Code of Practice on electrical safety for work on or near high voltage electrical apparatus

The Blue Book 2022

VICTORIA State Government

energysafe VICTORIA

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Note to users

Victoria's statutory electrical safety requirements are set out in the *Electricity Safety Act 1998* (ESA) and associated regulations.

This Code of Practice (Code) has been developed by the Victorian Electrical Safety Committee (VESC), which has been established under Section 8 of the *Energy Safe Victoria Act 2005*.

Employers, employees, self-employed persons and all persons (including companies) conducting a business who work, employ or engage persons to work on, or near high voltage (HV) electrical apparatus are required to be appropriately trained in accordance with this Code. They should be aware of its requirements and comply with the provisions of the Code that apply to the work that is being carried out.

This Code should be read in conjunction with the ESA and the regulations made under that ESA in particular, the *Electricity Safety (General) Regulations 2019*.

Disclaimer

This publication contains work health and safety information. It may cover some of your obligations under various legislation that is administered by Energy Safe Victoria or WorkSafe Victoria. To ensure you comply with your legal obligations, you must refer to the appropriate legislation. The latest laws can be accessed by visiting the Victorian legislation website legislation.vic.gov.au.

This publication does not represent a comprehensive statement of the law that applies to high voltage electrical installations or work on or near high voltage electrical apparatus and is not a substitute for legal advice. You should seek independent legal advice if you require assistance on the application of the law to your situation.

Electrical Safety Committee members at the time of publication

Members	Company
Loc Vuong	Energy Safe Victoria
Don Clancy	Energy Safe Victoria
James Webster	WorkSafe Victoria
David Huntley (Chairperson)	Melbourne Water
Nic Castle	Victorian Customer Electrical Safety Committee (VCESC)
Adam Beel	United Energy, Powercor and CitiPower
Dan Ploegmakers	AusNet Services Distribution
Martin Legg	AusNet Services Transmission
Stephen Dargan	Energy Australia
Andrew Plozza	Energy Australia
Ben Schmidt	Electrical Trades Union (ETU)
Michael Weekes	National Electrical and Communications Association (NECA)
Ben Rotin	Yarra Trams

Technical support

Members	Company
David Bibby	Energy Safe Victoria
Rob Oldfield	Energy Safe Victoria
Barry Heywood	Energy Safe Victoria
Mark Simms	Energy Safe Victoria
Justin Sordello	Electrical Trades Union (ETU)
Ben Li	AusNet Services
Patrick Curley	Melbourne Water
Bill Eastoe	Metro Trains Melbourne
Neale Wardley	Optec Training

Further information

Anyone seeking additional information on HV safety should contact:

- Their employer
- The relevant HV asset owner
- The relevant railway and tramway operators (if applicable)
- The relevant generation, transmission or distribution companies (if applicable)
- Energy Safe Victoria

For general workplace health and safety advice, contact:

- WorkSafe's Advisory Service on 1800 136 089

Suggestions or comments regarding possible amendments should be addressed to:

The Blue Book
Energy Safe Victoria
PO Box 262
Collins Street West Vic 8007
03 9203 9700
info@energysafe.vic.gov.au
esv.vic.gov.au

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Purpose

1.

Victoria's workplace health and safety laws place duties on employers to ensure, so far as is reasonably practicable, a working environment that is safe and without risks to health and that persons other than employees are not exposed to risks to their health or safety arising from the conduct of the employer.

Employees also have an obligation to take reasonable care for their own health and safety and the health and safety of persons who may be affected by the employee's acts or omissions at a workplace.

The purpose of this Code is to provide practical guidance in maintaining safe work systems in relation to the control of risks associated with work on or near, or in the vicinity of, HV electrical apparatus in Victoria, which will assist businesses and workers in meeting their workplace health and safety duties.

Scope and references

2.

2.1 Scope

This Code of Practice sets out:

a) key safety principles; and

b) minimum electrical safety requirements required to comply with those principles.

This Code of Practice shall apply to all work on, near or in the vicinity of HV electrical apparatus that is capable of being energised and is part of:

- an electricity supply network operated or controlled by a major electricity company (MEC),
- an electricity supply network operated or controlled by an owner or operator of a railway (including tramway), or
- a high voltage electrical installation or complex electrical installation.

This code also addresses matters relating to work on or near low voltage MEC's electrical apparatus that is near or in the vicinity of high voltage electrical apparatus.

For work on low voltage electrical installation assets, refer to the *Electricity Safety (General) Regulations 2019*.

This Code sets minimum requirements that should inform approved workplace procedures. These approved procedures may utilise other published standards and guidelines to enhance the level of safety.

In order to comply with the electrical safety requirements of this Code, an organisation shall either:

a) apply the requirements contained within this Code; or

b) vary the requirements by:

1. completing a hazard identification and risk assessment, and
2. ensure the varied requirements are equal to or better than the minimum requirements of this Code, and
3. document the process, and
4. advise ESV in writing of the outcomes and reasons for variation(s) at least 14 days before implementing the variation.

Figure 1 Hierarchy of electrical safety documentation.

2.2 Referenced documents

The following documents are referred to in the text of this Code of Practice in such a way that some or all of their content constitutes requirements of this document:

AS 1319	Safety signs for the occupational environment
AS1418.10	Cranes, hoists and winches – mobile elevating work platforms
AS 5804.1	High-Voltage live working – general
ENA	EMF Management Handbook
ENA NENS 04	National Guidelines for Safe Approach Distances to Electrical and Mechanical Apparatus
ICNIRP Guidelines 2010	For limiting exposure to time-varying electric and magnetic fields (1HZ – 100 kHZ)
IEEE C95.1-2019	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

2.3 Definitions

For the purposes of this Code, the following definitions *shall* apply:

1. **Access authority** means any form of authorisation that allows access to work on or near, or testing of electrical apparatus.

   Examples used in this Code are:

   — **Electrical access permit** means a form of authorisation that allows access to, and work upon, electrical apparatus

   — **Sanction for testing** means a form of authorisation to allow energisation of electrical apparatus for testing purposes

   — **Permit to work adjacent to Network assets** means a document providing *written* permission to persons, other than employees or contractors of the *network operator*, to work within *safe approach distances* or *near* the *network operator's electrical apparatus*

2. **Alive** see **Live**.

3. **Appliance** means any instrument or device designed for use near or in direct contact with *live* HV conductors.

4. **Approved** means having appropriate *organisation* endorsement in writing for a specific function.

5. **Approved training standard** means an *approved* standard that meets the National Competency Standards.

6. **Authorised person** means a person with technical knowledge or sufficient experience who has been *approved*, or has the delegated authority to act on behalf of the *organisation*, to perform the duty concerned.

   Examples used in this Code are:

   - authorised applicant means an *approved* person who has been assessed as *competent* against an *approved* training standard to make applications for specified types of *access authorities*
   - authorised electrical operator means an *approved* person who has been assessed as *competent* against an *approved* training standard and authorised by the owner of the *HV* asset to carry out switching operations on *HV electrical apparatus*
   - authorised *live HV* worker means an *approved* person who has been assessed as Competent against an *approved* training standard to carry out particular work on or *near* exposed, *live HV* conductors
   - authorised *recipient* means an *approved* person who has been assessed as *competent* against an *approved* training standard to receive an electrical access permit
   - authorised tester means an authorised *recipient* who has been assessed as *competent* against an *approved* training standard and is *approved* to receive sanction for testing.

7. **Authority to work in the vicinity of electrical apparatus** means a form of authorisation to be used where applicable to allow work in the *vicinity* of *electrical apparatus*.

8. **Bonded** means connected together in such a manner as to ensure that all connected parts are maintained at the same potential.

9. **Cable** means an Insulated *conductor* or two or more such *conductors* laid together, whether with or without fillings, reinforcements, or protective coverings.

10. **Circuit breaker** means a device capable of making, carrying, and breaking currents under normal and abnormal circuit conditions, such as short circuit.

11. **Competent** means having the skills, knowledge and attributes that a person acquires, whether through training, qualifications or experience (or a combination of these) to correctly complete a task.

12. **Complex electrical installation** means an electrical installation that:

    a) has an installed generation capacity of equal to or greater than 1000 kVA: or

    b) is an electric line that is on land that is not owned or leased by the owner or operator of the electric line.

13. **Conductor** means a wire or form of metal designed for carrying electric current.

14. **Connected** means joined together by a *conductor* capable of carrying electrical current for its required function or purpose by either physically clamping or bolting conductors together or closing a circuit breaker, switch or similar device.

15. **De-energised** means not connected to any source of electrical supply but not necessarily Isolated.

16. **Discharged** means having been connected to the general mass of earth in such a manner as to remove any residual electrical energy in a *conductor*.

17. **Distribution company** means a person who is the holder of a licence to distribute electricity.

18. **Earthed** means directly electrically connected to the general mass of earth so as to ensure and maintain the effective dissipation of electrical energy.

19. **Earthing device** means an *approved* device used for the earthing of *conductors*.

20. **Effective supervision**, in relation to work, means:

    a) being present at the site of the work to the extent necessary to ensure that the work is being correctly performed and carried out in accordance with (as the case requires) the Act, the Regulations, this Code and *approved procedures*; and

    b) being aware of the details of the work being performed and giving detailed instructions and directions with respect to the work;

21. **Electrical apparatus** means any electrical equipment that is *live* or capable of becoming *live*, including overhead lines and underground *cables*.

22. **Electrical Installation** means electrical equipment that is fixed or to be fixed in, on, under or over any land but does not include a part of a supply network:

    a) of a railway; or

    b) owned or operated by a major electricity company.

23. **Enclosure** means any secured area that restricts access to *electrical apparatus*.

24. **Energised** means connected to a source of electrical supply.

25. **Equipotential work zone** means a work zone (area, site) where all equipment is interconnected by hoppers, earths, earth rods, and/or earth grids that will provide acceptable potential differences between all parts of the work zone under worst-case conditions of energisation.

26. **ESV** means Energy Safe Victoria.

27. **Exposed Conductor** means an electrical conductor, approach to which is not prevented by a barrier of rigid material or by insulation that is adequate under a relevant Australian Standard specification for the voltage concerned.

28. **High voltage or HV** means a nominal voltage exceeding 1000 volts AC or exceeding 1500 volts DC.

29. **High voltage or HV electrical apparatus** means electrical apparatus that is required to operate at HV.

    This definition shall not include the secondary wiring of instrument transformers or control devices that may operate on occasions above 1000 volts.

30. **HV customer** means any user of electricity (excluding the licensed generators, transmission and distribution companies) directly connected at high voltage to the transmission or distribution networks.

31. **Instructed person** means a person effectively supervised by an authorised person to enable them to avoid the dangers that electricity may create.

32. **Insulated mobile plant** means mobile plant approved and tested for carrying out work on or near electrical apparatus.

33. **Insulated** means separated from adjoining conducting material by a non-conducting substance that provides resistance to the passage of current, or to disruptive discharges through or over the surface of the substance at the operating voltage, and to mitigate the danger of shock or injurious leakage of current.

34. **Insulating stick** means a stick approved and tested for carrying out operating and live work on live electrical apparatus.

35. **Isolated** means not connected to any possible sources of electricity supply by means that will prevent unintentional re-energisation of the electrical apparatus and which is assessed as a suitable step in the process of making safe for access purposes.

36. **Live** means energised or subject to hazardous induced or capacitive voltages.

37. **Live work** means all work performed on components of electrical apparatus that are not isolated, proved de-energised and earthed.

38. **Low voltage or LV** means nominal voltage exceeding 50V AC or 120V DC but not exceeding 1000V AC or 1500V DC.

39. **Major Electricity Company** means:

    a) a *distribution company*; or

    b) a *transmission company*,

    but does not include a distribution company or a transmission company, or a class of distribution company or transmission company, declared under section 3A of the *Electricity Safety Act 1998* not to be a major electricity company.

40. **Mobile plant** means cranes, elevating *work* platforms, tip trucks or similar plant, any equipment fitted with a jib or boom and any device capable of raising or lowering a load.

    Mobile plant can only be considered as a vehicle when in the normal travelling mode and not in the working mode when determining safe approach distances.

    Helicopters used for barehand live-line work are excluded from this definition of mobile plant.

41. **Near** means a situation where there is a reasonable possibility of a person, either directly or through any conducting medium, coming within the relevant safe approach distances.

42. **Network asset** means any asset that is owned or operated by a network operator for the purposes of generating, transmitting, distributing, or supplying electricity.

43. **Network operator** means the owner, controller, or operator of an electricity supply network.

44. **No Go Zone rules** means the No Go Zone rules as published or amended from time to time on the Energy Safe Victoria website which includes the No Go Zone rules set out for the following assets and activities:

    - Distribution overhead powerlines
    - Transmission overhead powerlines
    - Railway overhead powerlines
    - Tramway overhead powerlines
    - Underground assets
    - Scaffolding
    - Spotters
    - Building *near* powerlines
    - Working *near* powerlines for non-electrical workers.

45. **Nominal voltage** means the AC (phase to phase RMS) or DC voltage by which a system of supply is designated.

46. **Not electrically connected** means disconnected from all sources of electricity supply by the removal or absence of conductors.

47. **Operating Authority** means an organisation or an authorised person who is responsible for operational control of the electrical apparatus concerned.

48. **Ordinary person** means a person without sufficient training or experience to enable them to avoid the dangers that electrical apparatus may create.

    Note: Ordinary person in this Code refers to a person under the control of a network operator, generator or HV customer.

49. **Organisation** means a business, enterprise, company, or corporation.

50. **Out of commission** means the condition of electrical apparatus that is not electrically connected and declared to be so in writing to the operating authority responsible for the electrical apparatus.

51. **Personal protective equipment or PPE** means clothing, equipment and/or substances which when worn or correctly used, are intended to protect parts or all of the body from accidental injury or disease at work or in the workplace.

52. **Procedure** means the documentation of a systematic series of actions (or activities) directed to achieve a desired result.

53. **Recipient** means a person who has signed on an access authority.

54. **Recipient in charge** means an authorised recipient to whom an access authority has been issued and who is in charge of all recipients signed onto that access authority.

55. **Resumption of an access authority** means the re-commencement of all work under an access authority that had been suspended (also referred to as resuming an access authority).

56. **Safe approach distance or SAD** means the minimum distance in air from exposed conductors that shall be maintained by a person, vehicle, or mobile plant (including its load, controlling ropes and any other accessories) when approaching electrical apparatus other than for work in accordance with an access authority.

57. **Safety observer** means a person with sufficient knowledge of the task being performed and competent for the duty of observing and warning against unsafe approach to electrical apparatus.

58. **Shall** is to be interpreted as mandatory.

59. **Should** is to be interpreted as advisory or discretionary.

60. **Station** means a defined and enclosed or fenced space in which high voltage supply is generated, converted, controlled, or transformed.

61. **Suspension of an access authority** means the cessation of all work under an issued access authority where all persons working under that authority have signed off.

62. **Tester-in-charge** means an authorised tester to whom a sanction for testing has been issued and who is in charge of all members of the work party signed on to that sanction for testing.

63. **The Act** means the *Electricity Safety Act 1998* (Vic).

64. **The Regulations** means the *Electricity Safety (General) Regulations 2019*.

65. **Transmission company** means a person who is the holder of a licence to transmit electricity.

66. **Vehicle** means a truck, car, utility, or other general-purpose conveyance used for the carriage of persons or goods (see also mobile plant).

67. **Vicinity** means a situation where it is unlikely that a person will, either directly or through any conducting medium (e.g. via mobile plant), come within the relevant safe approach distances.

68. **Work** means a task or tasks to be undertaken on, near or in the vicinity of electrical components or apparatus.

69. **Written or in writing** means recorded on paper or in electronic form.

General safety requirements

3.

Principle: An organisation shall have procedures relevant to providing a comprehensive safe working environment.

3.1 Hazard identification, risk assessment and control

An organisation's safe system of work shall include appropriate risk management processes to ensure hazards associated with work within safe approach distances or near electrical apparatus are identified, assessed and controlled.

Prior to working on or near any electrical apparatus, the persons performing the work shall apply the safe system of work to identify, assess and control the associated hazards and risks.

The hazard identification and risk assessment process shall be documented, regularly reviewed and audited to ensure compliance.

3.2 First aid

Persons who are required to work where there is a risk of injury from live electrical conductors shall be given appropriate first aid training on commencement and thereafter subject to annual competency assessment.

Training shall cover skills in cardio-pulmonary resuscitation, shock, burns and their role in incident assessment and management in accordance with relevant National Competency Standard Units.

3.3 Communications

All communications relating to the operation of, or access to, electrical apparatus shall be clear and definite. Electrical apparatus shall be referred to by name and sufficient detail shall be given to enable positive identification. Verbal instructions and statements issued over phones or radios shall be confirmed by repeating back to avoid misunderstanding.

3.4 Forms

As a minimum, forms shall contain the information as prescribed in Appendix A.

Note: Appendix B provides examples of the forms described in Appendix A.

3.5 Use and testing of operating and live-line equipment

All sticks, gloves, sleeves, mats, protective barriers or covers, earthing trucks, portable earthing devices, insulating platforms, insulated elevating work platforms or other equipment used for operating high voltage electrical apparatus or performing live-line work shall be approved for the particular application.

All equipment including personal protective equipment used on HV electrical apparatus and that requires regular testing to prove the effectiveness of insulation, shall be tested at intervals as specified in approved procedures and marked to show the date of the next routine test. Equipment shall not be used after the marked test date.

Visual inspection shall be made for physical damage or contamination immediately prior to use.

Gloves, sleeves, mats and protective barriers or covers used for operating HV electrical apparatus or for performing live HV work shall not be relied upon as the sole means of protection, but will complement safe work practices and procedures aimed at mitigating risk from work on or associated with HV electrical apparatus.

3.6 Insulating sticks

Insulating sticks shall have a length that provides appropriate insulation from live parts and enables a person using the stick to maintain the applicable safe approach distance at all times. (Refer to 6.2) When an insulating stick is to be used in wet conditions consideration shall be given to the potential for hazardous surface leakage currents.

3.7 Labelling of electrical apparatus

For the purposes of identification and description, electrical apparatus shall, wherever practicable, be clearly labelled.

3.8 Ladders

Conductive ladders (including wire reinforced) shall not be used on, near or in the vicinity of, exposed live electrical apparatus, unless in accordance with approved procedures.

3.9 Personal protective equipment

All persons who may be exposed to possible electric shock, arc flash or other injury from electrical apparatus shall use approved personal protective equipment.

Any person or organisation shall risk assess the possibility of exposure to electrical shock, arc flash and other injuries which may occur from a fault on any electrical apparatus under their control.

Personal protective equipment used for performing live electrical work shall not be relied upon as the sole means of protection and shall be complemented by suitable tools, equipment and safe systems of work.

Personal protective equipment shall include clothing with wrist to ankle cover and fully enclosed footwear.

Additional personal protective equipment shall be used in accordance with the type of work and the risks involved.

All personal protective equipment and apparel shall comply with relevant published standards.

General PPE requirements

a) Working on, near or in the vicinity of electrical apparatus requires approved safety:

1. headwear, and
2. natural fibre or alternative arc flash protective clothing, and
3. footwear.

b) Operating electrical apparatus requires approved safety:

1. headwear, and
2. footwear, and
3. natural fibre or alternative arc flash protective clothing, and
4. hand protection, and
5. face/eye protection.

c) The person responsible for supervising visitors whose movements are confined to normal access ways, (e.g. roads, paths, and stairs) in a station, shall ensure the visitors utilise the following approved items:

1. headwear, and
2. fully enclosed footwear, and
3. ankle to wrist clothing.

3.10 Tapes and other measuring devices

Only approved non-conducting tapes and rulers shall be used in the vicinity of live electrical apparatus.

Conductive tapes shall not be used near exposed live electrical apparatus unless approved for use in accordance with approved procedures.

3.11 Use of safety observers

A safety observer shall be posted where, after a risk assessment, it is considered that a person, equipment or mobile plant might inadvertently infringe safe approach distances.

Under no circumstances shall the safety observer be diverted to other work while the possibility of infringing the safe approach distances exists.

A person acting as a safety observer shall:

a) understand the task, *work* process and sequence of work, and

b) have the authority to temporarily suspend the relevant work at any time, and

c) be specifically instructed in the duties and workplace hazards applicable, and

d) be positioned to effectively observe and immediately communicate with persons performing the work, and

e) monitor the work and warn against potential infringement of Safe approach distances, and

f) be capable of providing assistance in the case of emergency as well as being competent to provide first aid including the performance of electrical rescue and cardiopulmonary resuscitation, as required.

3.12 Fit state for work

Alcohol, drugs and diminished mental alertness or physical condition of a person may impede their ability to work safely in an electrical environment.

Persons who are required to work on, near or in the vicinity of electrical apparatus shall not consume or be under the influence of alcohol or drugs that diminish work skills during work hours

This shall be taken to include meal or rest breaks.

Appropriate policies shall be implemented by organisations to ensure all employees, contractors and agents are in a fit state for work.

3.13 Work within electric and magnetic fields

3.13.1 General

Electric and magnetic fields (EMFs) may be present in workplaces.

Where EMFs are of high intensity, appropriate measures must be undertaken to protect persons from any adverse effects, such as:

- irritating micro-shocks, due to electric discharge effects of strong electric fields, and
- possible biological effects associated with extremely strong electric and magnetic fields.

Prior to entering areas of strong electric and magnetic fields, persons fitted with implanted or body-worn medical devices, including cardiac pacemakers, metallic implants, insulin pumps, or persons who are pregnant, should consult their medical professionals and the relevant organisational officer for information on possible electromagnetic interference with their medical devices or any possible impacts to their health.

Advisory occupational exposure limits provided in ICNIRP Guidelines and the IEEE C95.1 Standard are detailed in sections 3.13.2 and 3.13.3.

Organisations should establish appropriate exposure limits in accordance with industry guidelines e.g. Energy Network Australia (ENA) EMF Management Handbook.

3.13.2 Electric fields (50 Hz)

Advisory occupational exposure limits for electric fields based on abovementioned guidelines are as follows:

- Unrestricted: Less than 10 kV/m
- Maximum permissible exposure: 20 kV/m
- Alternative controls: Greater than 20kV/m

For work situations with field strengths greater than 20kV/m, alternative controls shall be used. Such controls may include:

- restricted access,
- wearing appropriately earthed or bonded conducting suits,
- the screening and earthing of vehicles,
- the screening of work platforms and access ways, and
- de-energising adjacent electrical apparatus.

The person responsible for planning the work shall include details of any appropriate measures in the work instructions.

3.13.3 Magnetic fields

Advisory occupational exposure to magnetic fields are as follows:

a) Magnetic fields (50 Hz)

- General exposure: 1 milliTesla (10,000 milliGauss)
- Exposure to head and torso: 2.71 milliTesla (27,100 milliGauss)
- Exposure to arms and legs: 75.8 milliTesla (758,000 milliGauss)

b) Static or direct current (DC) magnetic fields

The 2009 International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for limits 1, 2, 3 (see notes below) of occupational exposure to static or DC magnetic fields are as follows:

- Head and trunk: 2000 milliTesla
- Limbs: 8000 milliTesla

Notes:

1. Caution: because of potential indirect adverse effects, ICNIRP recognises that practical policies need to be implemented to prevent inadvertent harmful exposure of persons with implanted electronic medical devices and implants containing ferromagnetic material. This requirement may lead to much lower restriction levels such as 0.5 milliTesla.
2. For specific work applications, exposure up to 8000 milliTesla can be justified if the environment is controlled and appropriate work practices are implemented to control movement-induced effects.
3. When magnetic flux densities exceed 5 milliTesla (static or DC magnetic fields) precautions should be taken to prevent hazards from flying metallic objects.

3.14 Victim rescue

Persons shall be trained in victim rescue techniques appropriate to the job function being performed.

Before performing victim rescue on or near live exposed conductors, the rescuer shall consider all hazards and methods to control the hazards to ensure the rescue can be performed safely.

Such controls may include de-energisation of the circuit, the use of Insulated sticks and maintaining SAD during the rescue.

Victim rescue assessment and/or instruction shall be undertaken by relevant personnel in accordance with appropriate National Competency Standard Units.

3.15 Arc flash hazard management

The risk of arc flash shall be assessed and managed as far as reasonably practicable.

Arc flash hazard management should include an arc flash assessment or study that takes into consideration the equipment and human interaction with the equipment.

This human interaction may include, live work, live switching or racking, fault finding, and installing isolations or earths.

In addition to the degree of interaction with the equipment, consideration shall be given to the risk posed to persons in the vicinity of the equipment.

Risk control measures shall be implemented, so far as is reasonably practicable, having regard to the hierarchy of controls.

Risk control measures shall be reviewed and, if necessary, revised whenever there is an indication the risks have changed, or risk control measures are inadequate.

Guidance on this topic can be found in the Energy Safe Victoria/ WorkSafe Victoria Guideline 'Arc flash hazard management'.[1]

1 Go to esv.vic.gov.au/sites/default/files/2022-12/Guideline_ArcFlashHazardManagement_July2022.pdf.

Training and authorisation

4.

Principle: persons working on or near electrical apparatus shall have appropriate training, authorisation and currency of competency for the duty to be performed.

4.1 General

An organisation's safe system of work shall include appropriate training, competency and authorisations for all persons working on or near electrical apparatus.

A person's authorisation shall be current for the task being performed.

Competency of persons holding authorisations shall be assessed at no more than a three-yearly interval and training shall be given to restore competency where appropriate.

A person who is not authorised may perform a task that normally requires authorisation or approval without that authorisation or approval (e.g. HV operating), only when that task is performed under a training program and the person is effectively supervised by a person with the relevant authorisation or as specified in section 7.1 Persons authorised to operate high voltage electrical apparatus.

4.2 Approved training standard

4.2.1 Introduction

Training shall consist of identified learning outcomes that are knowledge, skill (task), and attitude based and, where available, reflect National Competency Standards.

a) Assessment criteria shall be established and documented for each learning outcome

b) The assessment method shall be documented in detail

c) There shall be a documented process for recognition of prior learning, and

d) Persons undergoing training must be assessed for competency against the learning outcomes, and such assessment must be documented.

4.2.2 Learning outcomes

Learning outcomes for training shall include, but are not be limited to, the following:

a) working knowledge of the relevant sections of this Code,

b) knowledge of communication processes required,

c) knowledge of the relevant approved procedures,

d) a knowledge of the consequences of any physical tasks performed,

e) a working knowledge and skill associated with the relevant:

1. forms and documentation
2. risk assessment
3. work practices
4. equipment and plant

f) demonstration of acquired knowledge through practical exercises, and

g) a clear understanding of the responsibilities associated with relevant authorisations e.g. the range of responsibilities associated with a recipient in charge, and other training requirements as specified in this Code.

4.2.3 Training courses

Organisations shall confirm and be satisfied that training courses and training service providers meet their recognised needs.

Where available, training shall be consistent with National Competency Standards.

4.2.4 Records

Organisations shall develop and maintain an appropriate management system for recording all training and authorisations.

Entry to enclosures or work in the vicinity of electrical apparatus

5.

Principle: Entry to enclosures that contain electrical apparatus or work in the vicinity of electrical apparatus shall be carried out in a safe manner.

Control measures to mitigate the risk of injuries, significant property damage, fires and significant reduction in electrical safety shall be consistent with the identified risk and work performed

5.1 General

Entry to enclosures and/or work in the vicinity of electrical apparatus shall be performed in a safe manner.

The control measures implemented shall minimise the risks involved and may include:

a) defining the work area,

b) defining access routes,

c) isolating and earthing the electrical apparatus,

d) the use of barriers and signs,

e) the use of approved covering,

f) the use of Safety observers, and

g) the issue of the appropriate access authority or authority to work in the vicinity of electrical apparatus.

5.2 Entry into enclosures containing electrical apparatus

5.2.1 General

Entry into enclosures containing electrical apparatus shall be performed under approved procedures.

5.2.2 Entry by authorised, instructed and ordinary persons.

a) Authorised

Where authorised persons are required to enter enclosures containing electrical apparatus, the authorised person shall ensure the entry is performed safely and site specific precautions are taken.

These precautions may include but are not limited to:

- Site work permit system
- Site safe work system
- Job safety analysis

b) Instructed

Where instructed persons are required to enter enclosures containing electrical apparatus, the instructed person, the authorised person, the person in charge of the site and the person in charge of the electrical apparatus shall ensure entry is performed safely and specific precautions are taken.

These precautions may include but are not limited to:

- HV awareness training
- Site work permit system
- Site safe work system
- Job safety analysis
- The provision of specific instructions as to the location of the enclosed or exposed conductors or terminations or apparatus.

c) Ordinary persons

Where ordinary persons are required to enter enclosures containing electrical apparatus, entry shall be performed in accordance with approved precautions and they shall be directly supervised by an authorised person.

These precautions may include but not are limited to:

- Site work permit system
- Site safe work system
- Job safety analysis
- The provision of specific instructions as to the location of the enclosed or exposed conductors or terminations or apparatus.

5.2.3 Supervision of workers in enclosures

a) Authorised

Where authorised persons are required to work in the vicinity of electrical apparatus, the authorised person shall ensure that the work is performed safely and that site specific precautions are taken.

b) Instructed

Where instructed persons are required to work in the vicinity of electrical apparatus, the instructed person, the authorised person, the person in charge of the site and the person in charge of the electrical apparatus shall all cooperate to ensure that the work is performed safely, and that specific precautions are taken.

An instructed person shall be identified as such to those responsible for their supervision.

c) Ordinary persons

Where ordinary persons are required to work in the vicinity of electrical apparatus, ordinary persons shall be directly supervised by an authorised person.

5.3 Work in the vicinity of electrical apparatus

5.3.1 General

Work in the vicinity of electrical apparatus shall be performed either:

a) using specific written work instructions; or

b) approved procedures shall apply in conjunction with the use of instructed or authorised persons.

Note: See appendix B4 for sample vicinity Authority form.

5.4 Use of mobile plant

Mobile plant shall only be used in the vicinity of live conductors and/or electrical apparatus after precautions appropriate to the particular circumstances have been considered and action taken to control the associated hazards and risks.

The control measures to be considered within a risk assessment should include:

a) isolating and earthing electrical apparatus,

b) positioning the mobile plant such that the safe approach distance can be maintained in all circumstances,

c) the use of safety observers, barriers and signs,

d) the use of other precautions such as physical restrictions or control devices in conjunction with barriers,

e) the suppression of auto-reclose,

f) the alteration of protection and control settings,

g) de-energising the electrical apparatus, and

h) mechanical limitation devices options on mobile plant.

Mobile plant and vehicles, while travelling inside a high voltage enclosure, e.g. zone substation, shall be fitted with a trailing earthing conductor to protect against the hazards presented by induced voltages.

If mobile plant comes near live electrical apparatus the mobile plant shall be earthed. (Refer to section 6 Approach to electrical apparatus). This shall be achieved by an approved earthing system.

When mobile plant is operated from outside the mobile plant, precautions shall be taken to protect the operator from hazardous step and touch potentials. No person other than the mobile plant operator shall touch the mobile plant while in operation.

Where mobile plant (e.g. an elevating work platform) is not fully insulated, the insulation level of each part shall be labelled in accordance with the appropriate standard (e.g. AS 1418.10) and the following permanent sign shall be fixed at all plant operator controls.

DANGER — BEWARE OF POWER LINES

This appliance is not fully insulated.
Do not permit any uninsulated part of this appliance to be in close proximity to live conductors.

Insulated mobile plant shall be tested at specific intervals as per approved procedures and marked to show the date of the next routine test.

5.5 Handling objects/loads

When objects are being handled manually or by mechanical equipment, care shall be exercised to prevent the objects or the mechanical equipment infringing safe approach distances.

For manual handling, appropriate work methods and an appropriate number of persons shall be used to maintain safe approach distances.

For mechanical handling, where there is a risk of infringing the safe approach distances to electrical conductors, the movement of loads shall be controlled by means of approved non-conducting ropes or other approved means. (Refer to section 6 Approach to electrical apparatus)

No person shall contact the load or any attached conducting objects until the risk of safe approach distances infringement is removed. Only the plant operator shall contact the mobile plant controls in accordance with safe work procedures. (Refer to section 5.4 Use of mobile plant)

5.6 Erection or dismantling of overhead conductors

When overhead conductors (other than insulated or covered conductors) are being erected, dismantled, or replaced, conductors being moved shall be earthed by an approved device before work commences and shall remain earthed until the work is completed.

A conductor that is erected shall be earthed before it is lifted from the ground.

Consideration shall be given and documented as to the use of appropriate restraining devices to control such conductors when they are being moved.

When earthing is considered to be impracticable, or a safer control measure may be appropriate, alternative safety precautions shall be applied and subject to the following control:

a) they are applied to a specific task or process which has been subject to a formal risk assessment carried out in advance of the work, using a consultative process with subject matter experts, and

b) they are documented as an approved procedure specific to the task or process.

5.7 Work within stations or on multi-circuit overhead lines with multiple asset ownership

For work within stations or on multi-circuit overhead lines where electrical apparatus is owned by more than one organisation and work is adjacent to another organisation's exposed electrical apparatus, there shall be joint consideration and agreement reached and documented to carry out the work in a safe manner.

(See also 6.9 Work in stations, 6.10 Work outside of stations and 9.2.3 Multiple ownership)

Entry to enclosures or work in the vicinity of electrical apparatus

Approach to electrical apparatus

6.

Principle: persons shall observe appropriate safe approach distances when working, or operating vehicles or mobile plant, on or near electrical apparatus.

6.1 General

Part 6 of the *Electricity Safety (General) Regulations 2019* sets out the minimum distances that persons, vehicles, mobile plant, and machinery must maintain from aerial electric conductors. Some safe approach distances specified in this Code are less than the minimum distances specified in the Regulations. Only workers who have obtained written permission or an authorisation from the electrical asset owner or operator may adopt the safe approach distances that depart from the minimum distances specified in the Regulations.

The safe approach distances are based on an exclusion zone principle.

This principle defines an area around an exposed conductor into which no part of the person, mobile plant, or object (other than approved insulated objects) shall encroach, unless in accordance with section 9 Access for work on or near high voltage electrical apparatus.

Work practices shall be established to ensure persons, mobile plant and unapproved objects do not encroach on the safe approach distances. These work practices shall include consideration of:

a) working beyond reach of the exclusion zone wherever practicable,

b) precautions to be applied when use of controlled movement is necessary,

c) the workspace required including the expected reach of persons performing the work, and

d) the movement of mobile plant used for the work.

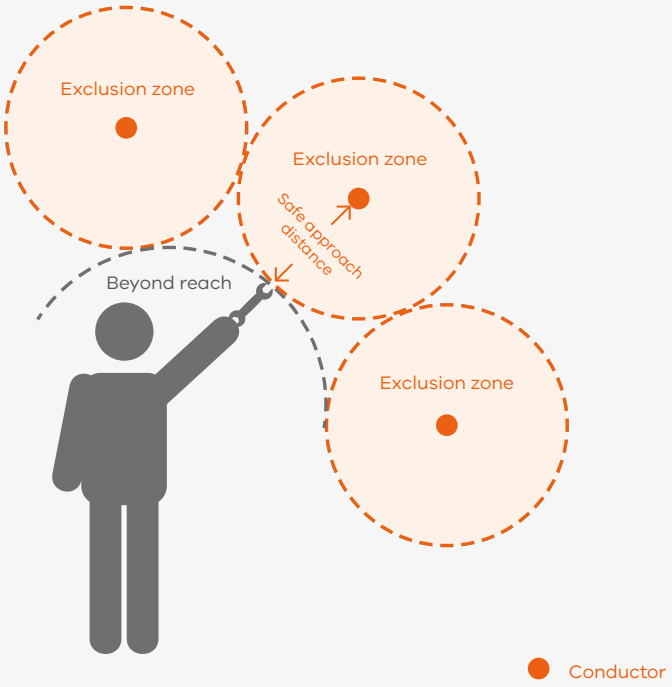
Expected reach shall include all intentional and expected movements such as adopting a work position, adjusting a hard hat, manoeuvring tools, and reaching for items being passed to the employee.

Unnecessary approach to electrical apparatus or unnecessary contact with parts not regarded as live shall be avoided.

Necessary approach to electrical apparatus shall be kept to a minimum and shall be restricted to the period required to perform the work.

For the application of earthing equipment to apparatus, refer to section 8.1.3 Earthing device application.

Figure 6.1: Safe approach distance – beyond reach



SAD is based on the exclusion zone principle and is measured out from the energised conductor. Proper application of SAD requires consideration of the workspace necessary to perform the task or function and either working beyond reach or the use of controlled movements to stay outside the SAD. (Figures 6.1 and 6.2 are for illustration purpose only).

Figure 6.2: Safe approach distance – expected reach

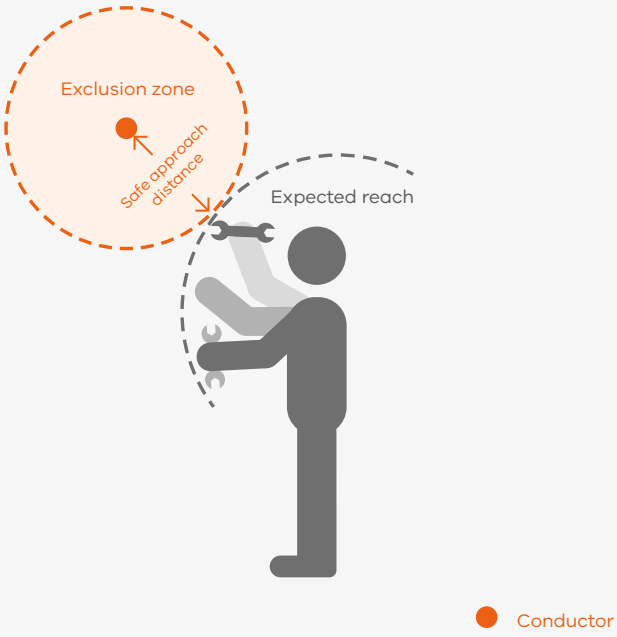
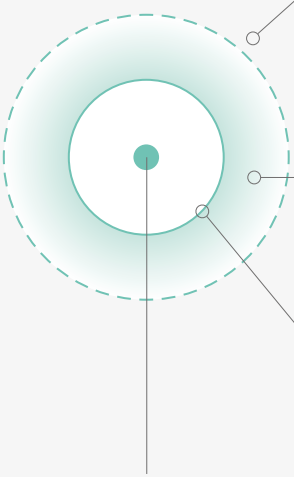


Figure 6.3: Illustration of differences between safe approach distance, near and vicinity



Vicinity means a situation where it is unlikely that a person will, either directly or through any conducting medium (e.g. via mobile plant), come within the relevant safe approach distances.

Near means a situation where there is a reasonable possibility of a person, either directly or through any conducting medium (e.g. via mobile plant) coming within the relevant safe approach distances.

Safe approach distance means the minimum distance in air from exposed conductors that shall be maintained by a person, vehicle or mobile plant (including its load, controlling ropes and any other accessories) when approaching electrical apparatus other than for work in accordance with an access authority.

Conductor means a wire, cable or form of metal designed for carrying electrical current.

6.2 Safe approach distance—persons

6.2.1 Safe approach distance—normal

Safe approach distance—normal is the minimum distance in air from exposed conductors that shall be maintained by a person, vehicle, or mobile plant (including its load, controlling ropes and any other accessories) when approaching electrical apparatus other than for work in accordance with an access authority.

The safe approach distances for persons performing general work are as shown in Table 1.

Instructed persons' safe approach distances apply while undertaking duties under supervision or as instructed by an authorised person.

There are elements of electrical apparatus that have semi conductive insulation. Such apparatus shall be treated the same as live apparatus in consideration of safe approach distances.

Organisational specific procedures shall be in place to enable activities to be safely performed on semi conductive insulated apparatus.

Table 1: Safe approach distance for persons to exposed conductors

Nominal phase to phase AC voltage (kV)	Ordinary persons (millimetres) (Note 1)	Instructed persons or authorised persons (millimetres) (Notes 2 and 3)
LV aerial lines	1500	Instructed persons—no contact authorised persons—insulated contact only
6.6	2000	700
11	2000	700
22	2000	700
33	2000	700
50	2000	750
66	2000	900
110	3000	1000
132	3000	1200
220	4000	1700
275	5000	2300
330	6000	2700
400	6000	3300
500	6000	3600
Nominal pole to earth DC Voltage (kV)		
LV DC aerial line (equal to or less than 1.5 kV	1500	Instructed persons—no contact authorised persons—insulated contact only
± 25	2000	700
± 85	3000	1000
± 150	3000	1200
± 270	4500	1800
± 350	5000	2500
± 400	6000	2900

Notes:

1. See definition for ordinary person. Persons not under control of the asset owner (network operator or HV customer) shall refer to the WorkSafe/ESV No Go Zone Rules and Section 12 of the Code.
2. Deliberately avoid movements that could result in distances being infringed.
3. These distances specified are based on work from a stable surface. Appropriate allowance shall be made for conductor sag and sway.

6.2.2 Safe approach distance—special

Safe approach distance—special is the minimum distance to an exposed conductor from any outstretched part of a person's body or any conducting or unapproved object touching any part of the person's body.

Safe approach distance—special, shown in Table 2, has been determined using risk analysis methodology and consideration of power frequency and switching surge distances, plus a reduced provision for inadvertent movement.

Safe approach distance—special, shall be used only by authorised persons performing approved tasks, after consideration of SAD normal, access permit, and live-line methods.

The recommended safe approach distances – special, shall be used only in conjunction with the following control measures:

a) approved safe work practice to ensure no part of the person's body or any conducting or unapproved object touching any part of the person's body infringing the relevant safe approach distances—special, and

b) positioning of the worker to minimise the risk of the specified distance being infringed. This includes any unapproved object or tool being held by the worker, and

c) using a person specifically trained and authorised to perform the work at the safe approach distance—special, and

d) work crew on-site risk assessments are conducted, and

e) afety observers are used to monitor the work activities, and

f) minimise the time a worker is using safe approach distance special and

g) addressing the adverse impact of any external influences on plant and equipment, e.g. traffic, boom movement, footing, and

h) addressing the adverse impact of weather and environmental conditions e.g. rain, lightning, wind, light, sag or sway of conductors.

The work party shall consider the suppression of the auto reclose function as part of the pre-work planning.

If these controls are not achieved, either an:

a) access authority shall be issued, or

b) live work techniques shall be applied, or

c) alternative safe approach distances — special or procedures shall be developed in accordance with section 6.2.3 Guidelines for the development and use of alternative safe approach distances—special.

Table 2: Safe approach distance—special for authorised persons only to exposed conductors

Nominal phase to phase AC voltage (kV)	Authorised persons (millimetres)
6.6	450
11	450
22	450
33	500
50	700
66	700

6.2.3 Guidelines for the development and use of alternative safe approach distances—special

An alternative safe approach distance—special may be required where the distances advised in Table 2 are not suitable for a particular task or process.

Determination and use of an alternative distance shall be subject to the following controls, which shall be in addition to the requirements of section 6.2.2 Safe approach distance – special:

a) be determined in accordance with ENA National Guidelines for safe approach distances to electrical apparatus' (ENA NENS 04) and related standards and guidelines as may be appropriate, and

b) be applied only to a specific task or process that has been subject to a formal risk assessment carried out in advance of the work using a consultative process with subject matter experts, and

c) be documented as an approved procedure specific to the task or process.

6.3 Safe approach distances—vehicles

6.3.1 Ordinary persons

An ordinary person in charge of any vehicle, except mobile plant when in working mode, shall ensure that no part of the vehicle or its load is placed or moved within the distances shown in column 2 of Table 3.

6.3.2 Authorised and instructed persons

Authorised and instructed persons in charge of any vehicle, except mobile plant when in working mode, shall ensure no part of the vehicle or its load is placed or moved within the distances shown in column 3 of Table 3.

Table 3: Safe approach distance for vehicles to live exposed conductors (except mobile plant when in the working mode)

Nominal phase to phase AC Voltage (kV)	Safe approach distance—for vehicles under the control of ordinary persons (millimetres) (Note 1 and 2)	Safe approach distance— for vehicles under the control of Instructed persons or authorised persons (millimetres) (Note 1)
Low voltage	600	600
HV up to and including 33	1000	700
50	1000	750
66	1000	1000
110	1500	1000
132	1500	1200
220	4600	1800
275	4600	2300
330	5500	3000
400	6400	3300
500	6400	3900

Nominal pole to earth DC voltage (kV)		
± 25	1000	700
± 85	1500	1000
± 150	1500	1200
± 270	4600	1800
± 350	5500	2500
± 400	6400	2900

Notes:

1. All distances specified are based on work from a stable surface. Appropriate allowance shall be made for conductor sag and sway and for uncontrolled movement of vehicle or plant due to any reason.
2. See definition for ordinary person. Persons not under control of the asset owner (network operator or HV customer) shall refer to the WorkSafe or ESV No Go Zone Rules and Section 12 of the Code.

6.4 Safe approach distances—uninsulated mobile plant

6.4.1 General

Due to the physical capabilities of, and potential hazard with, mobile plant working adjacent to live conductors and/or electrical apparatus, specific consideration including earthing, shall be given to its use during planning of the work (refer to section 5.4 Use of mobile plant).

6.4.2 Ordinary persons

An ordinary person (under the control of the asset owner) in charge of the work shall ensure the mobile plant, its gear and load are not placed or moved within the distances shown in column 2 of Table 4.

A person not under the control of the asset owner shall comply with No Gone Zone rules. The asset owner shall comply with section 12 of the Code.

6.4.3 Instructed persons or authorised persons

An instructed person or authorised person in charge of the work shall ensure the uninsulated mobile plant, its gear and load shall not approach live conductors and/or electrical apparatus within the distances shown in column 3 of Table 4.

When the work requires a closer approach to live conductors than the normal safe approach distances given in Table 4, special safe approach distances for uninsulated mobile plant may be developed and applied with consideration of the requirements set out in section 6.2.3 Guidelines for the development and use of alternative safe approach distances—special.

The use of helicopters for bare hand live-line work is excluded from the requirements of this section.

6.5 Safe approach distance—insulated mobile plant

Only instructed persons or authorised persons may operate insulated mobile plant in accordance with Table 5 and approved procedures.

The insulated portion of mobile plant may be allowed to contact or encroach the safe approach distances of a live conductor as specified in Table 5, provided it is rated for the voltage of that conductor.

Table 4: Safe approach distance for uninsulated mobile plant to live exposed conductors when in the working mode

Nominal phase to phase AC voltage (kV)	Safe approach distance—for mobile plant under the control of ordinary persons (millimetres) (Note 1, 4 and 5)	Safe approach distance—for mobile plant under the control of instructed persons or authorised persons. For insulated mobile plant refer Table 5 (millimetres) (Notes 1 and 2)	Safe approach distance—for mobile plant under the control of glove and barrier live line work authorised persons. For insulated mobile plant refer Table 5 (millimetres) (Notes 1, 2 and 3)
Low voltage	2000	1000	380
HV up to and including 33	2000-2000	1200	1000
50	2000	1300	
66	2000	1400	
110	4000	1800	
132	4000	1800	
220	4600	2400	
275	4600	3000	
330	5500	3700	
400	6400	4000	
500	6400	4600	
Nominal pole to earth DC voltage (kV)			
± 25	2000	1200	
± 85	4000	1800	
± 150	4000	1800	
± 270	4600	2400	
± 350	5500	3200	
± 400	6400	3600	

Notes:

1. All distances specified are based on work from a stable surface. Appropriate allowance shall be made for conductor sag and sway and for uncontrolled movement of vehicle or plant due to any reason.
2. A Safety observer is required unless the mobile plant is incapable of infringing the safe approach distance.
3. When lifting a load the conductors are suitably insulated in accordance with approved procedures.
4. Including insulated elevating work platforms.
5. See definition for ordinary person.

Persons not under control of the asset owner (network operator or HV customer) shall refer to the WorkSafe/ ESV No Go Zone Rules and section 12 of the Code.

Table 5: Safe approach distances to live exposed conductors for insulated mobile plant operated by persons who are instructed or authorised to work on or near exposed conductors

Nominal phase to phase AC voltage (kV)	Safe approach distances (millimetres) (Note 1, 2, 3 and 6)		Working within safe approach distance (millimetres) (Note 1, 3, 4, 5 and 6)	
	Insulated portions	Uninsulated portions	Insulated portions	Uninsulated portions
Low voltage	Contact allowable	1000	Contact allowable	1000
HV up to and including 33	700	1200	Contact allowable	1000
66	1000	1400	Contact allowable	1000
132	1200	1800	Contact allowable	1500
220	1800	2400	Contact allowable	2000
275	2300	3000	Contact allowable	2400
330	3000	3700	Contact allowable	3000
500	3900	4600	Contact allowable	3500
Nominal pole to earth DC voltage (kV)				
± 25	700	1200	Contact allowable	1000
± 85	1000	1800	Contact allowable	1000

Notes:

1. These distances specified are based on work from a stable surface. Appropriate allowance shall be made for conductor sag and sway, and for uncontrolled movement of the mobile plant for any reason.
2. For ordinary persons refer to Table 4.
3. For safe approach distance where contact is allowed, care shall be exercised to prevent movement of conductors.
4. For live work in accordance with approved procedures.
5. Alternative live work minimum approach distances as per 9.6 may be applied in accordance with organisational procedures.
6. A safety observer is required unless the mobile plant is incapable of infringing the safe approach distance.

6.6 Emergency approach

In emergency situations where there is likely risk of electric shock to persons from electrical conductors or electrical apparatus (e.g. fallen conductor), prompt action shall be taken to ensure people are kept well clear of the hazard in accordance with approved procedures.

All electrical apparatus shall be considered a live until proven isolated and earthed by approved means.

6.7 Contact with live high voltage conductors by means of appliances

Only approved and tested appliances shall be permitted to be brought within the safe approach distance or into direct contact with live high voltage conductors.

The owner or operator of the high voltage asset shall ensure the appliance is within test date immediately before using the appliance.

6.8 Approach to live high voltage insulated cables

6.8.1 General

When work is performed near live high voltage insulated cables, appropriate precautions shall be taken to ensure cable insulation is not damaged.

Cables, which are specifically designed for movement while live, may be moved in accordance with an approved procedure.

Slight movement of other types of live cables may be permitted, but only after consideration of all related circumstances by a person with detailed knowledge of the cables concerned, who shall fully document all precautions to be taken.

6.8.2 Earthed metallic sheathed or screened high voltage cables

Contact by persons may be made to external non-conductive surfaces of live high voltage cables with earthed metallic sheaths or screens.

Contact with exposed metallic sheath or screen shall only be undertaken after consideration of transferred earth potentials and induced voltages.

6.8.3 Non-metallic screened high voltage aerial bundled cable

No contact by persons shall be made to external surfaces of live non-metallic screened high voltage aerial bundled cable or its exposed support catenary. Only suitable live work techniques shall be used for this purpose.

Access to de-energised but not earthed non-metallic screened high voltage aerial bundled cable may be permitted in accordance with approved procedures.

For the purposes of insulated mobile plant work in the vicinity of live non-metallic screened high voltage aerial bundled cable, the safe approach distance shall be the same as it is for exposed high voltage conductors (refer to Table 5).

6.9 Work in stations

A person shall not perform work in any station or allow mobile plant to enter any station without first obtaining the permission of the person in charge of the station or the appropriate authorised person and accepting all the conditions imposed by that person (refer to section 5.2 for work in the vicinity of electrical apparatus).

6.10 Work outside of stations

Work on or near electrical apparatus outside of stations shall be performed after obtaining the permission and direction of the person in charge of the electrical apparatus.

Operation of high voltage electrical apparatus

7.

Principle: Only authorised persons shall undertake switching and associated duties on high voltage electrical apparatus.

7.1 Persons authorised to operate high voltage electrical apparatus

Switching and associated duties on high voltage electrical apparatus shall be performed by authorised electrical operators whose training, duties and instructions cover the particular electrical apparatus.

However, an unauthorised person may perform operations in the following circumstances:

a) when specifically instructed by, or authorised by, the appropriate operating authority, or

b) when specifically instructed by an authorised operator as part of electrical operator training, or

c) in an emergency involving serious risk to persons or property, or

d) when controlling high voltage electrical apparatus as part of a task for process control in accordance with approved organisational procedures.

7.2 Written HV switching instructions

Wherever practicable, written instructions shall be used when operating high voltage electrical apparatus.

7.3 High voltage switching

Prior to a high voltage switching operation, the available information regarding circuit conditions shall be taken into account and no electrical apparatus shall be operated if it is unsafe to perform the operation

After switching, correct operation of the electrical apparatus shall be confirmed whenever practicable.

When high voltage electrical apparatus is operated, the person undertaking the task shall be protected in an approved manner from electric shock, arc flash or other hazards (also refer to 3.9 Personal protective equipment).

Operation of high voltage electrical apparatus

Earthing of high voltage electrical apparatus

8.

Principle: an effective earthing device shall be applied to ensure the safety of the work party. Earthing devices shall be applied by an authorised person after confirming it is safe to earth.

8.1 General requirements

8.1.1 Earthing of electrical apparatus

The earthing of apparatus presents risks to persons performing the earthing and other persons nearby. Organisations shall establish approved procedures to mitigate risk to persons posed by the earthing of electrical apparatus.

8.1.2 Earthing devices shall be suitably rated and approved.

Earthing devices shall be inspected and/or tested in accordance with organisational procedures.

Earthing devices shall be applied by an authorised person only after confirming it is safe to earth.

Confirmation of safe to earth shall be by:

a) visual inspection of isolation(s) and testing of the conductors, or

b) where visual inspection of isolation(s) is not practicable, inquiry and testing shall be used, or

c) where testing is not practicable, earthing may take place only in accordance with approved procedures.

Earthing devices include but are not limited to:

- Earthing trucks,
- Earthing circuit breakers/switches,
- Portable earthing devices, and
- Permanently installed earthing devices.

8.1.3 Earthing device application

8.1.3.1 Application with an approved device.

An earthing device shall:

a) be attached or removed using an approved device,

b) be regarded as having the potential to become live and not be handled during application or removal,

c) be connected to earth before it is applied to the conductors, and

d) be removed from the conductors before it is disconnected from earth.

Exception:

The handling during application or removal of a portable earthing device connected to a permanently installed station earthing system or an electrically conductive transmission structure shall only be undertaken in accordance with approved company procedures.

8.1.3.2 Application by hand

When hand application or removal of a portable earth and short circuit/s device is unavoidable:

a) it shall be regarded as having the potential to become live,

b) all phases shall be discharged using an approved device, and

c) another earth shall be held in contact with the conductor using an approved device while the hand applied earth is being attached or removed.

8.1.4 Clearances

There are some situations when an authorised electrical operator cannot comply with the clearances specified as safe approach distances when applying earths to electrical apparatus during the preparation for access (e.g. discharging capacitor banks).

In these situations, approved procedures may permit such approach only to that part of the electrical apparatus that already has local isolation and earthing.

8.2 Earthing for access to high voltage electrical apparatus

Earths shall be applied at locations such that conductors within the work area are effectively earthed in the event of energisation from any source of supply or hazardous occurrences and be placed so as to remain effective if adjoining conductors are disconnected.

Wherever practicable, earths shall be placed at the site of the work.

8.3 Earthing of overhead lines

Where an overhead line is earthed the work planning shall consider protection from the hazards resulting from step and touch potentials in the event of energisation by any means, including (for example) direct connection, equipment failure, induction, or lightning.

Where work under an access authority involves the connection, cutting or disconnection of conductors, approved bridging leads shall be applied across the proposed conductor break, or earths shall be applied to both sides of (and as close as practicable to) the proposed break and individually connected to a common earth.

In situations where there is the risk of a worker becoming subject to different potentials across or between different earths, the hazard will be reduced by the application of equipotential work zone principles.

The choice of connection for a portable earthing device shall be made to achieve the most effective earthing of the work zone.

In accordance with the system being worked on, earths should be applied on the basis of the following order of preference:

a) Permanently installed earthing system including Common Multiple Earth Neutral (CMEN).

b) Earthing ferrule in a concrete pole.

c) The ground rod of an installed pole stay or permanently driven pole stakes.

d) A temporarily driven spike at the work site.

8.4 High voltage metal-clad switch units

The earthing of metal-clad switchgear and connected circuits by the use of probes or contact extension devices requiring manual application presents additional hazards.

Approved procedures shall define methods of operation and earthing to minimise the risk to the person applying the earthing.

The procedure shall include a safety observer to be present during such earthing unless procedures specifically allow application by one person.

8.5 High voltage capacitors

A safe method of discharging high voltage capacitors prior to access shall be included in approved procedures.

When earthing high voltage capacitors, the actives and, where available the neutrals, shall be earthed and each capacitor shall be discharged before it is touched.

The same precautions shall be taken for work on electrical apparatus which incorporates high voltage capacitors e.g. capacitor voltage transformers, carrier coupling capacitors.

8.6 Aerial supervisory cables

An aerial supervisory cable shall be regarded as a screened and insulated live low voltage cable and all appropriate procedures and precautions for such cables shall be followed. Such precautions are required because of induction from parallel high voltage lines.

When an aerial supervisory cable is being jointed or re-terminated, initially both the screen and catenary wires of both cables shall be bonded and earthed at the worksite. These shall then be insulated in an approved manner and the work on the cables shall proceed in an insulated situation.

As a minimum, the catenary wire of aerial supervisory cables shall be permanently earthed at alternative sectionalising points to provide safe working conditions.

Any work involving the disconnection of the catenary wire from the permanent earth shall not proceed until the catenary wire is earthed by means of local temporary earths attached to both sides of the sectionalising point.

Access for work on or near high voltage electrical apparatus

9.

Principle: an appropriate safe access system shall be applied to ensure the safety of work crews for work on or near high voltage electrical apparatus or associated with the testing of high voltage apparatus.

9.1 General

No person shall touch or work on or near the high voltage conductors of any electrical apparatus unless:

a) the person is a recipient of an electrical access permit covering that electrical apparatus and the high voltage conductors have been discharged and/or earthed at the work site, and the electrical permit is available for reference at the site of the work, or

b) the person is a recipient of an electrical access permit covering the conductors of a high voltage cable and the de-energised state of the cable at the work site is confirmed in accordance with section 9.8 and the electrical access permit is available for reference at the site of the work, or

c) in the case of a rackable circuit breaker or rackable voltage transformer, the electrical apparatus is removed from its rack or cubicle position and placed in a designated maintenance position, or

d) the person is working under the terms of a sanction for testing or alternative approved procedure on that electrical apparatus in accordance with section 9.3, or

e) the electrical apparatus has been declared as out of commission in accordance with section 9.4, or

f) the person is performing live work in accordance with approved procedures, or

g) the person is working in accordance with the requirements of a permit to work adjacent to network assets (refer to section 12), or

h) the person is working in accordance with the requirements of section 6.

9.2 Electrical access permit procedure

9.2.1 Planning for an electrical access permit

Before making an application for an electrical access permit, the authorised applicant shall establish that the proposed work has been properly planned and can be carried out safely.

The electrical apparatus to be covered and its location shall be accurately defined and the work to be undertaken adequately described.

Note: See appendix B1 for a sample application for access authority form

9.2.2 Multiple working parties

There shall be coordination between the parties in planning and performing the work to ensure the actions of one party shall not endanger the safety of others when more than one electrical access permit is issued on the same electrical apparatus, or where separate parties are working under the terms of one electrical access permit.

9.2.3 Multiple ownership

Where the operational control of the scope of electrical apparatus to be covered is owned by more than one organisation, a protocol shall be established between these organisations for processing the application and outage requirements.

9.2.4 Issue, receipt and cancellation of electrical access permits

a) An electrical access permit shall be issued and cancelled only by an authorised electrical operator. electrical access permits may be issued or relinquished by telephone or radio subject to the statements between the authorised electrical operator and the recipient in charge being confirmed by a witness at each end. Refer to section 3.3 for further details on communications.

b) At the time of issue of an electrical access permit the authorised electrical operator shall describe and show, where practicable, the recipient in charge and all the initial recipients:

   i) the electrical apparatus covered by the electrical access permit,

   ii) the precautions taken,

   iii) the nearest points of supply, and

   iv) any adjacent live electrical apparatus.

In the case of an electrical access permit issued by telephone or radio, the recipient in charge shall assume these responsibilities on behalf of the authorised electrical operator.

c) An electrical access permit shall be either cancelled or suspended prior to the issue of a sanction for testing or the use of an alternative approved procedure for testing on the same electrical apparatus.

d) High voltage live work and work under an access authority shall not be performed concurrently on the same structure.

e) Each electrical access permit shall be issued to a recipient in charge.

f) The recipient in charge shall ensure all members of the work party who will approach the electrical apparatus sign on the electrical access permit.

g) The issuer and authorised recipients all have a responsibility to ensure the scope and the condition of the electrical apparatus covered by the electrical access permit is such that it shall be safe for the proposed work to be undertaken.

h) All recipients shall be satisfied with the precautions taken, the location of the points of supply, and the proximity of any adjacent live electrical apparatus.

i) Any person involved in the issue or receipt of an electrical access permit who is not satisfied with the conditions, may apply to the authorised electrical operator to have additional precautions taken, either before the electrical access permit is issued or during the currency of the work.

j) After the issue of an electrical access permit, no additional recipients are allowed to sign on to the electrical access permit unless appropriate instructions are given by the recipient in charge, as per section 9.2.5. An authorised electrical operator, acting with the knowledge of the recipient in charge, may undertake this activity.

Note: See appendix B2 for an example electrical access permit form

9.2.5 Persons permitted to sign on to electrical access permits

Persons permitted to sign on to electrical access permits shall be authorised recipients or instructed persons assigned to work under that specific electrical access permit.

In the latter case it shall be the responsibility of the recipient in charge to ensure such Instructed persons are placed in the charge of an authorised recipient.

a) The conditions under which an authorised person shall sign-on to an electrical access permit is that the authorised recipient:
   i) understands the electrical apparatus covered and the limits of the electrical access permit,
   ii) is satisfied with the precautions taken, and
   iii) is aware of the nearest adjacent live electrical apparatus.

b) The conditions under which an instructed person shall sign-on to an electrical access permit is that the instructed person:
   i) understands instructions given on what approach is permitted to the electrical apparatus,
   ii) understands instructions given on what activity is permitted to be taken in relation to the electrical apparatus,
   iii) agrees to a level of effective supervision based on the electrical risk by a nominated authorised recipient, and
   iv) is indicated on the electrical access permit by bracketing their signature with that of their supervising authorised recipient.

Note: Identification of an instructed person on a permit is acceptable by the use of brackets or other means e.g. (IP) beside the person's name.

9.2.6 recipient working alone

An electrical access permit may be issued to a single authorised recipient.

The authorised recipient may work alone provided there is no risk of infringing the safe approach distances and the authorised recipient is working in accordance with approved procedures.

9.2.7 Issuer also a recipient

An issuer of an electrical access permit shall not be the initial recipient in charge, but may sign-on to the electrical access permit form as an authorised recipient.

In accordance with approved procedures, the issuer may sign-on as a subsequent recipient in charge.

9.2.8 Rejection of a recipient

A person shall recommend the exclusion from an electrical access permit of any other person who at any time is considered unsafe as a recipient. Such instances shall be reported promptly to the person in charge of the work.

9.2.9 Earthing of electrical apparatus under electrical access permit

Electrical apparatus shall be earthed before the issue of an electrical access permit, wherever practicable.

9.2.9.1 Absence of an earth after permit issue

Wherever practicable electrical apparatus shall be earthed before the issue of an electrical access permit. Where an earth has not been applied to electrical apparatus prior to the issue of an EAP, the recipient in charge shall arrange for discharging of the electrical apparatus before any recipient touches the HV apparatus

9.2.9.2 Recording of earths

All earths applied prior to and during the currency of an electrical access permit shall be recorded on the electrical access permit or documented in accordance with organisational procedures.

The removal of all earths shall be verified prior to re-energising the apparatus.

9.2.9.3 Removal of earth when working under an access authority

During work under an access authority, the recipient in charge may authorise the removal of an earth for testing, reconductoring, or other purposes, only if such action is considered necessary and safe, and provided:

a) the operating authority that has operational control of the earth and the operating authority who applied the earth agree with the removal, and

b) in cases where the earth is listed on the access authority, the operating authority who issued the access authority is consulted, to confirm the removal of the earth will not affect any other access authorities that have been issued, and

c) all persons likely to be affected by the removal of the earth are notified, and

d) consideration is given to induced voltages.

The earth removed shall be replaced in the same, or other equally effective position, as soon as possible.

9.2.10 Temporary cessation of work or absence of recipients

Following a temporary cessation of work or when recipients have been temporarily absent from the work site, upon return each recipient shall report to the recipient in charge to re-confirm the conditions of the electrical access permit.

9.2.11 Testing under an electrical access permit

Testing under an electrical access permit may be undertaken in accordance with approved procedures that shall include a risk assessment to ensure that:

a) all other work shall cease for the duration of the testing, and

b) no hazardous voltages and currents will be accessible as a result of the testing, and

c) recipient/s conducting the testing have the appropriate competency, and

d) consideration shall be given to any stored electrical charge, and

e) test voltages and current do not exceed the equipment rating or test equipment rating, and

f) consideration shall be given to maintain earth between the recipient/s and the sources of supply, and

g) consideration shall be given to the hazards of connecting and disconnecting test equipment, and

h) adequate precautions are taken for the safety of all persons during the performance of the test, and

i) the provisions of section 9.2.9.3 Removal of earth when working under an access authority, are met.

9.2.12 Working on multicircuit overhead lines

Where more than one high voltage circuit is carried on a pole or line structure and work is to be performed on specified circuits under an electrical access permit while others remain live, each recipient of the work party who approaches near any circuits shall correctly identify the circuit/s under electrical access permit and all other circuits.

If there is any doubt the recipient shall seek clarification from the recipient in charge.

9.2.13 Change of electrical access permit conditions

The conditions specified and the precautions listed on the electrical access permit shall not be changed unless mutually agreed upon by both the operating authority and the recipient in charge, and then only when a check has been made with the appropriate operating authority regarding the requirements of other electrical access permits and all recipients working under the electrical access permit have been notified of the change.

9.2.14 Cancellation of an electrical access permit

9.2.14.1 Recipients signing off an electrical access permit.

It shall be the duty of each recipient of an electrical access permit to sign-off before the electrical access permit is relinquished.

9.2.14.2 Responsibilities of the recipient in charge when relinquishing an electrical access permit for cancellation.

When an electrical access permit is to be relinquished for cancellation, the recipient in charge shall:

a) ensure all recipients signed on to the electrical access permit have ceased work covered by the electrical access permit and have signed off, and

b) ensure all recipients and equipment are clear and will remain clear of the electrical apparatus, and

c) sign-off the electrical access permit, as the recipient in charge to indicate that the electrical access permit can be cancelled, and

d) advise the operating authority of any condition of the electrical apparatus that could affect its operation.

An electrical access permit should not be cancelled by the recipient-in-charge. Appropriate approved procedures shall be established to cover instances where this is unavoidable.

9.2.14.3 Absence of a recipient at relinquishment

The practice of signing off an electrical access permit on behalf of another person is undesirable and should be avoided.

Appropriate organisation procedures should be implemented with instruction for signing off recipients where the recipients could not sign-off in person.

9.2.14.4 Recipient-in-charge replacement during permit on issue

In the event of a person ceasing to act as recipient-in-charge, another authorised recipient shall become the recipient-in-charge and where practicable, the electrical access permit form shall be initialled by both. Further:

a) the work party shall be advised of the change in recipient-in-charge, and

b) this change of recipient-in-charge shall be communicated to the operating authority and recorded on the electrical access permit, and

c) Appropriate organisational procedures shall be implemented with instructions for signing over the recipient-in-charge during electrical access permit on issue.

9.3 Testing HV electrical apparatus procedure

9.3.1 General

The sanction for testing or an alternative approved authorisation for testing shall be used if the testing of high voltage electrical apparatus has the potential to produce currents and voltages hazardous to the human body.

The alternative approved procedure shall satisfy the requirements of section 9.3 Testing HV electrical apparatus procedure to achieve the same or better safety outcomes.

9.3.2 Planning for testing of high voltage apparatus

Only an authorised applicant shall make application for a sanction for testing, which application shall take into account the following mandatory considerations:

a) Before making an application for sanction for testing the authorised applicant shall establish that the proposed work has been properly planned and can be carried out safely.

b) The electrical apparatus to be tested and its location shall be accurately defined and the task to be undertaken adequately described in the application.

c) Testing shall be undertaken in accordance with approved procedures and adequate precautions shall be taken to avoid exposure to hazardous voltages and currents.

d) Only one sanction for testing shall be on issue on the same electrical apparatus at any time. However, where the testing requires work at remote locations as well as at the nominated main location, a complementary sanction for testing covering the same electrical apparatus shall be issued at each remote location.

e) Where a complementary sanction for testing is required it shall be nominated on the original application and issued only in accordance with section 9.3 Testing HV electrical apparatus procedure.

f) Where the test is to be undertaken on electrical apparatus having involvement of more than one control authority then protocols shall be established for processing the application and test requirements.

9.3.3 Sanction for testing procedure

a) A sanction for testing shall be either cancelled or suspended prior to the issue of an electrical access permit on the same electrical apparatus.

b) The sanction for testing shall be issued to the tester-in-charge by an authorised electrical operator.
A complementary sanction for testing shall be issued only after, and relinquished only before, the sanction for testing at the nominated main location.
Such issues and cancellations shall take place only with the approval of the tester-in-charge.

c) A tester responsible at a remote location is an authorised tester at a remote location to whom an authorised electrical operator has issued a complementary sanction for testing.

d) Sanctions for testing and complementary sanctions for testing shall be issued and cancelled only by an authorised electrical operator.

e) The appropriate provisions of sections 7 Operation of high voltage electrical apparatus, 8 Earthing of high voltage electrical apparatus and 9 Access for work on or near high voltage electrical apparatus, of this Code shall also apply to sanctions for testing and complementary sanctions for testing.

f) Sanctions for testing and complementary sanctions for testing may be issued or relinquished by telephone or radio, subject to the statements between the authorised electrical operator and the tester-in-charge or tester responsible at remote location, as appropriate, being confirmed by a witness at each end.

g) In the case of a sanction for testing or a complementary sanction for testing issued by telephone or radio, the tester-in-charge or the tester responsible at a remote location, as appropriate, shall assume the responsibilities of the authorised electrical operator in applying these provisions.

Note: See appendix B3 for an example sanction for test form.

9.3.4 Persons permitted to sign onto sanctions for testing

Persons permitted to sign onto a sanction for testing shall be authorised testers, authorised electrical operators, authorised recipients or instructed persons approved to work under that specific sanction for testing.

In the case of authorised electrical operators, authorised recipients or instructed persons, it shall be the responsibility of the tester-in-charge or the tester responsible at a remote location to ensure such persons are placed in the charge of an authorised tester, who may be the tester-in-charge.

a) The conditions under which an authorised tester shall sign on to a sanction for testing are that the authorised tester:
   i) understands the electrical apparatus covered and the limits of the sanction for testing,
   ii) is satisfied with the precautions taken, and
   iii) is aware of the nearest adjacent live electrical apparatus.

b) The conditions under which an authorised electrical operator or authorised recipient shall sign on to a sanction for testing are that the authorised electrical operator or recipient:
   i) understands instructions given on what approach is permitted to the electrical apparatus,
   ii) understands instructions given on what activity is permitted to be taken in relation to the electrical apparatus,
   iii) is aware of the nearest adjacent live electrical apparatus, and
   iv) agrees to the effective supervision by a nominated authorised tester.

c) The conditions under which an instructed person shall sign-on to a sanction for testing are that the Instructed person:
   i) understands instructions given on what approach is permitted to the electrical apparatus,
   ii) understands instructions given on what activity is permitted to be taken in relation to the electrical apparatus,
   iii) is made aware of the nearest adjacent live electrical apparatus, and
   iv) agrees to the continuous and close supervision by a nominated authorised tester.

9.3.5 Responsibilities of tester-in-charge

a) The tester-in-charge shall ensure the members of the work party who will be making contact with electrical apparatus under test and any of the test connections or approaching within the prescribed safe approach distances during the currency of the sanction for testing, sign onto the sanction for testing or a complementary sanction for testing.

b) The tester-in-charge shall ensure the members of the work party are suitably experienced and trained for the work required of them and adequate precautions are taken for the safety of all persons.

9.3.6 Complementary sanctions for testing—responsibilities of tester responsible at remote location

The tester responsible at a remote location shall assume the same responsibilities as specified for the tester-in-charge and shall function under direction of the latter.

9.3.7 Relinquishment of sanctions for testing

9.3.7.1 Sanction for test

When relinquishing a sanction for testing, the tester-in-charge shall advise the operating authority of the condition of the electrical apparatus at all related locations.

9.3.7.2 Complimentary sanction for test

Where complementary sanctions for testing have been issued, each tester responsible at remote locations shall:

a) advise the tester-in-charge of relinquishment of the complementary sanction for testing and the condition of the electrical apparatus at the remote location, and

b) advise the operating authority at the remote location of the condition of the electrical apparatus at that location.

The tester-in-charge shall ensure all complementary sanctions for testing have been relinquished prior to relinquishing the sanction for testing.

9.4 Out of commission electrical apparatus

9.4.1 Declaring electrical apparatus out of commission

An out of commission declaration shall include a statement of the condition of the electrical apparatus including all relevant auxiliary equipment (e.g. control circuits, compressed air supplies, etc.).

9.4.2 Access to out of commission electrical apparatus

Electrical apparatus that is declared out of commission may be approached and worked upon without the issue of an electrical access permit, or sanction for testing.

Although the electrical apparatus is not electrically connected, due regard shall be given to the possibility of inadvertent energisation from adjacent electrical apparatus, induction, lightning, static charges or other means.

9.5 Suspension of an access authority

9.5.1 General

When the operating authority and the recipient/tester-in-charge agree, an access authority can be suspended in accordance with approved procedures.

9.5.2 Conditions for suspension of an access authority

a) An access authority is not considered suspended until all recipients have signed off, and

b) recipients sign off and have no access to the electrical apparatus while the access authority is suspended, and

c) the operating authority is informed of the condition/status of the electrical apparatus.

9.5.3 Procedure for suspension of an access authority

Approved procedures for suspension of an access authority shall ensure that:

a) the recipient/tester-in-charge ensures that all recipients sign-off and are informed that the access authority is suspended, and no further access is permitted, and

b) the operating authority is notified of the status of the electrical apparatus, and

c) while suspended the access authority is under the control of the operating authority.

9.5.4 Procedure for resumption of an access authority

Approved procedures for resumption of an access authority shall ensure that:

a) the access authority is resumed with the same isolations, earths and other precautions immediately prior to suspension, and

b) the operating authority shall approve the resumption of the access authority and where considered necessary use the procedure for issue of the access authority, and

c) the recipient/tester-in-charge ensures that recipients are informed of the limits of the resumed access authority and the precautions in place.

9.6 Live work – high voltage

Section 9.6 is not applicable to the operation, washing or testing of live high voltage electrical apparatus.

Refer to approved procedures.

9.6.1 General

Live work shall only be undertaken after consideration is first given to performing the work under isolated and earthed conditions.

9.6.1(a) For MEC's network assets

Before live work is undertaken a hazard identification and risk assessment shall confirm that the work can be performed safely.

All live work shall be conducted in accordance with approved procedures and approved live work minimum approach distances.

When developing approved procedures, determining live work minimum approach distances and performing the tasks the following shall be considered:

a) AS 5804.1 High-voltage live working – General and related standards and guidelines as may be appropriate,

b) electrical and ergonomic distances necessary to prevent flashover,

c) possibility of inadvertent movement,

d) minimising the duration of work at the live work minimum approach distances,

e) work techniques that provide maximum practical distance from live conductors,

f) limiting overvoltage conditions by operational or site controls,

g) work crew on site risk assessment, and

h) control of inadvertent movement by the use of insulating barriers, insulated plant and appliances and controlled body movements; and environmental conditions.

9.6.1(b) High voltage or complex electrical Installations:

Regulations 509, 510 and 511 of the *Electricity Safety (General) Regulations* must be complied with when carrying out work on energised electrical installations. These include:

- Electrical installation work carried out on energised electrical equipment may only be permitted in particular circumstances
- Preliminary steps before carrying out electrical installation work on Energised electrical equipment, and
- How electrical installation work is to be carried out on energised electrical equipment.

9.6.2 Minimum requirements

The procedures for undertaking live work shall include:

a) persons performing live work and appointed safety observers shall be authorised live HV workers

b) persons specifically instructed and supervised by an authorised live HV worker as part of live HV worker training

c) the risk assessment shall consider as a minimum:

1. the condition of the electrical apparatus
2. proximity of other electrical apparatus
3. proximity of earthed equipment and structures
4. protection and control settings
5. appointment of a safety observer

d) persons performing live work shall use appropriate rated and tested equipment and wear appropriate personal protective equipment, and

e) the work shall be performed in accordance with approved procedures.

If the live work is being carried out on an electrical installation, it may only be carried out in accordance with the requirements specified in regulation 511 of the *Electricity Safety (General) Regulations*.

9.6.3 Insulating stick work

An authorised live HV worker may access live high voltage conductors using insulating sticks at the distances determined through reference to section 9.6.1.

9.6.4 Glove and barrier work

An authorised live HV worker may make insulated contact with live high voltage conductors up to 33kV when fully insulated from earth and other phases using approved and tested personal protective equipment and insulating devices.

9.6.5 Bare hand work

An authorised live HV worker may make bare hand contact with live high voltage conductors of 220kV and above, provided they are fully insulated from earth and other conductors at different potentials by means of air gaps appropriate to the voltage of the conductors and the precautions applied.

9.7 Preparing high voltage electrical apparatus for access

9.7.1 Isolation and earthing

High voltage electrical apparatus should not be regarded as being safe for the issue of an electrical access permit until it has been isolated and earthed.

Consideration shall be given to the isolation of sources of supply from low voltage or secondary circuits.

Approved procedures shall ensure the integrity of the isolation is maintained during currency of the electrical access permit.

Isolation for access shall either be visible, or an approved means used to confirm the electrical apparatus is de-energised.

Note: Such isolation may not eliminate the effects of electrical or magnetic induction.

Earths shall be applied as described in section 8.2. If earthing is impracticable, other appropriate precautions shall be taken and the authorised electrical operator shall advise the recipient in charge and record the absence of an earth on the electrical access permit.

9.7.2 Barriers and signs

9.7.2.1 General

Appropriate barriers shall be used, where necessary, to indicate areas containing live electrical apparatus and the degree of hazard.

Appropriate signs shall be used where necessary:

a) to identify electrical apparatus covered by an access authority; and

b) to identify adjacent live electrical apparatus and related hazard.

Barriers shall not be altered or crossed except in accordance with approved procedures. In particular instances where identification is positive, such as on some high voltage overhead lines and underground cables, and provided appropriate safeguards have been taken, approved procedures may dispense with the use of barriers and/or signs.

9.7.2.2 Hazards that are likely to be life threatening

Situations where there is an immediate and probable risk of contact with live electrical apparatus shall be defined by the use of danger barriers and/or signs (refer 9.7.2.4 Descriptions of barriers and signs), e.g.:

a) areas where safe approach distances cannot be maintained, or

b) areas in which high voltage testing is in progress.

9.7.2.3 Hazards that are not likely to be life threatening

For the purpose of general identification of those areas where warning is necessary, warning barriers and/or signs (refer 9.7.2.4 Descriptions of barriers and signs) shall be used: e.g. between work areas and adjacent areas containing live high voltage electrical apparatus that does not present an electrical hazard to normal pedestrian movement.

9.7.2.4 Descriptions of barriers and signs

Live (Alive) sign

Approved danger sign having the word **LIVE** or **ALIVE** printed in white upon a red background or otherwise conforming to AS 1319.

Danger barrier and/or sign

A barrier and/or sign of suitable material coloured red or alternatively red and white, to indicate the presence of danger, or otherwise conforming to AS 1319.

Under access permit sign

A sign of appropriate dimensions having the words **UNDER ACCESS PERMIT** or similar printed in white on a green background or otherwise conforming to AS 1319.

Under sanction for testing sign

A danger sign of appropriate dimensions having the words **UNDER SANCTION FOR TESTING** printed in red on a white background or otherwise conforming to AS 1319.

Warning barrier and/or sign

A barrier and/or sign of suitable material, coloured yellow, or alternatively yellow and black, to indicate the need for a warning, or otherwise conforming to AS 1319.

9.7.2.5 Barriers and signs for electrical access permits

Prior to the issue of an electrical access permit, barriers and signs shall be erected:

a) to make it clearly evident which electrical apparatus is under electrical access permit and which is not, and

b) to guard against mistaken or inadvertent contact with other electrical apparatus.

The above shall be achieved with the use of appropriate signs and barriers including live signs and under access permit signs. In positioning signs and barriers consideration shall be given to all approaches to the work area.

Additional barriers and signs may be erected after the issue of the electrical access permit by agreement between the authorised electrical operator and the recipient in charge.

9.7.2.6 Barriers and/or signs for sanction for testing

Prior to the issue of a sanction for testing, barriers and signs shall be erected:

a) to make it clearly evident which electrical apparatus is under sanction for testing, and which is not, and

b) to guard against mistaken or inadvertent contact with other electrical apparatus or equipment under test.

The above shall be achieved with the use of appropriate signs and barriers including danger barriers, live signs and under sanction for testing signs. In positioning signs and barriers consideration shall be given to all approaches to the work area.

Additional barriers and signs may be erected after the issue of the sanction for testing by the tester-in-charge.

9.7.3 Use of a statement of condition of apparatus or plant (SCAP)

9.7.3.1 General

A SCAP is a statement outlining the condition of apparatus or plant.

It shall be used between operating authorities to confirm plant conditions and isolations to support an access authority or other operational requirements.

Note: See appendix B5 for a sample statement of condition of apparatus or plant (SCAP) form.

9.7.3.2 Use of the written statement of condition of apparatus or plant (SCAP)

A SCAP is a documented statement issued by one operating authority to another, stating the condition of the specified electrical apparatus or plant controlled by the issuing authority.

The SCAP specifies the state of the electrical apparatus or plant covered and does not by itself authorise work on the electrical apparatus or plant.

The stated conditions shall be maintained unless changed in accordance with the provisions referred to in this section, or until the SCAP is relinquished by the receiving authority.

Any earths listed on the SCAP may be removed as requested by the recipient in accordance with section 9.2.9.2 Recording of earths and 9.2.9.3 Removal of earth when working under an access authority.

The SCAP shall, where practicable, detail all relevant precautions taken for the safety of the work party/ies.

Where it is not practicable to detail all such precautions, a general written statement of the condition of the electrical apparatus/plant (e.g. isolated and earthed) is acceptable provided that:

a) it is acceptable to the operating authorities, and

b) It is acceptable to all recipients on the associated electrical access permit or sanction for test.

At the time of issue, the issuing operating authority shall describe and show the electrical apparatus covered by the SCAP and the precautions taken to the satisfaction of the receiving operating authority recipient.

Note: Where it is not practicable to show each SCAP isolation physically, other forms of communication, photographic, video evidence of the isolations can be provided.

Where a general statement is used and any isolation point is to be changed (while still maintaining general condition of isolation), prior agreement shall be obtained from all affected operating authorities. The receiving operating authority shall consult with recipients of affected access authorities before agreeing to any change.

Where the receiving authority is a high voltage or complex electrical installation, the receiving authority must keep records of the issue and cancellation of SCAPS or VSCAPS.

Where a high voltage installation or complex installation opens an access authority and records a SCAP or VSCAP as part of precautions taken:

- The receiving authority must record the access authority number on the issued SCAP or VSCAP, and
- The receiving authority must keep a record of the relinquished SCAP or VSCAP.

Note: A record may be a photo of, or scan of the SCAP.

9.7.3.3 Use of the SCAP – verbal

Use of a verbal statement of condition of apparatus or plant (VSCAP)

VSCAP's shall only be used between operating authorities when:

a) there is mutual agreement for their use,

b) they have established procedures and systems for the centralised logging of information both given and received, regarding the condition of electrical apparatus, and

c) the procedures and systems guard against the inadvertent operation or restoration of electrical apparatus.

The operating authority receiving the VSCAP shall be responsible for the issue of relevant access authorities.

Any earths listed on the VSCAP may be removed as requested by the recipient in accordance with section 9.2.9.2 Recording of earths and 9.2.9.3 Removal of earth when working under an access authority.

9.7.4 High voltage metal-clad switchgear and associated electrical apparatus

a) For the purpose of issuing an electrical access permit, a circuit breaker or a voltage transformer may be regarded as isolated and at earth potential when it is racked out, and appropriate precautions taken to prevent re-energisation (also refer to section 9.1 General).

b) For work on busbar circuits, where the physical separation of circuits within a chamber is not visibly evident, additional precautions shall be taken for the safety of the working party.

c) The proposed means of access within metal-clad chambers shall be described to the authorised electrical operator by the recipient in charge and both must agree on the extent of access and that such access is safe.

d) When access is required within spout bushings the contacts shall be confirmed as de-energised by an approved test. The circuit shall also be earthed elsewhere, or other precautions taken to ensure that the spout contacts cannot become live by induction or other means.

e) When it is not practicable to earth metal-clad circuits, a risk assessment shall be conducted to determine the special precautions, including discharging, which are required to ensure the conductors can be regarded as being at earth potential.

9.7.5 Rotating high voltage machines

A rotating machine, or circuits connected to it, shall not be regarded as safe for the issue of an electrical access permit while the machine is revolving unless it is on turning gear with earths applied.

These earths may be removed during the currency of an electrical access permit in accordance with section 8 Earthing of high voltage electrical apparatus.

9.8 Working on insulated power or supervisory cables

9.8.1 On-site identification of insulated cables (including out of commission or abandoned cables)

Where it is necessary for a cable to be de-energised to enable access to the cable, the de-energised state should be confirmed on site by positive identification or visually tracing it from one end or by the use of a spiking device or a remote cable cutting device.

9.8.2 Spiking or remote cutting of cables

A spiking or remote cable cutting device may be used to confirm that a cable is de-energised.

When a cable is to be spiked by a power-operated spiking device or cut by a remote cable cutting device the following measures shall be taken:

a) where practicable the electrical condition of the remote ends of the cable shall be confirmed as isolated and earthed,

b) the person in charge of the work shall personally select the cable to be spiked or cut after careful reference to the appropriate records and use of cable tracers where necessary, and

c) an approved cable spiking device or remote cable cutting device shall be used by a person trained in its use and in accordance with approved procedures.

Prior to spiking or cutting, the operating authority shall be advised. The operating authority shall prevent the energising or re-energising of any cable in the vicinity of the proposed works until advised that spiking/cutting has been completed.

9.8.3 Working under induced voltage conditions

Whenever work is to be carried out on a cable core, sheath, armouring, oil line, etc. of a fully insulated cable system, careful assessment shall first be given to the voltage that may appear on the conductor via induction or other means and appropriate earthing practices and approved work procedures adopted.

Placing high voltage electrical apparatus in service

10.

Principle: High voltage electrical apparatus shall not be placed into service until it has been cleared for service.

10.1 Clearance for service

An operating authority shall not consider electrical apparatus being available for service until it has been handed over from the constructing or maintaining authority by written notification or by approved procedures.

10.2 Connections to new or out of commission electrical apparatus

Before any electrical connection is made whereby new electrical apparatus or any electrical apparatus previously out of commission can be energised by direct switching or live work procedures:

a) the operating authority shall be notified of the intention to make such connection, and

b) all persons associated with the work, and any others likely to be affected shall be informed that no further work is permitted on the electrical apparatus unless:

1. they are recipients of an access authority, or
2. live work procedures are used.

To enable the connection to be made, an appropriate access authority or live work procedure shall be used.

Low voltage assets near HV assets

11.

Principle: Safe working procedures shall be established for work on or near low voltage assets.

11.1 General

Persons required to work on or near low voltage assets shall:

- be appropriately trained and authorised,
- work on or near low voltage assets in accordance with approved procedures, and
- before commencing work on or near any low voltage assets, the assets shall firstly be identified as the assets associated with the work to be undertaken.

Note: HV apparatus shall be managed in accordance with other relevant sections of the Blue Book.

11.2 Work on or near live low voltage assets that are near high voltage apparatus

Where work is to be carried out on or near exposed live low voltage assets that are near HV assets, approved precautions shall be taken to prevent simultaneous contact with conductors or conducting objects at different potentials.

11.3 Work on or near exposed de-energised low voltage assets that are near high voltage apparatus

Where work is to be carried out on or near exposed de-energised low voltage assets that are near HV apparatus:

a) an access authority shall be issued to work on or near the low voltage exposed conductors. For this purpose, an electrical access permit or other approved access authority may be used.

Exception: An access authority is not required for protection and control systems, station service supplies, auxiliary circuits and low voltage services.

b) Control measures shall be taken to:

1. prevent inadvertent contact with other live exposed conductors, or objects at different potentials, and
2. minimise the risks from hazardous induced voltages or unknown supplies.

c) Additional control measures should include:

1. testing to prove de-energised in accordance with approved procedures,
2. blocking and locking of switches,
3. signs and tags placed at all points of isolation, that shall be removed only with the permission of a person identified in approved procedures,
4. earthing, bonding or short circuiting,
5. work planning to minimise the risk of inadvertent contact with live conductors in the vicinity of the work, and
6. insulating and other types of barriers.

Note: For work on or near low voltage electrical installations, further guidance is available in AS/NZS 4836.

Low voltage assets
near HV assets

Work by persons not under the control of the asset owner

12.

Principle: The asset owner shall have procedures to facilitate a safe system of access by persons not under the control of the asset owner.

12.1 General

An asset owner shall have procedures to facilitate a safe system of access by persons not under the control of the asset owner, to work near or within safe approach distance or, when appropriate, in the vicinity of electrical apparatus.

For the purposes of this section, persons not under the control of the asset owner are persons or organisations that have no contractual obligation to the asset owner and are not performing work for the asset owner for the particular task.

The asset owner shall ensure appropriate instruction is provided to such persons on the electrical hazards.

The asset owner shall instruct the person controlling the work (not under the control of the asset owner) that the person is responsible for having a safe system of work in place to avoid the risk from electrical hazard and will ensure all persons are aware of the safe system of work.

12.2 Permit to work adjacent to network assets

Where the safe system of access referred to in section 12.1 is used, it shall include the use of the permit to work adjacent to network assets.

When a permit to work adjacent to network assets is required, the asset owner shall require a written application to be submitted.

The application shall include sufficient information to enable the asset owner to determine appropriate control measures to enable safe access.

The procedure for the permit to work adjacent to network assets shall include:

a) an approved issuer

b) nominated person in charge of the work

c) control measures (precautions) undertaken by the asset owner

d) instructions given to the nominated person in charge of the work, and

e) a process for the issue and cancellation of the permit.

12.3 Work on abandoned underground cables

For work by persons (not under the control of the asset owner) on abandoned underground cables, the use of a safe system of access shall be considered by the asset owner.

12.4 Vegetation management

In this section:

Protected Aerial Line means an aerial line that forms part of:

- a supply network owned or operated by a Major Electricity Company (MEC), or
- a railway or tramway supply network, or
- a low voltage electrical installation operating on public land, or
- a high voltage electrical installation, or
- a low voltage private electric line.

Vegetation Management Rules means the Electrical Safety Rules for Vegetation Management Work Near Overhead Powerlines by Non-electrical Workers, as published or amended from time to time by Energy Safe Victoria.

Vegetation management work includes:

a) the pruning, cutting, trimming or felling of vegetation in the vicinity of a protected aerial line; or

b) the application of herbicides to vegetation that is in the vicinity of a protected aerial line.

Persons performing vegetation management work shall comply with the requirements of the:

- *Electricity Safety (General) Regulations 2019*, and
- The Vegetation Management Rules as published on the Energy Safe Victoria website.

Appendix A Information to be contained in forms

This appendix provides information that shall be included and other information that could be considered by organisations in the formal communications associated with procedures referenced in this Code.

Unless stated otherwise, the information may be communicated verbally or by written or electronic means.

A1.1 Application for an access authority

An application for an access authority shall contain sufficient information to determine:

- the type of access authority to be issued, and
- electrical apparatus to be covered, and
- the precautions to be taken.

Examples of information that could be included are:

- work to be done, and
- details of special requirements by work party (e.g. hazard control measures, cross referencing of electrical access permits),
- instructions to be observed, and
- a unique identifying number, and
- the date, and endorsement of the applicant, and time and date for anticipated start and finish of access authority, and
- the work location.

A1.2 Application for authority to work in the vicinity of electrical apparatus

An application for an authority to work in the vicinity of electrical apparatus shall contain sufficient information to determine:

- work to be done (including details of mobile plant), and
- the work location and work area and access routes.

Examples of information that could be included are:

- details of special requirements by work party (e.g. cross-referencing to related access authority and instructions to be observed), and
- unique identification number, and
- date and endorsement of applicant, and
- time and date for start and finish.

A1.3 Personal authorisations

Authorised persons shall be issued a written statement of their authority.

The statement shall contain:

a) the type of authority, and

b) any limitations or extensions on the type of authority, and

c) the signature of the authorising officer, and

d) the date of issue.

The statement could also contain:

- the duration or authorisation review date, and
- the date of reviews and competency tests, and
- signed statement of acknowledgment by the authorised person, and
- the knowledge and skill required for the authority, and
- a description and scope of duties the person is authorised to perform.

A1.4 Authority to work in the vicinity of electrical apparatus

The details shall contain:

a) form number, and

b) location of work, and

c) description of work, day, commencement date, and

d) estimated day and date of completion, and

e) instructions to be observed by the work party, and

f) receipt, relinquishment and cancelling, and

g) signatures, time, date of issue.

A1.5 Clearance to place electrical apparatus into service

(May also be overhead line clearance and underground cable clearance)

The details shall contain:

a) a description of the electrical apparatus being cleared, and

b) expected commissioning date, and

c) authority to place into service with signature and date from the construction authority, and

d) authority to place into service with signature and date from the testing authority, and

e) statement that all construction persons are clear and will treat the apparatus as live, and

f) provision for construction persons to sign statement, and

g) statement that all commissioning tests have been completed by the testing authority, and

h) provision for the testing authority to sign and date the statement, and

i) statement that the apparatus has been accepted by the operating authority, and

j) provision for the operating authority to sign and date the statement.

The details could contain:

- drawing references, and
- description of works, and
- statement of when works are ready for general inspection.

A1.6 Electrical access permit and sanction for testing

The details shall contain:

a) form number, location, application number, cancellation due time and date, and

b) location or station, and

c) sections for electrical apparatus covered, and

d) condition of electrical apparatus (for sanction for testing) and precautions taken, and

e) section for issue, title, time, date, issued by, and

f) sections for receipt, relinquishment of test party, and

g) section for condition of electrical apparatus on relinquishment of sanction for testing, and

h) section for cancellation, signed, title, time, date.

The details could contain:

- section for telephone or radio issue, and
- additional sections for witnesses.

A1.7 Statement of condition of apparatus/plant (SCAP)

The details shall contain:

a) statement of certification of conditions of electrical apparatus, and

b) sections for signatures of acceptance, relinquishment, and cancellation, and

c) area to record electrical access permits issued, and

d) the following statement:
This statement covers only the state of the electrical apparatus specified hereon and does not by itself authorise work on the electrical apparatus.

Appendix B
Examples of forms described in Appendix A

B1 Example Application for access authority

APPLICATION FOR No: U

- ☐ Auto Reclose Suppression
- ☐ Live Line Maintenance
- ☐ Plant Outage
- ☐ Low Voltage Isolation
- ☐ Authority to Work in the Vicinity of Electrical Apparatus
- ☐ Electrical Access Permit
- ☐ Sanction for Testing
- ☐ Authority for Testing by Contractors
- ☐ Statement of Condition of Apparatus/Plant
- ☐ High Voltage Switching
- ☐ Authority to Work on or Remove Abandoned Underground Cables

From: Day..... Time.....Date...../...../..... To: Day..... Time.....Date...../...../.....

To be issued to ..... at ..... Estimated Recall Time .....

Location: Street No.....Street Name .....Suburb/Town .....Postcode .....

Apparatus to be covered (include relevant diagrams/drawings)

.....

.....

.....

.....

.....

Work to be done .....

.....

.....

.....

.....

Special requirement.....

.....

.....

.....

.....

Applicant's Name.....(print) .....Signed ..... Date ...../...../.....

Organisation ..... Telephone .....

FOR USE BY OPERATING AUTHORITY .....

.....

.....

.....

.....

.....

.....

.....

.....

Issuing Operator..... Restoration Time.....

Approved by: Name.....Signed ..... Date ...../...../.....

Auth. No.	Recipient in Charge	TMR No.	Issue Day/Time	Cancellation Day/Time

B2 Example Electrical access permit (EAP)

ELECTRICAL ACCESS PERMIT (EAP) No: U

HVEAP ☐ HV/LVEAP ☐ LVEAP/LVIBS ☐ OPERATOR'S PHONE NO. _____

Application No. _____ Issue (Time) _____ Day: _____ Date: __/__/__

Station (where applicable) _____ Cancellation (Time) _____ Day: _____ Date: __/__/__

A. This Electrical Access Permit allows access to:

B. The conditions of isolation from points of supply shall remain unchanged during the currency of the Electrical Access Permit. Variations to earthing may only be made under the terms of the "Blue Book" and "Green Book". The following precautions are in place.

D. Receipt

I understand the apparatus covered and the limits of the Electrical Access Permit.

I am satisfied with the precautions taken.

I am aware of all adjacent alive apparatus and I am satisfied I can remain clear of this apparatus during the currency of the work under this Electrical Access Permit.

I hereby acknowledge receipt of this Electrical Access Permit for work in accordance with the conditions stated herein.

E. Relinquishment

I hereby relinquish this Electrical Access Permit and state that henceforth I regard the apparatus as unsafe to touch.

	Print Name	Sign Name	Sign Name
	1. *Recipient in Charge*	*Recipient in Charge*	1. *Recipient in Charge*
	2.		2.
	3.		3.
	4.		4.
	5.		5.
	6.		6.
	7.		7.
	8.		8.
	9.		9.
	10.		10.
	11.		11.
	12.		12.
	13.		13.
	14.		14.
	15.		15.
	16.		16.
	17.		17.
	18.		18.
	19.		19.
	20.		20.

C. I hereby issue this Electrical Access Permit

Print Name: _____ Signed: _____

Instructed by: _____

Time: _____ Day: _____ Date: __/__/__

F. I hereby cancel this Electrical Access Permit

Print Name: _____ Signed: _____

Instructed by: _____

Time: _____ Day: _____ Date: __/__/__

Additional Information

Work Party Earths/Bonders are applied at the following locations:

Location	Installed by	Removed by
1.		
2.		
3.		
4.		

B3 Example Sanction for test

SANCTION FOR TESTING (SFT) No: U

Location .....

Application No. ..... Cancellation Due: Time ..... Date ...../...../.....

Apparatus/plant covered by this Sanction

.....

.....

.....

.....

.....

.....

.....

.....

Condition of apparatus/plant and precautions taken

.....

.....

.....

.....

.....

.....

.....

.....

Issue of Sanction authorised by .....Title..... Time..... Date ...../...../.....

Sanction issued by .....Title..... Time..... Date ...../...../.....

RECEIPT

I hereby receive this Sanction under the conditions stated above.

Test Party

1. ..... (Tester in Charge)
2. ..... (Tester responsible at remote location)
3. .....
4. .....
5. .....
6. .....

RELINQUISHMENT

All personnel under my charge are clear of the plant and I hereby relinquish this Sanction.

Test Party

1. ..... (Tester in Charge)
2. ..... (Tester responsible at remote location)
3. .....
4. .....
5. .....
6. .....

Condition of apparatus/plant on relinquishment of Sanction .....

.....

.....

CANCELLATION

I accept return of the above apparatus/plant and hereby cancel this Sanction for Testing.

Signed .....Title..... Time..... Date ...../...../.....

B4 Example Vicinity authority

No: **U**

AUTHORITY TO WORK IN THE VICINITY OF ELECTRICAL APPARATUS AND/OR MECHANICAL PLANT (VA)

To..... Date...../...../.....

In accordance with approved Application Number ..... Time.....

You are hereby authorised to carry out the following work.....

.....

.....

.....

.....

.....

at ..... from.....(day) Date...../...../..... Time .....

to.....(day) Date...../...../..... Time .....

The following precautions to ensure safety have been taken .....

.....

.....

.....

.....

.....

.....

The following instructions shall be observed by the work party.....

.....

.....

.....

.....

.....

.....

.....

.....

ISSUE: Signed by Issuing Authority

Name.....Signed .....Time.....Date...../...../.....

RECEIPT:

I hereby receive this authority and fully understand the nature and position of the work detailed. I have been advised of the nature and position of adjacent live apparatus and the Safe Approach Distance and I undertake to instruct the persons of the party to observe the safety precautions as detailed on this Authority.

Name.....Signed .....Time.....Date...../...../.....

RELINQUISHMENT:

I hereby relinquish the above Authority and all persons will remain clear of the work referred to:

Name.....Signed .....Time.....Date...../...../.....

CANCELLATION

I hereby cancel this Vicinity Authority.

Name.....Signed .....Time.....Date...../...../.....

B5 Example SCAP

STATEMENT OF CONDITION OF *APPARATUS – *PLANT (SCAP)

No: U

This Statement covers only the state of the apparatus or plant specified hereon and does not by itself authorise work on the apparatus or plant.

CONDITIONS OF ISOLATION

I hereby certify to.....

that.....

.....

.....

.....

.....

.....

.....

.....

.....

and state that the above conditions of isolation will remain unchanged until this statement is cancelled.

Any earths listed above may be removed as requested by the recipient. (Note: All switching, isolation and earthing to be state above.)

ISSUED BY

Name:..... Signed..... Time ..... Date...../...../.....

Instructed by.....

ACCEPTED BY

I have checked and understand the condition of (*apparatus/*plant) as stated above and hereby accept this statement.

Name:..... Signed..... Time ..... Date...../...../.....

RELINQUISHED BY

I hereby relinquish this statement and I fully understand that the condition of the aforesaid apparatus*/plant* may be changed without further reference to me

Name:..... Signed..... Time ..... Date...../...../.....

CANCELLED BY

I hereby cancel this statement

Name:..... Signed..... Time ..... Date...../...../.....

Instructed by.....

RECORD OF ACCESS PERMITS ISSUED

Access Permit No..... Issued Time ..... Date...../...../.....
Cancelled Time ..... Date...../...../.....

Access Permit No..... Issued Time ..... Date...../...../.....
Cancelled Time ..... Date...../...../.....

Access Permit No..... Issued Time ..... Date...../...../.....
Cancelled Time ..... Date...../...../.....

All the above Access Permits must be cancelled before this Statement is relinquished.

* Delete where not applicable

B6 Example High voltage switching instruction template

High voltage switching instruction

Location:

Date:

Reason for switching:

Prepared by:

Verified by:

Initial status (of network)

Switchgear identification:

Isolation of:

Electrical access permit will allow access to:

Warning: Confirm with the supplied operating procedure you are operating the switchgear listed above before proceeding with this instruction.

Item	Operation	Confirmation	Complete
To Open			
1			
To Rackout			
2			
3			
4			
5			
To Lockout			
6			
7			
8			
To Earth			
9			
10			
11			

STOP HERE – CIRCUIT IS ISOLATED

To return to service

Item	Operation	Confirmation	Complete
To Remove Earth			
12			
13			
To Unlock			
14			
15			
16			
To Rack in			
17			
18			
To Close			

19			
20			
21			

Notes:

1. Add/delete other fields and/or rows as required for each step.
2. Store all operating equipment and HV PPE to correct storage.
3. Return this completed switching instruction to the folder in the substation you obtained it from.

Bibliography

AS/NZS 1891.4	Industrial fall-arrest systems and devices Selection, use and maintenance
AS 1892.5	Portable ladders – Selection, safe use, and care
AS/NZS 4024.1 series	Safety of machinery
AS ISO 31000	Risk management – Guidelines
AS/NZS IEC 60903	Live working – electrical insulating gloves
AS/NZS IEC 61111	Live working – electrical insulating mats
ENA Doc 001	National Electricity Network Safety Code
ENA Doc 025	EG-0 Power System Earthing Guide Part 1: Management Principles
ENA Doc 042	National Guidelines for Manual Reclosing of High Voltage Electrical Apparatus Following a Fault Operation (Manual Reclose Guidelines)
ENA Doc 044	Guideline for Energised Low Voltage Work
ENA NENS 09	National Guideline for the Selection, Use and Maintenance of Personal Protection Equipment for Electrical Arc Hazards
IEC 60855-1 Ed. 2.0	Live Working – Insulating Foam-Filled Tubes and Solid Rods Part 1: Tubes and rods of a circular cross-section
IEC 61230	Live working – Portable equipment for earthing or earthing and short-circuiting
IEC 62271-213:2021	High-voltage switchgear and controlgear – Part 213: Voltage detecting and indicating system

Energy Safe Victoria
ABN 27 462 247 657

Head office
Level 5, 4 Riverside Quay
Southbank VIC 3006

Postal address
PO Box 262
Collins Street West VIC 8007

03 9203 9700
info@esv.vic.gov.au

esv.vic.gov.au

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