DESIGN & INSTALLATION REQUIREMENTS FOR THIRD PARTY ASSETS ON EVOENERGY NETWORK

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1. PURPOSE AND SCOPE

1.1 Purpose

The purpose of this document is to outline the general requirements and considerations for third party transmitting assets such as communications cables and radio frequency (RF) equipment on Evoenergy owned structures.

These types of cables and equipment are generally installed to provide communication services, including but not limited to, cable television (CATV), telephone and interactive data services. Communication cables are both broadband and narrowband (self-supporting or integral bearer). Communication equipment will include mobile phone cells, transmitters/receivers, and any other radio devices.

The requirements outlined are to mitigate the risk of radio frequency (RF) hazards to people, maintain access to Evoenergy hardware, protect street appeal and to ensure adequate fixing and effective integration onto Evoenergy structures.

1.2 Scope

The sections within the document outlines the design, installation, and operational and maintenance requirements for third party organisations or individuals proposing to install communication devices and associated hardware on Evoenergy overhead network structures. Also, the sections contain common requirements for both cables and RF equipment as well as specific requirements for RF equipment.

The required documentation provided to Evoenergy in accordance with this document will support the acceptance of a standard design for installation on Evoenergy assets.

Only 230/400V and or 11kV structures are within scope of this document. Underground network assets (such as switching stations) and substation assets or 66kV and 132kV transmission assets are not considered suitable for the attachment of third-party devices.

The standard design must cover the variables that could be proposed at any particular site. Site specific applications and plans must be submitted and approved prior to the installation of any cable or equipment.

The equipment referred to in this document must operate between 3 kHz to 300GHz (Radiation Protection Standard, series No 3) and that do not present ionising radiation hazards.

Clearances, pole loadings and all other conditions must also continue to meet the requirements of this standard for the entire life cycle of the communication cable and equipment, including during maintenance and removal.

The requirements for working on telecommunication equipment installed on Evoenergy structures; or, working on Evoenergy structures that have telecommunications equipment are outside the scope of this standard.

2. REFERENCES

It is the responsibility of the communications designer to ensure the latest version of the appropriate standards and drawings referred to in this standard is used in all designs and calculations.

2.1 External reference – Standards and Acts

TABLE 1. STANDARDS AND ACTS

REGULATIONS, CODES, GUIDELINES	
ENA Doc 005	Joint use of power poles – Model agreement
ESAA NENS 04	National Guidelines for Safe Approach Distances to Electrical Apparatus
WHS Act 2011	Work Health and Safety Act 2011
C564:2020	Mobile Phone Base Station Deployment
RPSP No 3	Radiation Protection Standard for Maximum Exposure Levels to Radiofrequency Fields — 3 kHz to 300 GHz (2002)
G591:2006	Telecommunications in road reserves – operational guidelines for installations (Communications Alliance Document)
AMTA Document	RFSCP Manual Two- Radio Frequency Safety Compliance Program-Process and Site Safety Documents
STANDARDS	
AS 3609-2005	Insulators - Porcelain stay type - Voltages greater than 1000 V a.c.
AS 7000-2016	Overhead Line Design

2.2 Internal Standards - Documents and Drawings

The following documents and drawings form part of this specification:

TABLE 2. DOCUMENTS & DRAWINGS

DOC NO. / DRAWING NO.	TITLE
390-018	Clearance Requirements Between Evoenergy Infrastructure and Telecommunication Carriers Cable Installation
390-022	Third party microcell and antenna requirements radio frequency hazards minimum clearance to ground
390-023	Third party microcell and antenna requirements bare overhead mains minimum clearance requirements
390-024	Third party microcell and antenna requirements LV ABC construction required minimum clearances
390-025	Third party microcell and antenna requirements isolation switch mounting considerations fixed to Evoenergy structures
D202-0070	Point of connection assembly for third party unmetered assets low voltage only poles-LV ABC
D202-0071	Point of connection assembly for third party unmetered assets low voltage only poles-LV Bare Mains
PO07127	PO07127 Distribution Earthing Design and Construction Manual
PO07132	Distribution Overhead Line Design Manual
PO07173	Evoenergy Electrical Safety Rules
PO07173	Evoenergy Service and Installation Rules
PO07312	Pole and Line Inspection Manual

3. DEFINITIONS & ABBREVIATIONS

TABLE 3. DEFINITIONS AND ABBREVIATIONS

TERM	DEFINITION
2CTW	2 Wire Twisted (1 phase) service
4CTW	4 Wire Twisted (3 phase) service
4WL	4 Wire Lateral (open wire 3 phase) service
AAAC	All Aluminum Alloy Conductor
AAC	All Aluminum Conductor
ABC	Aerial Bundled Conductor
ACSR	Aluminium Conductor Steel Reinforced
ACT	Australian Capital Territory
ADSS	All Dielectric Self-supporting (Communications cable—optical fibre)
AHD	Australian Height Datum
Al	Aluminium
Antenna	Transmitter, such as a wire or grid, sometimes mounted within a tube or panel, that emits and receives radio signals
Asset Owner	Owner of the Third-Party Communications Assets
Authorised person	A person with technical knowledge or sufficient experience who has been approved and authorised in writing by the Company to perform the function requiring authorisation.
BAZ	Bushfire Abatement Zone
BCC	Broadband Communication Cables
CATV	Cable television, that is, television provided by means of Broadband cable.
CBL	Calculated Breaking Load. In relation to a conductor, means the calculated minimum breaking load determined in accordance with the relevant Australian/New Zealand Standard.
CLAH	Current-limiting Arcing Horn, or gapped surge arrester
Communications Hardware	Communication hardware refers to the equipment associated with the transmitting device excluding the antenna, namely, the power supply, isolation device and any auxiliary equipment.
CSA	Cross-sectional Area
Cu	Copper
EMF	Electromagnetic Field
Exclusion Zone	The safe working distance that has to be achieved from an energised radio frequency transmitter, which cannot be entered by any part of the body or metal object.
GL	Ground Level
HDC	Hard Drawn Copper
HV	High Voltage

TERM	DEFINITION
IBC	Integrated bearer cable – an overhead cable used for telephone lines consisting of a metallic supporting strand or strands and a variable number of metallic telephone pairs
MEWP	Mobile elevated working platform
Microwave Dish	Dish-shaped transmitter device, used on some cells, that emits and receives radio signals that allow the cell to communicate with the telecommunications carrier's network
Mobile Phone Cell	Communications installation that communicates between mobile phones and the telecommunications carrier's network using radio signals
NENS	National Electricity Network Safety codes, issued by ENA
OPGW	Optical Ground Wire—an overhead earth wire with internal optical fibre/s
RF	Radio Frequency
Radio transmitter	A device used to send radio signals. Such transmitters have associated communications hardware installed on the ground or the structure supporting the antenna
SC/GZ	Steel Conductor / Galvanized
SF	Safety Factor, also Strength Factor
SL	Street lighting
UG/OH	Underground to overhead transition structure
UTS	Ultimate Tensile Strength – the maximum mechanical load, which may be applied to a conductor, beyond which failure occurs.

4. DESIGN REQUIREMENTS

4.1 Design Process

The high-level process of having proposed designs considered is outlined below.

4.1.1 Pre- lodgement period

Organisations or individuals proposing to install cellular or radio transmitting devices and or telecommunication cables on Evoenergy assets are encouraged to arrange a pre - lodgement meeting. The meeting will provide an opportunity to ask questions and request clarification on the requirements identified under this document.

The meeting should include all required stakeholders from the organisation proposing the installation of the transmitting devices and cables. Evoenergy representatives may include personnel from – Asset Standards and Specifications, Primary Assets, Customer Connections and Health and Safety.

Where the device owner is installing similar items to those proposed on other DNSP assets in Australia, it is encouraged to provide the accepted standard design drawings and documentation to Evoenergy at this stage.

The meeting should be arranged through the Consumer Engagement team.

Where the proposed designs may be installed on Evoenergy structures with other third-party assets attached, the owners of the assets should be consulted at this stage.

4.1.2 Application to install devices on Evoenergy structures

A formal application must be lodged and accepted prior to installing devices on Evoenergy owned structures in a separate process. Site-specific construction plans and documentation will be assessed against the standard design as previously accepted.

Where the proposed installation is not in compliance with the certified plans the proposal will be rejected.

Consultation with the public and other stakeholders of the proposed device installation must be in accordance with Communications Alliance Document- C564:2011- Mobile Phone Base Station Deployment (at minimum as per section 5 “Small Scale Infrastructure”). Devices that are not considered base stations must comply with the requirements.

4.1.3 Consideration of standard design

An application to install devices on Evoenergy structures will be formally assessed against the requirements identified in this document and the identified hazards presented by the proposed configuration.

Incomplete submissions will not be reviewed.

Where applicable, the submission must include;

- A comprehensive safety in design report
- Manuals, engineering drawings and product data of individual components
- Design drawings as outlined in this document
- Propagation path diagrams of the antennae (known as plume diagrams) – configured as per the proposed arrangement, showing vertical and horizontal profiles.
- Structural engineering certification(s)
- A bill of materials for each proposed design

Further clarification, information or amendment to drawings maybe requested.

All information must be submitted in one package.

4.1.4 Acceptance of standard design

Where a design is deemed fit for purpose Evoenergy will formally communicate this in a letter to the applicant and inform relevant internal stakeholders.

If more information is required or non-conformances to this document or its referenced standards are identified, notice will be provided in writing outlining the omissions. The Safety in Design Report must be then updated outlining the amendments to the design.

Acceptance of the standard design does not allow the devices to be installed on Evoenergy structures until site specific drawings are provided and approved.

4.2 Safety in Design

The safety in design report is a key document in the certification of the proposed design. Safety in design reports that are developed in accordance with the Safe Work Australia document *Safe Design of Structures Code of Practice* are preferred.

The safety in design report will identify to Evoenergy the presented hazards and hazard mitigations incorporated in the design. The report must identify all hazards presented throughout the entire lifecycle of the individual components and the design as a whole. Lifecycle stages must include the design, installation, maintenance, decommissioning and disposal tasks or requirements.

Hazards to be identified and mitigated include:

- Hazards to humans (incl. workers and public)
- Hazards to environment
- Hazards during installation (incl. considerations that will allow pre-work on structures- minimising crew conflicts between Evoenergy and third-party asset owner representatives
- Operational Hazards
- Maintenance Hazards (incl. tasks and time intervals between tasks)
- hazards to connected apparatus and property- i.e. item integration requirements.
- hazards presented by the standard design
- the design life or life expectancy of the assembly
- Electrical Hazards (Incl. earth return paths through coaxial cable screens due to open circuit neutrals or shared return paths during LV short circuits, elevated neutral voltages, power voltage injection, voltage back-feed through communications system power supply transformers and down earths on poles)

Where the accepted design varies in the future, a revised safety in design report must be submitted for all changes.

The safety in design report must be comprehensive and be supplied with supporting documentation. Supporting documentation must be referenced in the report as required, including the attached file name and page number of the supporting data. Supporting documentation may include test certificates, structural assessments, product datasheets, manufacturer instructions and product catalogues.

The report must identify the ‘status’ of each identified hazard. Evoenergy expects that all of the hazards will be identified as closed prior to submission of the safety in design report.

The inclusion of volumetric data in the report will alleviate the requirement of a statement of environmental effects to be provided with the standard design.

The safety in design report must have a unique number and be approved by the device asset owner- the safety in design report must be referenced on all standard construction drawings.

4.3 Evoenergy Network Attributes

Following tables outline the environmental and electrical details of the Evoenergy power distribution network. All proposed designs and individual components must be compatible with the conditions identified.

TABLE 4. ENVIRONMENTAL CONDITIONS

ATTRIBUTE	VALUE
Structure type	11kV and 230/400 V pole structures.
Minimum Ground Temperature:	0°C (minimum ground temperature recorded at Canberra airport at 100mm is 4°C)
Maximum Ground Temperature:	40°C
Typical Network Design Life	40 years

TABLE 5. ELECTRICAL REQUIREMENTS

ATTRIBUTE	VALUE
Maximum System Earth Fault Current (11kV Network)	7kA- Specified in compliance to Fyshwick Zone Substation
Maximum System Short Circuit Duration (11kV network)	0.5 seconds (as extracted from PO07127 Distribution Earthing Design and Construction Manual clause 6.8)
Maximum System Earth Fault Current (230/400V Network)	40kA (single 2MVA transformer 6% reactance)
Maximum System Short Circuit Duration (230/400V Network – Past the LV Protection at distribution substations)	0.2 Sec

4.4 Suitability of Structure

In order to ensure the minimum disruption to its customers Evoenergy retains the right to use its structures primarily for the purpose of the distribution of electricity.

The suitability of an Evoenergy structure for communication equipment will depend upon but not limited to the following:

- The possible impact of the equipment on Evoenergy ability to perform its operation of its network
- Evoenergy's future plans for augmentation, relocation and maintenance of the electricity network
- The proposed additional loading due to the communication equipment and the mechanical strength of the pole structure. All designs and calculations must be submitted with all application showing the structure can support the additional mechanical load as per AS/NZS 7000.

In addition to the above, some sites may have further restrictions and limitations due to unavoidable emergency outages, higher voltage and higher power capacity sites tend to be more critical.

The carrier's application must include consideration of voltage rise, the imposed step and touch potentials due to fault conditions on the electricity network at the structure and the impact on the communications asset and their staff during installation and operation of the equipment.

4.4.1 Pole Condition Requirements

Poles that are free of defects may be considered appropriate for proposing the installation of third-party devices. Poles should be assessed against Evoenergy document PO07312 – Pole and line inspection guide.

Where a structure is deemed defective Evoenergy will repair the defect (s) prior to the installation of the third-party asset. The defect will be repaired and prioritised based on the defect type and severity.

4.4.2 Stay Pole Suitability

Stay poles maybe suitable for the purpose of installing third party devices. Where a stay pole is being proposed, any powered device must be supplied from a nearby micro pillar.

The connected stay wire must have an insulator installed in series that meets the flash over requirements of the highest voltage attached to the structure being stayed. Typically, Porcelain insulators are utilised on the Evoenergy Network – to AS 3609

The correct stay insulator being installed mitigates the risk of transfer hazards from one circuit to another.

4.4.3 Restricted Structures and Locations

Complex structures are not deemed suitable for the installation of third-party assets.

Devices must not be installed above any Evoenergy network circuit- unless a site-specific exemption to this requirement is granted.

Structures with the following attachments must be avoided;

- Backyard Poles
- Conductive Poles
- Transmission Structures (33kV, 66kV, 132 kV)
- Pole with Substation
- Pole with automated switching equipment
- Customer overhead services
- Structures with other third-party assets installed
- Structures which are stayed
- Bare mains constructions with a tee off (double termination configuration)
- Overhead mains to underground service mains connections (possibly suitable up to one 16mm² underground service only)

Structures that are not considered appropriate are;

- Low Voltage and or High Voltage mains underground to overhead connections (UG/OH)
- Structures with surge arresters
- Structures with network nominal system voltages above 11kV
- Structures with any network switchgear (excluding service fuses)
- Reinforced timber structures (nailed poles)
- Condemned poles
- Termite affected structures
- Severely leaning structures
- In proximity to future planned capital works- For example the removal of overhead mains.

Structures located in environmentally sensitive environments such as water catchment areas or restricted areas in National Parks are not suitable for third party device installations.

4.4.4 UG/ OH Poles – Special Situation

Electricity cables rising up the pole do not pose any particular problem for the attachment of a steel catenary cable to the pole. To provide additional protection however, a non-conductive section guard is to be fitted to Evoenergy UG/OH cables centred on the BCC attachment point. This work must be carried out by Evoenergy personnel with all costs at the communications carrier's expense. For these poles, a clearance of 150 mm from parts with single insulation or covering must be maintained.

4.4.5 Structures with third party assets installed

Where a structure currently is encumbered by the attachment of items not owned by Evoenergy, the owner of the proposed installation must consult with the owner of the installed asset.

The owner of the installed hardware must agree and be satisfied that their implemented processes and procedures manage the risks associated with the proposed installation.

Written permission from the third-party asset owner for each site which they are affected must be provided to Evoenergy.

4.5 Structural Certification

Structural certification must be provided to confirm adequacy of all components and fixings configured as per the proposed designs. Where components are used in multiple arrangements, the certification of the most burdensome configuration should be assessed.

Understanding the maximum allowable resultant forces applied on proposed structures as below, will allow a limit of applicability to be established for the proposed designs. The structure details below are the weakest structures installed on the Evoenergy network- this is a conservative approach; however most proposed configurations are expected to be physically small and will likely comply. Meaning when site specific applications are lodged the main considerations to confirm structural adequacy will be conductor loadings (including third party cables) applied to the structure to determine the resultant forces onsite. Confirmation of an adequate foundation must also be confirmed. Where the proposed design does not comply with the basic limits of applicability further investigation can occur to assess the adequacy of the structure on site- for example considering the actual strength of the installed pole.

TABLE 6. TYPICAL POLE ATTRIBUTES

STRUCTURE LENGTH (UNBURIED)	STRENGTH RATING	MATERIAL	DIMENSION GROUND TO TOP OF PROPOSED INSTALLATION	ASSUMED AUSTRALIAN STANDARDS	ASSUMED FOOTING DEPTH- COMPACTED ROAD BASE
9.5m	4kN	Timber	7000mm	AS7000 AS1720.1-1997*	1600mm
9.5m	4kN	Composite Fibre		AS7000	
9.5m	4kN	Concrete		AS7000 AS 4065	
12.5m	5kN	Timber	8500mm	AS7000 AS1720.1-1997*	2000mm
12.5m	5kN	Composite Fibre		AS7000	
12.5m	5kN	Concrete		AS7000 AS 4065	

**AS1720.1 is referenced as the most recent edition does not completely align with AS7000 (as per AS7000 appendix F).*

Where specific information is required for currently installed apparatus on the network, a request in writing for such information should be made directly to Evoenergy.

Site specific requests for information should be made through the Consumer Engagement team. Please call 132 386 and ask to speak with a Consumer Engagement team member.

Strength reduction factors as outlined in AS7000 table 6.2 must be observed. This requirement must be noted in the safety in design report.

4.6 Aesthetics

Evoenergy is aware that its overhead electricity network will be implicated in any adverse community reaction due to the addition of communication infrastructure and accordingly, the telecommunications owner and Evoenergy staff involved in this exercise are to ensure the completed network is as aesthetically pleasing as possible.

The communication cable owner must obtain the required approvals from the relevant authority and inform the residents before proceeding with the installation of any communications equipment. Evoenergy must be provided this information prior to any works commencing.

4.7 Design Constraints – Cables and RF Equipment

4.7.1 Allowable Devices

Devices in compliance with the *PO07173 Evoenergy Service and Installation Rules* are permitted. The installation must be deemed suitable for an unmetered supply (known as type 7 devices). Conditions and approvals as outlined in the Evoenergy Service and Installation Rules apply to un-metered supplies. Electricity meters must not be installed on Evoenergy structures

4.7.2 Proposals with more than one antenna

Designs that require more than one antenna and are located with 2000mm of any Evoenergy owned circuit must be installed on standoff brackets. The circumference of the pole must be a maximum 25% covered with directly attached devices or brackets in this area.

The 25% coverage is not a requirement where devices are positioned more than 2000mm from Evoenergy network hardware. It is preferred where 2000mm clearance can be maintained to Evoenergy assets that the transmitters are installed directly to the structure with no brackets.

4.7.3 Radio frequency public hazard mitigation

All proposed installations must not impose an RF hazard to the public. Installations must meet or exceed the requirements outlined in the ATMA document *RF Safety Compliance Program-Process and Site Safety Documents* (RFSCP Manual Two).

The carrier must identify that all proposed installations will satisfy these requirements on both construction drawings and the safety in design report.

4.7.4 Antenna/ Transmitter minimum dimension to ground

The standard design must identify the minimum dimension from the bottom of the installed antenna to ground at an ideal site. Antennas must be installed with the centre of propagation path being horizontally level

At 5 m above ground line in a public area (non-sensitive) the exposure level at any point must not be greater than those allowable to the general public under the ARPANSA *Radiation Protection Series Publication No3.* (5m requirement is recommended in the *AMTA RF safety compliance program site safety documents)*

Propagation paths above private property with exposure levels above those allowable for the general public (ARPANSA) must be at least 10m above ground line (RFSCP V2).

Where there is likelihood of a person standing above ground line within the plume of the device, the minimum dimension must be from that point. For example, the top of a colour bond fence, bench or a roof structure within the plume area should be considered as the ground line.

4.7.5 Antennas in proximity to trees and vegetation

The proposed microcell installation should not extend non occupational limits (according to APARNSA) into trees or vegetation. Where this is unavoidable the tree owner must consent to the condition. A letter supporting the consent must be provided to Evoenergy with the proposed installation application.

4.7.6 Pole Mounted Substations and Automated Switching Equipment

No communications cables or equipment are to be installed on pole mounted substations or automated switching equipment. In these situations, the communications cable must be installed on a freestanding pole providing 2200 mm clearance between the substation or automated switching equipment or pass the pole as an underground cable.

4.7.7 Air Break Switches

Where an Air Break Switch (ABS) is currently installed, the telecommunication carrier must allow for the future replacement of an ABS with an automated switching device. In these circumstances, the clearance from the top of the pole to the communication cable must be a minimum of three metres.

4.7.8 Aerial Splices

All splices must be located in an underground pit. No splices must be installed on the overhead network, due to the additional load placed on poles/structures, visual impact of splicing equipment and impediment to access for maintenance and operation of the Evoenergy distribution network.

4.8 Design Drawings - RF Equipment

Accepted drawings will be electronically stored. The drawings will be referenced whilst approving site specific plans and for auditing tasks. Provided drawings are not considered commercially sensitive.

4.8.1 General requirements

The proposed design must be presented in a series of drawings. The drawings must be drawn on a computer aided design (CAD) program and be provided in PDF format. All dimensions must be in millimetres.

Hand drawn sketches will not be accepted.

The drawings must visually depict:

- The minimum and maximum proposed height above ground of each installed component of the design (Antenna height from ground must be from the bottom of the antenna).
- The dimension between the highest components of the proposed installation to the Evoenergy installed power circuits above.
- The maximum spacing between installed conduit fixings.
- The minimum clearances to other assets installed on the pole top (this maybe a generic pole top construction depicted- with a referenced note identifying clearances as per this document)
- The fixing method of each proposed component on each type of structure proposed (ie composite/concrete and timber)
- A depiction of the safety signage to be installed

The proposed drawing must identify in the drawing or associated notes

- The specific model of Antenna (s) that is able to be installed under the proposed design.
- The limits of applicability to the design- outlining the pole top constructions the design is suitable to be installed.
- Compliance with AS7000, AS/NZS 1170, AS4100, AS3000, PR1254 (this document) – must be stated on the drawing. Any variances to these standards must be identified and justified in the safety in design report. All other standards that the design conforms to for example AS4680 must be listed in the safety in design report.
- A statement- “Reference safety in design report #### for safety in design considerations” or similar
- Reference to a certification of structural adequacy – provided by a structural engineer.
- Must identify the constructions and pole attachments that the design is able to be installed on or with.
- The design drawings must clearly state the band width that the installation will be operating at.

4.8.2 Bill of materials

The drawings must contain a bill of materials (BOM). The bill of materials must identify the actual items to be installed when the device is constructed. Where installation of the design occurs utilising alternative parts listed to those in the BOM then the installation will be deemed defective.

Where an installation varies from the agreed assembly, Evoenergy reserves the right to issue a Network Protection Notice under section 32 of the Utilities (Technical Regulation) Act and may take any action to remove the installation from the structure as required.

4.8.3 Electrical single line diagram

An electrical single line diagram of the proposed components must be provided. The single line diagram must include the entire installation from the Evoenergy network boundary (service connection point).

The position of the isolation switch on the single line diagram must isolate all sources of supply including any battery power sources.

Industry standard symbols must be used for all diagrams. A legend must be provided identifying the symbology utilised.

4.8.4 Drawing Governance

All provided drawings must incorporate basic drawing governance principles. The drawings must identify;

- A unique drawing number,
- Sheet number
- A revision number and revision table- the amendment table must identify any changes between revisions
- Drawing title
- Approvals register- drawn and date approved as minimum entries

4.8.5 Plume diagrams

Each proposed transmitting device in the configurations depicted must be provided to Evoenergy. The plume diagrams must identify;

- A dimensioned vertical and horizontal profile
- Overlayed coloured plumes must identify the areas that are deemed to be above general public and occupational exposure levels (ARPANSA- RPS3).
- Each plume diagram must be dimensioned in mm – identifying the width of the plume at the widest point and the distance from the transmitter to the end of the plume
- The plume diagram must show the position of the isolation switch in relation to the propagation path.

A separate plume diagram must be provided showing the minimum ground clearance at the time the tilt switch activates, isolating the device.

5. INSTALLATION REQUIREMENTS

5.1 Access Requirements

This section is in relation to the positioning of components, allowing adequate access for persons conducting work on behalf of Evoenergy on the electricity distribution network.

5.1.1 Ladder access requirements

The proposed design must not inhibit ladder access for workers to Evoenergy network assets. The safety in design report must identify the design considerations that allow workers to access these components by ladder.

Evoenergy requires a minimum width for a ladder to be placed on the pole of 700mm between installed devices.

Devices mounted on standoff brackets positioned on the structure in accordance with this document will typically meet this requirement. The use of stand-off brackets minimises the surface area of the pole being impacted by the installation and moves clutter away from where a worker may be positioned.

Ladders are utilised on poles at a four to one ratio. Where a proposed design allows a ladder to be installed over direct pole mounted devices, maintaining 300mm clearance from the back of the ladder to the device are

deemed acceptable. The ladder must be able to be rested 1000mm below the Evoenergy network components see drawings 390-024, 390-023, 390-022 for component placement requirements.

5.1.2 Mobile elevated work platform access requirements.

The mobile elevated work platform access window for circuits above 1kV is increased to allow Evoenergy Live High Voltage Work practices to be observed. Live work practices require workers to insulate secondary points of contact. It is not appropriate for Live Workers to insulate third party devices, as such the devices must be located no closer than 1800mm to any circuit operating above 1kV.

5.1.3 Portable platforms

Where cables are vertically installed on a structure, they must allow a portable platform to be utilised.

To allow the platform chain to be positioned on the pole the cables should be installed 35mm off the pole between 800mm to 1200mm below the LV crossarm. This will form a bridge for the chain to pass under the conduits.

5.2 Clearance Requirement

5.2.1 General

Ground clearances for communications cables, structures attachment clearances, clearances between communication cable/equipment and electrical infrastructure, as well as safe working distances, must not be reduced from those specified in this standard unless agreed to in writing by Evoenergy.

Evoenergy requires the following communication cable ground clearances.

TABLE 7. MINIMUM CLEARANCE REQUIREMENTS

CROSSING TYPE	MINIMUM CLEARANCE
Waterways	AS 6947
Ground clearance	AS 7000
Railways and other utilities crossings.	Refer to relevant standards

5.2.2 Clearances to Evoenergy circuits

Clearances in the Evoenergy Electrical Safety Rules must be maintained and all conductors, including insulated/covered conductors, must be treated as energised.

TABLE 8. CLEARANCES TO EVOENERGY CIRCUITS, CABLES AND RF EQUIPMENT

CIRCUIT VOLTAGE	CONDUCTOR TYPE	MIN. CLEARANCE[2] FOR CABLES	MIN. CLEARANCE[2] FOR EQUIPMENT
33kV – 132 kV	N/A	Not permitted	Not permitted
11kV – 22 kV	Any	2200mm	1800mm
230/400V	Bare conductor	1200mm	1200mm
230/400V	Insulated Conductor[1]	600mm	600mm
		Reference: 390-018	Reference: 390-022, 390-023, 390-024

Note 1: Conductors must be considered as bare mains if insulation or covering is not UV stabilised or the insulation is damaged. Non-UV resistant insulation in good condition may have UV resistant tubing applied by an Evoenergy representative and be considered insulated mains.

Note 2: Minimum clearance from closest conductor to the top of the proposed installation

Note 3: Antennas are not permitted above bare conductors on tower structures.

5.2.3 Clearances to other third-party assets

Where third party assets are installed on the structure the asset owner of the proposed device must determine in consultation with the third-party hardware owner the required clearances. The clearances must be in compliance with relevant Australian Standards including AS7000. The existing third-party hardware owner must be satisfied their implemented policies and procedures control the hazards of the proposed installation.

All street light conductors must be at minimum regarded as bare or covered conductors as outlined in this document- regardless of the requirements identified by the asset owner.

5.2.4 Midspan Clearances

Midspan clearances between communication cables and the electrical infrastructure are to be determined under worst case operating conditions.

Clearances where a telecommunication cable is installed below electrical conductors are to be determined with the electrical network at maximum operating temperature and the communication cable at 5°C.

For ADSS cables installed above low voltage networks, where approval is given, a 0.1 m mid-span clearance must be maintained with both circuits at 5°C.

Crossing of communication cables between electrical network conductors is not permitted.

5.2.5 Mains Ground Clearance

Mains ground clearances must be as per AS/NZS 7000. If any locations are identified where clearances are not as per the latest standards, the designer must determine if any remediation work to the existing overhead conductors will provide suitable ground and mid-span separation clearances to allow installation of communication assets. Works to be considered covers all available options including conductor re-tensioning, service main alterations and the replacement of the Evoenergy pole. The proposed remediation work is to be submitted to Evoenergy at the design stage for approval.

5.2.6 Service Cables

The minimum separation between service cables and conductive aerial communications conductors is as per Evoenergy drawing 390-018. Communication providers are not allowed to connect any cables to LV cross-arms.

Generally, Evoenergy aerial service cables are attached to the pole below LV mains. These cables are usually insulated; however, the minimum clearance between overhead service mains and aerial communication conductors is 600 mm.

The following situations, however, will require attention by those installing the communications cables if it is anticipated that BCC staff will be required to work within 500 mm of such wiring:

If there is exposed live metal, such as uninsulated connectors between mains and aerial service cables, those installing the communications cable must cover the exposed metal with an Evoenergy approved insulating tape and a weatherproofing tape.

If the insulation on the service cables has deteriorated to the point that conductors are exposed, the overhead service to the customer will need to be replaced with a multi- core aerial bundled conductor. This type of insulation failure must be reported to Evoenergy immediately for remedial work.

If the number of services taken from a pole is large, and/or the connections between service conductors and the mains are untidy, the aerial service cables may impact upon the desired BCC location. The standard Evoenergy notification and outage processes to be followed to allow Evoenergy to carry out any remedial work.

5.3 Insulation Requirement

5.3.1 General

Regardless of the pole material, the installation of a third party device must not increase the risk of transferring a fault from one circuit to another. Meaning the installation of the device must be installed with the minimum insulation levels between the device, structure and low voltage circuit as outlined below;

TABLE 9. MINIMUM INSULATION LEVELS

ATTRIBUTE	REQUIREMENT
Insulation Rating	3kV A.C (AS3100 & AS3560.1) Working voltage

3kV insulation requirement is rationalised by accepting the insulation from the structure to the low voltage circuit on a LV ABC construction is approximately 3kV. The insulation level is made from the cables 1kV rating and the insulation properties of the applied clamp (AS3100).

The safety in design report must identify the adequacy of the proposed hazard mitigation measures. The proposed mitigations will be specific to the design and may include standoff insulators, insulating plates, double insulated conductors and the use of conduits. Sound engineering rationale or testing must substantiate any claims of insulation performance.

In the case of the installation being electrically connected to a low voltage circuit not on the same structure additional mitigation maybe required to limit risk to the connected low voltage circuit. This may include surge protection installed at the Third Party owned micro pillar.

5.3.2 Basic Insulation impulse Level (BIL)

Evoenergy has installed non-conductive and conductive poles (steel reinforced concrete) in the electricity distribution systems. Hazardous voltages can be present on all types of poles during abnormal system conditions including, but not limited to; equipment failure, earth faults, weather conditions, etc.

When communication equipment is installed on:

Conductive poles, equipment must be insulated to a minimum of

- LV Pole (BIL 15kV)
- 11 kV (BIL 95 kV)
- 22 kV (BIL 150 kV)

Conductive poles separately earthed (rural and urban) the equipment must be insulated to a minimum of

- 11 kV (BIL 6.6 kV)
- 22 kV (BIL 6.6 kV)

Common earthed LV, 11kV and 22 kV conductive poles, all metallic components of the communication cable and equipment can be bonded to the pole along with LV neutral.

During the installation process, allowance must be made for any potential rises on poles and appropriate installation methods and safe working procedures must be adhered to when working on or near them.

5.3.3 Metallic Fittings

Evoenergy poles may have unearthed, single insulated fittings installed, which can become live through the breakdown of the primary insulation (such as steel conduit, light fittings, street light outreach brackets and lantern choke boxes).

All persons working on structures must be made aware of the possibility of metallic fittings on non-conductive (timber and composite) poles becoming alive. Safe working procedures when working near unearthed, pole mounted, metallic fitting must be employed and must include a voltage test to ensure that the work can be safely performed.

5.3.4 Additional Hazard Mitigation.

Where the third-party device will be constructed on a structure with an 11kV circuit attached further hazard mitigation is required. The requirements identified below reduce the likelihood of a local fault occurrence at the installed structure:

- Pin / inline constructions the insulator ties must be renewed to current standards.
- All installed bridging must be covered conductor thick type (CCT).

- Termination insulators must be of approved 32kV polymeric long-rod construction.
- Insulator pins must be approved by Evoenergy and be a nominal 22kV rated.

5.4 Earthing Requirements

Site specific earthing assessments and designs must be conducted for each 11kV conductive structure (concrete or steel poles). The process must be in accordance with the risk-based approach as per AS7000 and PO07127 Distribution Earthing Design and Construction Manual. The earthing design will determine the placement of earthing infrastructure ensuring transfer, touch and step potential hazards are controlled.

The independent earthing design and assessment must be provided to Evoenergy for each site.

The device owner is responsible for ensuring the installed earthing does not introduce hazards to assets owned by other parties, including Evoenergy, other utilities or property owners.

Evoenergy may permit BCC (including sheath and catenary) to be connected to the MEN system (LV neutral) to form one earthing system for electricity and BCC systems. This earth sharing arrangement is only allowed in common earthed areas where the LV neutral (MEN) is connected with a large number of customer's MEN.

Any situation that would not comply with this earthing requirement must be brought into line with this standard or removed at the expense of the BCC installer.

5.5 Mechanical Protection

Communication cable must be mechanically protected with a non-conductive material where it is likely that it will be damaged due to Evoenergy operations. Evoenergy takes no responsibility for damage to any unprotected cables during Evoenergy's normal operational activities.

5.5.1 Ground line cable guards

Mechanical protection is required on all poles for all cables forming part of an overhead to underground connection, as follows:

- Suitable mechanical protection is required to be attached to the pole from a depth of 500 mm below ground to 4 m above ground level.
- Connection pits in the ground near poles must be a minimum of 1500 mm from pole.

5.5.2 Conduit

All conduits are to be a minimum medium duty polymeric conduit to AS2053. The conduits must be suitably secured to the structure with a maximum dimension between fixings of 300mm.

Mechanical protection (conduit, U guard or similar) is required to protect telecommunications cables that run up the pole where a ladder or pole platform may be placed for work on the pole, its equipment or mains.

This is required from 500 mm below the highest electricity mains on the pole to at least 2500 mm below the lowest electricity mains on the pole.

5.6 Labeling and Identification

The carrier must clearly identify the cell by a nameplate, attached to the pole or to hardware on the pole. The nameplate must be readable from the ground with the following information included:

- The name of the carrier owner.
- The carrier's Network Operations Centre phone number.
- The carrier's Site Reference Number
- Signs must be in compliance to AS1319.

5.6.1 Labelling requirements – Cables

The BCC owner must at each pole, clearly identify the cable by an Evoenergy approved sign. Where a sign is installed for this purpose, it must comply with the following requirements:

- Up to a six (6) letter word or acronym identifying the owner of the cable only
- A clear code to indicate the nature of the cable, NC for a non-conductive cable, and C for a conductive cable
- Mounting of signs will be according to the methods set out in Table 10. Attachment using cable ties is not acceptable. Attachment to poles to be approximately 100mm below the cable
- The sign material must be aluminium sheet with an edge sealer
- Reflective Class 2 individual numbers and letters, 30 mm high, are required.
- The sign must not impact any works to be carried out on Evoenergy assets by Evoenergy staff.

5.6.2 Labelling requirements – RF equipment

Suitable signage must be provided to alert workers to the presence of an RF hazard. The signage must be placed in a position that optimises the chance of the sign being seen by an attending worker. The sign must be positioned where exposure levels are deemed safe for the general public.

A sample acceptable sign is presented in appendix A.

The sign must be suitably fixed to the structure below the isolation switch assembly. The sign must be UV resistant. The sign must be replaced if missing or becomes difficult to read. The sign must be large enough and positioned to allow a person to read whilst standing on the ground.

The sign must meet the following requirements

- Have wording in bold and large font ‘Transmitting Antenna RF Hazard Above This Point’
- Have wording ‘Isolation switch system installed. Do not proceed above this point until the antenna is isolated and verified non-active’.

  If RFNSA registered- have wording ‘Consult RFNSA Website- www.rfnsa.com.au’

5.7 Acceptable Methods of Attachment – Cables

5.7.1 Timber Poles

BCC infrastructure generally will be attached to the pole clamping the steel catenary to a king bolt on timber poles.

The communications cable, network amplifiers, and service tap boxes (which service individual customers) are attached to the catenary at a distance approximately 1.2 metres from the pole.

For non-conductive systems, the cable must be supported by LV ABC hook-bolts and suspension clamps mounted on the pole. Connection to the LV cross-arm will only be allowed for Evoenergy ADSS. Cable terminations/strain constructions must be attached to the poles by means of either LV ABC hook-bolts or eyebolts.

5.7.2 Other Poles

All connections on composite poles should be by means of an approved catenary clamp. Care must be taken to prevent any damage to the gel-coating during the installation of communication equipment. Under no circumstances, must communications cabling/equipment installers drill any holes into concrete, steel or composite poles.

On a conductive pole, the communications cable will be attached in a manner agreed to by Evoenergy, such as stainless-steel strapping around the pole.

TABLE 10. CABLES ATTACHMENT METHODS

POLE MATERIAL TYPE	TELECOMMUNICATIONS CABLING	TELECOMMUNICATIONS HARDWARE
Timber	Support Bracket attached with bolts. These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by 12mm x 75mm long galvanised coach bolts.
Fibre-Reinforced Composite (FRC)	Support Bracket attached with stainless steel straps. These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by stainless steel straps.
Steel	Support Bracket attached with stainless steel straps. (kingbolt hole not available) These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by stainless steel straps. (where a kingbolt hole is not available)
Concrete	Support Bracket attached with stainless steel straps. (kingbolt hole not available) These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by stainless steel straps. (where a kingbolt hole is not available)
Other Information	Catenary must be isolated from HV Conductive Poles with an insulator capable of withstanding the Pole's EPR under all weather and pollution conditions – with the following specs: • Wet power frequency withstand voltage of 28kV for 1 minute; • Dry power frequency withstand voltage of 28kV for 1 minute; • Lightning impulse withstand voltage of 95kV; • Flashover distance > 120mm; • Creepage distance > 230mm; • Cantilever strength of 6 kN. The catenary must be attached to timber Poles via an insulator where that Pole carries a HV earth conductor down the Pole, i.e. cable screen, switch earth, surge arrester earth etc.	All metallic equipment must be either hot dipped galvanised or treated by other Evoenergy approved methods to prevent corrosion. The attachment brackets, clamps, ancillary hardware and equipment must not interfere with existing installation and the Operations. The attachment brackets, clamps, ancillary hardware and equipment must also be able to be detached from the Pole with the use of standard hand tools.

5.8 Acceptable Methods of Attachment – RF Equipment

Proposed designs on timber poles must incorporate the following requirements:

5.8.1 Timber Poles

Fixing methods to timber poles must be adequate to support the device being installed. Design specific fixings will be required for the proposed devices.

The sole use of stainless-steel strapping or pole bands on timber poles is not acceptable. Timber poles shrink, shed sapwood and do not uniformly taper making strapping not appropriate for installations. Stainless steel strapping maybe used to provide redundancy in a proposed design.

TABLE 11. EQUIPMENT ATTACHMENT METHODS – TIMBER POLES

Item to be installed	Fixing method	Further information
Conduits up to 50mm	Two screw saddles	Safety in design report to validate the fixing of cables requiring a saddle larger than 50mm Fixings must not be more than 300mm apart

Conduit saddles	50mm 12G Tec Screws	Saddles must be correctly sized to the conduit being installed
Ground line cable guard	50mm 12G Tec Screws or Minimum 50mm M10 coach screws	Size of fixing screw must be compatible with item being secured. Drawings to specify dimension between fixings
Items over 5kg, large or hazardous items requiring fixing with through bolts	Minimum M12 Galvanised with two flat washers and a spring volute washer	Items being installed with through bolts must be a minimum M12. Where through bolts are used rationale to the adequacy of the fixing must be included in the Safety in Design report. Hazardous items include any device that produces exposure levels greater than those deemed safe for the general population as defined in *ARPANSA Radiation Protection Series Publication No.3*
Items over 5 kg or large items requiring fixing with Coach Screws	Minimum M12 Galvanised with a minimum 50mm of embedment into the pole.	Where coach bolts are required used rationale to the adequacy of the fixing must be included in the safety in design report.
Hazardous items requiring fixing with Coach Screws	Minimum M12 Galvanised coach screws with a minimum 50mm of embedment into the pole. Plus an additional 32mm Stainless Steel strap	Where coach bolts are required for fixing hazardous items rationale to the adequacy of the fixing must be included in the safety in design report. Hazardous items include any device that produces exposure levels greater than those deemed safe for the general population as defined in *ARPANSA Radiation Protection Series Publication No.3*
Isolation switch	Minimum M10 Galvanised coach screws with a minimum 50mm of embedment into the pole.	

All loose sapwood on natural hardwood poles at the position where devices or hardware are to be installed must be removed.

Sapwood must not be removed on CCA treated poles.

5.8.2 Other Poles (Concrete, steel, composite)

Proposed designs on concrete, steel or composite poles may incorporate the following:

Fixing methods must be adequate to support the device being installed. Design specific fixings are required to be identified and certified for each method of installation.

The sole use of 16mm stainless steel strapping for items that are deemed large, over 5kg or pose RF hazards is not suitable. Multiple 32mm S/S strapping or robust fabricated pole bands are required.

Concrete, steel and composite fibre poles must not be drilled.

TABLE 12. EQUIPMENT ATTACHMENT METHODS - OTHER POLES

Item to be installed	Fixing method	Further information
Conduits up to 50mm	16mm S/S strapping	Safety in design report to validate the fixing of cables requiring a conduit larger than 50mm All cables must have mechanical protection where strapping is in contact with the cable. Fixings must not be spaced no further than 300mm apart

Ground line cable guard	16mm S/S strapping	Spacing of fixings to be specified on drawings
Light and physically small items (i.e. isolation switch)	Minimum 2X 16mm S/S strapping	
Items over 5kg, large or hazardous items	Minimum 32mm S/S strapping – installed with a buckle that minimises the risk of tearing the buckle or strap Two straps to be installed per installation	The safety in design report must provide rationale to the adequacy of the fixing method. Hazardous items include any device that produces exposure levels greater than those deemed safe for the general population as defined in ARPANSA *Radiation Protection Series Publication No.3*

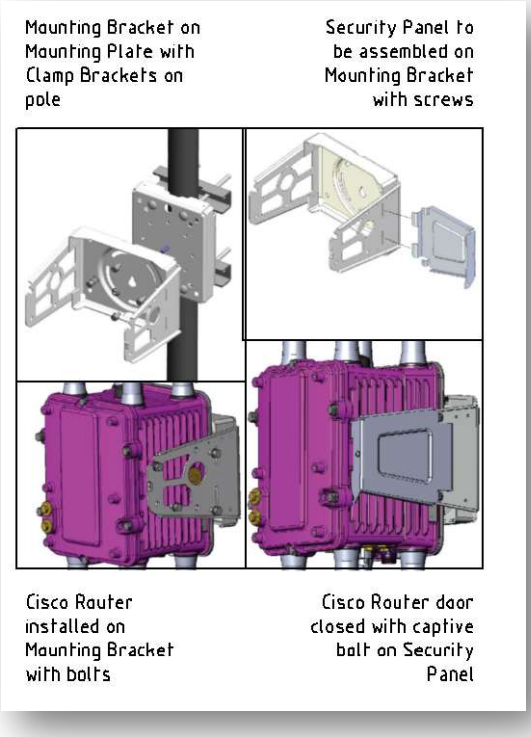
5.8.3 Stainless steel strapping -existing conduits and cables

Stainless steel strapping securing any third-party hardware or device must not be installed over Evoenergy hardware. Stainless steel strapping must be installed underneath previously installed Evoenergy cables or conduits. As required, this may require some assets to be de-energised to allow this practice.

Buckles and strapping to be utilised must minimise the risk of the items tearing. Stainless steel strapping is prone to failing at the buckle or bending points on the strap, where over tensioning has occurred.

5.8.4 Attachment details for CISCO router

CISCO routers that are to be installed on poles, following attachment details can be used as a guide.



- **CISCO Router Unit:** Refer to clearance requirements for Equipment in table 8
- **Power Supply Box**: this must be a stainless-steel enclosure and must be mounted with a clearance requirement of 3000mm from the ground level.

5.9 Power Supply and Isolation switch – RF Equipment

5.9.1 Power Supply

Where it is necessary to provide line power supplies to drive amplifiers and it need to be powered by the low voltage electricity system, this will be subject to an Evoenergy supply agreement.

Any devices that are required for the cable TV network will need to be powered by the low voltage electricity system and will be subject to a special supply agreement with Evoenergy.

It is critical that the location of these devices is recorded in the Evoenergy network data system. The communication hardware and associated power supply equipment must be located:

- Outside the vertical exclusion zone distance for the type of antenna installed
- A minimum of 3.0m from the bottom of the equipment and ground. If this cannot be achieved, the hardware may be installed lower, however, a clearance of 3.0m above the equipment is required.

5.9.2 Isolation switch Assembly

Evoenergy prefers device owners to provide an isolation switch with a similar interface to those already accepted for installation. Figure 1 depicts an acceptable switch assembly.

The ‘isolation switch assembly’ refers to the complete assembly, the ‘isolation switch’ refers to the switch component only.

FIGURE 1. ISOLATION SWITCH ASSEMBLY

5.9.3 Isolation switch location

Site specific drawings must identify the location of the isolation switch. This must be identified in profiles that depict the pole in relation to the nearest roadway and the height above ground.

The isolation switch must be at least 3000mm above ground.

The isolation switch must be installed in such a position not to place the operator in a hazardous environment whilst accessing the switch. The operator or worker must not be exposed to a hazard outside of the acceptable exposure levels for the general public.

The switch must not place the operator at a heightened risk of being struck by a vehicle. Where applicable the switch should be positioned;

- On the footpath side of the structure (optimum)
- To position the structure between the operator and the oncoming traffic in the nearest live lane (acceptable)
- Clear of the live lane with operator's back to the traffic (only under special circumstances)

See Evoenergy drawing 390-025 for further details.

The operator and the base of the ladder must never be positioned on a roadway to operate the isolation switch.

5.10 Electrical compliance – RF Equipment

All electrical components and installations must be in compliance with AS3000.

The requestor is responsible for gaining all required inspections and certifications from the ACT inspectorate. A Certificate of Electrical Compliance (CEC) must be produced to Evoenergy prior to energisation.

It must be the responsibility of the third-party assets/ system owner to satisfy Evoenergy that the system is non-conductive and provide a statement before the attachment of such a system to the Evoenergy network.

5.11 RAFSNA Requirements – RF Equipment

5.11.1 RFNSA site registration

Location and details of transmitting devices should be registered with the Radio Frequency National Site Archive (RFNSA). The registration of sites provides the general public access to site specific information. It is envisaged the availability of this information will minimise customer calls to Evoenergy.

Where a proposed design will not be registered in the RFNSA, the safety in design report must identify why this is not a requirement.

Evidence of site registration should be provided to Evoenergy for each installation.

5.11.2 Compliance to ARPANSA RF EME Requirements

The proposed standard design must be in compliance to the ACMA and ARPANSA mandatory limits for general public exposure. Compliance must be stated on the proposed standard drawings.

A declaration must be submitted with each proposed site plans (application) stating compliance to the ACMA limit for public exposure to RF EME.

6. OPERATIONAL AND MAINTENANCE REQUIREMENTS

6.1 Training

All persons working on Evoenergy poles near live mains must be Evoenergy authorised persons with appropriate company accreditation for working on pole tops and with optic fibre cables.

The communications provider must ensure that all personnel working on Evoenergy poles for the attachment of communications infrastructure would receive suitable training and familiarisation including but not limited to:

- Evoenergy Electrical Safety Rules
- Evoenergy Access Permit Requirements
- Evoenergy Network Outage Notification Lead Times
- Identification of voltages and mains types
- Knowledge of the hazards associated with pole top work
- Identification of suspect and condemned poles
- Working with fibre optic cables, NENS 04-2006 safe working distances
- Knowledge of the hazards associated with stringing communication cables beneath energised electricity conductors
- Awareness and knowledge of this Standard
- Any other required training

Required training can be obtained from industry training centre, including Evoenergy upon request and at an appropriate charge.

6.2 Tools and Equipment

All tools and equipment must be kept in good working condition so that they are safe to use at all times. Tools, plants and equipment that require inspection must be current in their period of inspection and tagged/logged accordingly.

MEWP and other equipment used by communication cable owners and their contractors must be rated in accordance with standards issued by Standards Australia. A copy of the valid test certificates for all equipment must be available on request.

WorkSafe ACT's guidance note, '*Working near Overhead Powerlines'*, will be applicable for all MEWP, cranes, plants, vehicles, individual's tools and equipment used on or near the Evoenergy electrical network.

6.3 Asset Alterations

Evoenergy reserves the right to change its structures at any time. In the situation where a telecommunications carrier's cable or equipment is attached to a structure, which needs to be modified, the owner must be notified. If Evoenergy deems the cable/equipment needs to be adjusted or removed from the structure, the telecommunication carrier must carry out these works at their own cost.

Existing electricity and communication infrastructure, which may not comply with the latest standards, may be deemed acceptable except where a specific risk may be posed to Evoenergy staff or the public. New and replaced communication cables and constructions must comply with the requirements of the latest standards.

In some instances, there will be a requirement for redressing or replacement of some Evoenergy aerial facilities before they will be suitable for the attachment of communication infrastructure. The communication asset owner is responsible for all costs associated with this make ready work.

6.3.1 Cell Owner Requested changes

At the request and expense of the owner, Evoenergy can carry out relocation and modification works on structures. The telecommunications owner may negotiate the relocation of other assets, including communication assets, which may be already attached to the pole. The cell owner will be required to get an agreement from all owners affected.

Where no alternative structure exists, a carrier may propose a different overhead construction of an Evoenergy structure to be able to install their communications equipment. Any changes will be for the account of the cell owner

6.3.2 Evoenergy Initiated Network Changes

Evoenergy reserves the right to change its structure at any time. In the situation where a cell owner's transmitters are attached to a structure, which needs to be modified, the cell owner must be notified and has the responsibility to disassemble and remove the transmitter(s). The undergrounding of all electrical circuits would normally require the removal of all associated poles; however, where the carrier requests, the pole ownership may be transferred to that carrier.

6.3.3 Multiple Antenna

When installing additional antennas on a structure, it is the responsibility of the carrier to Negotiate with owners of existing cells.

6.3.4 Pole Replacements

The agreements between various communication asset owners and Evoenergy define the process to be followed by both Evoenergy and the communication asset owners' staff. In general, Evoenergy staff are not permitted to interfere with the communication asset owners' equipment and cabling. The communication asset owner will make arrangements for the relocation of their assets where reasonable notice of the proposed works is given.

Evoenergy will notify the relevant telecommunications provider who must affix it as per the requirements of this standard. Replacement poles will generally be installed in the same position as the previous poles.

The asset owner must meet any requirement for the replacement of a pole for either clearance requirements or mechanical loadings due to the attachment of communication infrastructure, the cost of the pole replacement and associated works. In addition, any requirement to straighten leaning poles prior to the attachment of communication infrastructure must be the responsibility of the communication cable owner.

The conditions as stated in the agreements between various communication asset owners and Evoenergy set out the process to be followed by both Evoenergy staff and the various communication asset owners' staff.

6.3.5 Change of Pole ownership

If Evoenergy choose to remove an overhead section of overhead mains line and replace it with an underground section the telecommunication has two options:

- Asset owner can take ownership of the pole
- Augment the telecommunications line underground

Any cost associated with the changes will be for the account of the communications owner.

Any upgrading of the network proposed by the asset owner must allow for any future proposal that Evoenergy may have for that structure. Evoenergy's right to install a structure on public land is dependent upon its use for electricity distribution. Undergrounding of all electrical circuits may require removal of the pole or transfer of its ownership to the carrier.

6.3.6 Pole Movement with Existing Communication Cables

The variable nature of ground conditions and pole footings may prevent their accurate assessment at the time of assessing a pole's suitability for carrying communication cables. All costs are to be borne by the communication cable owner in the case where any corrective action is required to any infrastructure following the installation of communications cables.

6.4 Routine Inspections

Devices installed on Evoenergy assets should be visually inspected annually. The inspections must confirm that all fixings are secure, and the antenna is positioned as designed. After 3 periodic inspections if evidence can be produced to reduce this requirement, Evoenergy will consider a reduction to the inspection cycle. The

safety in design report must be amended to demonstrate the adequacy of the design to relax the requirements. Reports to demonstrate compliance to the inspection requirements must be provided to Evoenergy.

6.5 Network Records

The communication cable owner must provide GIS data in an Evoenergy approved electronic format of the proposed alteration and additions in a form compatible with the Evoenergy GIS.

Annual rental received by Evoenergy is determined from Evoenergy network data and mapping records, which contain details of the communications networks. Evoenergy is to be informed within 30 business days when attachments occur to ensure the correct rental assessment.

6.6 Tree Trimming

Evoenergy maintenance crews do not make allowance for communication cables in the extent of the tree trimming undertaken. Any requirement by communications infrastructure owners for the trimming of trees, if any, will only be done if payment for such work is negotiated separately.

VERSION CONTROL

VERSION	DETAILS	APPROVED
1.0	Initial Document	
2.0	Review, add sections and restructure, by M Senanayake and B North	N. Azizi, 15 Apr 2022

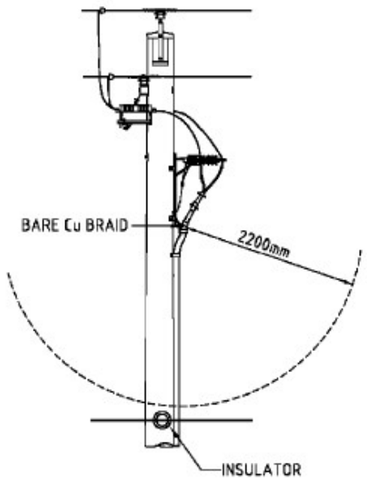
DOCUMENT CONTROL

DOCUMENT OWNER	PUBLISH DATE	REVIEW DATE
Manager Strategy and Operations	15 Apr 2022	15 Apr 2024

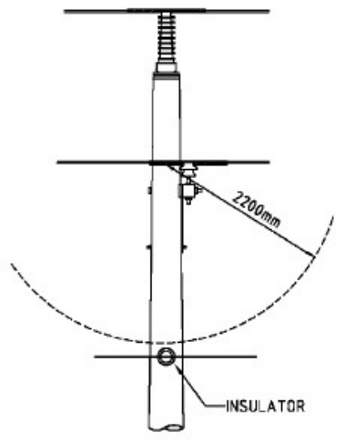
APPENDIX A – SIGNAGE

TABLE 1 – MINIMUM CLEARANCES BETWEEN TELECOMMUNICATION CARRIERS NETWORK AND ELECTRICITY DISTRIBUTION NETWORK CONDUCTORS FITTINGS OR EQUIPMENT ON POLE AND IN SPAN		
	ON POLE	IN SPAN
BARE OR EXPOSED 11kV AERIAL CONDUCTORS EQUIPMENT OR FITTINGS	2.2m	1.8m
11kV INSULATED AERIAL CONDUCTORS, DROP LEADS AND COVERED CONDUCTOR THICK	2.2m	1.8m
LV BARE OR EXPOSED AERIAL CONDUCTORS EQUIPMENT OR FITTINGS INCLUDING MAINS, SERVICE LEADS, STREETLIGHTS.	1.2m	0.6m
LV INSULATED AERIAL CONDUCTORS EQUIPMENT OR FITTINGS INCLUDING MAINS, SERVICE LEADS, STREETLIGHTS MAINS.	0.6m	0.6m

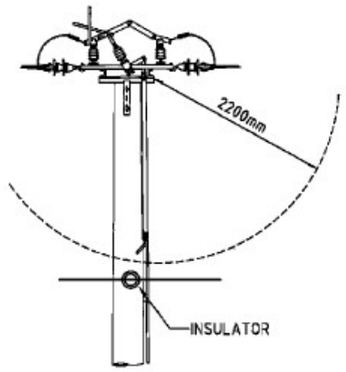
TABLE 2 – MINIMUM CLEARANCES FROM TELECOMMUNICATION CARRIERS DROP CABLE AND INSULATED EVOENERGY AERIAL SERVICE CABLE	
VERTICAL CLEARANCE ON THE POLE	0.6m
CLEARANCE IN SPAN	0.3m
HORIZONTAL CLEARANCE AT POINT OF ATTACHMENT	0.3m



HV UG/OH POLE



HV CONCRETE POLE



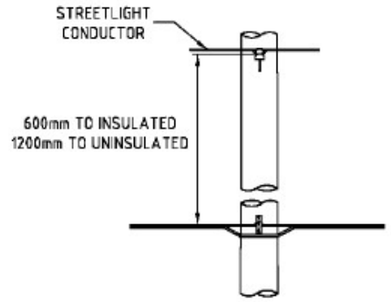
HV AIR BREAK SWITCH POLE

SEE NOTE 1

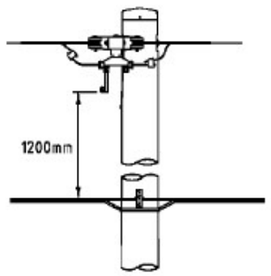
NOTES

1. POSITION OF TELECOMMUNICATIONS EQUIPMENT SHALL NOT INTERFERE WITH THE OPERATION OF AIR BREAK SWITCH.
2. CATENARY WIRE SHALL BE INSULATED FROM CONDUCTIVE POLES CARRYING HIGH VOLTAGE.
3. CATENARY WIRE SHALL BE INSULATED FROM WOODEN POLES WHERE THE POLES CARRIES A HIGH VOLTAGE EARTH. eg. CABLE SCREEN, SURGE ARRESTER.

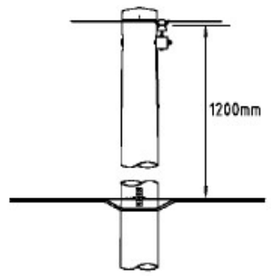
INSULATOR SIDE VIEW



POLE WITH STREETLIGHT



LV POLE WITH LV LINKS



LV INTERMEDIATE POLE

No	Revision	Date	Checked	Approved
C	LOGO UPDATED	15/01/2018	W. Ibrahim	W. Ibrahim
B	TRANSACT REPLACED WITH TELECOMMUNICATION CARRIERS	23/01/2017	M. Hogan	W. Ibrahim
A	TRANSFORMER POLE DELETED, NOTES 4 & 5 ADDED	15/01/2008	A. Charlton	G. Astbury

Drawn: G. Smith | Designed: D. Ramm | Checked: | Approved: D. Ramm | Project No:

evoenergy

CLEARANCE REQUIREMENTS BETWEEN ACTEWAGL INFRASTRUCTURE AND TELECOMMUNICATION CARRIERS CABLE INSTALLATION

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