STANDARD FOR INTEGRATION OF NON-EVOENERGY ASSETS ON THE EVOENERGY OVERHEAD DISTRIBUTION NETWORK

CONTENTS

1. PURPOSE AND SCOPE

1.1 Purpose

The purpose of this Standard is to outline the requirements and considerations for outside organisations to design and install items, including telecommunications equipment in safe and integrated fashion on Evoenergy owned distribution poles. For clarity in this Standard:

- Entities external to Evoenergy permitted to install equipment on Evoenergy structures will be referred to as “third parties.”
- Applicants requesting to install equipment on Evoenergy structures will be referred to as “third-party proponents.”
- Items that third parties have already, or propose to install, will be referred to as “third-party equipment” or a “third-party installation.”
- Evoenergy distribution poles will be referred to as “Evoenergy poles” or “Evoenergy structures,” any other Evoenergy piece of equipment is generally described as an “Evoenergy Asset.”

The requirements outlined in this Standard are to mitigate the risk to:

- Public and Evoenergy staff safety.
- Ensure Evoenergy network reliability is maintained and Evoenergy customers are not impacted.
- Ensure Evoenergy maintains compliance with all obligations and regulations.
- Ensure Evoenergy access to network assets is not impeded.
- Ensure Evoenergy asset life is not reduced.
- Ensure third part equipment is effectively integrated with Evoenergy overhead structures.
- Minimise visual impact.

Where an installation is found to have been installed without permission or varies from the Standard or site-specific design, Evoenergy reserves the right to issue a Network Protection Notice under section 32 of the Utilities (Technical Regulation) Act and take any action to remove the installation from the structure as required.

1.2 Scope

The sections within the Standard outline the design, installation, operational and maintenance requirements for proponents proposing to install equipment, including devices, cables, catenaries, and associated hardware on Evoenergy overhead distribution network structures.

This document may only be applied to Evoenergy overhead 230/400V and/or 11kV distribution structures. Overhead transmission and ground mounted distribution structures such as switching, and substations are unsuitable for installing non-Evoenergy equipment.

Requests for permission to install third-party equipment and requests for acceptance of Standard and site-specific designs for non-Evoenergy equipment on Evoenergy distribution structures must be accompanied by all relevant documentation required by this Standard.

Third-party equipment installed on Evoenergy structures must operate between 3 kHz to 300GHz (Radiation Protection Standard, series No 3) and not present ionising radiation hazards.

Clearances, pole loadings and all other conditions must also continue to meet the requirements of this, relevant Australian Standards, and guidelines as well as all relevant Evoenergy Standards for the entire life cycle of the installation.

The requirements for access and safe work on equipment installed on Evoenergy structures; or safe working on Evoenergy structures that have third party equipment are outside the scope of this Standard. Refer to Evoenergy’s PO0677 Electrical Safety Rule for safe working requirements and minimum standards for working on, near or in the vicinity of the Evoenergy’s transmission and distribution network facilities within the ACT and surrounding region into which Evoenergy’s electricity network extends.

2. REFERENCES

It is the responsibility of the third-party installation designer to ensure the current version of all applicable Evoenergy and Australian Standards, and Evoenergy drawings referred to in this standard are complied with in all designs and calculations.

2.1 Applicable Acts, Standards and Guidelines

TABLE 1. ACTS, STANDARDS AND GUIDELINES

REGULATIONS, CODES, GUIDELINES	
ENA Doc 005	Joint use of power poles – Model agreement
ENA 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
RADIATION PROTECTION SERIES 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	RF Safety Program
SAFE WORK AUSTRALIA	Safe design of structures – Code of Practice
AUSTRALIAN STANDARDS	
AS 3609-2005	Insulators - Porcelain stay type - Voltages greater than 1000 V a.c.
AS/NZS 7000-2016	Overhead Line Design

2.2 Evoenergy Standards - Documents and Drawings

The following documents and drawings form part of this specification:

TABLE 2. EVOENERGY DRAWINGS

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 equipment low voltage only poles- LV ABC
D202-0071	Point of connection assembly for third-party unmetered equipment low voltage only poles- LV Bare Mains

TABLE 3. EVOENERGY DOCUMENTS

DOCUMENT NO.	TITLE
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 4. 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 Aluminium Alloy Conductor
AAC	All Aluminium 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
Equipment Owner	Owner of the Third-Party Equipment.
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
Hazard	Items that could cause harm. Risks are the scenarios in which that hazard could cause harm.
HDC	Hard Drawn Copper
HV	High Voltage
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
LV	Low Voltage
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
Proponent	The proponent, as named in this Standard is the entity proposing/requesting telecommunications equipment to be installed on or interacting with Evoenergy network assets. Should proposed equipment become installed, the proponent will be considered the telecommunications equipment owner.
RF	Radio Frequency
Risk	The effect of uncertainty on objectives. In other words, risks arise because we are pursuing objectives (or goals) in an uncertain and potentially uncontrolled environment
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
Site-specific Design	A design that incorporates the Standard design with site specific details, constraints and mitigations that cannot be addressed in a Standard design. Any addition or substitution from the Standard design BOM must be included.

Site-specific Drawing	A site-specific drawing is an engineer approved; entity endorsed engineering drawing detailing the site-specific design.
SL	Streetlight / Street lighting
Standard Design	A Standard design is an engineer approved, entity endorsed design detailing construction requirements, materials (BOM) and technical detail to ensure construction is as per the specification. Standard designs are applicable to the majority situations where similar equipment will be installed and maintained. Any deviation from a Standard design will require approval from Evoenergy and a Site-Specific design be submitted addressing all deviations.
Standard Drawing	A Standard drawing is an engineer approved; entity endorsed engineering drawing detailing the Standard design.
Third-Party Equipment Owner	The entity, or representatives of, that own and or operate telecommunications equipment including any successor and permitted assigns, employees, agents, and contractors.
UG/OH	Underground cable to overhead conductor 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 Standard Design Process

The high-level process to have proposed designs for third-party installations considered is outlined below.

4.1.1 Pre-lodgement period

Proponents proposing to install third-party equipment on Evoenergy distribution overhead structures are required to arrange a pre-lodgement meeting with the Evoenergy Customer Engagement Team. The meeting will provide an opportunity for proponents to discuss their proposal, ask questions and request clarification on the requirements detailed in this Standard.

The pre-lodgement meeting should include all required stakeholders from the proponent organisation. Evoenergy representatives may include personnel from – Standards and Specifications, Primary Assets, Customer Connections, Environment and Sustainability, Work Practices and Safety Operations.

Where the proponent requesting to install items similar to those approved for installation on other DNSP assets in Australia, it is recommended the proponent provide the accepted Standard design drawings and any relevant documentation to Evoenergy at this stage.

Where the proposed designs on Evoenergy structures have existing or proposed third-party equipment attached, the proponents of that third-party equipment must be consulted to ensure integration is achievable.

4.1.2 Application to install third-party equipment on Evoenergy assets and structures

A formal application must be lodged and accepted prior to installing equipment on Evoenergy owned structures. This application must include the proponent Standard design.

Once Evoenergy have accepted a Standard design, separate applications for specific sites may be submitted as a separate application process. The 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 accepted Standard design, 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 Standard and the identified hazards presented by the proposed configuration.

Incomplete submissions will not be reviewed

The formal application to accept a Standard design 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.
- Poles & Wires or Catlin Software Calculation file for each proposed design.

Further clarification, information or amendment to drawings maybe requested. All information must be submitted as a single package.

4.1.4 Acceptance of Standard design

Where a design is deemed suitable for integration, Evoenergy will formally communicate this in writing to the proponent and inform relevant internal stakeholders.

If more information is required or non-conformances to this Standard or its referenced Standards, documents or drawings 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 any equipment to be installed on Evoenergy structures until site-specific drawings are approved by Evoenergy and safe access to the network has been arranged.

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 must be developed in accordance with the Safe Work Australia document “Safe Design of Structures Code of Practice.”

The Safety in Design report must 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, operation, maintenance, decommissioning, and disposal.

Hazards to be identified and mitigated include, however are not limited to:

- Hazards to workers and the public.

- Hazards to environment.
- Hazards during installation (incl. considerations that will allow pre-work on structures- minimising crew conflicts between Evoenergy and third-party equipment owner representatives.
- Operational hazards.
- Maintenance hazards including 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, life expectancy and lifecycle management of the assembly.
- Electrical Hazards, these include, however, are not limited to earth return paths through coaxial cable screens due to open circuit neutrals, or shared return paths during distribution network faults, elevated neutral voltages, power voltage injection, voltage back-feed through communications system power supply transformers and through the overhead earthing system.

Where the accepted Standard design varies in the future, a revised Safety in Design report must be submitted to address 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 requires that all hazards to be identified, must have suitable mitigations implemented to render associated risks to SFAIRP (So Far As Is Reasonably Practicable) 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 & be approved by the proponent, the Safety in Design report must be referenced on all Standard drawings

4.3 Evoenergy Network Attributes

Tables 5 and 6 outline the environmental and electrical attributes of the Evoenergy distribution network. All proposed designs, equipment and individual components must be compatible with the conditions identified.

TABLE 5. 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 6. 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 (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 for Third-party Equipment Integration

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

The suitability of an Evoenergy structure for third-party equipment will depend upon but not limited to:

- 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 condition of the structure and the stage of its lifecycle.
- The proposed additional mechanical 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.

The suitability criteria above, combined with pole condition are applied to structures assessed in Section 4.4.3 as their third-party equipment integration category as Unrestricted, Restricted or Prohibited.

4.4.1 Pole condition requirements

Poles that are free of defects may be appropriate for the installation of third-party devices. Where a structure is deemed defective by Evoenergy, the defect(s) may be repaired by Evoenergy, prior to the installation of the third-party equipment. The defect repair will be prioritised based on the defect type and severity.

4.4.2 Poles incorporating a pole stay

Stayed poles maybe suitable for the purpose of installing third-party equipment.

Third-party equipment that requires an LV supply will not receive that supply from the stayed pole.

LV supply to third-party equipment will be achieved by connection application, the details on the connection procedure are available on Evoenergy Website: Connections.

4.4.3 Third-party Equipment Integration Category

Pole constructions and their third-party equipment integration category are listed in Table 8. This is the first step in determining suitability of a pole, subsequently the suitability requirements detailed in Section 4.4 will be applied. Table 7 details Standard distribution pole constructions and their purpose.

TABLE 7. POLE CONSTRUCTION AND PURPOSE

TYPICAL HEIGHT	SERVICE STRENGTH	MATERIAL	PURPOSE
9.5m	8kN	Concrete	General Assembly LV
11.0m	8kN	Concrete	General Assembly LV
12.5m	8kN	Concrete – Type 4	General Assembly LV/HV Switching Equipment

			(i.e., ABS, Manual/ Automated Switches, UG/OH
12.5m	8kN	Concrete – Type 3	Pole Substation
14.0m, 15.5m	8kN	Concrete	General Assembly LV/HV
9.5m	4kN	Fibre Reinforced Polymer Pole (FRP) – Composite	General Assembly LV / Backyards
12.5m	8kN	Fibre Reinforced Polymer Pole (FRP) – Composite	General Assembly LV/HV
12.5m	8kN	Fibre Reinforced Cement Pole (FRCP) – Titan	General Assembly LV/HV Switching Equipment
9.5m, 12.5m	4kN	Timber	General Assembly LV
12.5m	4kN	Timber	General Assembly LV/HV and Switching Equipment

4.4.3.1 Unrestricted poles for third-party equipment

Unrestricted poles may have third-party equipment installed provided all conditions of Section 4.4 are met and the proponent provides tip load calculations for Evoenergy to consider as part of assessment and design review.

HV and LV Poles listed in Table 7 with heights ranging from 9.5m to 15.5m and designated “General Assembly” i.e. conductor only poles will be assessed as Unrestricted if:

- The conductor configuration is inline or double strain and;
- line deviation less than to 30°and;
- there is no stay, UG/OH or switching device.

Note: unrestricted poles may have acceptable span imbalance.

4.4.3.2 Restricted poles for third-party equipment

Third-party equipment must not be installed on Evoenergy poles assessed as restricted unless a site-specific exemption is granted by Evoenergy. The proponent must provide tip load, and additional equipment loading calculations when applying for exemption for installation on Restricted poles.

HV or LV Poles listed in Table 7 with heights ranging from 9.5m to 15.5m, designated General Assembly including:

- Poles incorporating a pole stay.
- Inline or double strain poles where line deviation is greater than to 30˚.
- Termination poles, UG/OH poles, tee-off poles.
- HV switchgear pole where the switchgear has no monitoring or control box mounted to the pole. Types include air break switch, load break switch, gas switch, ug/oh with fuse/surge arrestor/links, dropout fuses.
- Reinforced poles; including conditionally serviceable or temporarily nailed poles.
- Poles leaning greater than 10°.

4.4.3.3 Prohibited poles/structures for third-party equipment

Complex structures are not deemed suitable for the installation of third-party equipment and therefore are prohibited.

From the above table 7, following arrangements of pole heights ranging from 9.5m to 15.5m, with “General Assembly” purpose that is used to hang the wires, switching equipment, and/or is stayed as noted below are

considered prohibited and must be avoided for the installation of third-party equipment. Site-specific exemptions are applicable in this category, Third-party may seek alternate route / design for is subjected to clearance and tip load + additional load (by third-party) calculations for the installation of third-party equipment.

- Transmission Structures with 66kV and 132 kV assets.
- Pole Substations.
- HV Switchgear pole (automated switching equipment with a monitoring or control box on pole.
- Condemned poles.
- Termite affected poles.
- Poles leaning in excess of 10˚.
- In proximity to future planned works such as the removal of overhead mains.
- Poles located in environmentally sensitive environments such as water catchment areas or restricted areas in National Parks.

TABLE 8. SUMMARY OF UNRESTRICTED, RESTRICTED & PROHIBITED POLES FOR THIRD-PARTY EQUIPMENT

EVOENERGY STANDARD CONSTRUCTION ARRANGMENT	CONSTRAINT	MINIMUM REQUIREMENT	DESKTOP ASSESSMENT
General assembly LV or HV inline / double strain pole, where deviation is less than 30^{o}	Subject to clearance and tip load calculations;	Check clearance and tip load;	Unrestricted
General assembly LV or HV inline / double strain pole, where spans are unbalanced	Subject to clearance and tip load calculations;	Check clearance and tip load;	Unrestricted
General assembly LV or HV Poles incorporating a pole stay	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional stay support;	Restricted
General assembly LV or HV inline / double strain pole, where deviation is more than 30^{o}	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional stay support;	Restricted
General assembly LV or HV Termination (UG/OH) pole or Tee-off	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional stay support;	Restricted
HV Switchgear pole (manual switching equipment with no control box on pole)	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional	Restricted

EVOENERGY STANDARD CONSTRUCTION ARRANGMENT	CONSTRAINT	MINIMUM REQUIREMENT	DESKTOP ASSESSMENT
	Additional clearance may be required for operation and maintenance;	stay support or stronger / longer pole replacement;	
General assembly LV or HV Reinforced Poles	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional stay support or pole replacement;	Restricted
General assembly LV or HV leaning poles >10°	Site-specific exemption is required; Subject to clearance, calculation of tip load and additional load by 3rd party;	Submit engineering calculations for tip load, additional load by 3rd party and clearances; May require additional stay support or pole replacement;	Restricted
Poles / Transmission Structures with 66kV and 132 kV assets	Transmission assets must not incorporate 3rd party equipment	Seek alternate route; Separate freestanding pole;	Prohibited
General assembly pole with substation	No load alteration by 3rd party is accepted; Assess and EMF constraints;	Seek alternate route; Separate freestanding pole;	Prohibited
General assembly LV or HV condemned poles	No load alteration by 3rd party is accepted; End of original service life;	Must replace pole; Submit engineering calculations for tip load, additional load by 3rd party and clearances;	Prohibited
General assembly LV or HV termite affected poles	No load alteration by 3rd party is accepted; Strength constraints	Must replace pole; Submit engineering calculations for tip load, additional load by 3rd party and clearances;	Prohibited
General assembly LV or HV leaning poles >10°	No load alteration by 3rd party is accepted; Strength constraints	Must replace pole (stronger/longer); Submit engineering calculations for tip load, additional load by 3rd party and clearances;	Prohibited
In proximity to future planned capital works such as the removal of overhead mains in future	No load alteration by 3rd party is accepted; Assess constraints;	Seek alternate route;	Prohibited

EVOENERGY STANDARD CONSTRUCTION ARRANGMENT	CONSTRAINT	MINIMUM REQUIREMENT	DESKTOP ASSESSMENT
Pole / structures located in environmentally sensitive environments such as water catchment areas or restricted areas in National Parks	No load alteration by 3rd party is accepted; Assess constraints;	Seek alternate route;	Prohibited

4.4.4 Pole mounted substations and automated switching equipment

No third-party equipment may be installed on poles with substations or automated switching equipment. In these situations, the third-party equipment must be installed on a freestanding providing 2200mm minimum clearance from Evoenergy's pole assets or pass the Evoenergy's pole as an underground cable.

Evoenergy reserve the right to upgrade manual switching device to automated or install automated switching devices on poles where previously there is no switching device. In these cases, third party equipment will need to be removed at the cost of the third party.

4.4.5 Air-break switches

Where an Air-Break Switch (ABS) is currently installed, the clearance from the top of the pole to the third-party equipment including communications cable, must be a minimum of 3000mm.

4.4.6 Aerial splices

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

4.4.7 UG/ OH poles

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 with all costs at the proponent's expense. For these poles, a clearance of 150mm from parts with single insulation or covering must be maintained.

4.4.8 Poles / structures with third-party equipment previously installed

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

The owner of the previously installed equipment must agree and be satisfied that their implemented processes and procedures manage the risks associated with the proposed installation. This includes clearances to other third-party equipment, see 5.2.3.

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

4.4.9 Communication transmitters

Communication transmitters are prohibited in following situations.

- Where any worker will perform works within 500mm of the antenna.
- Tee-off poles.
- Above any conductor including bare, covered and insulated.
- Any Evoenergy cross-arms.

Evoenergy network communications equipment associated with the electricity distribution network is not subject to the restrictions listed above provided relevant clearances are maintained as per the applicable standards.

4.5 Structural Certification

Structural certification must be provided to confirm acceptability of all components and fixings configured as per the proposed Standard 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 detailed in Table 9, will allow a limit of applicability to be established for the proposed designs. The structure details in Table 9 have the lowest strength ratings of 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. When site-specific applications are lodged the main considerations to confirm structural adequacy will be conductor loadings (including proponent's catenaries and cables) applied to the structure to determine the resultant forces onsite. Confirmation of an adequate structure 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 9. 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	
12.5m	5kN	Fibre Reinforced Concrete			

*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 third-party equipment and accordingly, the proponent and Evoenergy staff involved in any proposal must to ensure the completed network is as aesthetically pleasing as possible.

The proponent must obtain the required approvals from the relevant authority and inform the residents before proceeding with the installation of any third-party 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 cable or conductor must be installed on standoff brackets. The circumference of the pole must not exceed 25% covered with directly attached devices or brackets in this area.

25% coverage is not a requirement where devices are positioned further 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 metallic 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

Proposed microcell installations 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.

4.8 Standard and Site-Specific Design Drawings - RF Equipment

Accepted drawings will be electronically stored. The drawings will be referenced whilst approving site-specific plans and for auditing tasks.

4.8.1 General requirements

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

Hand drawn sketches / mark-ups 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 (i.e. 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 can 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”
- Reference to a certification of structural adequacy – provided by a structural engineer.
- 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 will render the installation non-compliant.

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

Plume diagrams for 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.

4.9 Site-specific Design Process

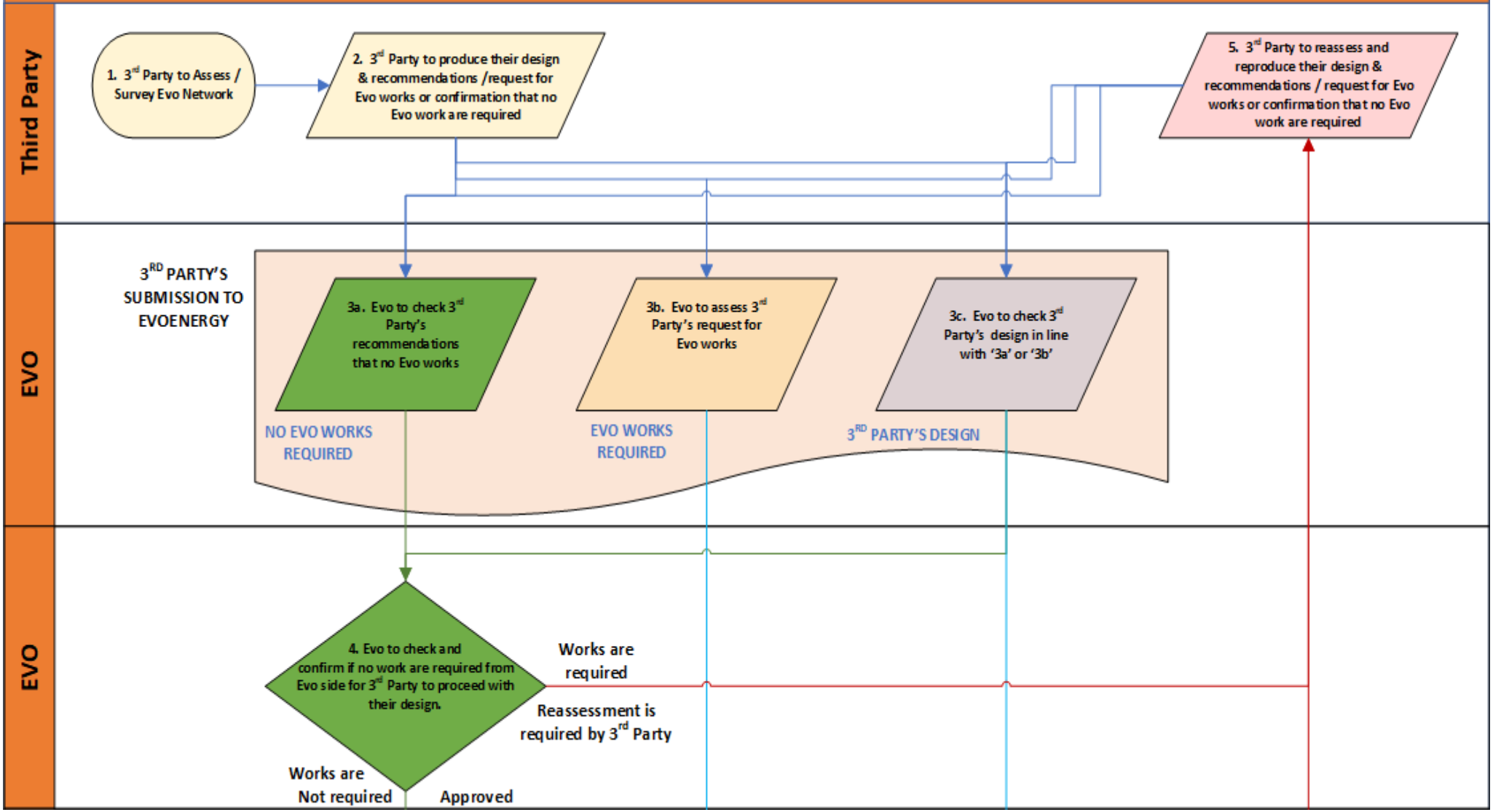
Following steps / process (as per Figure 1) has been established for third parties proposing to install their equipment on Evoenergy's pole:

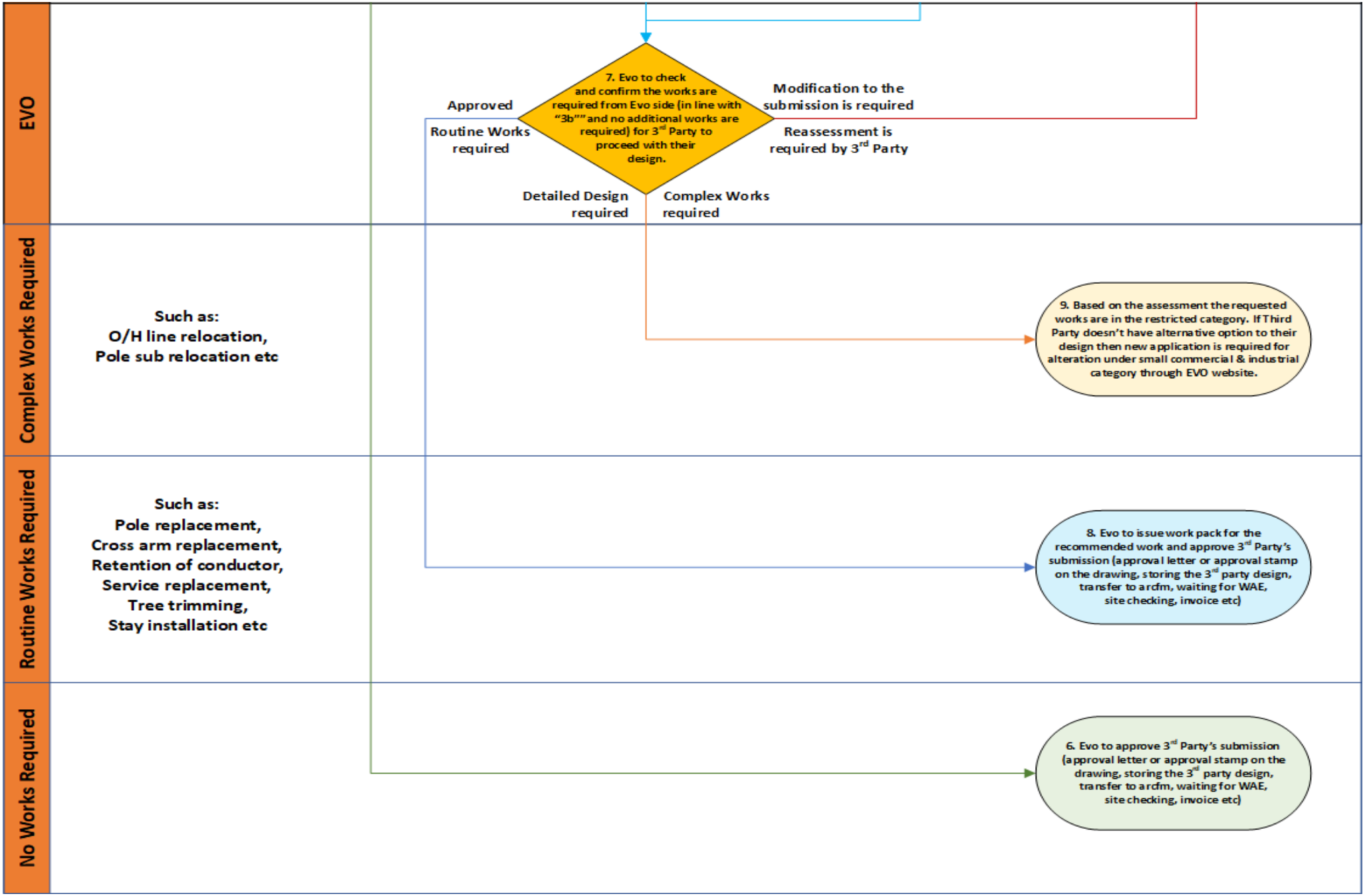
TABLE 10. DESIGN PROCESS

STEP	DESCRIPTION
1	Proponent to assess and/or survey Evoenergy's network (site-specific). Next step: 2
2	Proponent to produce their design & recommendations / request for Evoenergy's works or confirmation that no works are required by Evoenergy. Submission must include: (details to be worked out separately, TBA) Note: Evoenergy understand that one submission may include several poles, however the assessment and process steps are based on per pole. Next step: 3a / 3b / 3c
3	Evoenergy to check / assess Proponent's submission (per pole) based on following three conditions:
3a	No works are required by Evoenergy. Next step: 4
3b	Works are required by Evoenergy. Next step: 7

3c	Evoenergy to check Proponent's overall design in line with '3a' or '3b' that if any pole, span etc is missing in submission. Next step: 4 / 7
4	Evoenergy to check all poles (identified for no works) in their submission. If more information is required or works are required on poles (identified for no works) Next step: 5 If no works are required from Evoenergy side on poles (identified for no works) Next step: 6
5	Proponent to reassess and reproduce their design & recommendations / request for Evoenergy's works or confirmation that no works are required by Evoenergy. Submission must answer all the queries raised previously. Next step: 3a / 3b / 3c
6	Evoenergy to approve Proponent's submission per pole identified for no works; (approval process, invoicing process, WAE, storing the 3rd party design, transfer to ArcFM, details to be worked out separately, TBA)
7	Evoenergy will check all poles (identified for works) in their submission. If more information is required or modification to submission or different/additional works are required on poles (identified for works) Next step: 5 If routine works are required (as pole replacement, span realignment/retention, etc) on poles (identified for works) Next step: 8 If complex works are required (as removal of the pole substation, switchgear etc) on poles (identified for works) Next step: 9
8	Evoenergy to approve proponent's submission per pole identified for routine works; (work pack issue, approval process, invoicing process, WAE, storing the 3rd party design, transfer to ArcFM, details to be worked out separately, TBA)
9	Based on the assessment the requested works are in the restricted category. If a proponent does not have alternative option to their design, then new application is required for alteration under small commercial & industrial category through Evoenergy's website. Proponent / Third party to be advised to lodge the new application: Small connections (70kVA-3MVA)

INTEGRATION OF NON-EVOENERGY ASSETS ON THE EVOENERGY OVERHEAD DISTRIBUTION NETWORK




EVO
7. Evo to check and confirm the works are required from Evo side (in line with "3b"" and no additional works are required) for 3rd Party to proceed with their design.
Approved
Routine Works required
Modification to the submission is required
Reassessment is required by 3rd Party
Detailed Design required
Complex Works required
Complex Works Required
Such as:
O/H line relocation,
Pole sub relocation etc
9. Based on the assessment the requested works are in the restricted category. If Third Party doesn't have alternative option to their design then new application is required for alteration under small commercial & industrial category through EVO website.
Routine Works Required
Such as:
Pole replacement,
Cross arm replacement,
Retention of conductor,
Service replacement,
Tree trimming,
Stay installation etc
8. Evo to issue work pack for the recommended work and approve 3rd Party's submission (approval letter or approval stamp on the drawing, storing the 3rd party design, transfer to arcfm, waiting for WAE, site checking, invoice etc)
No Works Required
6. Evo to approve 3rd Party's submission (approval letter or approval stamp on the drawing, storing the 3rd party design, transfer to arcfm, waiting for WAE, site checking, invoice etc)

5. INSTALLATION AND INTEGRATION REQUIREMENTS

5.1 Integration Requirements for Evoenergy Access

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 High Voltage Live Line work practices to be applied. Live Line work practices require workers to insulate secondary points of contact. It is not appropriate for Live Line 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 pole platforms

Where cables are vertically installed on a structure, they must allow a portable pole 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 Requirements

5.2.1 General

Ground clearances for communications cables, structures attachment, clearances between communication cables/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 11. MINIMUM CLEARANCE REQUIREMENTS

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

5.2.2 Clearances to Evoenergy circuits

Electrical clearances detailed below must be maintained and all conductors, including insulated/covered conductors, must be treated as energised.

TABLE 12. CLEARANCES TO EVOENERGY CIRCUITS, CABLES, AND RF EQUIPMENT

CIRCUIT VOLTAGE	CONDUCTOR[1] / EQUIPMENT TYPE	MIN. CLEARANCE[2] TO CONDUCTORS / EQUIPMENT ON POLE	MIN. CLEARANCE[2] TO CONDUCTOR IN SPAN
22kV – 132 kV	N/A	Not permitted	Not permitted
11kV	Air break switch with bare conductor	3000mm	1800mm
11kV	Bare or covered conductors, equipment or fittings including covered drop leads and CCT	2200mm	1800mm
230/400V	Bare conductors, equipment or fittings including mains, service leads	1200mm	1200mm
230/400V	Insulated conductors, equipment or fittings including mains	600mm	600mm
230/400V	Insulated aerial service cables, equipment, or fittings	600mm	300mm
		References: 390-018, 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 nearest conductor to the top of the proposed installation.

5.2.3 Clearances to other third-party equipment

Where third-party equipment is installed on the structure the proponent of the proposed device must determine in consultation with the third-party hardware owner the required clearances. The clearances must comply with relevant Australian Standards including AS7000. The existing third-party hardware owner must be satisfied that the proponent's implemented policies and procedures control the hazards of the proposed installation.

All street light conductors must be at minimum regarded as bare conductors as outlined in this document.

5.2.4 Midspan clearances

Midspan clearances between communication cables and 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 comply with AS/NZS 7000. Should any location be identified where clearances are not compliant with the latest version of AS/NZS 7000, the Asset Manager must determine if any remediation work to the existing overhead conductors will provide suitable ground and mid-span separation clearances to allow installation of third-party equipment. Evoenergy may address clearance issues by the most suitable method, including conductor re-tensioning, service main alterations and the

replacement of the Evoenergy pole. Any proposed mains clearance remediation work is to be submitted to Evoenergy at the design stage for approval.

5.2.6 Service cables

Third-party equipment is prohibited from being installed on Evoenergy crossarms.

The minimum separation between service cables and conductive aerial communications conductors is as per Evoenergy drawing 390-018.

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

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 more than three (3) services originate from a pole, and/or the connections between service cables and the mains are congested, the aerial service cables may impact upon the desired BCC location.

5.3 Insulation Requirements

5.3.1 General

Regardless of the pole material, the installation of third-party equipment must not increase the risk of transferring a fault from one circuit to another the equipment must meet the minimum insulation levels between the device, structure and low voltage circuit as outlined below:

TABLE 13. MINIMUM INSULATION LEVELS

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

The 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 mitigation(s) to ensure minimum insulation level is met. The proposed mitigation(s) will be specific to the design and may include standoff insulators, insulating plates, double insulated conductors, and the use of conduits etc. Sound engineering rationale and testing must substantiate any claims of insulation performance.

In the case of the equipment being electrically connected to a low voltage source that is not on the same structure, the risks must be assessed and mitigation applied to limit risk to the connected low voltage circuit. For example, surge protection installed at the Third-party owned micro pillar.

5.3.2 Basic Insulation 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)

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

- 11 kV (BIL 6.6 kV)

For conductive poles, all metallic components of the third-party equipment including communication cable can be bonded to the pole along with LV neutral.

5.3.3 Metallic fittings

Evoenergy poles may have unearthed, uninsulated or single insulated fittings installed, which may become energised 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 energised. 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 third-party equipment will be installed on a structure with an 11kV assets attached, further hazard mitigation is required. The requirements identified below reduce the likelihood of a local fault occurrence at the installed structure:

- Inline and termination 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.
- BCC insulator pins must be approved by Evoenergy and be nominally rated at 22kV.

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 proponent is responsible for ensuring the proposed earthing does not introduce hazards to through assets and equipment owned by other parties, including Evoenergy, other utilities, third parties 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 only.

Any situation that does not comply with this earthing requirement must be made compliant 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:

- Non-conductive mechanical protection is required to be attached to the pole from a depth of 500mm below ground to 4 m above ground level and fixed at distances not exceeding 350mm.
- Connection pits in the ground near poles must be a minimum of 1500mm from pole.

5.5.2 Conduit

All conduits are to be medium or heavy-duty polymeric conduit to AS2053. The conduits must be suitably secured to the structure with a maximum dimension between fixings of 300mm. Concrete and composite must not be fixed by any method that penetrates the pole such as screws, nails, or anchors.

Mechanical protection (conduit, non-conductive 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.

Mechanical protection is required from 500mm below the highest electricity mains on the pole to a minimum of 2500mm below the lowest electricity mains on the pole.

5.6 Labelling and Identification

The proponent 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 and use text that is permanent, 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 comply with 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 Tables 15 and 16. 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, 30mm high, are required.
- Signs must be UV resistant.
- 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 1200mm 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 any equipment. Under no circumstances, may cabling/equipment installers drill any holes into concrete, steel, or composite poles.

On concrete and fibre reinforced cement poles, the communications cable must be attached in a manner agreed to by Evoenergy, such as a tensioned stainless-steel strap and buckle system around the pole.

TABLE 14. 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 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 a tensioned stainless-steel strap and buckle system.
Steel	Support bracket attached with a tensioned stainless-steel strap and buckle system if kingbolt hole not available. These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by a tensioned stainless-steel strap and buckle system if kingbolt hole is not available.
Concrete	Attached by a tensioned stainless-steel strap and buckle system if kingbolt hole is not available. These fixtures must be UV stabilised and not be affected by temperature cycle brittleness	Attached by a tensioned stainless-steel strap and buckle system. if 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.	All metallic equipment must be either hot dipped galvanised or treated by other Evoenergy approved methods to prevent corrosion. Zinc plated is not acceptable. The attachment brackets, clamps, ancillary hardware, and equipment

	• Lightning impulse withstand voltage of 95kV. • Flashover distance > 120mm. • Creepage distance > 230mm. • Cantilever strength of 6kN. 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.	must not interfere with existing installation and operation. 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 a tensioned stainless-steel strap and buckle system 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 15. EQUIPMENT ATTACHMENT METHODS – TIMBER POLES

ITEM TO BE INSTALLED	FIXING METHOD	FURTHER INFORMATION
Conduits up to 50mm	Full saddles and screws (half saddles and nailed full saddles are unacceptable)	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 tek screws	Saddles must be correctly sized to the conduit being installed. Fixings must not be more than 300mm apart.
Ground line cable guard	50mm 12G tek screws or Minimum 50mm M10 galvanised 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.

Isolation switch	Minimum M10 galvanised coach screws with a minimum 50mm of embedment into the pole.	
Signage	Galvanized or stainless tek screws, minimum 32mm length	

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 for the lifecycle of the installation. Design specific fixings are required to be identified and certified for each method of installation.

The sole use of 16mm a tensioned stainless-steel strap and buckle system for items that are deemed large, over 5kg or pose RF hazards is not suitable. Multiple 32mm a tensioned stainless-steel strap and buckle system or robust fabricated pole bands are required.

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

TABLE 16. EQUIPMENT ATTACHMENT METHODS - OTHER POLES

ITEM TO BE INSTALLED	FIXING METHOD	FURTHER INFORMATION
Conduits up to 50mm	16mm tensioned stainless-steel strap and buckle system	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 tensioned stainless-steel strap and buckle system	Spacing of fixings to be specified on drawings
Light and physically small items (i.e. isolation switch)	Minimum 2 x 16mm tensioned stainless-steel strap and buckle system	
Items over 5kg, large or hazardous items	Minimum 2 x 32mm tensioned stainless-steel strap and buckle system.	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

Signage	Metallic sign bracket attached to pole by tensioned stainless steel strap, sign attached to bracket by threaded fasteners	

5.8.3 Stainless steel strapping near existing conduits and cables

Stainless steel strapping securing any third-party equipment 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 Evoenergy assets to be de-energised to allow this practice.

5.9 Power Supply and Isolation switch for Third-party Equipment

5.9.1 Power supply

Where third-party equipment requires LV supply, an Evoenergy Supply Agreement will be required.

It is critical that the location of these LV connected devices and their associated isolation points are recorded in the Evoenergy network data system. The third-party power supply equipment must be located:

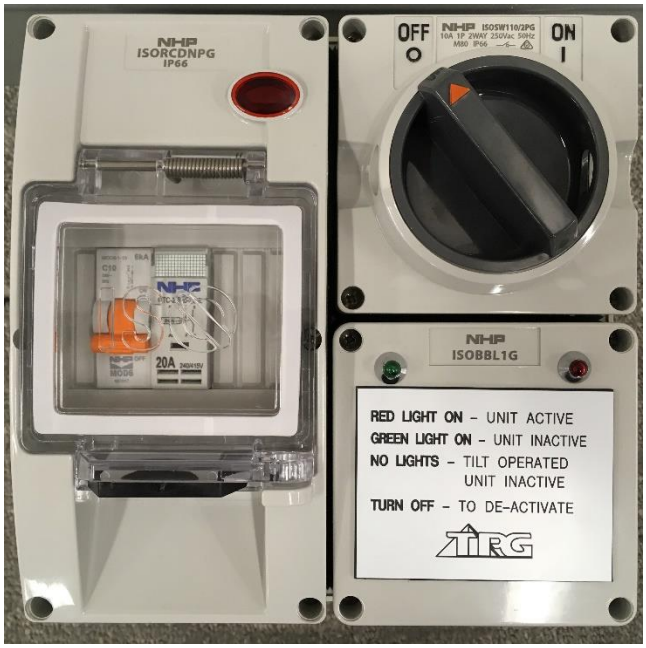
- Outside the vertical exclusion zone distance for the type of antenna installed
- A minimum of 3000mm from the bottom of the equipment and ground. If this cannot be achieved, the equipment may be installed lower, however, a clearance of 3000mm above the equipment is required.

5.9.2 Isolation switch Assembly

Evoenergy requires proponents to provide an isolation switch, which meets relevant Standards and is suitably weather and UV protected. 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. 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.

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 must be provided to Evoenergy for each installation.

5.11.2 Compliance to ARPANSA RF EME requirements

The proposed standard design must comply with 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 authorised persons with appropriate accreditation for working on Evoenergy network poles and with optic fibre cables.

The communications provider must ensure that all personnel working on Evoenergy poles for the attachment of third-party equipment 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.
- Safe to Climb procedures.

- Knowledge of the hazards associated with pole top work.
- Identification of condemned poles and defects.
- 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 Asset Alterations

Evoenergy reserves the right to change its Standard designs and structures at any time. In the situation where a third-party'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 equipment owner must carry out these works at their own cost.

Existing electricity and third part equipment, 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 assets to ensure suitability for the attachment of communication infrastructure. The proponent is responsible for all costs associated with Evoenergy altering their assets to BCC requirements (make ready work).

6.2.1 Third-Party equipment owner requested changes

At the request and expense of the equipment owner, Evoenergy may carry out relocation and modification work on structures. The third-party equipment owner may negotiate the relocation of other equipment, including communication equipment, which may be already attached to the pole. The owner will be required to achieve an agreement from all stakeholders affected.

Where no alternative structure exists, a proponent may propose a different overhead construction of an Evoenergy structure to be able to install their equipment. All costs will be incurred by the proponent.

6.2.2 Evoenergy initiated network changes

Evoenergy reserves the right to change its structure at any time. In the situation where a proponent's equipment is attached to a structure which needs to be modified, the proponent must be notified and has the responsibility to disassemble and remove the equipment. 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.

6.2.3 Multiple antenna

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

6.2.4 Pole replacements

The agreements between various telecommunication equipment 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 owners' equipment and cabling. The communication equipment owner will make arrangements for the relocation of their equipment 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 equipment 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 equipment owners and Evoenergy set out the process to be followed by both Evoenergy staff and the various communication equipment owners' staff.

6.2.5 Change of pole ownership

Should Evoenergy choose to remove an overhead section of mains and replace it with an underground section, the third-party has two options:

- Asset owner may negotiate ownership of the pole.
- Augment cables underground.
- Mount equipment at another location.

Any cost associated with the changes will be for the account of the third-party equipment owner.

Any upgrading of the third-party network proposed by the equipment 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.

6.2.6 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 third-party cables. All costs are to be borne by the cable owner in the case where any corrective action is required to any infrastructure following the installation of communications cables.

6.3 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.

6.4 Network Records

The communication cable owner must provide GIS data in 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.

6.5 Vegetation Trimming

Evoenergy maintenance crews do not make allowance for communication cables in the extent of the vegetation trimming undertaken. Any requirement by communications infrastructure owners for the trimming of vegetation, 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
3.0	Major update to chapter 4	N. Azizi; 23 Jan 2025

DOCUMENT CONTROL

DOCUMENT OWNER	DOCUMENT CUSTODIAN	PUBLISH DATE	REVIEW DATE
Group Manager Strategy and Operations	Principal Engineer Standards and Specifications	13/02/2025	13/02/2028

APPENDIX A – SIGNAGE

APPENDIX B – DRAWING 390-018

Link to the Drawing 390-018 on Evoenergy Website