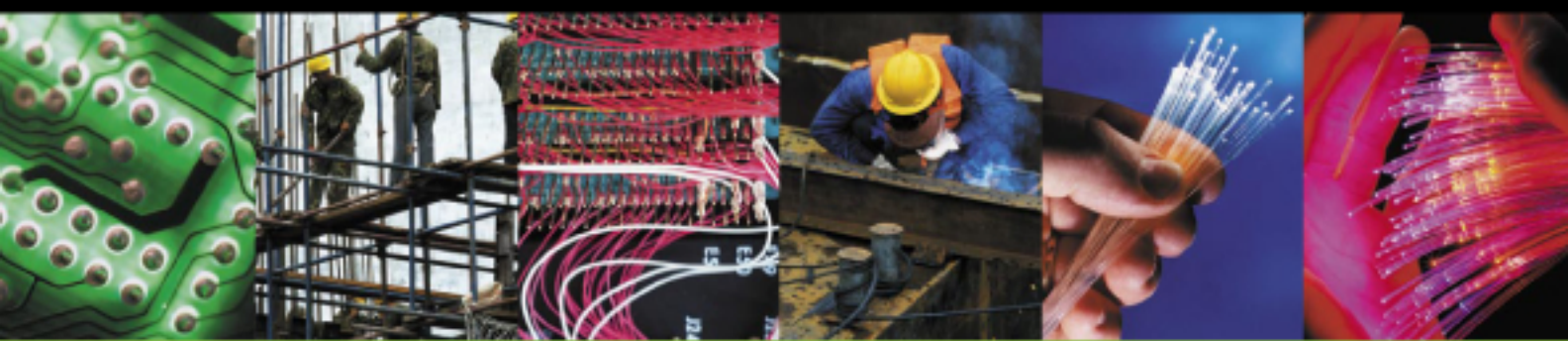




# Digital Building Telecommunications Access



2006

# Guideline



# **GUIDELINE DOCUMENT**

**Digital Building Telecommunications Access**

**2006**





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# Preface

The Inter-Government Agreement that governs the ABCB places a strong emphasis on reducing reliance on regulation, including consideration of non-regulatory alternatives to regulation such as non-mandatory Guidelines and Protocols.

The Digital Building Telecommunications Access Guideline has been developed to foster an understanding of fundamental issues related to the management of access to multi-tenanted buildings by multiple telecommunications carriers, carriage service providers and other service providers. It assists the user in identifying legislation, codes, standards and industry guidelines that can have a material bearing on the provision of access for installation of telecommunications in buildings.

The content of the Guideline is based on the “Digital River Digital Building Telecommunications Access Guideline”, which was developed by the Digital River Program (Victoria) in consultation with practitioners within the telecommunications market, including carriers, building management, agents and telecommunication advisers, in order to identify common issues and practical solutions.

Market information was then coupled with research into best practice and a review of mandatory legislative requirements in order to produce this enhanced national Guideline.

The aim of the document is to provide users with non-mandatory guidance on a specific issue. It is not intended that the content of the Guideline be counteractive to legislative requirements or references in legal documents.

It is recommended that users of the Guideline seek specialist advice in areas of building services, telecommunications services, telecommunications regulatory aspects and other relevant disciplines in the application of this Guideline to a specific building.

## **More Information and Comments**

To make comment on this Guideline or to seek further information please contact the General Manager of the ABCB. The ABCB’s e-mail address is [abcb.office@abcb.gov.au](mailto:abcb.office@abcb.gov.au).

# Acknowledgments

The ABCB acknowledges the valuable contribution of the Victorian Digital River Program, publisher of the document “Digital Building Telecommunications Access Guideline” 2002/2004 (DBTAG), upon which this document is based.

Additionally, Multimedia Victoria is acknowledged for its support and funding of the launch and implementation of the DBTAG project and its funding to update the document to accommodate subsequent revisions of relevant codes and standards.

This Guideline also includes information from the Bayside City Council (Victoria) document “Digital Bayside”; a guideline that addresses telecommunication installations in low and medium-rise buildings.

The ABCB also acknowledges that the Australian Communications Industry Forum (ACIF) has issued a document titled “Building Access Operations and Installation”, which defines standardised processes for the installation of telecommunications infrastructure in multi-tenanted buildings such as office blocks and apartment buildings. It is the ABCB intention that this Guideline co-exist with the ACIF document presented on the following:

[http://www.acif.org.au/data/page/3267/G571\\_2002.pdf](http://www.acif.org.au/data/page/3267/G571_2002.pdf)

## Victorian Digital River Program acknowledgements:

DIGITAL RIVER



CITY OF MELBOURNE



COMMITTEE FOR MELBOURNE





DIGITAL HARBOUR



PROPERTY COUNCIL OF VICTORIA



VICTORIAN BUILDING COMMISSION



VicURBAN



**Other acknowledgements:**

BAYSIDE CITY COUNCIL  
(VICTORIA)



GOVERNMENT OF VICTORIA,  
MULTIMEDIA VICTORIA



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# Abbreviations

<b>A</b>	Amps
<b>ABCB</b>	Australian Building Codes Board
<b>ACMA (ACA)</b>	Australian Communications & Media Authority (formerly the Australian Communications Authority)
<b>ACIF</b>	Australian Communications Industry Forum
<b>AS</b>	Australian Standard
<b>AS/NZS</b>	Australian Standard / New Zealand Standard
<b>BCA</b>	Building Code of Australia
<b>BD</b>	Building Distributor
<b>BEP</b>	Building Entry Point
<b>EMI</b>	Electromagnetic Interference
<b>EMR</b>	Electromagnetic Radiation
<b>ER</b>	Equipment Room
<b>FD</b>	Floor Distributor
<b>HVAC</b>	Heating, Ventilation and Air Conditioning
<b>IT</b>	Information Technology
<b>TC</b>	Telecommunications Closet
<b>UHF</b>	Ultra High Frequency
<b>VA</b>	Volt Amps
<b>VHF</b>	Very High Frequency

# Definition of Terms

<b>Access</b>	A means of giving access to a building including access to all areas required for installation and maintenance of telecommunications facilities. This may include entrance rooms, equipment rooms, riser shafts and horizontal pathways as defined.
<b>Access Hole</b>	A vault located in the ground or earth as part of an underground distribution system and used to facilitate placing, connection and maintenance of cables as well as the placing of associated equipment, in which it is expected that a person will enter to perform work underground.
<b>Alternate Entrance</b>	A supplementary service entrance into a building using a different routing to provide diversity of service and assurance of service continuity.
<b>Building Entry Point</b>	A point at which a line that is used to provide a carriage service to an end-user in a building meets the outer surface of that building, immediately before entering the building.
<b>Broadband</b>	A measure of transmission at bandwidths higher than 4 Mbit/s (e.g. high-speed data and video services). It should be noted that some lower bandwidth services and called broadband, such as Asymmetric Digital Subscriber Line (ADSL), operate at speeds less than 2 Mbit/s.
<b>Building Distributor</b>	A distributor in which the building backbone cabling terminates; previously referred to as the Building Main Distribution Frame.
<b>Building Management</b>	Any person or body that controls the building, including the building owner, building manager, leasing agent or body corporate.
<b>Campus</b>	A local network arrangement servicing a number of buildings, rather than just a single building, such as a university or hospital.
<b>Campus Pathway</b>	A pathway facility for interconnecting telecommunications entrance rooms or spaces of different buildings, as in a campus environment, as well as to the property line for connection off the premises.



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<b>Carrier</b>	A holder of a telecommunications carrier license granted under the Telecommunications Act.
<b>Carriage Service</b>	A service for carrying communications by means of guided and/or unguided electromagnetic energy.
<b>Carriage Service Provider</b>	A supplier of carriage services using network units owned by carriers.
<b>Conduit</b>	A tube or duct for enclosing wires or cable.
<b>Dial Before You Dig</b>	A service providing information about the presence of underground services networks; including electricity, gas, communications and water. The aim of such services is to inform operators of excavators of the location of services and reduce potential damage.
<b>Distributor</b>	A collection of components used to connect cables, including patch panels and cords.
<b>Earthing</b>	The provision of a direct, low-impedance electrical connection to the building earth.
<b>Electromagnetic Interference</b>	Interference in electronic signal flow through cables, or internally in electronic equipment, due to the functioning of nearby electronic or electrical equipment.
<b>Electromagnetic Radiation</b>	The radio frequency energy generated by a radio transmitter and radiated from an antenna.
<b>Entrance Room</b>	A room or space where the joining of campus and building backbone facilities takes place. Often the space in which conduits from an access-hole appear and may contain network interface devices and telecommunications equipment and be co-located with an equipment room.
<b>Equipment Room</b>	A centralised room containing telecommunications equipment such as switches, computing equipment, video switches and typically co-located with an entrance room.
<b>Floor Distributor</b>	An element in a network that serves as the connection between the vertical backbone and horizontal cabling. Previously known as an Intermediate Distribution Frame, these are generally located in telecommunications closets.
<b>Horizontal Pathways</b>	The horizontal cable paths for distributing cabling from telecommunications closet(s) and/or riser shaft(s) to cable outlets. Horizontal pathways include ceiling space (plenum), under floor systems and skirting duct systems.



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<b>Pathway</b>	The facility for the placement of telecommunications cable.
<b>Riser Duct or Shaft</b>	An enclosed fire resisting vertical duct or shaft housing distribution cables within a building.
<b>Telecommunications</b>	The carriage of communications by means of guided and/or unguided electromagnetic energy.
<b>Telecommunications Closet</b>	A small room or space which houses equipment and cable terminations for horizontal wiring for each floor. Other names include communications closet, floor distribution point, wiring closet.
<b>Telecommunications Outlets</b>	A fixed connecting device where the horizontal cable terminates. The telecommunications outlet provides the interface to the work area cabling.

# 1 Introduction

A competitive telecommunications market has been rapidly developing in Australia over the past decade as a direct consequence of Government policy. Tenants of buildings now have an expectation that they should have access to telecommunications services from a number of carriers and carriage service providers. Carriers and carriage service providers in turn have rights of access to buildings to permit them to provide services. At the time of preparing this Guideline, approximately 100 licensed carriers existed in Australia, with many seeking to provide telecommunications services to commercial and residential tenants in buildings.

The effective use of telecommunications services is vital for successful competition between businesses, which has a flow-on benefit to the national economy. Therefore, it is important to determine how to make the best use of telecommunications and seek to gain benefit from the competitive supply of services.

Significant changes to the scope of services available to tenants have resulted in substantial components of telecommunications equipment being located in the tenant's rented space rather than appropriately located in shared or common equipment rooms. Consequently, building management are seeking new ways to provide telecommunications access for multiple carriers, making buildings more attractive to prospective tenants, particularly regarding the provision of space and access for future services.

Development of strategies for installing telecommunications services also requires an appreciation of the rights and obligations of carriers and carriage service providers conferred by the Telecommunications Act 1997 and reflected in relevant industry codes and standards.

The focus of the Guideline is to encourage a non-mandatory approach to:

- facilitation of building access for carriers and carriage service providers to provide telecommunications services in multi-tenant high and medium rise buildings and low rise buildings in campus environments
- encouragement of a business environment in which there is extensive competition and high take-up of broadband telecommunications services in commercial and residential buildings
- providing information to tenants on the provision of broadband services in a given building by multiple carriers and carriage service providers
- multiple carriers and carriage service providers requiring access to service tenants
- avoiding the development of buildings that have limited space for telecommunications services
- carriers and carriage service providers seeking "end-to-end" connectivity with tenants
- competition for space between telecommunications services and other technology and infrastructure services
- inadequate documentation and co-ordination of telecommunications and other communications infrastructure
- the rights and responsibilities of various parties in regard to building access.

## 1.1 Guideline Structure

Information in the Guideline is presented in an introductory chapter and the following Chapter headings and Appendices:

<b>Chapter 2</b>	Terms of Agreement for Access
<b>Chapter 3</b>	Management of Building Access
<b>Chapter 4</b>	Access Spaces and Design
<b>Chapter 5</b>	Alternative Pathways and Spaces
<b>Chapter 6</b>	Building Services
<b>Appendix A</b>	Regulatory Principles
<b>Appendix B</b>	Typical Space Requirements
<b>Appendix C</b>	Terms of Building Access Agreements
<b>Appendix D</b>	Building Access Checklist

## 1.2 Scope

This Guideline contains general information and guidance to facilitate the management of arrangements for access to buildings by multiple telecommunications carriers, carriage service providers and others involved in the provision of telecommunications services to tenants in buildings.

Although the focus of this Guideline is on access for telecommunications services, the document recognises that services such as building management systems and communications systems compete for space within buildings; however it does not provide information explicit to these systems.

This Guideline also recognises that providers of radio (wireless) based systems and services, such as free to air digital television, may seek access to a building for the purpose of serving tenants or customers located outside a building. While this Guideline addresses wireless services for building tenants, it does not address services designed primarily for customers outside the building.

## 1.3 Limitations

This Guideline is not intended to:

- present comprehensive information on all issues related to a particular building or site
- encompass design situations that involve difficult or unusual building or site configurations
- be a “recipe book” to enable inexperienced or unqualified people to undertake work that should be undertaken by qualified and experienced practitioners



- replace published information  
or
- be counteractive to legislative requirements or references in legal documents.





## 2 Terms of Agreement for Access

### 2.1 Objective

To outline the general rights and responsibilities of various parties in relation to telecommunications access so that informed decisions can be made regarding the terms of agreement for access to buildings, including rights to compensation, reimbursement of expenses and rent or licence payments.

### 2.2 Regulatory Provisions

Schedule 3 of the Telecommunications Act 1997, the Telecommunications (Low-Impact Facilities) Determination 1997 and the Telecommunications Code of Practice 1997 set out the statutory rights of carriers to inspect land, install low-impact facilities and maintain those facilities.

It is important to note that these regulatory provisions apply only to carriers, not carriage service providers. A carrier is not obliged to enter into an agreement with building management and there is no automatic right to demand rent or license payments from a carrier exercising its rights under Schedule 3 of the Telecommunications Act 1997. When building management is approached by an organisation wishing to install facilities in a building, it should check whether the organisation is a licensed carrier or a carriage service provider in order to determine whether regulations apply.

However, typically there will be a number of matters on which the parties will need to agree. In addition, there are regulatory requirements that must be adhered to by carriers.

Clause 42, Schedule 3 of the Telecommunications Act 1997 provides a right to compensation if a person suffers financial loss or damage because of anything done by a carrier in exercising its inspection, installation or maintenance powers.

However, it is important to note that the right to compensation under clause 42 is specifically limited. Essentially, it is only if a property owner or a person with an interest in that property suffers financial loss or damage because of anything done by a carrier in exercising its powers that the carrier is liable to pay compensation.

The scope of compensation is decided after a carrier has relied on its powers and the amount of compensation is either agreed between the carrier and building management, or failing agreement, is determined by a Court.

Secondly, the carrier must comply with certain obligations under the Telecommunications Act 1997 and the Telecommunications Code of Practice 1997, including:

- giving notice to the owner of the land
- causes as little detriment and inconvenience, and does as little damage, as is practicable
- ensuring that any activity interferes as little as practicable with the use of the land
- protecting the safety of persons and property

- using best practice methods
- complying with applicable noise regulations
- co-locating facilities
- co-operating with other carriers and utilities
- restoring the land
- acting in accordance with good engineering practice
- complying with conditions specified in the regulations (where applicable)
- complying with conditions specified in the Telecommunications Code of Practice 1997
- complying with any applicable industry codes or standards
- complying with conditions specified in a facility installation permit (where applicable).

### 2.3 What About Carriage Service Providers?

Normally, it would be a carrier that seeks access to a building to install facilities; however carriage service providers may also wish to do so.

As land access regulations apply only to carriers, if a carriage service provider wishes to obtain access to a building, building management may require that the parties enter into an agreement.

### 2.4 Terms of Agreements for Access

Carriers may decide to rely on their statutory powers under Schedule 3 of the Telecommunications Act 1997 and not enter into an agreement for building access with building management. However, in practice, a carrier may enter into an agreement for building access, in addition to its statutory rights.

If building management and a carrier/carriage service provider are going to enter into an agreement, they will need to consider what types of terms the agreement will contain.

Appendix C of this Guideline contains information on the types of terms and conditions that may be relevant to a building access agreement.

### 2.5 Dispute Resolution

The Telecommunications Code of Practice 1997 sets out procedures for dealing with disputes or objections regarding access by a carrier. Appendix A of this Guideline provides further information on the subject. Certain types of disputes fall under the jurisdiction of the Telecommunications Industry Ombudsman; although the Ombudsman does not have jurisdiction to determine disputes relating to the payment (or non-payment) of monies.

If the dispute or objection involves a carriage service provider, then the Telecommunications Code of Practice 1997 does not apply and the parties may use ordinary dispute resolution mechanisms.

## 2.6 Provision of External Communication Services

A carrier may approach building management for building access for the purpose of augmenting the carrier's network, rather than providing services to tenants within the building, e.g. a carrier may wish to install rooftop transmission equipment. While this type of building access is outside the scope of this Guideline it does involve many related issues, such as the application of Schedule 3 of the Telecommunications Act 1997 and certain issues addressed in Appendix C of this Guideline. The respective parties should consider obtaining independent professional advice in these situations.



## 3 Management of Building Access

### 3.1 Objective

To provide information on a number of key issues relating to effective management of building access, including:

- ACIF guidelines for carriers, carriage service providers and building management
- Telecommunications Code of Practice 1997
- requirements for co-location and co-operation in relation to building access
- guidelines for security and access
- benefits of following this Guideline.

### 3.2 Carrier Specific Rules May Apply

While this Chapter generally relates to both carriers and carriage service providers, other carrier-specific rules or standards may also apply, such as Schedule 3 of the Telecommunications Act 1997 and the Telecommunications Code of Practice 1997.

### 3.3 ACIF Guideline

The Australian Communications Industry Forum has developed a guideline titled Building Access Operations and Installation (ACIF G571:2002), which deals with various issues including carrier and building management responsibilities when dealing with each other in relation to building access. This Guideline should be read in conjunction with the ACIF guideline.

### 3.4 Building Management Consultation

In order to ensure that tenants are aware of current and proposed telecommunications facilities, building management should consult with tenants regarding their need for telecommunications services and advise of the availability of space for entrance rooms, equipment rooms, telecommunications pathways and telecommunications closets within the building. Building management should also consider tenants and carriers needs for redundancy of spaces and pathways to support the provision of services with high availability.

### 3.5 Building Management Cooperation

Building management should co-operate with carriers and carriage service providers to establish appropriate management practices relating to matters such as:

- occupational health and safety requirements
- permits and times of work
- security and access system for shared facilities
- cable and equipment labelling policies
- maintenance of accurate records of building telecommunications facilities and related data and telephony infrastructure.

### 3.6 Timing and Notification

The speedy provision of telecommunications services is usually a priority concern for tenants and therefore notification of access requirements should be provided to building management as quickly as possible.

Clause 17, Schedule 3 of the Telecommunications Act 1997 provides that before engaging in inspection, installation or maintenance activities, a carrier must give the land owner and (if the land is occupied by a person other than the owner) the occupier written notice of its intention to do so. The notice must specify the purpose for which the carrier intends to engage in the activity.

The timeframes for notification under the Telecommunications Act 1997 are set out in Appendix A of this Guideline; however a landowner or occupier may waive its statutory notification rights or agree to alternative timeframes with the carrier.

### 3.7 Co-location and Cooperation

Before a carrier installs or carries out an activity for purposes in connection with the installation of low-impact facilities (including subscriber equipment), it is obliged under the Telecommunications Code of Practice 1997 to take all reasonable steps to find out whether any of the following are available for the activity and to take all reasonable steps to use such items as:

- cabling, conduits or other facilities of the carrier or another carrier
- a facility of a public utility
- or
- an easement attaching to the land for a public purpose.

In addition, a carrier must take all reasonable steps:

- to find out whether another carrier, or a public utility, is engaging in, or proposing to engage in, a similar activity for the same land
- to consider whether it is practicable to work with the other carrier or the utility to allow the first carrier:
  - (i) to cause as little detriment and inconvenience as is practicable
  - (ii) to do as little damage as is practicable.

These obligations relate to carrier arrangements to share building entries, entrance rooms, equipment rooms and vertical and horizontal pathways and are intended to minimise inconvenience and damage to building management.

## 4 Access Spaces and Design

### 4.1 Overview

In order to encourage a competitive market for high capacity telecommunications services in buildings, adequate space should be made available for use by multiple carriers. The provision of space ensures that access for the installation of services is not limited and presents an opportunity for various carriers and carriage service providers to compete for business.

### 4.2 Key Issues

Key issues to be addressed during the design of access spaces include:

- limited availability of space for telecommunications facilities in many buildings
- access to buildings for multiple carriers and carriage service providers
- various forms of infrastructure and technology that may need to be accommodated within building services
- identification and management of telecommunications and other communications infrastructure
- rights and responsibilities of carriers, carriage service providers, building managers and tenants in regard to building access.

Except where permitted by relevant legislation and industry Codes, the following components of telecommunications or other communications services should be housed separately to other building infrastructure and services:

- telecommunications service entrance facilities, lead-in ducts and building entry points
- entrance rooms or space
- equipment rooms
- vertical pathways and riser shafts
- campus networks
- building distributors
- floor distributors
- horizontal pathways
- telecommunications outlets
- lead-in cabling
- building backbone cable
- horizontal cable
- telecommunications closets
- telecommunications equipment/facilities.

### 4.3 Communications Network Layout

A building's entrance room, equipment room and communications pathway should be capable of accommodating different communications network layouts.



### 4.3.1 Multiple network layouts

Communication network layouts in a multi-storey building include those for telecommunications carriers and service providers, building management and control systems, tenant computer and communications systems and other related systems.

In low and medium rise buildings arranged in a campus setting, vertical pathways (riser shafts) are generally replaced by external horizontal pathways, such as underground conduit networks, to connect buildings.

The components of telecommunication networks include:

- copper and optical fibre cables entering the building
- special purpose copper cabling in vertical and horizontal pathways for delivery of high bandwidth services
- optical fibre cabling in vertical and horizontal pathways for delivery of high bandwidth services
- telephone cabling in vertical and horizontal pathways
- coaxial cable in vertical and horizontal pathways for delivery of Pay TV, free to air digital television, high-speed Internet and telephony services
- specialised antenna cables in vertical pathways for provision of mobile telephone and other radio-based services
- electronic equipment located in entrance room(s), equipment room(s), telecommunications closets and tenancy areas
- external antenna systems for connection of carriage services to the building. External antenna systems may also be associated with provision of carriage services to customers not located within the building.

Components of other communication networks include multi-pair data, coaxial and optical fibre cabling in vertical and horizontal pathways for Local Area Network systems, other computing systems, security systems, control systems, video systems and the like.

Additionally, buildings may have communications systems that are not specifically related to servicing building tenants that have cabling in vertical pathways for connection to a carriers' network, including:

- mobile telephone, mobile data, link radio and mobile radio systems
- television and radio broadcasting systems
- other systems such as those used for weather monitoring, environmental monitoring and video surveillance that have cabling in vertical pathways for connection to a carriers' network.

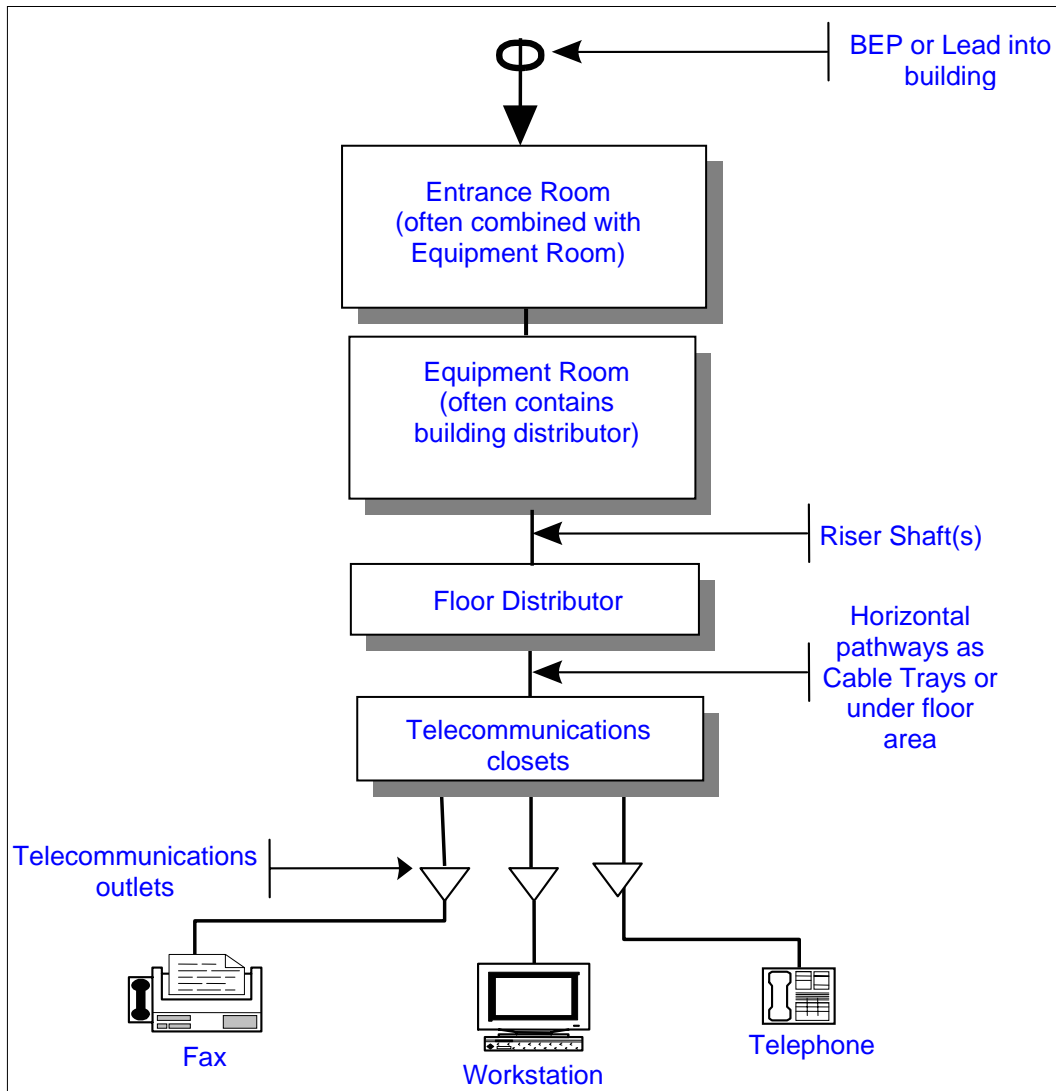
### 4.3.2 Common telecommunications infrastructure

Tenanted buildings generally accommodate a range of building services including telecommunications, other communications and non-tenant communications systems. The accommodation of services typically includes:

- building entry points
- entrance room(s)
- equipment room(s)

- vertical pathways
- horizontal pathways
- primary power
- telephone backbone cabling
- back-up power
- lighting
- heating, ventilation and air-conditioning.

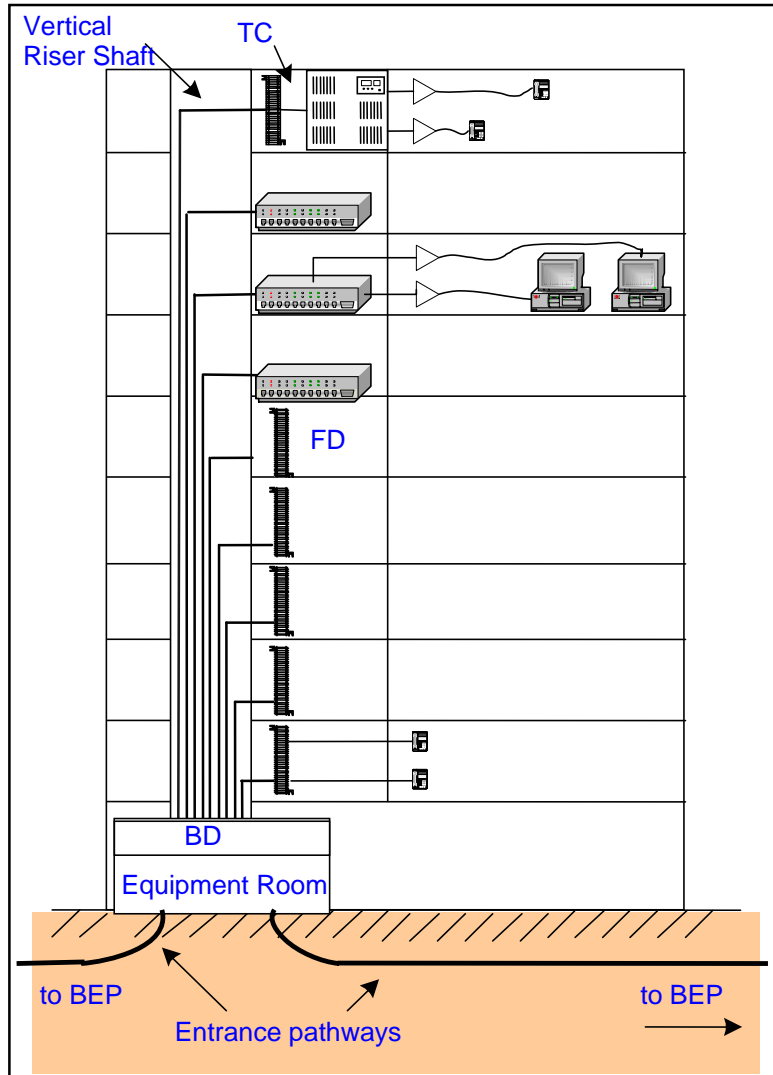
Figure 1 illustrates the relationship between these pathways and spaces.



**Figure 1 – Spaces and pathways**

In accordance with telecommunications regulatory requirements, or as part of a commercial arrangement, other carriers and carriage service providers may use telecommunications infrastructure provided in buildings. Specific requirements should form part of commercial arrangements and be included in tenancy agreements.

To facilitate connections to telecommunications carrier services in multi-storey buildings, backbone telephone cabling for use by carriers and tenants in vertical pathways is typically provided as shown in Figure 2.



**Figure 2 - Layout of view spaces and pathways**

In some cases, optical fibre cables may also be provided. However, due to the diverse range of network configurations, in most cases additional equipment and cabling will still need to be installed to deliver the full range of telecommunications services to tenants.

In cases where new installations result in additional expenditure, the specific service providers may fund work such as electrical distribution circuits, additional air-conditioning and additional cabling in order to meet the requirements of their specific systems.

### 4.3.3 Equipment and cabling requirements

It is not feasible to present advice on the type of equipment and cabling that should be installed as this is typically the responsibility of respective service providers and/or tenants, other than shared infrastructure provided by building management.

Issues relating to the selection of the most suitable communications equipment and cabling are best referred to an appropriate telecommunications advisor or building services advisor and planned in consultation with carriers where appropriate.

## 4.4 Telecommunications Service Entrance

To provide telecommunications services and cable-based broadcasting services to a building, lead-in ducts need to be laid below pavement level from an access hole outside the property boundary that contains cables from an underground street system to the building's entry point.

In accordance with the relevant requirements, all necessary space and structural requirements for all related entrance facilities should be met and contact with relevant local authorities and Dial Before You Dig should be made for information regarding the location of existing facilities.

Any location where a lead-in duct enters a building is referenced in this document as the BEP. In some cases, as a precautionary measure, two or more BEPs are provided to a building. A carrier may also use a radio-based system with antennas mounted on the building to provide either the primary or secondary BEP.

### 4.4.1 Entrance pathways and entrance rooms

To help minimise disruption to business and the cost of providing additional services, building management should typically obtain advice from appropriate telecommunication advisers, service carriers and tenants to determine a suitable number, location, type and size of entrance pathways to meet cabling requirements.

In this context, the following issues relate to the design and construction of entrance pathways and entrance rooms:

- carriers have rights and obligations in relation to co-locating facilities and co-operating with others - see section 3.7
- carriers and tenants may require multiple entrance pathways to provide diversity and security of connections
- an entrance room is required to accommodate the building distributor cable frame, which is typically wall mounted, or located in freestanding frames or racks
- an entrance room and equipment room may be one room
- information on the design of spaces for entrance pathways and entrance facilities is given in AS/NZS 3084-2003 Appendix ZB5.2 and ZB5.3 and AS/ACIF S009:2006.

Additional information is provided in Appendix B of this Guideline.

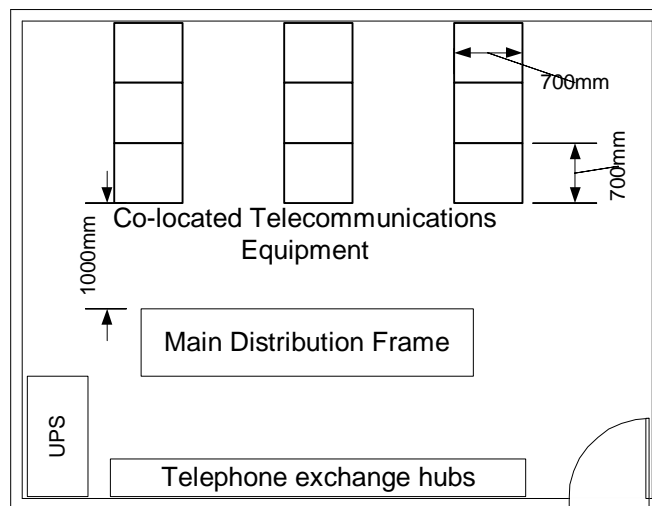
In large-scale multi-unit apartment complexes, or campus layouts where underground networks link buildings, a campus distributor and an alternate inter-building backbone

pathway may be required. Alternatively, separate lead-in ducts may be provided along the perimeter of the campus for connecting an individual building.

## 4.5 Equipment Room

One or more dedicated equipment rooms is normally provided, with enough space to house carrier equipment and in some cases equipment associated with tenants and/or associated suppliers. The equipment room would preferably house only telecommunications equipment or related equipment and be accessible at all times. Appendix B of this Guideline presents typical dimensions of equipment rooms that may accommodate equipment for a suggested minimum of four service providers. Figure 3 illustrates a typical floor layout for an equipment room.

Figure 3 illustrates a typical floor layout for an equipment room.



(Dimensions are example only)

**Figure 3 – Typical equipment room layout**

General considerations in regard to equipment room requirements include:

- carriers have rights and obligations in relation to co-locating facilities and co-operating with others - see section 3.7
- carriers and tenants may require multiple equipment rooms to provide diversity and security of connections
- the equipment room and entrance room may be the one room, in which case the room will be required to accommodate the building distributor cable frames that are either wall mounted or located in freestanding frames or racks
- the room should be located above the building's lowest basement level and be resistant to flood damage, protected against inappropriate water infiltration and if necessary, a floor drain should be provided
- the room should be easily accessible to the carriers
- the room should have pathways to the vertical pathway(s), campus pathways and the entrance room (if separate) as well as the lead-in ducts if a separate entrance room is not provided

- except as otherwise required by legislation such as the BCA, no water pipes, sewage pipes, water drainage, water sprinklers, high voltage power supply cables or power transformers should be installed within the equipment room
- no air ducts, except those servicing the equipment room, should be installed or routed through the room
- except as otherwise required by legislation such as the BCA, there should be no openings in the room except for the door, the ventilation ducts and cabling ducts
- all windows not required by the BCA should be closed and sealed. If necessary, window coverings and security grilles should be provided. Penetrations, openings and doors should comply with the BCA - see Section 6.6
- the room should not be exposed to vibration
- lighting should be provided in accordance with the BCA and AS/NZS 3084-2003 Appendix ZB2.3.4.8
- a dedicated electrical power supply should be provided to the room and connected to a back-up power supply if one is provided
- the temperature and humidity range for the room should be between 18°C and 24°C with 30% to 55% humidity as per AS/NZS 3084-2003 Appendix ZB2.3.4.6.2
- the floor, walls and ceiling should be painted in light colours to assist room illumination and to minimise dust generation.

The layout of an equipment room should take into account:

- the potential quantity and volume of equipment to be used by multiple carriers
- the expected frequency of accessing equipment racks for maintenance purposes
- security and access arrangements for access to or from the equipment room and to external parking for the transport of equipment
- space for future expansion where possible.

For further information refer to AS/NZS 3084 – 2003 Appendix ZB2.3.

Figure 4 is a picture of a typical equipment installation in an equipment room.



**Figure 4 – Installations in an equipment room**

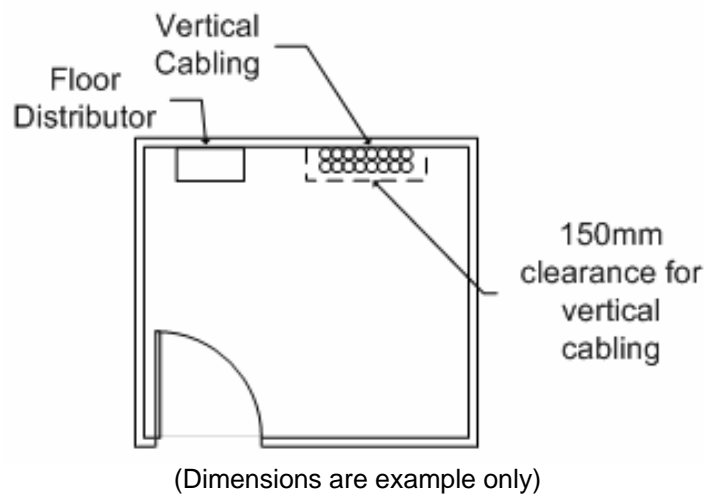
## 4.6 Backbone Pathways or Riser Shafts

Riser shafts provide a vertical passage for telecommunications services to be distributed to each floor. Therefore, it is important that carriers are provided adequate cabling space and access so they can provide an effective service within the building. Riser shafts are also used for cabling associated with other communications services including:

- backbone cabling for tenant telephone systems
- pay TV cabling
- free to air analogue and digital television cabling
- antenna cables (e.g. mobile telephone systems)
- tenant Local Area Network/Wide Area Network systems
- security and surveillance systems.

Appendix B of this Guideline presents typical dimensions of riser shafts that may accommodate cabling for a suggested minimum of four service providers.

Figure 5 provides a cross section view of a typical riser shaft design and further information can be derived from AS/NZS 3084-2003 Appendix ZB4.



**Figure 5 – Plan of typical riser**

To obtain maximum utility from the riser shafts, they should ideally be placed through a common part of the building and central to the distribution area that they serve. Provision of more than one riser shaft is highly desirable in buildings with large floor areas in order to provide flexibility and improve reliability of telecommunication services.

Access to each riser shaft will be necessary on each floor and should be from a corridor or common area to avoid disturbing tenants. Access is best provided by a standard height hinged-door.

Riser shafts should be fitted with cable fixing devices such as steel cable racks or perforated cable trays fixed along the entire height from the entrance room or equipment room to the top of the building. The type of fixing devices used will depend on the type and quantity of cables to be installed and they should only be fitted on the permanent structure of the building to avoid future problems when partition walls are relocated. All fixed cabling should conform to cabling standards.

## 4.7 Telecommunications Closets

The telecommunications closet contains telecommunications equipment, cable terminations for horizontal wiring and cross-connection wiring to backbone cabling. In some cases, the telecommunications closet is also used to accommodate equipment associated with tenant systems and other systems. As a general guideline, the size and spacing of telecommunications closets should be in accordance with AS/NZS 3084-2003 Appendix ZB2.2.2. However, additional space may be required to facilitate multiple carriers and accommodate tenant systems.

In large buildings, the telecommunications closet is typically located in the services core(s) and riser shaft floor penetrations are located within the same area as the telecommunications closet.

In general, at least one telecommunications closet with adequate access should be provided on each floor and each telecommunications closet should:

- serve a maximum floor area of 1000m<sup>2</sup>

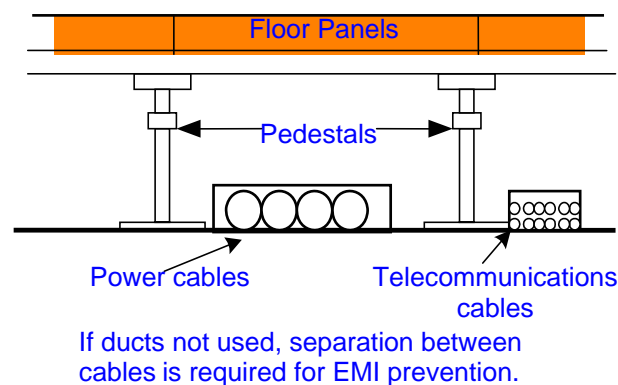


- have a maximum cable run of 90m, particularly where the horizontal cabling system is an integrated telephone and data system
- be able to accommodate a suggested minimum of four carriers
- have a rigid wall that is capable of supporting the equipment
- be located away from water pipes and fire hydrants, except as otherwise required by legislation including the BCA.

## 4.8 Horizontal Pathways

Horizontal pathways allow the installation of cabling from each telecommunications closet to the area occupied by the tenant. The pathways may be in conduit, cable tray and ducts, ceiling or perimeter, in-floor or under floor access, or in some cases simple suspended brackets may be used.

Figure 6 depicts a typical underfloor cabling pathway.



**Figure 6 – Typical underfloor cabling**

Horizontal pathways are usually inherent in the building design and hence are normally managed by building management and the tenant. However in some cases parts of the horizontal pathways are provided by the tenant by means such as partitioning ducting.

The pathway should be designed to accommodate all types of telecommunications cable, other distribution cables, and also have spare capacity to allow for expansion. Normal industry practice is to use integrated voice and data horizontal cabling systems (e.g. Category 5 cabling). However there are still separate telephone and data cabling systems in many tenancy areas due to historical installations and/or use of certain computer systems with dedicated cabling systems.

In general, horizontal pathways should be provided with spaces designed in accordance with AS/NZS 3084-2003 Appendix ZB3. However, it is highlighted that the requirements will usually be specific to particular tenant needs for computer system and telephone system internal cabling in addition to telecommunications services.

Liaison should occur between the relevant parties including building management, appropriate telecommunications advisors and building services advisors and existing and prospective tenants to ensure that the most appropriate horizontal pathways are used for the planned network layout.

## 4.8.1 Methods of distribution

One or more of the following horizontal distribution methods should be provided to service tenanted areas:

### **In-floor**

There are several types of in-floor ducting. Some are incorporated in the concrete when the building is being constructed and others, such as freestanding duct, are not. Design guidelines for this distribution method are given in AS/NZS 3084-2003 Appendix ZB3.9.1.2.

### **Access floor**

This requires the construction of a floor from floor panels supported on pedestals. Design guidelines for this distribution method are given in AS/NZS 3084-2003 Appendix ZB3.2.

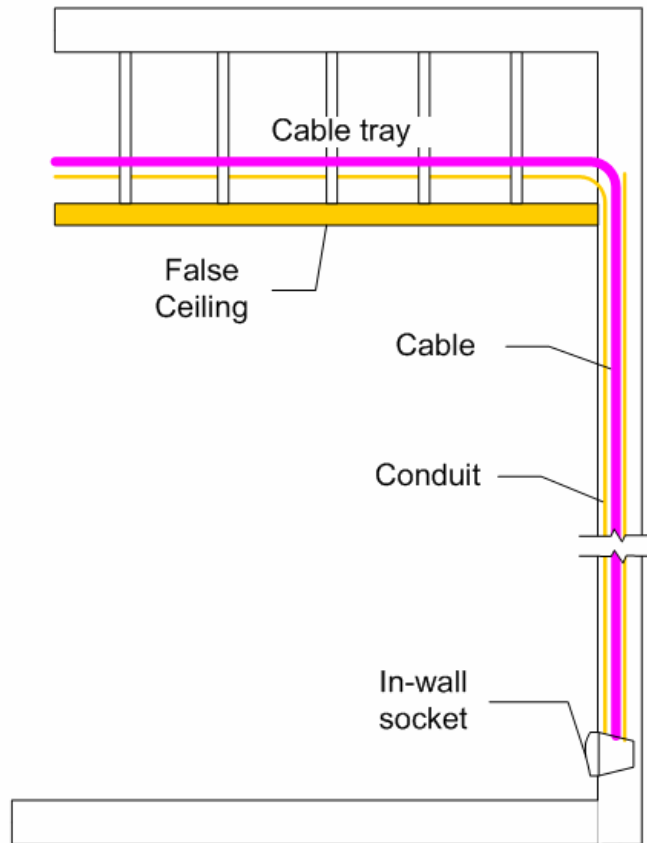
### **Conduit**

Conduit may be constructed from rigid metal or PVC. This method is mainly used where the quantities of telecommunications outlets are low in density and their positions are likely to be permanent. Design guidelines for this distribution method are given in AS/NZS 3084-2003 Appendix ZB3.4.

### **Ceiling Pathway**

Ceiling spaces may be used for the provision of pathways for telecommunications cables. Generally, this requires the provision of ducting or troughs, such as cable trays. The cables should not be laid directly on suspended ceiling tiles, particularly given that these are not normally designed to carry additional loads. In addition, access to cables by lifting tiles is restricted and in some cases airflow through the perforated tiles may be compromised.

Figure 7 illustrates cable distribution via a false ceiling. Access to a ceiling pathway is normally gained by lifting ceiling tiles. Should the ceiling space be inaccessible, such as behind plasterboard lining or fixed ceiling tiles, the space should not be used unless a duct or conduit with draw wire is provided. Design guidelines for this distribution method are given in AS/NZS 3084-2003 Appendix ZB3.5.



**Figure 7 – Cable distribution through false ceiling**

### **Perimeter Pathways**

Perimeter pathways are often located as a skirting duct. Design guidelines for this distribution method are given in AS/NZS 3084-2003 Appendix ZB 3.8. Also, a detailed description of perimeter pathways may be found by referring to Section 3 of the Communications Cabling Handbook, Module 2, HB 29:2000.

### **Residential Multi-Tenant Premises**

Horizontal pathway requirements of multiple dwelling residential premises generally need to be building-specific to take into account aesthetic and operational requirements such as provision of outlets for telephone, Pay TV, free to air TV and computer systems.

In the case of residential apartments where integrated wiring is used, telecommunications wiring is typically brought into the apartment from the floor distributor where it is connected to a disconnection test point. The disconnection test point enables tests to be undertaken both in the direction of the network and in the direction of the tenant's equipment.

After the disconnection test point there is a distribution device from where cabling in a star configuration goes to each telecommunications outlet. In some cases, particularly where there is existing cabling, the point between the network and the customer may be at the building distributor.

If the building is wired using an integrated cabling system, a detailed description of the wiring, pathways and installation requirements is described in AS/NZS 3086:1996.

Appropriate telecommunications advisors and building services advisors should be consulted to ensure that the most appropriate horizontal pathways are used for the planned network layout.

## 4.9 Radio (Wireless) Facilities Provision

Providers of radio (wireless) based systems and services may seek access to a building for the purposes of servicing tenants within a building, servicing customers outside a building, or a combination of both.

### 4.9.1 Services to tenants

In the case of carriers seeking building access for radio based facilities to provide services to tenants, the general principles of this Guideline in regard to provision of spaces and building services to facilitate the provision of services to tenants should be applied.

### 4.9.2 Services for general customers

In the case of organisations seeking building access for the purpose of providing services to customers in general rather than for provision of services to building tenants (e.g. mobile telephone base station), a range of issues arise that include requirements for the use of in-building common use infrastructure such as riser shafts, equipment rooms and building services. Professional advice should be sought from appropriate telecommunications advisors, building services advisors, carriers and other relevant parties.

### 4.9.3 Building fit-out requirements

The nature and design of carrier radio based systems in tenanted buildings varies from very small external antennas and small internal equipment to relatively large antenna systems and requirements for equipment racks.

The arrangements for access to rooftop equipment accommodation and mounting locations for antennas need to be dealt with on a case-by-case basis with the carrier.

Figure 8 illustrates rooftop radio communication installations.



**Figure 8 - Rooftop radio communications installations**

Arrangements for carriers to provide radio-based systems to service building tenants should include consideration of all general access arrangements described in the respective sections of this Guideline, plus a number of additional issues such as:

- carriers should demonstrate to building management that external equipment, including antennae and cables, meet mandatory design requirements
- carriers should agree to remove radio-based facilities and repair the building as necessary when a facility is no longer used to provide service to building tenants
- regulatory powers of the ACMA in regard to protection of health and safety of persons exposed to non-ionising Electromagnetic Radiation. The ACMA does not have regulatory powers in relation to ionising radiation such as X-rays
- new Electromagnetic Radiation human health exposure regulations introduced by the ACMA on 1 March 2003. The applicable mandatory standard is the “Radio communications (Electromagnetic Radiation-Human Exposure) Standard 2003”. The standard makes mandatory the exposure limits in the “Radiation Protection Standard Maximum Exposure Levels to Radiofrequency Fields - 3kHz to 300 GHz” which was issued in May 2002 by Australian Radiation Protection And Nuclear Safety Agency
- in October 2002 the ACMA registered the industry code ACIF C564:2002 Deployment of Radio Communications Infrastructure, which complements the Australian Radiation Protection and Nuclear Safety Agency standard, which was subsequently revised to ACIF C564:2004 in December of 2004.

#### 4.10 Physical Space Allowances

Appendix B of this Guideline presents tables of dimensions for typical equipment rooms which may accommodate telecommunications facilities for up to four carriers or carriage service providers.

Appendix B also provides guidelines on typical numbers of building entry points, floor distributors and cable pathways (riser shafts) that will be required for various building sizes and combinations. It is assumed that in some equipment rooms, telecommunications closets etc., space will be required for use by multiple tenants, building management/occupiers and other parties for other communications systems,

in addition to space for telecommunications systems or terminations for services operated by carriers and carriage service providers.

Tables in Appendix B cater for the main types of buildings and complexes that are constructed including:

<b>Table 1</b>	High Rise Commercial Buildings.
<b>Table 2</b>	Multi Tenant Residential Buildings.
<b>Table 3</b>	Single occupier/multi-tenant occupier multi-storey single building.
<b>Table 4</b>	Single storey office/workshop/warehouse building – various combinations and sizes.
<b>Table 5</b>	Single storey building complex (commercial/industrial campus) - various numbers and types of buildings.

Normally only buildings with a floor area greater than 50,000m<sup>2</sup> require more than one equipment room for accommodation spaces or the provision of alternate spaces and pathways. While one equipment room will generally suffice, an exception may be special purpose buildings where high reliability and integrity of telecommunications services is required due to the nature of the business being performed, such as:

- computer centre
- computer centre backup and disaster recovery site
- call centre
- corporate head office or major government office.

## 4.11 Security Considerations

The security of telecommunications infrastructure could be breached if not addressed appropriately, resulting in threats and disruption to business operations. However, it is possible to minimise these potential problems during the design and installation process by undertaking a security audit prior to installation and a physical security audit after installation.

Basic security issues to be addressed during design include:

- control of access to buildings
- subject to compliance with legislation such as the BCA, installing locks on all equipment rooms, telecommunications closets, building distributors, riser shafts and floor distributors
- installing locks on pit lids for any inter-building underground distribution
- installing intruder detection in equipment rooms as a minimum
- optional intruder detection for floor distributors and telecommunications closets
- placing all cabling in conduit if cabling cannot be located in lockable facilities, including ceiling spaces.

## 4.12 External Pathways and Spaces

When developing a telecommunications plan for a multi-building site, all buildings should be included in the plan regardless of whether a service has been requested.

External pathways connecting separate buildings will generally consist of underground conduit pathways, although options such as aerial pathways, underground tunnels or direct burial may be considered.

When determining the size and number of pathways required, a number of issues should be considered, including:

- size and use of all buildings
- potential or planned growth on the site
- location of alternative entrances to a building
- potential to include future pathways
- type, size and number of cables likely to be installed
- connection hardware and housing of equipment
- extent and location of building services
- the likely number of carriers and carriage service providers seeking access.

## 4.13 Cable Pathway Infrastructure and Materials

Cable pathway infrastructure needs to provide physical support and protection for the cabling system and it should generally conform to AS/NZS 3084:2003.

Cable pathways for optical fibre and copper cables should incorporate:

- a cable ladder for internal vertical risers, which typically is manufactured from galvanised steel and has a minimum width of 300 mm with 75 mm side rails
- cable ties to secure the cable to a ladder at intervals not exceeding 150 mm
- inspection pits or draw boxes installed at intervals not exceeding 40 m
- catenary wire for horizontal cabling only
- minimum bend radius appropriate to the size of installed cables
- fire-resisting penetrations where pathways pass through fire-resisting elements (refer to the BCA for requirements)
- electrical earthing as set out in AS 3000:2000
- ducts containing nylon or PVC draw wires
- 80 mm white heavy duty PVC conduit for external cable locations.

## 5 Alternative Pathways and Spaces

### 5.1 Overview

In order to provide a high degree of reliability in telecommunications services, carrier networks may employ physically separate pathways in the carrier's access network. Buildings that complement carriers access design strategies by providing alternative building entry, spaces and pathways that permit the elimination of single points of failure on working services, result in higher levels of service performance to tenants. Typically, this is achieved through the provision of a minimum of two building entry points so that carriers can provide connections via alternative routes.

### 5.2 General Requirements

The provision of alternative connections to telecommunications pathways is a means of ensuring continuity of service to tenants and is more likely to be critical in commercial buildings than in residential buildings.

The design of separate alternative pathways is often complex and requires input from a range of parties, including carriers, carriage service providers and their customers. Design considerations regarding the need for alternative Building Entry Points, alternative entrance rooms and/or equipment rooms, alternative vertical risers, alternative horizontal pathways and back-up power supply will generally depend on the size of a building and the needs of individual tenants.

### 5.3 Building Entry Point

The requirement for provision of an alternate building entry point is generally dependent on tenant requirements. However, as a guide it is suggested that a minimum of one alternate entrance be included in new buildings and in reconditioned buildings with a lettable floor area greater than 50,000 m<sup>2</sup> where possible (refer to Appendix B of this Guideline). Where a second building entry point is provided, a second entrance room (or equipment room where it is co-located) may be sought to allow for an alternate building distributor and other equipment.

As carriers and tenants may seek a radio-based facility to provide a diverse connection, consideration should be given to providing possible alternate spaces and pathways from the rooftop down.

### 5.4 Equipment Rooms

The requirement for provision of alternative or redundant equipment rooms is generally dependent on building and tenant requirements. However, as a guide it is suggested that a second equipment room be considered for new buildings and refurbished buildings with a lettable floor area greater than 50,000 m<sup>2</sup> where possible.

If a radio-based facility is also sought, consideration should be given to providing possible alternate spaces and pathways from the rooftop down.



In existing buildings where the equipment room is of insufficient size, it may be practical to provide an additional equipment room that contains both alternative and redundant equipment. Another option to a redundant equipment room is the use of tenant floor areas and/or telecommunications closets to accommodate equipment.

In the case of residential buildings, the provision of a second equipment room is generally not a key requirement for tenants and carriers may generally meet individual tenant requirements for alternate pathways by the use of fixed and mobile radio services.

It is also critical to consider a disaster recovery strategy in the design of building's infrastructure and for high level security of service. Where two equipment rooms exist, one should be able to continue operating when the other is taken out of service. To provide this capability, the capacity of building services such as power and HVAC for either equipment room should be considered.

## 5.5 Riser Shafts

The need for alternative riser shafts is generally dependent upon the building layout and individual tenant requirements. However, it is suggested that an additional riser shaft be provided in new buildings, with a further riser for each 50,000 m<sup>2</sup> of floor area and in refurbished buildings where individual floors require multiple telecommunications closets. One telecommunications closet per 1500 m<sup>2</sup> of habitable floor area is recommended in AS/NZS 3084-2003 Appendix ZB2.2.2.1.

For residential developments and smaller commercial or refurbished buildings, it is suggested that design options be considered where tenant requirements for alternative pathways are identified. In these cases, utilisation of an existing and separate fire-rated riser shaft as an alternative pathway should be considered.

## 5.6 Radio (Wireless) Services

Radio based carrier services can be used to provide an alternative building entry point for cable based telecommunications services.

Figure 9 illustrates alternative building entry points both at the building's ground level and via a radio system on the rooftop.

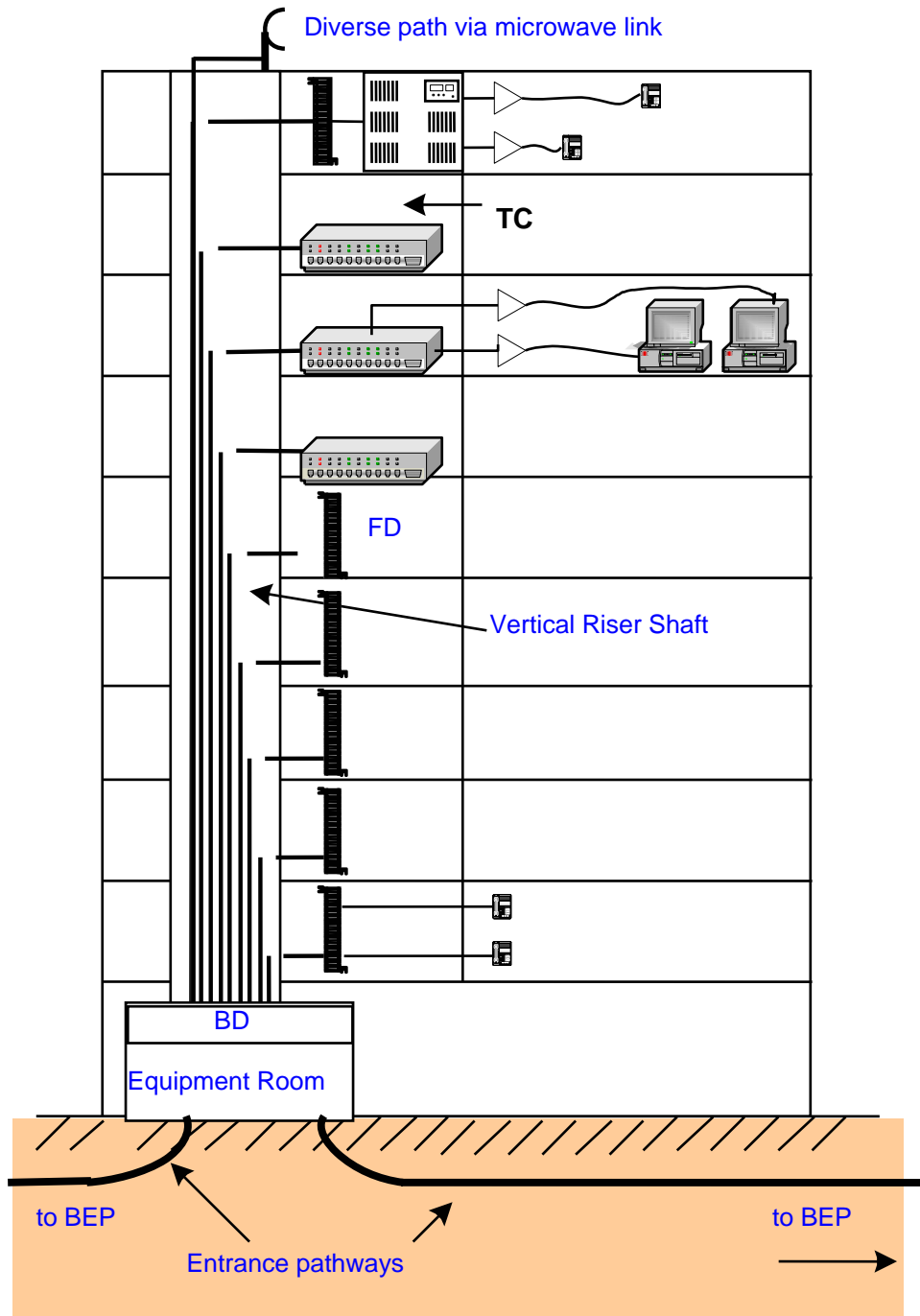


Figure 9 - Alternative building entry



## 6 Building Services

### 6.1 Overview

In order to ensure sufficient capacity for future telecommunications services, building services and infrastructure should be able to support telecommunications facilities for a minimum of four carriers.

### 6.2 Considerations

This section outlines considerations relating to service provider access to a building and the operation of general building services that may influence the installation and operation of telecommunications facilities. Typically, the effective operation of telecommunications services can be influenced by the effectiveness of other services or systems, such as:

- building security
- power
- HVAC
- fire safety systems
- lighting.

Specific advice on the operation and integration of building services should be sought from appropriate specialist building service designers and telecommunications advisors.

### 6.3 Building and services access

In order to install and maintain telecommunications facilities, service providers should have general access to a building as well as access to a variety of building services. Therefore it is essential that providers negotiate an access agreement with building management to undertake all activities with due regard to the building security and internal monitoring systems.

#### 6.3.1 Building security

Building management is generally responsible for informing a service provider of the capabilities of the security provided in the building. Service providers should then ensure that the security system is appropriate for their requirements and that their need for access to their facilities will not jeopardise the overall performance of the system. If it is considered that the security system requires upgrading as a result of a proposed installation, the service provider would typically reach agreement with building management and ensure the issue is properly addressed in a building access agreement.

Factors that should be addressed in reaching such an agreement include:

- access to facilities at any time in order to respond to fault situations. Typical mechanisms include keys, entry passes, parking passes and access cards that record movements of personnel within a building
- management processes can readily address changes to arrangements, including; changes to authorised personnel, access to new service providers and cancelling access to vacating providers
- agreement to not change any shared security devices without approval from building management. When changes are made, the respective provider should ensure that building management and other providers are immediately notified and not disadvantaged.

### 6.3.2 Information management systems

To facilitate the design and installation of telecommunications systems, service providers need information on existing facilities and building services.

Building management is generally responsible for informing a service provider of the scope of the building's information management system. Service providers should ensure that the system is appropriate for their requirements and advise building management that information regarding the installed facilities will be submitted to enable existing records to be up-dated. If it is considered that the building's information management system requires upgrading, the service provider would typically reach agreement with building management and ensure the issue is properly addressed in a building access agreement.

To ensure consistency when documenting new information it is suggested that building management act as a central repository of records relating to the installation and maintenance of all facilities in the building.

## 6.4 Power Supply

Telecommunications facilities are typically delivered using electronic equipment that requires a continuous power supply.

Building management is generally responsible for informing a service provider of the capabilities of the primary power and back-up power systems provided in the building. Service providers should then ensure that the power supply systems are appropriate for their requirements and that their facilities will not jeopardise the performance of power systems. If it is considered that power supplies require upgrading as a result of a proposed installation, the service provider would typically reach agreement with building management and ensure the issue is properly addressed in a building access agreement.

Arrangements for payment for access to power supplies, or the provision of separate metering for power, should be also be included in a building access agreement. Characteristics that a power supply system for telecommunications systems should contain include:

- provision of dedicated 240 Volt AC circuits to the entrance room and equipment rooms so that power is unaffected by loads and/or activation of circuit breakers on circuits servicing tenancy areas
- provision of electrical distribution boards (or sub-boards) in the entrance room and equipment rooms so that individual circuits and circuit breakers can be allocated to individual equipment racks/systems. This allows the operation of individual racks/systems associated with one service provider to be unaffected by loads and circuit breaker operation of other racks/systems
- provision of dedicated 240 Volt AC circuit(s) to sub-board(s) that service riser shafts and telecommunications closets so that power is unaffected by loads and/or activation of circuit breakers on circuits servicing tenancy areas. The number of general purpose outlets required at each riser/telecommunications closet should be determined for a specific building. It is suggested that a minimum of 2 x 10A, 240 Volt AC double general purpose outlets be provided
- the power load of telecommunications systems in entrance rooms and equipment rooms should be determined for a specific building. As a guide, the power load of each rack is typically in the range of 100VA to 400VA with peak VA draw on start-ups being higher
- the total number of racks installed in a given room is often estimated on the basis of the typical floor area of a rack being 0.5m<sup>2</sup> and the typical occupancy ratio of an equipment room being around 30% of floor area when allowing for general access routes and doorways
- the power load of telecommunications facilities and other systems in risers and telecommunications closets should be determined for a specific building. As a guide, the power load of each closet of telecommunications facilities may range from nil VA to 250VA for each carrier's facilities, with peak VA draw on start-ups being higher
- the provision of back-up batteries and Uninterruptible Power Supply systems is typically the responsibility of individual carriers and service providers, although it is noted that use of batteries may require adjustment to the HVAC system
- if a back-up power supply is provided it should be connected to sub-boards servicing the entrance room, equipment room, riser shafts and telecommunications closets. Arrangements regarding the connection of racks/systems to the back-up power supply would normally be made between the service providers and building management.

Information regarding electrical earthing is outside the scope of this Guideline as the issue is adequately addressed in various electrical and telecommunications standards.

Generally, building management should provide access to the main building earth if required by the service provider. A detailed technical description of the three main methods of earthing telecommunications equipment is covered in AS/ACIF S009:2006. Should a special form of earthing be proposed, details should be provided to building management.

The provision of three phase power for telecommunications facilities should be determined when considering design requirements for specific buildings.

## 6.5 Heating, Ventilation and Air-Conditioning

Telecommunications facilities are typically delivered using electronic equipment contained within an environment in which temperature and humidity are controlled in order to maximise the reliability and service life of the equipment.

Building management is generally responsible for informing a service provider of the capabilities of the HVAC systems provided in the building. Service providers should then ensure that the HVAC systems are appropriate for their requirements and that their facilities will not jeopardise the performance of the systems.

If it is considered that the HVAC systems require upgrading as a result of a proposed installation, the service provider would typically reach agreement with building management and ensure the issue is properly addressed in a building access agreement.

It should be noted that the BCA contains energy efficiency requirements for HVAC systems.

Telecommunications facilities can typically be located in an entrance room, an equipment room, a riser shaft, a telecommunications closet and in some cases within a tenant's floor area.

Figure 10 shows typical air-conditioning ducting in an equipment room.



**Figure 10 – Air-conditioning ducting in an equipment room**

General requirements for a controlled environment for telecommunications facilities include:

- separate HVAC zones covering the entrance room and equipment room so that settings can be specific and the HVAC operation is continuous and unaffected by settings in tenancy areas

- air temperatures should be between 18°C and 24°C with humidity from 30% to 55% as per AS/NZS 3084-2003 Appendix ZB2.3.4.6. The heat produced by facilities needs to be assessed for each specific area. As a guide, the heat produced by each rack is typically in the range of 100 watts to 250 watts; although some systems will exceed this output. Heat loads of other systems accommodated in the area of telecommunications facilities may be higher
- the total number of racks installed in a given room is often estimated on the basis of the typical floor area of a rack being 0.5m<sup>2</sup> and the typical occupancy ratio of an equipment room being around 30% of floor area when allowing for general access routes and doorways
- typically, facilities located in risers and telecommunications closets are relatively robust and specific parameters for HVAC systems are not required, provided the system's operation is continuous and unaffected by tenancy areas.

## 6.6 Fire safety systems

The BCA sets out the scope and requirements for fire safety systems required to be installed in a building. Required fire safety systems may include passive systems, such as fire-resisting walls, floors and doors; or active systems, such as fire alarms, fire sprinklers or smoke exhaust systems. The scope of required systems will depend on a number of factors, including the characteristics of the building, the characteristics of the occupants and the building's fuel load.

When a building is approved for occupation, the relevant authority may inspect the fire safety systems to ensure they comply with the approved design.

Following occupation, building management is usually responsible for maintenance of the building and needs to ensure that installed systems are capable of performing at least to the level to which they were originally designed and approved.

When work is proposed to be undertaken on a building, such as work conducted by carriers and service providers, respective State or Territory governments regulate whether the work needs to comply with the BCA. If there is any doubt, the relevant building control authority (such as the local government) will usually be able to provide advice. Regardless of whether the BCA applies, it is essential that the performance of fire safety systems in any building is not affected by new work.

When the BCA is applicable, the requirements of the Code will usually override general industry standards or individual agreements if any inconsistency arises.

Under the performance-based BCA, the selection and design of fire safety systems can be determined by either following the deemed-to-satisfy provisions or developing an alternative solution to meet the mandatory performance requirements (or a combination of both). Therefore, the deemed-to-satisfy provisions, including any documents referenced in deemed-to-satisfy provisions such as Australian Standards, are simply one way of meeting the mandatory performance requirements of the BCA.

In the development of new buildings, designers may consult with other practitioners, such as carriers and carriage service providers, on the selection of fire safety systems. For example, it may be preferred that water sprinkler systems not be installed in areas that accommodate telecommunications electronic equipment, as activation of these systems might cause significant damage. However, using this example, if the deemed-



to-satisfy provisions of the BCA require a sprinkler system to be installed, an alternative solution complying with the BCA performance requirements would need to be prepared and approved.

When work is proposed on existing buildings, all relevant parties, including carriers and service providers, should be informed of the capabilities of fire safety systems installed in a building. Consideration needs to be given to whether installed systems are appropriate for their requirements and to ensure that their activities and equipment will not jeopardise existing levels of fire safety and BCA compliance. If it is considered that existing systems require augmentation or upgrading because of a proposed service installation, this issue should be discussed with the relevant parties, such as building management, and an agreement on a scope of proposed change should be entered into before any work is undertaken.

Additionally, the mitigation of specific risks associated with the installation and accommodation of telecommunications equipment, such as the accidental operation of fire safety systems, should also be addressed, ensuring that the requirements of the BCA are met.

Fire safety systems are a critical component of life safety in a building and their performance cannot be compromised in any way. Therefore, when work is proposed on existing buildings, new systems need to integrate with existing systems without increasing risk or affecting BCA compliance and the issues outlined above need to be addressed in the development of access management agreements.

## 6.7 Lighting

Telecommunications facilities are typically located in an entrance room, equipment room, riser shaft, telecommunications closet and in some cases, within a tenant's floor area. In all areas, lighting should be provided to a level that allows installation and maintenance processes to be undertaken safely.

Building management is generally responsible for informing a service provider of the capabilities of the lighting system provided in the building. Service providers should then ensure that the lighting system is appropriate for their requirements and that their facilities will not jeopardise the performance of the system. If it is considered that the system requires upgrading as a result of a proposed installation, the service provider would typically reach agreement with building management and ensure the subject is properly addressed in a building access agreement.

General requirements for lighting in telecommunications facilities include:

- lighting levels in an entrance room, equipment room, risers and telecommunications closets should comply with the BCA and AS/NZS 3084:2003. It should be noted that the BCA also contains energy efficiency requirements for lighting
- specific lighting circuit(s) should be provided for the entrance room and equipment room so that lighting is unaffected by loads or the operation of circuit breakers servicing tenancy areas. Light switches should be located within each room
- specific lighting circuit(s) should be provided for risers and telecommunications closets so that lighting is unaffected by loads or the operation of circuit breakers

- servicing tenancy areas. Light switches should be located immediately adjacent to each riser or telecommunications closet
- if a back-up power supply is provided arrangements regarding which lighting circuits are to be connected should be agreed between building management and the service providers. Back-up power should provide lighting to the entrance room, equipment room, risers and telecommunications closets.

## 6.8 Electromagnetic Radiation

Service providers may provide systems such as mobile telephone and radio systems that generate radio-frequency electromagnetic radiation (sometimes called electromagnetic energy).

There is significant regulation of electromagnetic radiation. Building management and tenants may have legislative responsibilities, such as occupational health and safety requirements, and should seek information and advice from respective authorities and appropriate professional advisors in this regard.

Building management is generally responsible for informing carriers and other users of spaces of any sources of Electromagnetic Radiation located in the building and service providers should advise building management of any potential implications regarding a proposed installation meeting regulatory requirements.

The ACMA administers the “Radio-communications (Electromagnetic Radiation-Human Exposure) Standard – 2003”, which regulates the exposure limits established by the Australian Radiation Protection and Nuclear Safety Agency in the “Radiation Protection Standard Maximum Exposure Levels to Radiofrequency Fields – 3kHz to 300 GHz”. ACMA registered the industry code ACIF C564: 2004 “Deployment of Radio-communications Infrastructure”, which complements the Australian Radiation Protection and Nuclear Safety Agency standard.

## 6.9 Electromagnetic Interference

Facilities provided by carriers and carriage service providers may be affected by electromagnetic interference that can adversely affect the performance of some types of electronic equipment and the reception of free to air analogue or digital television. It is important that equipment rooms be located as far as practicable from sources of electromagnetic interference such as radio or radar transmitters, medical or industrial radio diathermy equipment, X-Ray equipment and power supply transformers.

Building management is generally responsible for informing a service provider of any potential sources of electromagnetic interference. Service providers should then ensure that the level of electromagnetic interference is appropriate for their requirements and that their facilities will not jeopardise the performance of services for other existing users. If it is considered that electromagnetic interference requires further reduction as a direct result of a proposed installation, the service provider would typically reach agreement with building management and ensure the subject is properly addressed in a building access agreement.

Appropriate specialist advice should be obtained when determining the location of all telecommunications equipment near other sources of electromagnetic interference so



that the level of any interference may be reduced to meet the requirements specified in AS 2834:1995 and AS/NZS 1367:2006.

## References

Changes to government policy, acceptable industry practice and community expectations drive reform of legislative and industry standards and practitioners need to keep up-to-date with mandatory requirements. In this context, the information provided in this Guideline is current at the time of its publication. The following documents are referenced in this Guideline:

### Legislation

Telecommunications Act 1997 (Commonwealth)

Telecommunications Code of Practice 1997 (Commonwealth)

Telecommunications Code of Practice 1997 (Amendment 1 of 2002) (Commonwealth)

Telecommunications (Low Impact Facilities) Determination 1997 (Commonwealth)

Telecommunications (Low Impact Facilities) Determination 1997 (Amendment 1 of 1999) (Commonwealth)

State and Territory building legislation, including the Building Code of Australia

### Codes

ACCC – A Code of Access to Telecommunications Transmission Towers, Sites of Towers and Underground Facilities, October 1999

ACIF C564:2004 - Deployment of Radio Communications Infrastructure

### Standards

AS 2834:1995 - Computer accommodation

AS/ACIF S009:2006 - Installation Requirements for Customer Cabling (Wiring Rules)

AS HB 29:2000 - Communications Cabling Handbook

AS/NZS 1367:2000 - Coaxial cable systems for the distribution of analogue television and sound signals in single and multiple unit installations

AS/NZS 1367:2006- (DRAFT<sup>2</sup>) Coaxial and optical fibre cabled distribution systems for analogue and digital television and sound signals in single and multiple premise installations

AS/NZS 3000:2000 – The Australian/New Zealand Wiring Rules

AS/NZS 3084: 2003 - Telecommunications Pathways and Spaces for Commercial Buildings

AS/NZS 3086: 1996 - Telecommunications Installations – Integrated telecommunication cabling systems for small office/home office premises

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<sup>2</sup> As at the time of writing the current version of this Standard was AS/NZS 2000, with final approval of AS/NZS 1367:2006 still pending.



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RPS3 - Australian Radiation Protection and Nuclear Safety Agency. Radiation Protection Standard – Maximum Exposure levels to Radiofrequency fields, May 2002  
Radio communications (Electromagnetic Radiation-Human Exposure) Standard 2003

**Guidelines**

ACIF G571: 2002 - Building Access Operations and Installation

Bayside City Council (Victoria), “Digital Bayside Digital Building Telecommunications Access Guidelines”

Digital River Program (Victoria), “Digital Building Telecommunications Access Guideline” 2002/2004 (DBTAG)

## Appendix A – Regulatory Principles

### OVERVIEW

Licensed carriers have certain statutory rights and obligations under the Telecommunications Act 1997 in relation to land access for telecommunications related purposes.

In particular, carriers have the right to enter upon another person's land to do the following:

- inspect the land
- install facilities
- maintain facilities.<sup>3</sup>

These rights and obligations relate only to licensed carriers; they do not relate to carriage service providers or cabling.

Schedule 3 to the Telecommunications Act 1997 operates together with the Telecommunications Code of Practice 1997. Under these provisions, a carrier may exercise its right of entry upon another person's land, for instance:

- to provide services to tenants within the building
- to provide services to building management
- to maintain its facilities
- to augment its own network (for instance, to install a radio communications transmitter on top of a building)
- or
- to do a combination of the above.

However, in doing so, the carrier must comply with certain obligations, such as obligations relating to notifying the landowner of its intention to enter the land and act in accordance with good engineering practice. In addition, building management has limited rights to object to land access by carriers and may, in some circumstances, bring complaints before the Telecommunications Industry Ombudsman.

Carriers also have rights under the Telecommunications Act 1997 to obtain access to other carriers' facilities, such as transmission towers and underground ducts.<sup>4</sup> Such rights between carriers are an important part of the regulatory framework relating to the development of competing telecommunications networks. However, they do not directly affect the relationship between a carrier and building management or a tenant and they are therefore outside the scope of this Guideline.

### CARRIERS' POWERS AND IMMUNITIES

#### Low-Impact Facilities

A carrier's statutory rights to enter another person's land apply automatically in relation to "low-impact facilities". Generally, these are facilities that have been

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<sup>3</sup> See section 484 and Schedule 3 of the Telecommunications Act 1997.

<sup>4</sup> See Schedule 1, Parts 3 and 5 of the Telecommunications Act 1997 and *A Code Of Access To Telecommunications Transmission Towers, Sites Of Towers And Underground Facilities*, ACCC October 1999.

determined as being of “low-impact” based on the type of use, geographic location and the nature of the facility.<sup>5</sup>

### **In-Building Subscriber Connection Equipment**

One particular type of low-impact facility is “in-building subscriber connection equipment”. These are defined as a facility installed within a building with the aim of managing and maintaining the supply of carriage services to a customer of a carrier.<sup>6</sup> In other words, a carrier has a statutory right to enter another person’s land to inspect the land and install and maintain in-building subscriber connection equipment.

### **Agreements Between Carriers and Building Management**

A carrier and building management may enter into an agreement to govern each party’s rights and obligations in relation to telecommunications land access. Such an agreement may include terms such as the facilities to be installed, the period of the arrangement, terms of access, security requirements and payment for access. The terms set out in Appendix C of this Guideline set out a number of issues that the parties may wish to consider if they are to enter into an agreement. If the carrier and building management do not have an agreement, then Schedule 3 of the Telecommunications Act 1997, together with the Telecommunications Code of Practice 1997, set out the minimum rights and obligations of the carrier and building management. Some of these matters are discussed below.

### **Carriers’ Obligations**

In exercising its powers under the Telecommunications Act 1997 in relation to inspecting land, installing a facility or maintaining a facility, a carrier must comply with certain conditions, including:

- giving notice to the owner of the land
- causing as little detriment and inconvenience and doing as little damage as practicable
- ensuring that the activity interferes as little as practicable with the use of the land
- protecting the safety of persons and property
- using best practice methods
- complying with applicable noise level regulations
- co-locating facilities
- cooperating with other carriers and utilities
- restoring the land
- acting in accordance with good engineering practice
- complying with conditions specified in legislation (where applicable)
- complying with conditions specified in the Telecommunications Code of Practice 1997
- complying with any applicable industry codes or standards

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<sup>5</sup> See the *Telecommunications (Low-Impact Facilities) Determination 1997* and the *Telecommunications (Low-Impact Facilities) Determination 1997 (Amendment No. 1 of 1999)* for precise definitions of what is a low-impact facility.

<sup>6</sup> See the *Telecommunications (Low-Impact Facilities) Determination 1997 (Amendment No. 1 of 1999)*.



- complying with conditions specified in a facility installation permit (where applicable).

### **Notification**

Clause 17, Schedule 3 of the Telecommunications Act 1997 provides that, before engaging in inspection, installation or maintenance activities under that Act, a carrier must give the landowner and (if the land is occupied by a person other than the owner) the occupier written notice of its intention to do so. The notice:

- must be in writing
- should specify the proposed start and finish dates of access
- must specify the purpose for which the carrier intends to engage in the activity
- must contain a statement about the carrier's obligation to pay compensation under clause 42, Schedule 3 to the Telecommunications Act 1997
- must contain details of the actions that the carrier expects to take, as part of the land entry activity, on land affected by the activity (except in circumstances in which the safety of life or property is endangered or if the owner or occupier of the land has asked the carrier to engage in it as part of the installation of a facility)
- must contain a statement about the objection process (except in circumstances in which the safety of life or property is endangered or if the owner or occupier of the land has asked the carrier to engage in it as part of the installation of a facility).

The notice must be given at least 10 business days before the carrier begins to engage in the activity, except:

The notice need be given only two business days before the carrier begins to engage in inspection activity that:

- will not have an adverse effect on a streetscape or other landscape
- will not have an impact on (relevantly) a declared World Heritage property (as defined in the Environment Protection and Biodiversity Conservation Act 1999), a place that Australia is required to protect by the terms of a listed international agreement, or an area that, under a law of the Commonwealth, a State or a Territory, is protected from significant environmental disturbance
- will not have an impact on a thing that is entered in the Register of the National Estate, or the Interim List for that Register, or is registered under a law of a State or Territory relating to heritage conservation, or is of particular significance to Aboriginal persons, or Torres Strait Islanders, in accordance with their traditions.

No notice need be given if the carrier intends to engage in inspection, installation or maintenance activities and those activities need to be carried out without delay in order to protect the integrity of a telecommunications network or a facility, the health or safety of persons, the environment, property or the maintenance of an adequate level of service.

Other exceptions to the notice requirements apply in relation to temporary defence facilities and public places, but these are not immediately relevant to this Guideline.

The carrier and landowner may agree alternative notification arrangements.

The ACIF Guideline "ACIF G571: 2002 - Building Access Operations and Installation" - contains examples of alternative notification arrangements.



## Objections

An owner or occupier may object to a carrier exercising its inspection, installation or maintenance powers.

The objection must be given within the following timeframes:

- in the case of activities relating to the inspection of land, at least one business day before the activity is to commence
- in the case of activities relating to installing low-impact facilities, at least five business days before the carrier proposes to engage in the activity
- in the case of maintenance activities, at least five business days before the carrier proposes to engage in the activity.

The objection must be in writing and may only be made for a reason that relates to any or all of the following:

- using the objector's land to engage in the activity
- the location of a facility on the objector's land
- the date when the carrier proposes to start the activity, engage in it or stop it
- the likely effect of the activity on the objector's land
- the carrier's proposals to minimise detriment and inconvenience, and to do as little damage as practicable, to the objector's land.

The carrier must make reasonable efforts to consult with the objector about the objection within five business days after receiving the objection. The carrier must also make reasonable efforts to resolve the objection by agreement with the objector within 20 business days after receiving the objection.

If the objection is not resolved by agreement within 20 business days after receiving the objection, the carrier must consider whether to change the low-impact facility activity. However, the carrier is not required to change the activity in a way that:

- is not economically feasible
- is not technically practicable
- is likely to have a greater adverse effect on the environment than engaging in the activity as originally proposed
- or
- is inconsistent with a recognised industry standard or practice relevant to the activity.

Within 25 business days after receiving the objection, the carrier must tell the objector, in writing:

- whether the carrier proposes to change the activity, and, if so, how
- if the carrier does not propose to change the activity, why the carrier will engage in the activity as originally proposed.

If:

- the objection is not resolved by agreement between the carrier and objector
- the objector is not satisfied with the carrier's response to the objection,

then, within 5 business days after the objector receives the carrier's response to the objection, the objector may make a written request to the carrier to refer the objection to the Telecommunications Industry Ombudsman.



If the Telecommunications Industry Ombudsman gives a direction to the carrier about the way in which the carrier should engage in the low-impact facility activity, the carrier must comply with the direction.

The carrier must not engage in the activity unless one of the following situations exists:

- the objection is resolved by an agreement between the carrier and objector
- a request to refer the objection to the Telecommunications Industry Ombudsman is not received by the carrier within nine business days after the objector receives the carrier's response to the objection (in the case of activities relating to the inspection of land) or five business days after the objector receives the carrier's response to the objection (in the case of activities relating to installing low-impact facilities or maintaining facilities)
- the Telecommunications Industry Ombudsman deals with the objection without giving a direction to the carrier, and the Ombudsman informs the carrier in writing of that outcome  
or
- the Telecommunications Industry Ombudsman gives a direction to the carrier.

### **Co-location and Cooperation**

Before a carrier installs or carries out an activity for purposes in connection with the installation of low-impact facilities (including subscriber equipment), it is obliged under the Telecommunications Code of Practice 1997 to take all reasonable steps to find out whether any of the following things is available for the activity and to take all reasonable steps to use such things:

- cabling, conduits or other facilities of the carrier or another carrier
- a facility of a public utility  
or
- an easement attaching to the land for a public purpose.

In addition, a carrier must take all reasonable steps:

- to find out whether another carrier, or a public utility, is engaging in, or proposing to engage in, a similar activity for the same land
- to consider whether it is practicable to work with the other carrier or the utility to allow the first carrier:
  - (i) to cause as little detriment and inconvenience as is practicable
  - (ii) to do as little damage as is practicable.

These rules about co-location and cooperation are relevant to carriers arrangements to share building entries, entrance rooms, equipment rooms and vertical and horizontal pathways. They are also intended to minimise the detriment, inconvenience and damage to building management.

### **ACIF Guideline**

The ACIF has developed the ACIF G571:2002 guideline which deals with (amongst other things) timeframes, provision of information and carriers and building management's responsibilities when dealing with each other in relation to telecommunications building access.



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This Guideline should be read in conjunction with the ACIF G571:2002 guideline.

## Appendix B – Typical Space Requirements

The information in these Tables is intended as a general guide for typical space requirements that may be sought to accommodate telecommunications facilities for up to four carriers. The indicated space requirements are general only and assume that some further additional space provisions are sought for use by tenants, service providers, building owners and other parties for other communications systems. There is also a need to allow for coaxial cables at outlets for terminations and storage of excess cable behind wall plates.

**Table 1 - High rise commercial building**

Usable Floor Area (m <sup>2</sup> )		Equipment room (m <sup>2</sup> )	Height of equipment rooms (m)	Total vertical riser area (mm)	No. of vertical riser shafts
Up to 4,000	1 - 2	14-28	2.4 – 3	300 x 200	1 - 2
4,001 up to 12,000	1 - 2	28-53	2.4 – 3	300 x 200	1 - 2
12,001 up to 25,000	1 - 2	33-64	2.4 – 3	400 x 200	1 - 2
25,001 up to 50,000	1 - 2	39-77	2.4 – 3	400 x 200	1 - 2
50,001 up to 75,000	2	50-99	2.4 – 3	600 x 250	2
75,001 up to 100,000	2	56-111	2.4 – 3	650 x 250	2 - 3
100,001 up to 150,000	2 - 3	67-142	2.4 – 3	950 x 250	2 - 3
<b>Note:</b> BEPs and risers are suggested for new and/or refurbished buildings.					

**Table 2 - High rise multi-tenant residential building**

No. of apartments in a building		Equipment rooms (m <sup>2</sup> )	Height of equipment rooms (m)	Total vertical riser area (mm)	No. of vertical riser shafts
Up to 5	1	5 - 9	2.4 – 3	100 x 75	1
6 up to 50	1	5 - 9	2.4 – 3	200 x 100	1
51 up to 100	1	10 - 27	2.4 – 3	200 x 100	1
101 up to 250	1	15 - 31	2.4 – 3	200 x 200	1
251 up to 500	1	20 - 37	2.4 – 3	300 x 200	1
501 up to 1,000	2	26 - 54	2.4 – 3	300 x 200	2
1,001 up to 1,500	2	31 - 60	2.4 – 3	400 x 200	2
<b>Note:</b> BEPs and risers are suggested for new and/or refurbished buildings.					

**Table 3 - Single occupier / multi-tenant multi-storey office building**

Usable Floor Area (m <sup>2</sup> )	No. of Floors/ floor distributors	Number of BEPs	Area of equipment rooms (m <sup>2</sup> )	No. of vertical riser shafts
Up to 1,000	1-2	1	6-9	0-1
1,001 up to 2,000	1-2	1	10-15	0-1
2,001 up to 4,000	2-3	1	15-25	1
4,001 up to 8,000	3-4	1-2	20-30	1-2
8,001 up to 12,000	4-5	1-2	30-40	1-2

**Note:** It is assumed only one equipment room is required for these building sizes.

**Table 4 - Single-storey office / workshop / warehouse building**

Type of building	Usable floor area (m <sup>2</sup> )	No. of Floors/ floor distributors	Number of BEPs	Area of equipment rooms (m <sup>2</sup> )
Offices only	Up to 2,000	1	1	10-12
Offices + Workshop	1,000 to 2,000	1	1	6-9
Office + Manufacturing	2,000 to 4,000	1	1	10-20
Office + Warehouse	1,001 to 4,000	1	1	10-20

**Note:** It is assumed only one equipment room is required for these building sizes.

**Table 5 - Single-storey building complex (commercial / industrial campus)**

Type and no. of buildings	Usable floor area (m <sup>2</sup> )	No. of floor distributors	Number of BEPs	Area of equipment rooms (m <sup>2</sup> )
3 Office buildings	2,000 to 4,000	3	1	10-20
1 Office building + 1 Warehouse	2,000 to 4,000	2	1	10-12
1 Office building + 1 Warehouse + 1 Manufacturing building	3,000 to 6,000	3	1-2	20-30
Large multi-tenant multi- building complex – 5 buildings	4,000 to 12,000	5	1-2	30-40
Large industrial multi- building complex – 10 buildings	6,000 to 25,000	10	2-3	30-50

**Note:** It is assumed only one equipment room is required for these building sizes.

## Appendix C - Terms of Building Access Agreements

### INTRODUCTION

Under Schedule 3 of the Telecommunications Act 1997 and the Telecommunications Code of Practice 1997, licensed telecommunications carriers have a right to enter upon land to inspect the land to determine whether the land is suitable for the carrier's purposes, install "low-impact" facilities (including "in-building subscriber connection equipment") and maintain such facilities that are situated on the land. The scope of such rights and related obligations on carriers are set out in more detail in Appendix A of this Guideline.

Where a carrier relies on its statutory powers under Schedule 3 of the Telecommunications Act 1997, the carrier is not obliged to enter into an agreement with building management for building access. However, in practice, for a variety of practical and commercial reasons, a carrier may enter into an agreement for building access, in addition to its statutory powers.

The provisions of Schedule 3 of the Telecommunications Act 1997 apply only to carriers, not carriage service providers. Accordingly, if a carriage service provider wishes to obtain access to a building, building management may require that the carriage service providers enter into an agreement for building access. The terms set out in this Appendix may be used in building access agreements with carriage service providers or, where applicable, in building access agreements with carriers. References to the statutory powers throughout this Appendix apply only to carriers and not carriage service providers.

Building management and a carrier/carriage service provider will need to consider the terms of an agreement for access and the scope of terms outlined in this Appendix is intended only as a guide. Nothing in this Appendix is intended to detract from legislative powers and responsibilities and parties should seek appropriate professional advice in relation to the content of proposed agreements.

### TERMS OF BUILDING ACCESS AGREEMENTS

#### **Relationship of building access agreement with existing regulation**

In many instances, a building access agreement will complement a carrier's statutory powers. In such cases, the parties may wish to expressly preserve their statutory powers.

#### **Nature of the occupancy of the site**

A carrier is entitled to exercise and rely upon its statutory powers without entering into an agreement with building management. However, a carrier may enter into an agreement. Such an agreement may either confirm that the carrier is relying on its statutory powers or it may set out the terms of a lease or license arrangement for building access.

Alternatively, the parties may wish to consider a lease or a licence. Typically, a lease would give the carrier a proprietary interest over the site in question and exclusive possession to the areas covered by the lease. From the carrier's perspective, this is generally regarded as a stronger right than the granting of a licence, which generally gives a contractual right only.

### **Definition of the land/building to which the carrier has access**

The agreement should define the building at which the facilities are to be installed. This is often defined as the "site".

The parties may also wish to expressly provide that the carrier may have access to any adjoining areas and common areas over which building management has a right of control to the extent necessary for the carrier to exercise its rights under the agreement.

The agreement should define the precise location within the site where the facilities are to be installed. This is often defined as the location and it should be detailed in drawings and specifications attached to the agreement.

### **Definition of the place where the facilities are to be installed**

The agreement should define the precise location within the site where the facilities are to be installed. This is often defined as the "location" and it should be detailed in drawings and specifications attached to the agreement.

### **Definition of the facilities to be installed**

The agreement should clearly and accurately define the facilities, including equipment and cabling, to be installed. Typically these will be limited to "low-impact" facilities pursuant to the Telecommunications (Low-Impact Facilities) Determination 1997 (as amended by the Telecommunications (Low-Impact Facilities) Determination 1997 (Amendment No. 1 of 1999) to include "in-building subscriber connection equipment".

The agreement may provide that the facilities are not to become fixtures of the landowner. In addition, the parties may wish to consider responsibility for tagging of facilities to show who is the owner of the facilities and the maintenance of records of tagged facilities.

### **Duration of works at the site**

The agreement should specify the start and finish dates of proposed works at the site.

### **Duration of the occupancy of the site**

Where a carrier relies on its statutory powers for access, the carrier has statutory tenure to occupy the site.

Alternatively, if the parties are entering into a lease or a license, they should consider a clause which specifies the commencement and expiry dates of the lease or licence and which provides for extensions to the lease or licence and the terms applicable to the lease or licence during the extended period.



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## **Giving notice to building management**

The statutory powers require a carrier to give notice to the land owner (or occupier) prior to exercising statutory powers. The owner/occupier may waive its right to receive such notice or the parties may agree alternative notification arrangements. (Refer also Appendix A of this Guideline).

The parties should consider whether to retain the statutory notice requirements, or provide for different notice requirements, or provide for no notification requirements. The parties should also consider what notice requirements will apply to scheduled maintenance activities.

## **The purposes for which the carrier may exercise its rights**

The agreement should specify the purposes for which the carrier may exercise its rights of inspection, installation and maintenance. For example, these rights may be limited to the purposes provided for in Schedule 3 of the Telecommunications Act 1997.

## **Emergency access**

Carriers have a right to access a site pursuant to the statutory powers to carry out works of an urgent nature. Where an agreement is entered into, the carrier will require a right to obtain access to the site and take other steps in the event of an emergency.

A clause dealing with emergency access may take into account any applicable notice requirements, a definition of what constitutes an emergency, what the carrier may do if it gains access in the event of an emergency and an obligation on the parties to cooperate in good faith in dealing with and resolving emergency situations (including dealings with third persons).

## **Specific conditions of site access**

Building management may wish to impose specific conditions relating to who may or may not have access to the site, access procedures, security requirements and other matters. A clause dealing with conditions of site access may take into account various matters, including:

- requirements relating to personnel who may or may not be admitted to the site
- procedures as to the method of access
- times of access
- rules relating to conduct at the site
- occupational health and safety of personnel at the site
- security procedures and requirements.

## **Responsibility for obtaining applicable consents and approvals**

Typically, the carrier will obtain all applicable consents and approvals relating to the facilities themselves, the installation of facilities and any works at the site.



### **Measures to reduce interference and which carrier takes priority**

The parties should consider how to deal with situations involving facilities which cause interference (including EMR) with other facilities. The parties may wish to consider various issues, including:

- an obligation on the carrier to cooperate in good faith with building management and the owner or operator of the other facilities to ensure that interference does not occur
- the standard or amount of evidence required to show that the carrier's facilities are causing interference with other facilities
- what the carrier must do in such circumstances
- the amount of time in which the carrier must eliminate the interference
- requirements in relation to compliance of facilities with applicable ACMA and industry codes and standards
- any specific provisions relating to the priority of competing carriers facilities.

### **Co-location and cooperation**

The Telecommunications Code of Practice 1997 specifies certain obligations of carriers with respect to co-location of facilities and cooperation with other carriers and utilities, as detailed further in Appendix A of this Guideline. The parties may wish to refer to these obligations in a building access agreement.

### **Rights of assignment, sub-letting and sub-licensing**

The parties may wish to consider whether the carrier ought to have a right to assign its rights under the agreement, or sub-let the site (in the case of a lease arrangement) or sub-license the site (in the case of a licence arrangement). The carrier may wish to do so, for instance, if it is engaged in a joint project with another company or a related body corporate. The possibility of transferring rights and granting further rights in favour of other entities is one feature that distinguishes a building access agreement from the situation where the carrier simply relies on its statutory powers.

### **The right to engage sub-contractors**

A carrier may require the right to engage sub-contractors to perform works at the site. The parties may wish to consider the extent to which the carrier is responsible for the acts and omissions of its contractors and agents.

### **Maintaining the site, site restoration, cleaning up and safety requirements**

To assist with harmonious relations between the carrier and building management and to reflect the carrier's responsibilities under the statutory powers for its use of the site, the parties may wish to consider including provisions dealing with various issues, including:

- ensuring that the carrier causes as little detriment and inconvenience and does as little damage, as is practicable
- ensuring that the carrier keeps the site clean and tidy and removes all of its rubbish from the site (not using on-site bins)



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- ensuring that the carrier takes all reasonable steps to ensure that the site is restored to a condition that is similar to its condition before the activity began
  - ensuring that the carrier immediately reports to building management any hazardous materials discovered or uncovered by the carrier.

### **Associated services**

Building management should inform carriers of the capabilities of various building services provided at the site. Carriers should ensure that such services are appropriate for their requirements and that their facilities will not jeopardise the performance of such services for other existing users. Further, if such services require augmentation or upgrading, the carrier should obtain building management's consent to such changes. The types of services contemplated here include:

- primary power
- back-up power systems
- HVAC systems
- lighting
- fire safety systems
- access control and security systems.

The parties should discuss and agree payment terms regarding the use of such services and, where practicable, (for example in the case of primary power) whether separate metering is to be provided.

### **Circumstances beyond the parties' reasonable control**

The parties may wish to consider including a clause in an access agreement that deals with a party's responsibilities in the event of circumstances beyond its reasonable control.

### **Adherence to applicable standards etc.**

The statutory powers impose a number of requirements on carriers regarding the standard of their conduct. The parties may wish to consider referring to these requirements in an access agreement, including the carrier's obligations to:

- act in accordance with best practice
- act in accordance with good engineering practice
- protect the safety of persons and property
- comply with conditions specified in applicable legislation
- comply with any applicable industry codes, standards or guidelines.

### **Payment issues**

There is no automatic right to demand rent or licence payments from a carrier exercising its statutory powers. However, there are likely to be a number of matters under a building access agreement that raise the question of payment, including:

- a) Payments for occupancy of the site:
  - if the agreement is with a carrier, whether the carrier agrees to pay an amount for occupancy of the site (such as rent or licence payments)

- if the agreement is with a carriage service provider, the carriage service provider will typically pay rent or licence payments
- if an amount is payable, whether there will be a periodic review of such payments and the nature of such a review
- an independent property agent may be of assistance where rent or licence payments are to be paid.

b) Compensation for financial loss or damage. Issues to consider include:

- clause 42, Schedule 3 to the Telecommunications Act 1997 (refer to section 2.1 of this Guideline)
- agreed indemnities
- agreed limitation of liability for direct loss and damage and for indirect or consequential loss and damage.

c) Re-imbusement for expenses:

The parties should consider the basis for reimbursement of expenses incurred by building management to accommodate the carrier or carriage service provider. Alternatively, the carrier or carriage service provider may be made directly responsible for certain costs related to items, such as:

- primary power
- lighting
- HVAC
- fire safety systems
- security and special access arrangements
- car parking
- construction or development works
- de-commissioning or removal of facilities
- site restoration.

The Telecommunications Code of Practice 1997 does not specify how, or to what standard, these types of items should be provided and therefore this is a matter which the parties reasonably determine taking into proper account any applicable standards or codes including the BCA where applicable.

d) Other considerations

Other considerations may influence the value to the carrier of gaining access to the building, such as:

- suitability of the building for other communications purposes
- the number of tenants
- the amount of space available in the building
- timing issues
- access to the building by competing carriers
- determining which competing carriers take priority, for example in the case of electromagnetic interference.



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### **IMPORTANT NOTICE:**

The information in this Guideline is current as at the time of publication and may or may not be updated thereafter. Persons using this Guideline should ensure that they check the currency of the information in this Guideline and update that information as and where necessary.

This Guideline is not intended to impose legal rights or obligations on any person, nor is anything in this Guideline intended to create a contract or relationship of any kind between any persons.

Nothing in this Guideline constitutes (or is intended to constitute) legal, engineering, design or other professional advice. This Guideline is intended as a guide only. It is intended to identify some issues for consideration by potential parties to a telecommunications building access agreement; however, it does not contain all of the elements necessary to form such an agreement. Moreover, each situation is different and parties may have additional requirements which are particular to them. Accordingly, persons using this Guideline should not rely on the information in this Guideline, but should first seek independent professional advice specific to their requirements.

To the maximum extent permitted by law, the authors of this Guideline and all persons involved in the preparation of this document hereby expressly disclaim and exclude all liability to any person for any loss, damage, injury or other consequence (direct or indirect), howsoever caused (including without limitation by way of negligence) which may arise from or in any way relate to any person's use of, reliance on or non-reliance on, this Guideline.

## Appendix D - Building Access Checklist

### CHECKLIST 1 – Access Spaces and Design; Alternative Pathways and Spaces; Building Services

<b>ACCESS SPACES AND DESIGN</b>		
Topic/Issue	Yes or No	Comments
<b>TELECOMMUNICATIONS SERVICE ENTRANCE</b>		
Is the Entrance provided in accordance with this Guideline?		
Is there a separate entrance room?		
<b>EQUIPMENT ROOM</b>		
Are the dimensions of the equipment room in accordance with Appendix B of this Guideline?		
Is there anything other than telecommunications equipment in the equipment room?		
Is this a co-located equipment room and entrance room?		
Is there risk of flooding the equipment room?		
Is there easy access for carriers and carriage service providers?		
Are there pathways to the vertical pathway(s), campus and lead-in ducts as required?		
Apart from the door, are there other openings i.e. windows?		
If so, are other openings secured?		
Do penetrations through fire-resisting elements comply with the BCA?		
Is there adequate lighting?		
Is the room supplied by a dedicated electrical supply?		
Is the room supplied by a back-up electrical supply?		
Does temperature and humidity seem to be within limits?		
Are the floors, walls and ceiling painted in light colours?		
Is there room for future expansion?		
<b>BACKBONE PATHWAYS OR RISER SHAFTS</b>		
Is the riser shaft accessible from each floor?		
Is access from a common area i.e. corridor?		
Is it fitted with appropriate cable fixing devices?		
<b>TELECOMMUNICATIONS CLOSETS</b>		
Is there a telecommunications closet on each floor?		
Is the area it is serving no greater than 1500m <sup>2</sup> ?		
Is the size generally in accordance with AS/NZS 3084:2003 Appendix ZB2.2?		
Are there any water pipes and fire hydrants in the telecommunications closet?		
Is there a rigid wall in it to mount equipment?		
Is there a FD?		
<b>HORIZONTAL PATHWAYS</b>		
Is there a pathway provided to service most of the		



tenanted areas of the building?		
Does it access the telecommunications closet and FD if used?		
<b>RADIO (WIRELESS) FACILITIES PROVISION</b>		
Is there equipment still installed that is not in service?		
Has the carrier(s) demonstrated to building management that structural aspects are met?		
Where applicable, has the carrier(s) defined a safe distance from equipment for EMR?		
<b>ALTERNATIVE PATHWAYS AND SPACES</b>		
Topic/Issue	Yes or No	Comments
<b>BUILDING ENTRY POINT</b>		
Is there more than one BEP? (Refer to Appendix B of this Guideline)		
<b>EQUIPMENT ROOMS</b>		
Does building warrant, and if so, does it have more than one equipment room?		
<b>RISER SHAFTS</b>		
Refer to Appendix B of this Guideline?		
<b>RADIO WIRELESS SERVICES</b>		
Does the building utilise this as another entry point?		
<b>BUILDING SERVICES</b>		
Topic/Issue	Yes or No	Comments
<b>HVAC</b>		
Is there a specific HVAC zone for the equipment room(s)?		
<b>PRIMARY POWER SUPPLY</b>		
Is there a dedicated supply to the equipment room?		
Is there a switchboard in the equipment room?		
Is there a dedicated supply to the telecommunications closets?		
Is the main building earth available for access by a carrier or carriage service provider?		
<b>FIRE SAFETY SYSTEMS</b>		
If there are sprinklers in the equipment room that are likely to suffer mechanical damage, do they have protective guards complying with the BCA?		
Are portable fire extinguishers located adjacent to the equipment room entry/exit?		
Do penetrations through fire-resisting elements comply with the BCA?		
<b>ELECTRO-MAGNETIC RADIATION (EMR)</b>		
Have EMR requirements been met?		
<b>ELECTRO-MAGNETIC INTERFERENCE (EMI)</b>		
Is the equipment room located away from sources of EMI?		
Have potential sources of EMI been identified by building management?		



LIGHTING		
Is lighting provided from a dedicated supply for both equipment room and telecommunications closet?		
ACCESS SECURITY & BUILDING MANAGEMENT		
Does building management act as a central repository of information re installations?		
Is there continual access to carrier or carriage service provider installations?		

**CHECKLIST 2 - Carriage Service Provider**

CURRENT BROADBAND SERVICES DELIVERY		
TOPIC/ISSUE	NUMBER	NOTES
Number of carriers and carriage service providers		
How many carriers are providing services in the building?		
How many carriers are providing broadband services in the building?		
How many carriers have Optical Fibre connection to the building?		
How many carriage service providers are providing services in the building?		
How many carriage service providers are providing broadband services in the building?		
How many carriers/carriage service providers are using rooftop radio to service tenants in the building?		
How many carriers/carriage service providers are using rooftop radio to provide broadband services to tenants in the building?		