

Attachment of communication cables to Endeavour Energy poles

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Amendment No. 10



**Endeavour
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Revision History

This amendment replaces the following specifications:

MCI 0002 – Attachment of communication cables to Endeavour Energy poles Am. 9

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Contact Information

The latest version of this document and other standards, are located on Endeavour Energy's standards website located at:

<http://www.endeavourenergy.com.au/aspPortal/webengine/au/com/ee/asp/Standards/Standards>.

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Document Control

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1 Documentation Scope

To set out in detail the requirements for the attachment of communication cables to Endeavour Energy poles.

This Construction Standard covers the attachment of communication services to Endeavour Energy poles, including;

- cable television (CATV);
- fibre cables;
- co-axial cable;
- PSTN cables;
- associated communication equipment; and,
- other communication cables.

2 References

External Regulations

NSW Work Health and Safety Act 2011

NSW Work Health and Safety Regulation 2017

Service and installation rules of New South Wales 2019

External Standards

Standard No.	Year	Title
ENA Doc 01	2019	ENA National Electricity Network Safety Code
AS/NZS 3000	2018	Electrical installations (known as the Australian/New Zealand Wiring Rules)
AS 6947	R2019	Crossing of waterways by electricity infrastructure

Company Policies and Procedures

Company Policy (Network) 9.1.6 – Approved material list

Company Policy (Network) 9.6.9 – Facilities Access (Shared Infrastructure)

Company Policy (Network) 9.7.1 – Network Asset Construction

Company Policy (Network) 9.8.3 – Network Operations

Company Policy (Network) 9.9.1 – Network Asset Maintenance
Company Procedure GAM 0001 – Network Standards Framework: Preparation and Amendment of Network Standards
Company Procedure GAM 0037 Network facilities access approval
Company Procedure GAM 0045 Management of network crossings of navigable waterways
Company Procedure GAM 0114 Granting dispensation for engineering documents

Company Standards	
Earthing Design Instruction EDI 001	Earthing design risk assessment
Earthing Design Instruction EDI 004	Earthing design, construction and testing of overhead transmission mains
Earthing Design Instruction EDI 100	Distribution earthing design
Lighting Construction Instruction LCI 001	Public lighting construction
Lighting Design Instruction LDI 001	Public lighting design
Mains Construction Instruction MCI 0005	Overhead construction standards manual
Mains Design Instruction MDI 0031	Overhead line design
Standards Asset Data SAD 0002	GISCAD design

3 Definitions and Abbreviations

Term	Definition
ABC	Aerial bundled cable
ADSS	All dielectric self-supporting
Approved Materials List (AML)	A dynamic list of materials and equipment approved (at that point in time) for installation on the electricity network and is available from Endeavour Energy's Standards website. This list details the material description, approved supplier/manufacturer name and associated part number.
ASP	Accredited Service Provider
Authorised person	A person with technical knowledge or sufficient experience who has been approved, or who has delegated authority to act on behalf of Endeavour Energy, to perform the duty concerned.
Broadband Communication Cables (BBC)	These include optical fibre cables and coaxial cables used for the provision of cable television and other information services.
CBL	Conductor breaking load
EWP	Elevated work platform
FAA	Facilities Access Agreement

HAT	Highest astronomical tide
HDPE	High density polyethylene insulation
HFC	Hybrid Fibre Coaxial
HV	High voltage (>1,000 volts alternating (ac) or 1,500 volts direct current (dc))
Instructed person	A person adequately advised by an Authorised Person or who has sufficient training and experience in the safety requirements for the work being undertaken to enable them to avoid the dangers which electricity may create.
IBC	Integrated bearer cable
LV	Low voltage (>50 volts alternating (ac) or 120 volts direct current (dc)) but not normally >1,000 volts alternating (ac) or 1,500 volts direct current (dc))
MSS	Multiport sheath segment
Ordinary person	A person without sufficient training or experience to enable them to avoid the dangers which electricity apparatus may create.
PSTN	Public switched telephone network (narrowband)
PVC	Poly-vinyl chloride
Riser	Communication cable or conduit transitioning between overhead and underground
SDS	Service drop sheath
SL	Street lighting
Special small service	An electricity supply located in public places, unmetered and of LV single phase up to 10 Amps rating where an accurate assessment of energy usage can be made.
UGOH	Underground to overhead
XLPE	Cross-linked polyethylene

4 Actions

4.1 General requirements

It is the responsibility of the communication cable owner to enter into a Facilities Access Agreement with Endeavour Energy and to negotiate a suitable attachment point on Endeavour Energy's poles.

The communications cable owner is responsible for the design, installation, operation, maintenance, repair, augmentation, alteration and removal of the communications cable.

The communications cable owner is responsible for all costs associated with the above, including all costs incurred by Endeavour Energy.

4.2 Safety Considerations

Appropriate design, safety, training and risk management practices must be implemented to prevent the exposure of potential hazards to all staff, the community and equipment. Some electrical hazards associated with the installation of communications infrastructure include, but are not limited to:

- earth return paths through coaxial cable screen due to open circuit neutrals or shared return paths during short circuits;
- elevated neutral voltages;
- power voltage injection;
- voltage back feed through communications system power supply transformers;
- down earths on poles;

- metallic fixtures that may become live (e.g. brackets and streetlight outreach arms); and
- voltage potential rises on conductive poles.

Staff installing or maintaining communication equipment must employ safe working procedures to mitigate these risks. Such procedures must include a voltage test so work can be safely performed.

Personnel working on Endeavour Energy poles within the organisations Safe Approach Distances (as defined Endeavour Energy's Electrical Safety Rules) must be authorised persons (Accredited Services Providers) with appropriate accreditations to the work being proposed.

Before a new cable technology may be attached to Endeavour Energy poles, the communication cable owner must provide the following to the Engineering Delivery Manager:

- evidence on whether the communication cable is non-conductive or conductive (specifications and/or testing); and
- a suitable evaluation of the potential impacts on Endeavour Energy's network.

4.3 Design requirements

4.3.1 Pole loading calculation

Before any communication cable is attached to, removed from or relocated onto an Endeavour Energy pole, the proposed pole loading must be calculated by either conducting:

- a full-detailed overhead design (such as using Poles 'n' Wires); or
- an onsite pole loading assessment tool approved for use by Endeavour Energy's Engineering Delivery Manager.

The following assets must be considered in the pole loading calculation:

- communication cables connected between poles (including road crossings);
- communication cables connected to buildings;
- electrical network conductors; and
- electrical service conductors.

The existing conductor tensions must be calculated and converted to the operating temperatures referenced in Section 4.3.1.3.

4.3.1.1 Full detailed overhead design

The proposed loading must not exceed the applicable pole rating as detailed in MDI 0031. The full-detailed design (inclusive of technical specifications of the cables eg. CBL) must be submitted to Endeavour Energy via the Contestable Works process, as outlined in Section 4.8.

4.3.1.2 Onsite pole loading assessment

If a full-detailed overhead design is not conducted, an onsite pole loading assessment tool must be used, along with appropriate means and techniques, to assess the pole loading from existing conductors/attachments and the proposed telecommunication cables. The assessment tool must be submitted to the Engineering Delivery Manager for approval prior to use.

Where an onsite pole loading assessment is conducted, the installation of telecommunication cables must not increase the total pole loading above 95% of the otherwise allowable pole load. This applies to all Endeavour Energy poles regardless of the use (distribution / transmission), type (timber/concrete/steel/composite) or design methodology (working stress/limit state).

Evidence of conducting the onsite pole loading assessment, including all input parameters and output results must be supplied to Endeavour Energy.

4.3.1.3 Operating temperatures for loading calculations

Refer to MDI 0031 - Overhead line design.

4.3.2 Pole rating

The meaning of the strength rating displayed on a pole disc varies depending on the pole type. As such, the technical specification for the relevant pole type should be consulted along with MDI 0031.

4.3.3 Pole condition

The condition of the pole must be inspected and verified to be suitable for attaching additional communication equipment on the pole. Where the communication cable owner or its representative has any concerns regarding the condition of a pole, a pole inspection can be arranged by contacting the Asset Inspection Manager. Any drilling of a timber pole for assessing internal decay must only be carried out by inspectors authorised by Endeavour Energy.

4.3.4 Earthing requirements

In addition to the earthing requirements for conductive poles in Section 4.5.1.2, the metallic catenary or bearer for conductive communication cables must be earthed at regular intervals. It is the communication cable owner's responsibility to design, install and maintain the earthing system to adequately mitigate hazardous voltages.

Conductive communication cables catenary may be connected to the MEN system (LV neutral) provided it is proven to be adequate in size for fault current carrying and safety voltage risk compliance achieved for the requirements of EDI 001 – Earthing design risk assessment. The conductive communication cables cannot be connected to Endeavour Energy's separate earthing system.

4.3.5 Easements

Where Endeavour Energy poles are located within an easement or where Endeavour Energy has the requisite statutory powers to access and maintain assets within a corridor, the communication cable owner must obtain the required consent to enter and occupy the land.

4.3.6 Asset replacements, alterations or relocations

Where make ready or alteration works are required, as outlined in Section 4.6, the proposed works must be included in the design submitted to Endeavour Energy in accordance with Section 4.8.

4.4 Clearance requirements

4.4.1 Clearances to ground

The clearances to ground for communication cables are outlined in Table 1.

Table 1 – Minimum ground clearance requirements

Description	Minimum clearances (m)	
	Communication cables	Customer service drops (SDS)
Over any part of a freeway, highway or route for over-dimensional vehicles	6.0	
Any part of a road carriageway and land where vehicular traffic may traverse	5.5	5.0
Commercial driveways	5.0	
Residential driveways	4.6	
Land which is not normally traversed by vehicular traffic	4.5	
Waterways, railways and other utilities crossings.	Refer to MDI 0031	

4.4.1.1 Operating temperatures for ground clearance measurements

The maximum cable operating temperature for communication cables, for the purpose of calculating ground clearances, must be 50°C.

4.4.2 Clearances to Endeavour Energy infrastructure

The separations between communication infrastructure and Endeavour Energy's infrastructure must meet the clearance requirements detailed in Table 3.

For Endeavour Energy ADSS cables and non-conductive communication cables below bare and insulated LV conductors, the following must be achieved:

Table 2: Requirements for ADSS and non-conductive cables below LV conductors

Span length (m)	Requirement
< 50m	1500 mm below the LV mains at the pole to create an EWP window.
≥ 50m	300 mm at midspan.

Table 3: Separation between communication cables and Endeavour Energy conductors and equipment

		Communication Asset							
		Endeavour Energy ADSS cable				Non-conductive communication cables		Conductive communication cables (HFC + PSTN)	
		Below conductors		Above conductors ¹ (By prior approval only)		Below conductors		Below conductors	
		At the pole	At mid span	At the pole	At mid span	At the pole	At mid span	At the pole	At mid span
Endeavour Energy Asset	LV Services ²	300mm	300mm	300mm	300mm	300mm	300mm	600mm	600mm
		Level on opposite side of pole		Level on opposite side of pole		Level on opposite side of pole			
	LVABC ² and SL (XLPE insulated)	1500mm EWP window	300mm	200mm	100mm	1500mm EWP window	300mm	1500mm	300mm
	Bare LV and SL (bare or PVC insulated)	1500mm EWP window	300mm	200mm	100mm	1500mm EWP window	300mm	1500mm	300mm
	11kV -33kV	2000mm				2000mm		3000mm	
	66kV – 132kV	On application to Engineering Delivery Manager. Cable manufacturer's recommendations for attachment, including circuitry separation to be included							
	Street light and service leads/tails, brackets, fittings, conduits, down earths, chokes, stay fittings and bearer wires	50mm							
	Pole-mounted electrical switches / fuses / connection boxes	300mm		300mm		300mm		600mm	

¹ An Endeavour ADSS cables can be attached above the LV mains where the standard “below conductor” attachment points are not possible, provided a minimum 1.5m mid-span clearance (to provide an EWP window) is maintained to the above 11/22/33kV network. Approval is required from the Engineering Delivery Manager to use of this position.

² Refer to drawing 078520 and Service and Installation Rules of NSW for more information.

4.4.2.1 Pole mounted substations

Pole mounted substations have a significant number of hardware installed limiting the space available for attaching communication cables. The clearance requirements are detailed in Table 4.

Table 4: Clearance requirements on poles with pole mounted substations

	Endeavour ADSS Cable	Non Endeavour Energy communications cable	Associated Drawing
Urban	500mm below the LV conductors on the box arm OR 50mm from the end of the platform crossarm	Option 1: 300mm below the lowest part of the transformer OR Option 2: Extend the platform crossarm by 1000 mm, attach at the end of the cross arm, and meet the radial clearance of 1200mm for HV, and 1000mm for LV. As per drawing 078618	249489
Rural / semi rural	50mm from the end of the platform crossarm		240383
Coastal	50mm from the end of the platform crossarm, on the footpath side		303376

4.4.2.2 Clearances to existing communication cables

The minimum separation clearances between communication cables must be 300mm.

4.4.2.3 Clearances on poles with HV only

Where Endeavour Energy's Facilities Access and Metrology Engineer confirms in writing that low voltage conductors are unlikely to be installed, a communication cable may be installed 500mm less than the values shown in Table 3 for below 11/22/33 kV assets.

4.4.2.4 Historic clearances

Endeavour Energy has separate agreements with Optus, Telstra and other communication owners that may stipulate construction separations that vary from this standard. For example;

- Some existing conductive communication cables (mainly Optus) are installed 500mm below Endeavour Energy's low voltage mains.
- Some existing Telstra twisted pair telephone cables are installed 1.2m below Endeavour Energy's low voltage network conductors.

However, Table 3 must be used for all future installations unless Endeavour Energy has provided written approval.

4.4.2.5 Operating temperatures

Table 5 specifies the operating temperatures which must be used to calculate separation distances between the applicable assets.

Table 5: Operating temperatures of communication and electricity cables and conductors for the purpose of calculating mid-span clearances

Situation	Asset	Temperature
Between communication cables (including Endeavour Energy ADSS)	Both cables	Minimum Temperature in Table 6 & 50°C
Non Conductive Communications Cable installed above an Electricity conductor	ADSS	Minimum Temperature in Table 4
	Electricity cables and conductors	
Electricity cables and conductors installed above communication cables (including ADSS)	Electricity cables and conductors	Maximum Design Temperature
	Communication cable	Minimum Temperature in Table 4

Table 6: Minimum temperatures for subalpine areas

Elevation	Minimum temperature
Above 900 m	-10°C
500 m to 900 m	-5°C
Below 500 m	5°C

4.4.3 Waterway crossing

The risks associated with any conductor crossing a waterway are significant and therefore the attachment of any communication cables to Endeavour Energy's assets, for the purposes of a waterway crossing, are subject to an individual risk assessment in accordance with MDI 0031 - Overhead Line Design.

The Engineering Delivery Manager must be contacted prior to any design or construction work associated with a communications cable crossing a navigable water crossing.

4.4.3.1 Design process

In cases where a communication cable owner wishes to attach to, or augment any section of an Endeavour Energy water crossing, the following process is being used:

1. Request the risk assessment template and the recorded details of the waterway crossing from the Engineering Delivery Manager. The communication cable owner must confirm all details as part of the risk assessment process. The recorded details available may include;
 - Max vessel height;
 - Tidal heights and details;
 - Wave effect; and
 - Location of existing signage.
2. Obtain consent from RMS on the proposed modification.

3. Submit a full-detailed design and new risk assessment to the **Engineering Delivery Manager** for approval (as part of the **Customer Network Solution** certification process). These must outline all proposed changes by the inclusion of the communication cable and the associated equipment, including;
 - any changes to construction;
 - pole loading calculations; and
 - existing signage replacements or modifications.
4. Construction is completed by the communication cable owner.
5. As built survey is completed and submitted to the **Engineering Delivery Manager** along with updated risk assessment for final approval.

Where Endeavour Energy is not satisfied with the as built survey due to changes resulting in higher risks to the company than the design specified, the communication cable owner must rectify these issues prior to final acceptance by Endeavour Energy of the project.

4.4.3.2 Specific design requirements

Communication cables to be installed above navigable waterways under Endeavour Energy's mains must meet the requirements of:

- NSW Maritime's "Crossings of NSW Navigable Waters: Electricity Industry Code";
- Endeavour Energy's MDI 0031, and;
- AS 6947 – Crossing of Waterways by Electricity Infrastructure

Figure 1 shows Endeavour Energy's minimum required clearances for waterway crossings. The proposed communication cable is not to restrict the height of vessels that may travel along the waterway. It is highly probable that the installation of a communication cable on existing structures will not comply with these clearances, therefore requiring the span and structures to be reconstructed.

In cases where the communication cable owner's design does not comply with the clearances outlined in Figure 1, the communication cable owner must either:

- Use an alternative route for the cable, or
- Augment/rebuild the waterway crossing to meet the required clearances in accordance with Endeavour Energy standards.

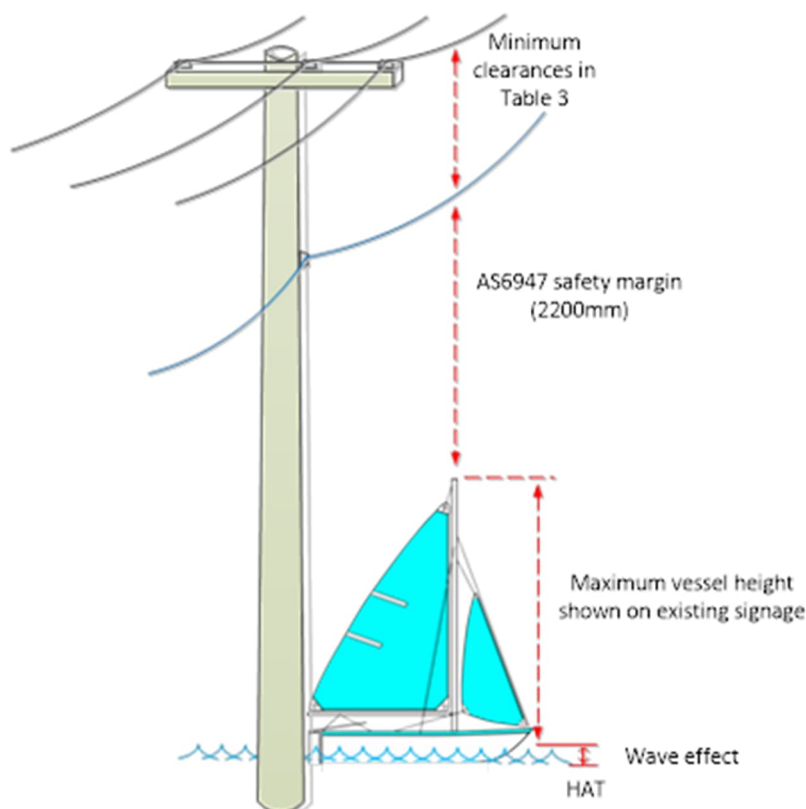


Figure 1: Required clearances of waterway crossings

4.4.3.3 Ongoing maintenance of waterway crossings

Any incident associated with the communications cable, such as a wire strike or activity that may have caused potential or actual pole movement on Endeavour Energy assets must be immediately notified to Endeavour Energy. All costs associated with damage or required rectification works to Endeavour's assets will be the communication cable owner's responsibility.

The maintenance requirements for the signage of water crossings with communication cables installed will be determined by Endeavour Energy and may require compliance reports to be submitted on an annual basis.

4.5 Construction requirements

4.5.1 Attachment on poles

In general, communications cables must be installed on the road side of the pole. Approval may be given by the Engineering Delivery Manager for the attachment on the property side, only where the road clearance is inadequate under conductor blow-out conditions if attached on the roadside.

There are some additional requirements depending on the construction on the pole which are outlined in the section below.

4.5.1.1 Riser cables (UGOH's) and conduits

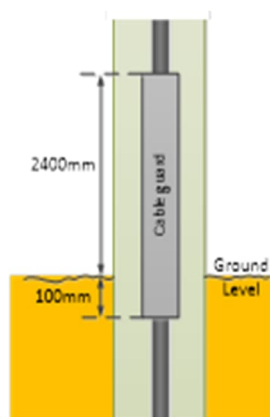
The maximum number of riser conduits permitted on an Endeavour Energy pole for communication and electricity purposes must be in accordance with Table 7.

Table 7: Maximum number of cables/conduits on a pole

Pole Type	Conduits/cables $\leq 70\text{mm}$	Conduits/cables $> 70\text{mm}$
Line pole	3	1
Air break switch, Load break switch or EE UGOH pole	1	1
Substation pole	LV cable: 1 Communication Cable: 0	0

All electricity service cables for communication equipment are to be installed in accordance with the Service and Installation Rules of New South Wales, which includes the installation of flexible conduits and non-conductive mechanical protection (cable guards).

To minimize any impact on the communication cables during routine pole inspections, non-conductive mechanical protection is also required over all communication cables from a minimum depth of 100mm below ground to 2400 mm above ground level.

**Figure 2: Cable guard requirements**

The overall diameter of the mechanical protection and conduits must be as small as practical to fit over the conduit or cable and minimise the occupied space on the pole. This is required from 1000 mm below the highest electricity mains on the pole to at least 1800 mm below the lowest electricity mains on the pole.

The communication cable owner must install mechanical protection on Endeavour Energy UGOH cables in accordance with MCI 0005 – Overhead distribution construction standards manual, if not installed already, before the installation of any communication equipment.

Communication installation and maintenance staff must maintain a clearance of 150mm from all cables with single insulation or covering.

To permit the possible future installation of a pole nail (pole reinstatement process), all conduits are to be located such that the critical load axis is avoided.

For an in-line pole, the critical axis is at a right angle to the conductors and for angle poles, the critical axis is directly behind the combined load direction.

4.5.1.2 Conductive poles

Hazardous voltages can be present on conductive poles (steel and concrete) or columns during abnormal system conditions, including earth faults and lightning strikes. The requirements outlined in Table 8 are to be used when attaching conductive communication cables (including conductive cores) on conductive poles.

The required insulation level for communication cables can generally be achieved by installing a suitably rated insulator on the conductive pole. However, the metallic sheath and catenary wire of Optus communication cables have historically been bonded to the pole and the LV neutral for commonly earthed systems.

Table 8: Minimum insulator requirements for attaching communication equipment to conductive poles

Situation	Insulator size (Rated Voltage)
33kV conductive poles	≥ 20kV
LV, 11kV and 22kV conductive poles	≥ 6.6kV

All metallic fixtures on conductive poles must be connected to the pole earthing system in accordance with EDI 0004 – Earthing design, construction and testing of overhead transmission mains and EDI 100 – Distribution Earthing Design.

Other communication equipment (excluding cables) are not permitted on conductive poles without the written permission from the Facilities Access and Metrology Engineer for each pole. Each conductive pole must be assessed separately.

4.5.1.3 Conductive columns

The attachment of any communication cables or equipment is not permitted on conductive columns (steel or concrete).

4.5.1.4 Transmission only poles

Communication cables may be attached to Endeavour Energy poles which only have transmission circuits installed, provided:

- The separations indicated in Table 3 are achieved;
- No future HV or LV circuits are planned to be installed (to be confirmed by Endeavour Energy's Network Planning Manager); and
- Approval is granted from Endeavour Energy's Engineering Delivery Manager.

Where future HV and LV circuits are planned for installation on these poles, standard circuit and safety clearances are to be achieved.

4.5.2 Attachment on LV cross arms

Only Endeavour Energy ADSS cables are permitted to be installed on LV cross arms provided the following conditions are satisfied:

- angle of deviation is less than 50°; and
- the ADSS attachment is not a termination or strain construction.

4.5.2.1 Associated communication equipment

Communications cable network amplifiers and service tap boxes (which service individual customers) should be attached to the catenary conductor at a distance approximately 1200 mm from the pole.

The attachment of associated communication equipment is not permitted above any electricity mains.

4.5.3 Attachment methods

The attachment of communication cables to timber poles or cross arms is generally achieved using hook or eye bolts to support the approved associated cable hardware. The use of bolts on conductive poles may not

be possible due to the limited availability of ferrules or holes. In these cases, stainless steel strapping (shown in Figure 3) may be used. The drilling of concrete and steel poles is not permitted.



Figure 3: Typical stainless steel strapping used for installing communication equipment where drilling is not permitted.

4.5.4 Identification requirements

The communication cable owner must clearly label the communication cable at each pole. The signage must be:

- Manufactured in accordance with drawing 291664;
- Marked with up to a six (6) letter word or acronym identifying the owner of the cable (a telephone contact number is not required).
- Have lettering where the individual characters are 30 mm high to be readable from ground;
- Have a code to indicate the nature of the communication cable, for example, NC for a non-conductive cable, and C for a conductive cable;
- Attached either by (attachment using cable ties is not acceptable):
 - a. Hanging from the termination bolt or hook, provided the tag could not become loose; or
 - b. Attachment to wood poles could be by 12 mm diameter x 75 mm long galvanised coach bolt into the pole, approximately 100 mm below the cable; and
- The proposed sign material / design must be submitted to Endeavour Energy's **Engineering Delivery Manager** for review of compliance with this standard and longevity of the signs design life.

The only exemption to the above is where given, in writing, by Endeavour Energy.

4.5.5 Minimise interference with Endeavour Energy network

The communication owner must prevent unauthorised interference with any component of Endeavour Energy's network. This may include;

- covering Endeavour's buried cables and earthing conductors that are exposed due to excavations; and
- securing the pole when excavating in close proximity.

4.6 Make ready and alteration works

4.6.1 Defective service cables

Where it is anticipated that workers will work within 500 mm of service cables, the service defects outlined in Table 9 require the communication owner to carry out the corresponding remediation works at their own cost.

Table 9: Remediation requirements for defective service cables and equipment

Defect	Required remedial action
Exposed live metal (uninsulated split bolt connections between mains and aerial service cables)	Cover the exposed metal with a suitable insulating tape and a weatherproofing tape.
Insulation on the service cables has deteriorated leading to exposed conductors	Report the defect to the Facilities Access and Metrology Engineer, who will advise the appropriate Endeavour Energy depot to arrange the necessary replacement. <i>Note: Communication cable work within 500mm of a deteriorated service cable is not to be performed unless suitable insulating covering is applied to the affected cables.</i>

4.6.2 Congestion on pole

Where the number of existing assets installed on the pole impairs the ability to install communication equipment, the communication owner can propose remediation works to simplify the congestion via a design. If the congestion is from many services, the services can be rearranged provided the standard Endeavour Energy notification/outage process is followed.

If the congestion on the pole can only be simplified by relocating assets, the proposed remediation work must be submitted to Endeavour Energy via the Contestable Works process, as outlined in Section 4.7.

4.6.3 Inadequate ground or electrical clearances

Where the clearances cannot be maintained, the communication cable designers must assess whether any remediation works are necessary to achieve the required clearances. This may include but are not limited to:

- conversion of street lighting from a SL control circuit to direct LV photo-electric controlled luminaries in accordance with LCI 0001;
- increasing the attachment height of the mains;
- replacing bare mains with insulated mains;
- relocating of street lighting and associated fixtures;
- relocating electricity mains and services;
- conductor re-tensioning;
- service mains alterations; and
- pole replacement (including condemned and nailed poles).

All proposed remediation work must be submitted to Endeavour Energy via the Contestable Works process, as outlined in Section 4.8. The communication cable owner is responsible for all costs associated with the design and construction of the remediation works.

4.6.4 Inadequate pole strength or condition

If the mechanical loadings from the attachment of communication infrastructure exceed the pole rating, the pole will require replacement at the cost of the communication cable owner. Likewise, any requirement to straighten a leaning pole prior to the attachment of communication infrastructure will be the responsibility of the communication cable owner.

Generally, the installation of a communication cable onto the electrical network must utilise the existing poles. The installation of additional network poles, including stay poles is to be avoided and will only be approved if no practical alternative arrangement is available. Requests for such poles must be submitted to the Facilities Access and Metrology Engineer for approval before commencing the Contestable Works process, as outlined in Section 4.8.

4.7 Other requirements

4.7.1 Connection Pits

All pits in the ground must be at least 500 mm away from poles to minimise the impact on routine pole inspections.

4.7.2 Special small services

Applications for Special Small Services must be submitted via Customer Network Solutions branch and must follow the Service and Installation Rules of New South Wales.

4.7.3 Record keeping

The annual rental received by Endeavour Energy is determined from Endeavour Energy's network data and mapping records, which contain details of the communications networks attached to the network poles.

Endeavour Energy is to be informed when attachments occur to provide the correct rental assessment. In this respect, the communication cable owner must provide a GIS layer of the proposed alteration/addition in accordance with SAD0002 – GISCAD design.

4.7.4 Removal of Endeavour Energy assets from pole

If Endeavour Energy removes Endeavour Energy electricity assets from a pole, such as for the purposes of undergrounding, the ownership of pole may be required to be transferred to the owner of the remaining communication assets installed on the pole. Otherwise, the communication cable owner must remove their equipment in a timely manner as required by Endeavour Energy.

4.7.5 Proposed future use of a pole

Endeavour Energy may contact the owner of a communication cable if it has any future proposed additional use or works, which the communication cable owner must allow for when designing for the attachment of its communication infrastructure.

Endeavour Energy may also need to replace, upgrade or install additional circuits that require the communication cable owner to remove or relocate their assets at their own cost.

4.7.6 Defects found after the installation of communication equipment

Where Endeavour Energy has found that the installation of communication equipment has led to or contributed to a defect, the communication cable owner is responsible for the costs to remediate the construction to an acceptable level. Defects may include, but are not limited to;

- the pole leaning;
- inadequate ground clearances;
- inadequate clearance to Endeavour Energy assets;
- installing materials and equipment not included on the Approved Materials List (AML);
- the equipment interferes with the electricity distribution function; or
- the pole is overloaded.

4.7.7 Future pole replacements and network alterations

The conditions for coordinating pole replacements, transfer of communication infrastructure to the new pole and relocation of infrastructure are outlined in the individual agreements between the communication cable owner and Endeavour Energy. In general, Endeavour Energy staff are not permitted to interfere with communications equipment and cabling. The communication cable owners will make arrangements for the relocation of their assets where reasonable notice of the proposed works is given.

If the communication cable owner fails to relocate the equipment within a reasonable time frame, Endeavour Energy may take any action deemed necessary to relocate the equipment. This may include engaging a contractor to prepare a new or amended design and to conduct the works at the communication cable owner's cost.

4.7.8 Vegetation management

It is the communication cable owner's responsibility to determine if communication cables require a specific clearance to trees. Endeavour Energy has no commercial arrangement with communication cable owners to conduct tree trimming around their cables.

4.7.9 Changes to public lighting

A design must be completed for any alterations to public lighting in accordance with LDI0001 – Public lighting design.

If the proposed alterations to public lighting will result in a tariff change to be paid by the public lighting customer, the communication cable owner must negotiate the acceptance of the proposed changes with the public lighting customer before construction can commence. A tariff change is generally not required if the scope of works only involves converting the street lights from a control circuit to individually controlled PE cells.

4.8 Design approval process

The proposed attachment of communication cables and any alternation works are to be included into a design and submitted to Endeavour Energy via the Contestable Works process. The proposed design will be submitted to the **Facilities Access and Metrology Engineer** at the design stage for processing applicable fees.

The communication cable owner is responsible for all costs associated with the design and construction of the remediation works.

5 Responsibilities

General Manager Future Grid & Asset Management has the authority and responsibility for:

- Approving major changes to this instruction in accordance with GAM0001.

Head of Asset Planning & Performance has the authority and responsibility for:

- Approving minor changes to this instruction in accordance with GAM0001.
- Endorsing major changes to this instruction in accordance with GAM0001.

Engineering Delivery Manager has the authority and responsibility for:

- Endorsing and recommending changes and revisions to this instruction;
- Endorsing variations from the requirements of this instruction;
- Assessing any new communication technologies proposed to be installed on the Network;

- Endorsing and reviewing the pole loading assessment tool;
- Assess communication cables installed on poles with only circuits with transmission level voltages;
- Assess applications to install communication cables above Endeavour Energy circuits;
- Assessing applications to install communication cables over established waterway crossings;
- Assessing applications to install communication cables on the property side of the pole; and
- Assessing communication cable signage details.

Head of Customer Network Solutions has the authority and responsibility for:

- Overseeing that all designs submitted by Level 3 ASPs conform to the requirements of this instruction.
- Managing the applications of special small services.

Manager Design has the authority and responsibility for:

- Overseeing that all designs submitted by carried out by **design** employees conform to the requirements of this instruction.

The **Facilities Access and Metrology Engineer** is responsible for coordinating enquiries and proposals with Network Planning, **Customer Network Solutions** and others for the attachment of communications cables to Endeavour Energy poles.

The **Asset Inspection Manager** has the authority and responsibility for organising the inspection of a pole at the request of a third party.

Annexure 1 - Drawings

Drawing number	Amendment	Description
012000	G	Overhead construction clearances between mains on same pole
078518 Sh1	G	Communication cable clearances on pole with bare mains (HV)
078518 Sh2	G	Communication cable clearances on pole with bare mains (LV)
078520	E	Communication cable installation near service mains
078521	E	Communication cable installation on pole with LVABC mains
078522	F	Communication cable power inserter installation details
078616	D	Communication cable neutral connection to bare LV
078617	D	Communication cable neutral connection to ABC LV
078618	E	Communication cable mounting on pole substation
240383	J	Overhead 11/22kV Rural/Semi rural substation general arrangement
249489	H	Overhead 11/22kV urban substation general arrangement
291664	C	Communication cable pole mounting identification label fabrication detail
303376	E	Overhead 11/22kV Coastal substation general arrangement

