COMMUNICATIONS ALLIANCE LTD

PUBLIC COMMENT DRAFT

DRAFT AUSTRALIAN STANDARD

DR AS/CA S035:2025

Requirements for installation of temporary field telecommunications customer cabling for defence purposes

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Draft Australian Standard – *Requirements for installation of temporary field telecommunications customer cabling for defence purposes*

This Standard was issued in draft form for public comment as DR AS/CA S035:2025.

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Second edition as AS/CA S035:2015, published on 20 April 2015

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Guidance for public comment on DR AS/CA S035:2025

This draft Standard is the outcome of the revision of AS/CA S035:2015 undertaken by the Communications Alliance WC105 : ***Defence Cabling Standard Revision*** Working Committee. The two-month public comment phase is a part of the requirements of Communications Alliance Operating Procedures for the development or revision of an AS/CA Standard.

The reader is invited to comment on the requirements for customer equipment scoped within this Standard and on the following proposed recommendations. All submissions received will be made publicly available on the Communications Alliance website unless the submitter requests otherwise.

Please return comments by 19 September 2025 to:
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This draft is available from www.commsalliance.com.au for download.

Background

The ***Requirements for installation of temporary field telecommunications customer cabling for defence purposes*** Standard (AS/CA S035:2015) references the AS/CA S009 ***Installation requirements for customer cabling (Wiring rules)*** Standard. The AS/CA S009 Standard was revised and republished in 2020. The reference to AS/CA S009 in AS/CA S035 has been updated to the current version to have the requirements specified in AS/CA S035 align with the current cabling installation practices mandated under Australian telecommunications regulation, including the use of the new voltage, electrical energy sources (ES1, ES2, ES3) and related terminology as used in AS/NZS 62368.1.

Compliance arrangements

The installation and repair of customer cabling is subject to the ***Telecommunications (Cabling Provider) Rules 2025***, which require customer cabling work to be performed or supervised by a person with the appropriate cabling provider registration and to be installed in accordance with AS/CA S009 (Wiring Rules). This requirement is determined by legislation and subordinate regulatory instruments administered by the Australian Communications and Media Authority (ACMA).

The ***Telecommunications (Types of Cabling Work) Declaration 2024***, which calls up AS/CA S035, exempts Department of Defence (DoD) personnel and overseas defence forces from the requirements to have a cabling provider registration or to comply with AS/CA S009, provided the requirements of this technical standard have been met. This Standard applies only to installation of temporary field telecommunications customer cabling for DoD purposes during exercise, training or operational deployment in any environment.

FOREWORD

General

This Standard was prepared by Communications Alliance and most recently revised by the WC105 Defence Cabling Standard Revision Working Committee. It is one of a series of Telecommunication Standards developed under the Memorandum of Understanding between the Australian Communications Authority (ACA) and the Australian Communications Industry Forum.

Note: On 1 July 2005 the ACA became the Australian Communications and Media Authority (ACMA) and the Memorandum of Understanding continues in effect as if the reference to the ACA were a reference to ACMA.

Communications Alliance was formed in 2006 and continues the functions previously fulfilled by ACIF.

This Standard is a revision of AS/CA S035:2015 *Requirements for installation of temporary field telecommunications customer cabling for defence purposes* Standard.

This Standard is the result of a consensus among representatives on the Communications Alliance Working Committee to produce it as an Australian Standard.

Intellectual property rights

Equipment which is manufactured to comply with this Standard may require the use of technology which is protected by patent rights in Australia. Questions about the availability of such technology, under licence or otherwise, should be directed to the patent holder or Australian licensee (if known) or through enquiry at IP Australia which incorporates the Patent, Designs and Trade Marks Offices. Further information can be found at www.ipaustralia.gov.au.

Standards revision

Australian Standards (AS/ACIF and AS/CA Standards) developed by the Communications Alliance are updated according to the needs of the industry, by amendments or revision. Users of these Standards should make sure that they possess the latest amendments or editions. Representations concerning the need for a change to this AS/CA Standard should be addressed to—

The Project Manager
Customer Equipment and Cable Reference Panel
Communications Alliance
PO Box 444
Milsons Point NSW 1565

Regulatory notice

Attention is drawn to the fact that the installation and repair of customer cabling is subject to the *Telecommunications (Cabling Provider) Rules 2025*, which require customer cabling work to be performed or supervised by a person with the appropriate cabling provider registration and to be installed in accordance with AS/CA S009 (Wiring Rules). This requirement is determined by legislation and

subordinate regulatory instruments administered by the Australian Communications and Media Authority (ACMA).

The *Telecommunications (Types of Cabling Work) Declaration 2024*, which calls up this Standard, exempts Department of Defence (DoD) personnel and overseas defence forces from the requirements to have a cabling provider registration or to comply with AS/CA S009, provided the requirements of this technical standard have been met. This Standard applies only to installation of temporary field telecommunications customer cabling for DoD purposes during exercise, training or operational deployment in any environment.

ACMA is a Commonwealth Authority with statutory powers to impose requirements on cabling providers concerning customer cabling.

Details on cabling regulations can be obtained from the ACMA website at http://www.acma.gov.au or by contacting ACMA below at:

Australian Communications and Media Authority
PO Box 13112
Law Courts PO
Melbourne VIC 8010
Australia

Telephone: 1800 850 115 (Australia)
Telephone: +61 3 9963 6800
Facsimile: +61 3 9963 6899
Email: info@acma.gov.au

Introduction

This introduction for the AS/CA S035 *Requirements for installation of temporary field telecommunications customer cabling for defence purposes* is not an authoritative section of this Standard and is only provided as guidance for the user of the Standard to outline its objectives, the factors that have been taken into account in its development and to list the principle differences between the new and the previous edition.

The reader is directed to the clauses of this Standard for the specific requirements and to the Australian Communications and Media Authority (ACMA) for the applicable telecommunications labelling and compliance arrangements.

Note: Further information on the telecommunications labelling and compliance arrangements can be found in *The Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice* (the TLN). The TLN can be obtained from the Australian Communications and Media Authority (ACMA) website at www.acma.gov.au.

The objective of this Standard is to—

(a) provide a mechanism for the rapid deployment of temporary field cabling by Department of Defence personnel and overseas defence forces during exercise, training or operational deployment in any environment.

(b) ensure the safety of Carrier network staff and any contracted non-military personnel who may come in contact with temporary field telecommunications customer cabling for defence purposes.

(c) meet obligations of the *Telecommunication Act 1997*.

(d) provide ACMA with assurance under the *Telecommunications (Types of Cabling Work) Declaration 2013* which enables an effective mechanism for the Department of Defence or an overseas defence force to rapidly deploy temporary field cabling.

The objective of this revision is to update the requirements to align with AS/CA S009 and AS/NZS 62368.1.

The principal differences between this edition of AS/CA S035 and the previous edition are—

(i) updates to the referenced Standards (Section 3)

(ii) new voltage, electrical energy source (ES1, ES2, ES3) and related terminology as used in AS/NZS 62368.1. Appendix A specifies how equivalence between AS/NZS 62368.1 and AS/NZS 60950.1 is to be implemented, together with a table comparing AS/NZS 60950.1 and AS/NZS 62368.1 terms.

(iii) new definitions, including ordinary, skilled and instructed persons (Section 4.2).

(iv) new safe and sound practice requirements (Clause 5.2).

(v) alignment of requirements for optical fibre systems with those in AS/CA S009 (Clause 5.10).

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1 INTERPRETATIVE GUIDELINES

1.1 Categories of requirements

This Standard contains mandatory requirements as well as provisions that are recommendatory only. Mandatory requirements are designated by the words '**shall**' or '**shall not**'. All other provisions are voluntary.

1.2 Compliance statements

Compliance statements, in italics, suggest methodologies for demonstrating CE's compliance with the requirements.

1.3 Definitions, expressions and terms

If there is any conflict between the definitions used in this Standard and the definitions used in the *Telecommunications Act 1997*, the definitions in the Act take precedence.

1.4 Notes

Text denoted as 'Note' is for guidance in interpretation and is shown in smaller size type.

1.5 References

(a) Applicable editions (or versions) of other documents referred to in this Standard are specified in Section 3: REFERENCES.

(b) If a document refers to another document, the other document is a sub-referenced document.

(c) Where the edition (or version) of the sub-referenced document is uniquely identified in the reference document, then that edition (or version) applies.

(d) Where the edition (or version) of the sub-referenced document is not uniquely identified in the reference document, then the applicable edition (or version) is that which is current at the date the reference document is legislated under the applicable regulatory framework, or for a non- legislated document, the date upon which the document is published by the relevant standards organisation.

1.6 Units and symbols

In this Standard the International System (SI) of units and symbols is used in accordance with ISO 80000-1.

2 SCOPE

2.1 This Standard applies to the installation of temporary field cabling by Department of Defence personnel and overseas defence forces for defence purposes during exercise, training or operational deployment by the Department of Defence (DoD), or overseas defence forces exercising with Australian DoD personnel. It should be read in conjunction with other referenced Standards.

2.2 This Standard sets out the minimum requirements to ensure that—

(a) the installation or use of the cabling does not expose Carrier personnel, cabling providers, end-users or other persons to any danger; and

(b) the installation or use of the cabling does not adversely affect the integrity (proper end-to-end functioning) of a Telecommunications Network.

3 REFERENCES

Publication	Title
Australian Standards	
AS/NZS 3000:2018	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS/NZS IEC 60825.1:2014	Safety of laser products Equipment classification and requirements
AS/NZS 60950.1:2015	Information technology equipment - Safety - General requirements (IEC 60950-1, Ed. 2.2 (2013), MOD)
AS/NZS 62368.1:2022	Audio/video, information and communication technology equipment, Part 1: Safety requirements (IEC 62368-1:2018 (ED. 3.0), MOD)
AS/CA Standards	
AS/CA S008:2020	Requirements for customer cabling Products
AS/CA S009:2020	Installation Requirements for Customer Cabling (Wiring Rules)
ISO Standards	
ISO 80000-1:2022	Quantities and units - Part 1: General

Note: AS/CA Standards can be downloaded from the Communications Alliance website at www.commsalliance.com.au

4 ABBREVIATIONS AND DEFINITIONS

For the purposes of this Standard, the following abbreviations and definitions and those of Part 1 apply:

4.1 Abbreviations

AC (or a.c.)	Alternating Current
ACIF	Australian Communications Industry Forum
ACMA	Australian Communications and Media Authority
ADF	Australian Defence Force
AS	Australian Standard
CA	Communications Alliance
CE	Customer Equipment
DC (or d.c.)	Direct Current
DoD	Department of Defence
ELV	Extra-Low Voltage
EPR	Earth Potential Rise
ES1	Electrical energy source class 1
ES2	Electrical energy source class 2
ES3	Electrical energy source class 3
HV	High Voltage
LFI	Low Frequency Induction
LIU	Line Isolation Unit
LV	Low Voltage
NZS	New Zealand Standard
SELV	Safety Extra-Low Voltage
TNV	Telecommunications Network Voltage

4.2 Definitions

4.2.1 Cabling Work

(a) the installation of customer cabling for connection to a Telecommunications Network or to a facility; or

(b) the connection of customer cabling to a Telecommunications Network or to a facility; or

(c) the maintenance of customer cabling connected to a Telecommunications Network or to a facility.

[*Telecommunications Act 1997*]

4.2.2 Carrier

The holder of a carrier licence. [*Telecommunications Act 1997*]

4.2.3 Customer Cabling

A line that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network. [*Telecommunications Act 1997*]

Note: For the purposes of this Standard, the customer refers to the Department of Defence or an overseas defence force' when referring to the organisation.

4.2.4 Customer Equipment (CE)

(a) Any equipment, apparatus, tower, mast, antenna or other structure or thing that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network; or

(b) Any system (whether software-based or otherwise) that is used, installed ready for use or intended for use on the customer side of the boundary of a Telecommunications Network;

but not including a line. [*Telecommunications Act 1997*]

4.2.5 High Voltage (HV)

A voltage exceeding LV limits. [AS/NZS 3000]

4.2.6 Instructed person

a person instructed or supervised by a Skilled Person as to energy sources and who can responsibly use equipment safeguards and precautionary safeguards with respect to those energy sources.

Note: Supervised, as used in the definition, means having the direction and oversight of the performance of others.

4.2.7 Low Voltage (LV)

A voltage exceeding ELV limits but not exceeding 1000 V a.c. or 1500 V d.c. [AS/NZS 3000]

4.2.8 Network Boundary

A point which is the boundary of a Carrier's Telecommunications Network for determining whether cabling or equipment is 'customer cabling' or 'customer equipment' for the purpose of technical regulation under Part 21 of the *Telecommunications Act 1997*.

Note: In the context of this Standard the Network Boundary will usually be a point between the Carrier or Carriage Service Provider and the Department of Defence or an overseas defence force, such as an LIU specified in Clause 5.2 or an optical fibre termination unit.

4.2.9 Ordinary person

a person who is neither a Skilled Person nor an Instructed Person.

[AS/NZS 62368.1]

Note: Examples of people assumed to be Ordinary Persons are End-Users and the general public.

4.2.10 Power Feeding

The transfer of electrical power (usually DC) over a telecommunications line for telecommunications purposes to operate a powered device.

4.2.11 Registered Cabling Provider

A cabler who is registered under the ACMA registration system to perform cabling work to which registration relates.

4.2.12 Skilled person

a person with relevant education or experience to be able to identify hazards and to take appropriate actions to reduce the risks of injury to themselves and others [AS/NZS 62368.1]

4.2.13 Telecommunications Network

A system, or a series of systems, that is operated by a Carrier or carriage service provider and which carries, or is capable of carrying, communications by means of guided and/or unguided electromagnetic energy.

4.2.14 Temporary Cabling

Any customer cabling installed by Department of Defence personnel or overseas defence forces for the sole purpose of supporting the conduct of an exercise, training or operational deployment and only for the duration of that activity but, in any case, for a period not exceeding 90 days

5 REQUIREMENTS

5.1 General

Temporary cabling within the scope of this Standard **shall** be installed by Department of Defence personnel and overseas defence forces in accordance with one of the following:

(a) The requirements of Australian Standard AS/CA S009.

(b) The current ADF cabling specifications and manuals provided that the requirements of Clauses 5.2 to 5.14 of this Standard are met.

(c) Clauses 5.2 to 5.14 of this Standard in the case of cabling installed by overseas forces whether or not these Clauses are contrary to their cabling specifications and manuals.

Note: AS/CA S009 does not make any distinction between permanent cabling and temporary cabling. AS/CA S009 sets out minimum requirements for all customer cabling whether permanent or temporary cabling. While this Standard (AS/CA S035) sets out alternative requirements for temporary DoD cabling, any permanent cabling is to comply with AS/CA S009 and is to be installed by a registered cabling provider in accordance with the *Telecommunications Cabling Provider Rules 2000*.

5.2 Safe and sound practice

Customer Cabling should be installed in accordance with principles of safe and sound practice.

Note: An example of practices that are not considered to be safe and sound are those that may, in due course, lead to the injury of a person, such as—

(a) physical protrusions that a person may bump into or trip over (e.g. due to their location or low visibility);

(b) non-compliance with another industry Standard or Code; or

(c) the improper installation of a Cabling Product and associated equipment that makes it unfit for purpose.

5.3 Line Isolation

Telecommunications circuits in temporary cabling **shall** be connected to a Telecommunications Network via a line isolation unit (LIU) that provides the equivalent of a double insulation barrier of a minimum of 3000 V a.c. between the Telecommunications Network and hazardous voltage in accordance with AS/NZS 60950.1.

An LIU **shall** be appropriate for the service interface with which it is to be used. This may require repetition or regeneration of signals, or local power feeding depending upon the particular service provided by the telecommunications network.

5.4 Earth Potential Rise (EPR) and Low Frequency Induction (LFI)

Temporary cabling **shall** be installed in such a way as to minimise EPR and LFI hazards.

Note: Appendix H of AS/CA S009 may be used as a guide.

5.5 Indoor or Outdoor Cabling

5.5.1 General

All cabling should be installed in such a way as to minimise the risk of injury to persons or livestock due to, for example, tripping, choking, impact, to ensure the safe passage of persons and livestock where they may reasonably be expected to pass.

5.5.2 Aerial cabling ground clearance

The minimum clearance from the ground in any direction of an aerial temporary cable should be as follows—

(a) Over any land not traversable by road vehicles — 2.7 m.

(b) Over any residential driveway — 3.5 m.

(c) Over any commercial/industrial driveway or private roadway — 4.9 m.

(d) Over any public roadway or footway — as required by the relevant authority but, in any case, preferably no less than 4.9 m.

5.5.3 Cable support

Temporary cable should be supported or secured at suitable intervals to maintain the required separation from hazardous services as specified in Clauses 5.12 and 5.13.

5.6 Telecommunications outlets

All telecommunications outlets **shall** be designed or located to prevent the ordinary person coming into contact with parts at an ES3 circuit.

5.7 ES3 circuits

Temporary cabling **shall not** be used to carry an ES3 Circuit unless all of the following conditions are met:

(a) The voltage **shall not** exceed LV limits.

(b) An ES3 Circuit **shall not** be carried within a cable that contains ES1 or ES2 Circuits.

(c) The cable **shall** be clearly identifiable at any access point.

(d) The cable terminations **shall** be separated from the terminations of other telecommunications cables in the same way as power cable terminations are required to be separated from telecommunications cable terminations, in accordance with Clause 5.12.

(e) The cable **shall** be separated from other telecommunications cables in the same way as power cables are required to be separated from telecommunications cables, in accordance with Clause 5.13.

(f) The cable and its terminations **shall** be separated from power cables and their terminations in accordance with Clauses 5.12 and 5.13.

(g) The cable **shall not** terminate on a socket into which conventional telecommunications equipment may be plugged by an end-user.

Note: There are two types of ES3 circuits; being ES3 generic circuits and ES3 special application circuits, both which are defined in AS/CA S009.

5.8 Interference to other circuits

Any communications or Power Feeding circuit carried in Customer Cabling with any Carriage Service **shall** comply with the requirements of AS/CA S043, where applicable, whether or not the communications or Power Feeding circuit is connected to a Telecommunications Network.

5.9 Tampering or interference with a Carrier facility

A Carrier's lead-in cabling or network boundary facilities **shall not** be moved, removed or altered without the prior written authorisation of the Carrier.

Note 1: If a Carrier publishes a document authorising registered cabling providers to alter its facilities, for the purpose of this clause such a document will be taken to be the prior written authorisation of the Carrier as long as any terms and conditions set out in the document are adhered to by the registered cabling provider.

Note 2: Sections 446 and 447 of the *Telecommunications Act 1997* empower a Carrier to disconnect customer cabling or customer equipment if the Carrier has an honest belief that the cabling or equipment is, or is likely to be, a threat to the health or safety of persons or to the integrity of the Carrier's Telecommunications Network or a facility.

Note 3: Facilities on the Carrier's side of the Network Boundary are protected from unlawful tampering or interference under section 474.6 of the *Criminal Code 1995* ('Cwth').

5.10 Optical fibre systems

5.10.1 General exemption from separation requirements

While Customer Cabling that does not contain Electrically Conductive Elements is exempt from certain separation requirements in this Standard, it should be installed in such a way so as to ensure a Cabling Provider or an Ordinary Person is not exposed to electrical hazards while testing or connecting the Customer Cabling.

Note: In some circumstances the installer of the Cabling may need to be appropriately licensed. For example, the installer may be required to be a licensed electrical worker to draw the Cabling through electrical Conduits.

5.10.2 Inspection and cleaning

An optical fibre interface should be inspected using an instrument designed for the purpose.

If necessary, the interface should be cleaned using equipment designed for the purpose and reinspected to ensure that it is clean before making a connection.

Note: Safe inspection and cleaning if required of optical fibre interfaces is recommended as contaminants will affect performance of the connection.

5.10.3 Inspecting apparatus

Visual inspecting apparatus should be safe to the eye for the fibre being inspected.

Note 1: It is recommended that an indirect viewing device be used in the inspection of connector end-faces, e.g. a video-scope or video probe.

Note 2: Direct viewing devices may be used on non-active (dark) fibres but this is not recommended.

5.10.4 Safety of the installation

The Cabling Provider should ensure—

(a) optical fibre Cables carry appropriate markings or labelling, or another form of identification, to distinguish them from metallic Cables and Cables containing other services (e.g. AC Mains power);

(b) all access points (e.g. splice Enclosures, connectors) where disconnected fibres may be able to emit laser radiation are appropriately labelled (refer to Clause 5.10.5.8 for multiple connectors, outlets and access points);

(c) suitable mechanically protective eyewear and clothing is worn when preparing, cutting or splicing optical fibres;

(d) that suitable measures are taken to avoid exposure to hazardous light levels; and

(e) no fibre particles or shards, hazardous solvents or chemicals are left on site at the completion of the work. All items are to be disposed of in a suitable hazardous material or 'sharps' container, as applicable.

5.10.5 Labelling of fibre optic panels and enclosures

5.10.5.1 Warning of potential hazardous laser levels

All optical fibre panels and Enclosures should be labelled to warn of the potential that hazardous laser levels may be present.

5.10.5.2 Access to emitted radiation

Each optical connector, splice box or other part that may emit radiation when opened should be marked, e.g. with a label, sleeve, tag or tape.

Note: The labelling for connectors may be located in close proximity where mounting the label on the connector itself is not practical.

5.10.5.3 Types of laser warning markings

Laser warning markings should consist of—

(a) a Warning Label meeting the requirements of Figure 1 of AS/NZS IEC 60825.1; and

(b) an Explanatory Label meeting the requirements Figure 2 of AS/NZS IEC 60825.1.

5.10.5.4 Laser warning marking style

Laser warning markings should be coloured black on a yellow background, appropriately sized and legible for the area served.

5.10.5.5 Laser explanatory label wording

The laser explanatory label should provide a person with warnings of potentially dangerous laser radiation. Wording on the Label should be such that effective warning is given to any person who may or may not be familiar with laser radiation and the danger of exposure to it. Laser beams have the ability to damage eyesight.

The text for a laser explanatory label should be as follows:

CAUTION VISIBLE AND INVISIBLE LASER BEAM AVOID EXPOSURE TO THE BEAM

The above wording for the laser explanatory label is not mandatory and other words that convey the same meaning may be used.

5.10.5.6 Marking durability

The durability of the laser warning markings should meet the *Marking Durability* requirements of AS/CA S008.

5.10.5.7 Fibre outlets in work areas

Fibre outlets in work areas do not require a laser explanatory label.

5.10.5.8 Marking of groups of optical fibre connectors, outlets and access points

Groups of optical fibre connectors, outlets or access points such as Patch Panels may be marked as a group. A single clearly visible triangular Laser Warning Label marking may be used rather than having one Laser Warning Label for each connector/outlet. A minimum of one Laser Explanatory Label should be installed on the rack or frame for each location.

5.10.5.9 Multiple markings

Where a group of optical fibre connectors/outlets are enclosed within a housing, then a Laser Explanatory Label should be installed and clearly visible both before and after the housing is opened. This may require the use of more than one laser warning marking, such as one on the outside of a cabinet door and one inside on the rack/frame.

5.10.6 Unused optical fibre connectors and adaptors

Unused optical fibre connectors and adaptors should be covered by suitable Plugs or protective covers.

Note: Protective covers and caps should provide suitable optical attenuation to reduce the laser hazard. They also provide physical protection for the optical fibre interface and help minimise contamination of the interface.

5.11 Coaxial cabling

A telecommunications circuit **shall not** be connected to the outer conductor of a coaxial cable that may be touched by an ordinary person, e.g. at a coaxial connector, unless—

(a) the circuit meets the requirements of an ES1 circuit; or

(b) the outer conductor is earthed in accordance with Clause 5.14.

5.12 Cable terminations

5.12.1 Access to cable terminations

All telecommunications terminations **shall** be enclosed or located to prevent unintentional contact with ES3 circuit.

Note: ES3 should only be accessible by suitably qualified Skilled Persons.

5.12.2 Separation from LV power terminations

5.12.2.1 Shared enclosure

The conductors and terminations of a temporary cable may be located within the same enclosure as the conductors and terminations of an LV power cable subject to the requirements of Clauses 5.12.2.2 and 5.12.2.3.

5.12.2.2 Prevention from accidental personal contact with LV power terminations

The conductors and terminations of a temporary cable should not be located within the same enclosure, building cavity or room as the uninsulated and single-insulated conductors and terminations of an LV power cable unless—

(a) accidental access to the LV power conductors and terminations by persons working on the temporary cable conductors and terminations is prevented by means of a physical barrier or obstruction that prevents contact with the LV power conductors or terminations by any part of the body or by any tool being used by the person working on the temporary cable; or

(b) the temporary cable and the LV power cable are terminated on equipment whose access is restricted to suitably qualified and authorised defence personnel.

5.12.2.3 Prevention from accidental electrical contact between temporary cable terminations and LV power terminations

The conductors and terminations of a temporary cable **shall** be separated from the uninsulated and single-insulated conductors and terminations of an LV power cable by either a minimum distance of 150 mm or by means of a permanent, rigidly-fixed barrier of durable insulating material or metal earthed in accordance with Clause 5.14 unless all of the following are met:

(a) The temporary cable and the LV power cable are terminated on equipment whose access is restricted to suitably qualified and authorised defence personnel.

(b) Separate cables are used for LV power and telecommunications.

(c) Any telecommunications circuit that is terminated on the restricted access equipment—

  (i) does not share the same cable sheath as any other telecommunications service; and

  (ii) only connects to a Telecommunications Network via an LIU as specified in Clause 5.3.

5.12.3 Separation from HV circuit terminations

5.12.3.1 Shared enclosure

The electrical conductors and terminations of a temporary cable **shall not** be located within the same enclosure or building cavity as the conductors and terminations of an HV circuit.

Note 1: Temporary cable conductors and terminations and HV conductors and terminations may be contained in the same room, subject to the requirements of Clause 5.12.3.2, as long as the HV conductors and terminations are separately enclosed within the room.

Note 2: Installation of a distributor in the same room as any HV equipment is not recommended.

5.12.3.2 Separation of enclosures

The enclosed electrical conductors and terminations of a temporary cable **shall** be separated from the conductors and terminations of a separately enclosed HV circuit by a minimum distance of 450 mm, whether or not there is an interposing barrier.

Note: The 450 mm distance is measured between the actual conductors and terminations within their respective enclosures, not between the enclosures. However, allowance should be made for any future equipment expansion within each enclosure.

5.13 Separation from power cables

5.13.1 LV power cables

A temporary cable that contains electrically conductive elements **shall** be separated from any LV power cable so as to prevent cable insulation damage that may result in mutual electrical contact between the cable conductors (e.g. due to pressure, impact, abrasion or heat).

Note: Cable crossings are a particular concern. The cables should be separated at crossings by suitable spacing or a durable insulating barrier.

5.13.2 HV power circuits

5.13.2.1 Single-core cables

A temporary cable that contains electrically conductive elements and which runs alongside or crosses a single-core cable carrying an HV circuit **shall** be separated for its entire length from the single-core cable by a distance of at least 450 mm whether or not there is an interposing barrier.

5.13.2.2 Multi-core cables

A temporary cable that contains electrically conductive elements and which runs alongside or crosses a multi-core cable carrying an HV circuit **shall** be separated for its entire length from the multi-core cable by—

(a) a distance of not less than 300 mm; or

(b) a distance of not less than 150 mm where there is an interposing barrier that—

(i) is of such dimensions that at every point the shortest path between the temporary cable and the multi-core HV cable around the barrier is at least 175 mm measured from the outside of the cable sheaths; and

(ii) is made of either durable insulating material or metal earthed in accordance with Clause 5.14.

Note: Compliance with Item (b) may be achieved by the enclosure of either the temporary cable or the HV cable in conduit.

5.13.3 Aerial cabling

5.13.3.1 Attachment to power poles

Aerial temporary cabling **shall not** attach to any of the following:

(a) Any pole or structure carrying an aerial power line exceeding 66 kV.

(b) Any conductive pole or structure carrying an HV power line of any voltage.

(c) Any non-conductive pole or structure carrying an HV power line unless the HV power line does not exceed 66 kV and there is an existing LV power line below the HV power line.

(d) Any power pole that carries an HV power transformer.

Note: Conductive poles include poles manufactured from steel, concrete or timber.

5.13.3.2 Crossings

(a) Aerial temporary cabling **shall not** cross an aerial power line exceeding 330 kV.

(b) Where aerial temporary cabling crosses any aerial power line that does not exceed 330kV it **shall** cross below the aerial power line in accordance with Table 1.

(c) Temporary cabling that crosses an aerial power cable should be installed underground for at least 50 m each side of the power line at an angle as near as practicable to 90° to the power line route.

5.13.3.3 Separation from aerial power lines

Aerial temporary cabling, including joint or termination enclosures and telecommunications poles or structures, **shall** be separated from aerial power lines by the minimum distances indicated in Table 1.

5.14 Earthing

5.14.1 Resistance

Any earthing connection made for safety purposes should have a maximum resistance to ground of 30 Ω (5 Ω preferred).

5.14.2 Access to earthing bars or terminals

Any earthing bar or terminal, other than a connection to an earth electrode, should be enclosed or located to prevent unintentional contact by a person who is not installing or accessing the cabling.

5.14.3 Earthing at distributors terminating outdoor customer cabling

At a Distributor that is located in or on a Building or other structure and which terminates outdoor Customer Cabling where—

(a) the Customer Cabling contains Electrically Conductive Elements; and

(b) the Distributor does not have a surge suppression device already installed;

the following requirements apply:

(i) An earthing bar or terminal should be mounted at the Distributor.

(ii) The earthing bar or terminal should be Connected to Protective Earth in accordance with Clause 20.7 of AS/CA S009 or to a suitable bonding point using an earthing/bonding conductor with green/yellow insulation.

(iii) The cross-sectional area of the earthing/bonding conductors between the earth bonding terminal at the Distributor and the main earthing bar, terminal or connection in the electrical switchboard, main earthing conductor or earth electrode, as applicable, should not be less than 6 mm^2.

Note: The above earthing requirements do not apply to MDFs unless Outdoor Cabling on the Customer Cabling side is present.

Table 1

Minimum separation of aerial temporary cabling, including joint or termination enclosures and telecommunications poles or structures, from aerial power lines and fittings

Type of power line, structure or fitting		At a shared/ common pole or structure (Note 8)	In span	Telecommunications pole or structure		
				Crossing (Note 5)		Separate parallel route
				Horiz.	Radial	
Light fitting, stay fitting or power conduit at a pole		50 mm	n/a	n/a		n/a
LV cable independently secured to the same catenary support as the temporary cable (Note 1)		50 mm or insulating conduit	Insulating conduit	n/a		n/a
Independently supported, insulated LV (Notes 2 and 3)		0.6 m	0.6 m	2.4 m	2.4 m	2.4 m
Uninsulated LV		1.2 m	0.6 m	2.4 m	2.4 m	10 m
HV (Note 3)	≤ 11 kV	2.4 m (Note 4)	1.2 m	2.4 m	3.7 m	10 m
	> 11 kV ≤ 33 kV		2.1 m	2.4 m	4.0 m	10 m
	> 33 kV ≤ 66 kV	3.0 m (Note 4)	2.1 m	2.4 m	4.0 m	10 m
	> 66 kV ≤ 132 kV	Note 6	3.0 m	2.4 m	4.6 m	10 m
	> 132 kV ≤ 220 kV		3.7 m	2.4 m	6.0 m	10 m
	> 220 kV ≤ 330 kV		4.6 m	2.4 m	7.5 m	10 m
	> 330 kV		Note 7	Note 7		50 m

Notes:

1. LV power and telecommunications conduits may share the same catenary support as long as they are independently secured to the catenary support and separated by the enclosure of either the power cable or the telecommunications cable in conduit or are otherwise protected from damage that may result in mutual electrical contact between the cable conductors.
2. 'Independently supported, insulated LV' means—
   (a) aerial bundled cable (ABC);
   (b) insulated cable on a separate catenary support;
   (c) aerial insulated cable to a light fitting; or
   (d) an insulated service lead or neutral-screened cable servicing a building.
3. Earthed Metallic Screened HV ABC may be treated as 'Independently supported insulated LV'.
4. HV separations at the pole apply where no aerial LV power line is installed below the HV (attachment to the pole in such cases is only permitted for crossings).
5. Where the horizontal distance cannot be met, the radial distance applies. The horizontal distance is measured from the vertical projection below the aerial power line to any part of the telecommunications pole or structure. The radial distance is measured from the power line itself to the closest part of the telecommunications pole or structure.
6. Attachment of temporary cabling to a pole or structure carrying power lines exceeding 66 kV is not permitted.
7. Aerial temporary cabling crossings with aerial power lines exceeding 330 kV are not permitted. Where it is necessary for temporary cabling to cross power lines exceeding 330 kV, the temporary cabling should be installed underground for at least 50 m each side of the power lines at an angle as close as practicable to 90° to the power line route.
8. The temporary cable bearer is to be insulated from any conductive pole or structure and insulated or shrouded to prevent accidental personal contact with the bearer by an electrical worker accessing the power line.

APPENDIX

A AS/NZS 60950.1 and AS/NZS 62368.1 equivalence (INFORMATIVE)

A.1 General

This Standard has been revised to use the terminology and requirements of the AS/NZS 62368.1 equipment safety Standard, which was published on 15 February 2018 as a replacement for AS/NZS 60950.1.

AS/NZS 62368.1 introduces revised terminology as used in AS/NZS 60950.1. To aid with the transition process in this Standard, this Appendix specifies how equivalence between the two referenced safety Standards is implemented.

The term and definition for ELV is an exception to the above, since this Standard uses the term with respect to electrical Building wiring in accordance with AS/NZS 3000, even though the term is no longer used in AS/NZS 62368.1.

A.2 Definitions for use with AS/NZS 62368.1 products

For the purposes of this Standard, ES1, ES2 and ES3 refer to voltage and current classifications only.

Voltage and current limits for ES1 and ES2 are those specified in AS/NZS 62368.1.

Note: There are no voltage and current limits for ES3.

A.2.1 Electrical Energy Source Class 1 (ES1)

ES1 is a class 1 electrical energy source with touch current or prospective touch voltage levels not exceeding ES1 limits under—

(a) normal operating conditions;

(a) abnormal operating conditions; and

(b) single fault conditions of a component, device or insulation not serving as a safeguard;

and not exceeding ES2 limits under single fault conditions of a basic safeguard or of a supplementary safeguard.

ES1 may be accessible to an Ordinary Person.

Note: ES1 provides the equivalent level of safety to SELV as specified in AS/NZS 60950.1.

[Adapted from AS/NZS 62368.1]

A.2.2 Electrical Energy Source Class 2 (ES2)

ES2 is a class 2 electrical energy source where both the prospective touch voltage and the touch current exceed the limits for ES1 and under—

(a) normal operating conditions;

(a) abnormal operating conditions; and

(b) single fault conditions;

and either the prospective touch voltage or the touch current does not exceed the limit for ES2.

At least one basic safeguard is required between ES2 and an Ordinary Person. ES2 may be accessible to an Instructed Person and a Skilled Person.

A circuit with telephone ringing signals as defined in Annex H of AS/NZS 62368.1 is also considered ES2.

Note: ES2 provides the equivalent level of safety to ELV as specified in AS/NZS 60950.1.

[Adapted from AS/NZS 62368.1 MOD]

A.2.3 Electrical Energy Source Class 3 (ES3)

ES3 is a class 3 electrical energy source where both the prospective touch voltage and the touch current exceed the limit for ES2.

Note 1: ES3 is considered hazardous.

Note 2: ES3 is equivalent to 'hazardous energy source' as specified in AS/NZS 60950.1. Safety requirements for ES3 communications and other ES3 circuits are specifies in this Standard.

[Adapted from AS/NZS 62368.1 MOD]

A.3 Comparison of AS/NZS 60950.1 and AS/NZS 62368.1 terms

An informative comparison of terms between AS/NZS 62368.1 and earlier Standards can be found in Annex W of AS/NZS 62368.1. Table W.3 of AZ/NZS 62368.1 Annex W compares AS/NZS 60950.1 terms with AS/NZS 62368.1 terms. The following guidelines in Table P1 are provided for information only. Where terms are compared, it means that they provide equivalent safety outcomes, provided all the requirements in the applicable standard have been fulfilled. Equivalence in these cases does not mean the technical parameters are identical.

Table A1
AS/NZS 60950.1 comparison of terms with AS/NZS 62368.1

AS/NZS 60950.1	AS/NZS 62368.1	Notes
ELV	ES2	ELV (up to 42.4 V peak or 60 V d.c. in AS/NZS 60950.1) is separated from hazardous energy source by basic insulation only. ELV may receive transient voltages or currents from circuits external to the Building, as such it is classified as ES2 for the purposes of this Standard.
SELV	ES1	SELV (60 V d.c. or 42.4 V peak) and ES1 both have protection against hazardous energy source by double or reinforced insulation (safeguards) and both may be touched by the user (Ordinary Person).
Limited current circuit	ES1	In AS/NZS 60950.1 a limited current circuit is limited to 2 mA d.c. or 0.7 mA peak. AS/NZS 62368.1 does not use the term 'limited current circuit' but does, have comparable requirements by way of current limits for ES1.
TNV	ES2	Telecommunications Network Voltage can be one of three levels. Generally, TNV-1 is up to 60 V d.c. but may have higher transients from circuits external to the Building; TNV-2 is up to 120 V d.c. but no transients; TNV-3 is up to 120 V d.c. but may have transients. The Ordinary Person must be separated from contact with possible transient circuits. All TNV circuits are classified as ES2 unless a professional engineer advises otherwise for each situation.
Hazardous voltage	ES3	AS/NZS 62368.1 does not use the term 'hazardous'. Instead it states that any energy source exceeding ES2 limits is classified as ES3 and as such is classified as hazardous. ES3 circuits must not be accessible to the Ordinary Person or the Instructed Person by the use of double or reinforced safeguards. The Skilled Person may have access to ES3 for safe work but protection must be provided to guard against accidental contact with another class 3 energy source.
Restricted access location	Restricted access area	Restricted Access Area is the term used in AS/NZS 62368.1. This is a change in terminology in the new safety standard.

PARTICIPANTS

The Working Committee responsible for the revisions made to this Standard consisted of the following organisations:

Organisation	Membership
Department of Defence	Voting
NBN Co	Voting
Telstra	Voting
VTI Services	Voting
Ian Millner - Academic expert	Voting

This Working Committee was chaired by Mike Johns of Communications Alliance, who also provided project management support.

Optus resigned from the Working Committee during the course of the project.

NOTES

Communications Alliance was formed in 2006 to provide a unified voice for the Australian communications industry and to lead it into the next generation of converging networks, technologies and services.

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

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