Safety Guidelines for the Live Entertainment and Events Industries

Part 3. Hazard Guides 02 – Electricity

Version 2: effective September 2024

LIVE PERFORMANCE AUSTRALIA

Contents

Part 3. Hazard Guide 2 - Electricity

Disclaimer

In legislative terms, the requirements of the **Australian WHS/OHS Framework** are mandatory. In contrast, a guide is designed to assist obligation holders to comply with the requirements of an act or regulation.

Obligation holders still have a duty to assess the risks in each work situation and take all reasonable steps to eliminate or minimise the risks that are specific to each work activity, so far as reasonably practicable. These obligations are described in the *Occupational Health & Safety Act 2004* (Vic) (**Victorian OHS Act**) at section 21 and in the Work Health Safety Acts in all other states and territories at section 19.

The information contained in the LPA Safety Guidelines for the Live Entertainment and Events Industries (**LPA Safety Guidelines**) is of a general nature and may not apply in all work situations, it is not mandatory and should not be regarded as legal advice. In any important matter, you should seek appropriate independent professional advice in relation to your own circumstances. Live Performance Australia (**LPA**) accepts no responsibility or liability for any damage, loss or expense incurred as a result of the reliance on information contained in this guide.

Definitions and Terms Used

Australian WHS/OHS Framework means Model WHS Legislation and Victorian Legislation

Certificate of Electrical Compliance means all temporary electrical installations in Australia must be certified by a qualified electrician in the state and this document MUST be issued. The certificate shows that all electrical work has been carried out, installed, or tested to the relevant industry safety standards, Australia/New Zealand wiring rules, and the State Service and Installation Rules

Employer means a person who employs one or more other persons under contracts of employment or contracts of training (Victorian OHS Act)

Federal Model WHS Act means *Work Health and Safety Act 2011* (Cth)

Federal Model WHS Regulations means *Work Health and Safety Regulations 2011* (Cth)

IP Rating means Ingress Protection Rating classifies the degree of protection provided by an enclosure for electrical equipment

KPSC means Keyed Single Pole Connectors (Brand Names like Power Lock, PowerSafe are compliant in AUS and Cam-Lok are not compliant but used in US still)

Model WHS Legislation Work Health and Safety Act 2020 (WA); Work Health and Safety Regulations 2022 (WA); Work Health and Safety Act 2012 (Tas); Work Health and Safety Regulations 2022 (Tas); Work Health and Safety Act 2012 (SA); Work Health and Safety Regulations 2012 (SA); Work Health and Safety Act 2011 (NSW); Work Health and Safety Regulations 2017 (NSW); Work Health and Safety Act 2011 (ACT); Work Health and Safety Regulations 2011(ACT) Work Health and Safety Act 2011 (QLD); Work Health and Safety Regulations 2011 (QLD); Work Health and Safety Act 2011 (NT); Work Health and Safety Regulations 2011 (NT)

Model WHS Acts *means Work Health and Safety Act 2020* (WA); *Work Health and Safety Act 2012* (Tas); *Work Health and Safety Act 2012* (SA); *Work Health and Safety Act 2011* (NSW); *Work Health and Safety Act 2011* (ACT); *Work Health and Safety Act 2011* (QLD); *Work Health and Safety Act 2011* (NT)

Model WHS Regulations means *Work Health and Safety Regulations 2022* (WA); *Work Health and Safety Regulations 2022* (Tas); *Work Health and Safety Regulations 2012* (SA); *Work Health and Safety Regulations 2017* (NSW); *Work Health and Safety Regulations 2011* (ACT); *Work Health and Safety Regulations 2011* (QLD); *Work Health and Safety Regulations 2011* (NT).

PCBU means person conducting a business or undertaking (Model WHS Legislation)

RCD Protections means Residual Current Device protects by stopping current flow by breaking circuit

SWMS means safe work method statement

Victorian OHS Act means *Occupational Health & Safety Act 2004* (Vic)

Victorian OHS Regulations means *Occupational Health & Safety Regulations 2017* (Vic)

Victorian Legislation means *Occupational Health & Safety Act 2004* (Vic)*; Occupational Health & Safety Regulations 2017* (Vic)

Electricity Hazard Guide

1. Overview

This guide provides information to assist in managing risks associated with **working with electricity** in live entertainment and events. Information in this guide is based on the Australian WHS/OHS Framework.

It is recommended that this information is referenced during the planning and delivery of events to assist in identifying hazards, assessing risks and determining appropriate control measures to eliminate and/or minimise these risks, so far as reasonably practicable.

This guide does not replace the need to implement risk management strategies, undertake research or seek specialist advice.

Each person conducting a business or undertaking (**PCBU**), or Employer who manages or controls a workplace has a responsibility to understand their obligations under Australian WHS/OHS Framework. Workers/employees also have a responsibility to ensure they do not endanger themselves or others. Australian and international standards provide approved guidance on how to meet work health and safety obligations. Codes of Practice and Compliance Codes are available from Safe Work Australia or the relevant state regulator eg: SafeWork NSW, or the WHS regulator in your state or territory.

A Code of Practice, or Compliance Code is a refined version of a Standard, which also refers to the Australian WHS/OHS Framework. They can be easily read and understood, with information on specific work tasks and procedures, to assist you to achieve compliance required under the OHS/WHS Acts and Regulations in each state or territory.

An electrical hazard can cause death (electrocution), electric shock, burns, and nervous and muscular system injuries. Electrical hazards can also result in arcing, explosion and fire. Electrical hazards can lead to blackouts, creating flow-on health and safety risks to workers and patrons.

There are some additional complications because electricity cannot be seen. Electric shock can be received by direct and indirect contact, by unintentionally energised (live) equipment, misuse or incorrect operation of equipment, or by not following established safe work procedures.

The risk of injury from electricity is strongly linked to where and how it is used. The risks are greater when working in outdoor or in wet environments, with portable equipment, with custom made equipment and props, or with equipment that can be damaged through high frequency use and movement.

This Electricity Safety Guide provides practical information and suggested control measures for:

- General electricity
- Electrical equipment
- Electrical leads and cables
- Licensed work
- Isolation
- Operations and maintenance
- Power supply
- Testing

2. Key Considerations

The following questions must be considered during event design, planning and delivery. Use them to identify hazards and plan how risks will be managed.	Yes	No	Action/Comments
2.1. Design and planning			
Has the scope of work (duration, equipment, scheduling, location) been clearly defined?	☐	☐	
Have other PCBUs/Employers and workers/employees who will be affected by this activity been identified?	☐	☐	
Have arrangements been made to consult with and coordinate activities with other PCBUs/Employers?	☐	☐	
Have all site/venue specific safety requirements or procedures been considered?	☐	☐	
If installing temporary power, has the relevant state regulator/local government organisation been contacted to check what safety certification is required?	☐	☐	
Is electrical safety included in the site/venue induction?	☐	☐	
Will the potential electrical load be within the limits and design of the power supply/circuit?	☐	☐	
Have locations of all electrical equipment and cables been determined?	☐	☐	
Are safety procedures in place for workers working near overhead power lines?	☐	☐	
Are power supplies suitable for the location and positioned safely?	☐	☐	
Will there be a requirement for an ongoing electrical maintenance program?	☐	☐	
Has machinery/equipment that may expose workers to electrical risk been identified?	☐	☐	

The following questions must be considered during event design, planning and delivery. Use them to identify hazards and plan how risks will be managed.	Yes	No	Action/Comments
2.2 Event Delivery			
Have the people working with electricity been given information, instruction and training?	☐	☐	
*Are residual current devices (**RCDs**) labelled and tested?*	☐	☐	
Are plugs/sockets in good condition?	☐	☐	
Have surge protected power boards or piggy-back plugs been used in preference to double adaptors?	☐	☐	
Are power cables of suitable length for their intended use?	☐	☐	
Are switchboards labelled correctly and protected from damage?	☐	☐	
A check has been conducted to ensure that no aerial cables are fixed or attached to scaffolding?	☐	☐	
Has all electrical equipment and cables been inspected, tested and tagged in accordance with AS/NZ 3760?	☐	☐	
Are extension cables protected from water, and from being damaged or cut?	☐	☐	
Are electrical installations suitably protected from damage that would increase the risk of electrical shock or fire?	☐	☐	
Do extension cables have either moulded or transparent type plugs/sockets attached?	☐	☐	
Are light fittings suitable for the location and protected from breakage?	☐	☐	
Is all portable electrical equipment protected by RCDs with a safety switch?	☐	☐	
Has a check been conducted to ensure that extension cables and connections DO NOT prevent access to emergency response equipment?	☐	☐	

3. General Guide – Electricity

3.1 Responsibilities

The Australian WHS/OHS Framework imposes specific requirements on PCBUs concerning electrical work, including to:

- Manage any electrical risks
- Ensure workers receive adequate training so as to work safely with electrical equipment
- Inspect, test and tag electrical equipment at the workplace
- Disconnect and replace or remove unsafe electrical equipment
- Use and test appropriate residual current devices
- Follow conditions for work carried out on energised electrical equipment and cables (See below section of guide 3.2 – Training & Competence)

Duty holders may also have additional responsibilities under state electrical safety regulations.
See Part 5 – Legislation, Standards & Guidance.

3.2 Training and competence

Different licensing and competency requirements apply across Australian states and territories. Responsible persons should check with their state electricity regulator to clarify what type of licence is required. Broadly, the following requirements apply for each task/activity:

- **Inspect, test and tag electrical equipment and cables**
  Inspection and testing of electrical equipment must be carried out by a competent person – someone who has acquired the knowledge and skills to carry out the task through either training, a qualification or experience. The unit of competency '*UEERL0003 Conduct* in-*service safety testing of electrical cord connected equipment and cord assemblies'* is the minimum benchmark for persons conducting or supervising this type of work. See: training.gov.au - UEERL0003 - Conduct in-service safety testing of electrical cord connected equipment and cord assemblies

- **Electrical cable plug and socket repair**
  Electrical plugs and sockets may be replaced by a person who does not hold an electrical licence provided the person has been trained, assessed and found to be competent to fit plugs and sockets according to the manufacturer's instructions. The unit of competency '*UEERL0001 Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply'* is the minimum recommended benchmark for persons conducting or supervising this type of work. See: training.gov.au - UEERL0001 - Attach cords and plugs to electrical equipment for connection to a single phase 230 Volt supply

- **Electrical equipment repair and maintenance**
  The repair and maintenance of electrical equipment must be carried out by a competent person – someone who has acquired the knowledge and skills to carry out the task through either training, a qualification or experience. The Restricted Electrical Worker's Licence (Class C) allows a person to disconnect and reconnect low voltage (under 1000v AC / 1500v DC) electrical equipment or components for the purpose of repair, replacement or maintenance.

- **Work on energised electrical equipment and cables**
  This is an extremely high risk activity and is restricted to a Licensed Electrician, Registered Electrical Contractor, or Qualified Electronic Technician. This activity must be thoroughly risk assessed with a range of controls introduced. Further to this, a 'rescue from live electrical

apparatus' plan must be in place prior to commencement of work.

See Part 4.4 of this guide– Licensed work, for further information.

3.3 Consultation, co-operation and co-ordination

The WHS Acts and the Victorian OHS Act make consultation with workers a legal requirement. Consultation, cooperation and coordination between PCBUs is a requirement where they share a duty for the safety of a worker or for work to be done.

PCBUs and Employers should use the information in this guide to consult with workers including event staff to determine the electrical hazards and risks associated with an event and how to best eliminate or minimise these risks using the hierarchy of controls.

Consultation should start as early as possible, before decisions are made, and continue throughout the duration of the event.

Consider the other parties who will need to be involved in the consultation process in the planning stages of the event and determine what information needs to be shared and discussed.

During an event, PCBUs/Employers are required to consult, co-operate and co-ordinate with other PCBUs such as the venue or site management, unions, production companies, designers, event organisers or promoters, catering providers, security, subject matter experts (e.g. registered electricians or safety officers), local authorities or governments, rigging companies, performers, suppliers of plant or equipment.

If employees are represented by health and safety representatives, the consultation must involve those representatives.

Areas to address during consultation may include induction, schedules, floor plans, set elements, lighting and sound designs, site specific requirements, risk assessments, SWMS, hazards and control measures, legislative requirements, licences, plant movement, traffic management, exclusion zones, key contacts, emergency procedures, permits to work etc.

Opportunities for consultation include at toolbox talks, event briefings, site inspections, and stakeholder meetings, post event reviews, working groups or forums.

3.4 Design and planning

In the early stages of design and planning for an event, the following criteria should be addressed when planning to work with electricity:

- Consultation with relevant PCBUs/workers and Employers/employees
- Consultation with all departments that will require electrical power
- Development of risk assessments and SWMS including controls agreed to during consultation
- Selection of the plant and equipment required to complete the task
- Agreed scheduling and allocation of resources to minimise impact on others
- Access to site and delivery logistics
- Maintenance programs
- IP rating requirements for outdoor electrical equipment and cable
- Location and accessibility of power supplies/source(s)
- Maximum capacities of power supplies/source(s)
- Circuit and phase load calculations

- Rating of cables and connectors for maximum load requirements
- Licensing requirements to connect and disconnect temporary mains supply
- Type and capacity of mobile generators
- Type and capacity of uninterruptable power supplies
- Cable routes/runs and management strategies
- Emergency procedures for rescue from energised electrical apparatus

3.5 Event delivery

In the delivery stages of an event (bump-in, rehearsal, show, bump-out) the following criteria should be addressed when undertaking work with electricity:

- Consultation with relevant PCBUs/Employers and workers/employees
- Site-specific inductions
- Equipment inspections and/or maintenance
- Work permits or engineering certificate requirements
- Implementation and monitoring of controls identified in risk assessments or SWMS
- Enforcing compliance to legislative requirements
- Reviewing, consultation and adjusting control measures as required on site
- Incident reporting and management
- Communication procedures
- Sign-off and handover procedures

3.6 Review

After an event, the following criteria should be reviewed in consultation with relevant parties:

- Incident reports and outcomes including near-misses.
- Effectiveness of the control measures
- Scheduling
- Areas for improvement
- Incidents of non-compliance
- Any new hazards or risks identified

3.7 Documentation and records

The following documents and records should be created, maintained and kept on site when working with electricity during an event:

- Risk assessments and SWMS
- Training records, certificates of competency and licences
- Induction records
- Toolbox talk topics and attendance
- Evidence of consultation
- Incident reports, including near-misses
- Maintenance records
- Engineering certification, work permits and sign-off records
- Power calculations and circuit loadings

Any of the above documents could be requested to be sighted by other PCBUs/Employers for verification or clarification and should be available at all times.

Some WHS documents and records need to be retained for a specific period of time – Under the Model WHS Regulations in relevant states and territories. See, Part 4.7 General Electrical safety in workplaces and energised electrical work, Reg 162, Record Keeping.

The SafeWork NSW, electrical guidance material states; Keep a record of any testing you do on your energised electrical equipment. Also keep records of your safe work method statements (until the work is finished) and risk assessments (for at least 28 days after the work is completed). Should there be an electrical shock or a serious injury, keep records for at least two years.

3.8 Reporting

Electrical incidents require notification to the state/territory electrical regulator and safety regulator. Organisations and specific events will have differing reporting channels, which must be made clear to all workers/employees, contractors and PCBUs/Employers in advance. Workers must report ALL electrical shocks or accidents to their employer, including the relevant Health and Safety Representative, where they exist.

Reporting to the state/territory safety regulator

All electrical shock injuries are notifiable to the state and territory safety regulator, except those resulting from extra low voltage (<50v AC, <120v DC). Near misses are also reportable – that is where such injury could have occurred had a person been present. The regulator should be notified immediately.

In such circumstances the worksite must not be disturbed.

In the event of a person being killed this must be reported immediately by telephone. The PCBU/Employer must ensure that the worksite (area) is not disturbed.

Serious risks to public safety must be reported.

Reporting to the electrical supplier/regulator

In Tasmania, New South Wales, Queensland, only electrical accidents and events requiring medical attention require notification to the electrical supplier. In all other jurisdictions, all electrical incidents or events must be reported to the network supplier (energy company) and/or electricity regulator. Always confirm with the state and territory safety regulator who else needs to be notified after making the first contact following an incident.

An event that causes significant damage to property must also be reported, as this would be classified as a ‘near miss’ or a ‘dangerous incident’.

Multiple PCBU/Employer reporting

At a site where multiple PCBUs are operating, each PCBU/Employer must ensure that a ‘notifiable incident’ is reported. PCBUs and Employers should clarify who is responsible for reporting. This may be the event manager, site safety officer, or persons undertaking such duties, for the employer.

4. Suggested Control Measures

4.1 General electricity

Almost every event will require electrical power of some form or another. It is important that electricity is carefully risk managed at all times due to the serious consequences that may result.

4.2 Electrical equipment

All equipment must be well maintained and must not be used if it appears faulty.

Workers must be trained in conducting routine inspection and must clearly understand how to report worn, faulty or damaged equipment.

Unsafe equipment must be disconnected or isolated.

'Out of service' ('lockout') tagging procedures must be understood. 'Return to service' procedures should be understood and include testing of equipment prior to use. These processes are electrical specific procedures for removing and returning equipment to and from service. If you don't understand - consult an electrician.

All equipment and cables must be inspected, tested and tagged in accordance with AS/NZ 3760. Testing frequency must be determined with respect to WHS Regulations, state regulations and taking into account conditions of use. Appropriate records must be maintained.

Lighting Fixtures and Dimmers

Lighting equipment likely to reach high temperature must be suitably guarded with a clearance maintained from flexible cords to prevent overheating and melting.

To avoid overloading and a consequent fire hazard, maximum loads of lighting dimmers must not be exceeded.

Lighting designers or persons designing a temporary lighting system require knowledge and understanding for the capacity of the available power supply. In designing a system and the layout of equipment, the capacity of cabling should also be considered. Dimmer and phase loading plus size of lighting equipment should be carefully planned with a load diagram for the system.

Portable equipment

Portable electrical tools/appliances must be protected by RCDs, or when incompatible (e.g. dry ice machines) protection must be provided by current protection on the distribution board.

4.3 Leads and cables

During the planning stage, decisions will need to be made as to which type of cable management system is to be used. For example a cable tray may be more appropriate than the use of centenary wire to travel the cable overhead.

The use of socket adaptor plugs (piggy backs) must be carefully managed and only used in the way they are designed.

Cable routes need to be carefully planned pre-event. Cable management may be required for protection against sharp edges and heavy loads. Any protection should be conspicuously marked to avoid trip hazards.

Cable connections and joins need to be secured and protected, especially in outdoor environments exposed to weather. It may be necessary to fit appropriate weatherproofing and elevate the cable connection to prevent exposure to moisture/water.

Cables should be selected to minimise excess length. Any excess length on power cables should be coiled in a 'figure 8' pattern so as to dissipate any heat build-up and help reduce induction.

When managing excess power cable on a truss or bar the cable should be run-out along the structure and double-backed on, so as to dissipate any heat build-up and help reduce induction, rather than coiled or wrapped around the structure.

Once the installation of cables is complete, it is best practice to do a walk-through of the work site to see if any heavy duty rubber mats or extra signage are required to avoid trips**.**

All leads and cables must:

- Be tested and tagged in accordance with AS/NZ 3760.2022
- Be of industrial quality
- Be protected from weather
- Be secured and clearly identified
- Be protected from sharp edges and heavy loads, including during transport
- Have ends covered with plastic protective covers
- Have any excess coiled in a 'figure 8' configuration
- Be stored so they will not be damaged
- Not be frayed or have wiring exposed
- Not be twisted, crushed or kinked
- Not create a tripping hazard
- Not be in contact with cranes or overhead mobile plant and equipment
- Be off the ground, or if not possible, protected from damage, weather and tripping with suitable cable covers

4.4 Licensed work

Work that is undertaken on an electrical installation or equipment (except extra low voltage – <50 v AC or 120 v DC) must only be undertaken by competent and licensed or registered electricians. Working on extra low voltage appliances or equipment requires training and competency. A course is available through training.gov.au - training.gov.au - UEECD0045 - Solve problems in multiple path extra-low voltage (ELV) a.c. circuits

Energised electrical work is prohibited unless one or more of the exceptions under the WHS Regulations/Victorian OHS Regulations or Electrical Safety Regulations applies and the work is carried out in accordance with the WHS Regulations, Victorian OHS Regulations or Electrical Safety Regulations in each state or territory.
See part 5 of this guide – Legislation, Standards and Guidance for more information.

Before working on any electrical equipment it must be isolated, tagged out of service and checked. the safe work procedure 'TEST FOR 'DEAD' BEFORE YOU TOUCH' must be applied at all times. The steps are:

- Ensure all participants are competent and qualified for the job
- Identify potential hazards
- Wear correct PPE and use the proper tools
- De-energise the circuit
- Lockout/Tagout
- Test the circuit
- Verify the testing device

Treat every circuit or piece of electrical equipment as live until tested and proven **not** to be live.

4.5 Isolation

Exposed wiring or any electrical item in need of repair or maintenance or should be isolated from its power source. For example, when replacing a globe in a lighting fixture, it must be unplugged locally from its power source. This also applies to distribution boards. Circuit breakers may need to be tagged out to protect personnel working downstream.

4.6 Operations and maintenance

All workers must be aware of their responsibilities with regard to electrical safety, through induction, ongoing training and appropriate supervision. Manufacturer's instructions must be followed. Instructions and operating manuals should be available and accessible to workers using equipment.

All outlets must be considered live/energised unless proved dead (de-energised).

Conducting materials such as earth, concrete, wet/damp timber, flames, all metal objects such as rulers, tapes, rings and belts and including yourself must, as far as possible, be removed from contact with any electrical work.

Double adaptors or rewireable three-pin piggy-back plugs must not be used.

The use of moulded or clear, riveted (not user accessible) piggyback plugs is acceptable only when wired by competent, appropriately trained, authorised personnel.

Ladders intended for electrical use must be used. In practice only ladders made from non-conductive materials such as fibreglass should be used for work around live electrical equipment.

4.7 Power supply

Ensure all power distribution systems are energised in steps, starting at the main power supply and flowing down stream through each distribution point until the last device is reached.

Ensure all power distribution systems are de-energised in steps, starting at the last device, back through each distribution point and ending at the main power supply.

Prior to energising or de-energising a distribution system, ensure all co-workers are informed that the distribution system is 'alive' or 'isolated'.

Check supply boards annually. Thermal imaging while under load is a good way to assure the board is safe.

Ensure all contractors and staff are aware of and adhere to power load allowances.

At outdoor events, mains power must be earth protected and all power supplies be fitted with Residual Current Devices (**RCD**s) including the electrical grid, portable distribution boards, electrical panels etc. Production electrical distribution devices (tie-ins or tails) must only be installed, removed or handled while the mains/generator power is isolated. Ensure that the electrical grid is effectively isolated from mains or generators while any electrical equipment is installed or removed. Danger tagging and physical isolation of mains/generators outlets and mains controls must occur while works along the power grid are being undertaken.

All switchboards must be of robust weatherproof construction and have a locking device, protective doors that will not damage flexible extension cords, securely fixed to a structure and be locked after work each day/shift. All temporary switchboards must additionally have an isolating switch.

All power lock (KSPC, Keyed Single Pole Connectors) mains and power distribution systems used for temporary power must be installed off the ground, out of water and protected from the elements. In the event that cables are installed on the ground, floor or platform where concessions are located or vehicles parked or driven, they shall be selected and installed so as to minimise the risk of mechanical damage. Protection against mechanical damage shall be provided by one or more of the following:

- Mechanical characteristics of the wiring system
- Location selected
- Provision of additional local or general mechanical protection including electrical cable covers or barriers specifically designed as cable covers or barriers and tested to AS/NZS 3996

No cabling under a stage is to be in contact with the conduction framework of the structure.

State regulators and some local governments require safety certification for temporary power installation. Electrical contractors should provide PCBUs or Employers with a 'Certificate of Compliance' for any temporary electrical installation. Checks are required during planning to assure which specific licences may be required to perform certain tasks or installations. Below are examples of a Certificate of Compliance (COC):

- Worksafe QLD
  QLD - Certificate of Electrical Compliance
  Example Certificate
- Fair Trading NSW
  NSW
  Example Certificate
- Government of South Australia
  SA
  Example Certificate
- Energy Safe Victoria
  Vic - Certificate of Electrical Safety
  Example Certificate
- Government of Western Australia
  WA
  Example Certificate

A secure (fenced) location (see AS/NZS 4687) should be provided for portable generators, including the fuel source (which will also require a Type ABE Dry Powder Fire Extinguisher). Work procedures must ensure inhalation of fumes and fuel spillage hazards are managed. A silencer may be required to manage noise. Whenever cables (KSPC, Keyed Single Pole Connectors) are installed it is best practice to install the earth first, followed by live conductors. When disconnecting, the earth should always be left in until all the other live cnductors have been disconnected.

The WHS Regulations (Chapter 4 section 4.7, Reg 144-166) have additional specific requirements for regular testing of electrical equipment used in a 'hostile operating environment' (outdoor, exposure to moisture, heat, vibration).

4.7.1 Non-Australian Power Supply

There are times when an overseas tour or production will bring equipment that is designed for voltages other than Australian Standard (240V/415V 50Hz). US mains voltage is 110V 60Hz. In these cases a thorough Risk Assessment must be done to provide assurance that the non compliant system is safe and is understood.

Assessment and Inventory:

- Detailed Inventory: Establish a comprehensive list of all equipment being brought in. Note the voltage and power requirements for each item.
- Compatibility Check: Identify which equipment is not compatible with the local 240V, 415V/50Hz power supply. Establish what the required Voltage is for the touring system.

Equipment Inspection

- Initial Inspection: Touring electrician or responsible person will need to provide evidence of Conducting a thorough inspection of all incoming equipment to identify any potential safety hazards.
- Certification Verification: Ensure that all equipment has valid safety certifications from reputable bodies. If uncertified, consider whether it can be replaced with locally certified equipment. This will be the responsibility of the touring electrician or production manager.

Power Distribution Systems

- Power Supply: Assessment of power supply adequacy and distribution infrastructure.
- Circuit Protection: Inclusion of circuit breakers, fuses, and Residual Current Devices (**RCD**s) to prevent electrical faults.
- Grounding and Earthing: Ensuring proper grounding and earthing of all equipment.
- Creation of Line Diagram: Provide information where House Power ends and Touring Power starts (demarcation point). Using transformers that match the required power supply or providing generators set to correct power supply may be an alternative.

Installation and Setup:

- Installation Procedures: Detailed procedures for the safe installation of equipment, including any special requirements.
- Qualified Personnel: Verification that installation is carried out by licensed electricians or qualified professionals. This should be done in consultation by the House Electrician.

Operational Safety:

The touring production manager or touring electrician will need to have Safe Operating Procedures.

- Usage Guidelines: Clear guidelines and instructions for safe operation of the equipment.
- Emergency Procedures: Established emergency procedures in case of electrical failure or incidents.

5. Legislation, Standards and Guidance

WHS Legislation
(NSW, QLD, ACT, NT)

- WH&S Act 2011 –Division 2 Primary duty of care, 19 (2), 28, 29, Part 4 Authorisations, 41, 42, 43, 44
- WH&S Regulations 2017 (NSW) – Chapter 2 Representation and participation, 25, 26
- Part 4.7 General electrical safety in workplaces and energised electrical work 144 > 166
- WH&S Regulations 2011 (ACT, NT) - Chapter 2 Representation and participation, 25, 26
- Part 4.7 General electrical safety in workplaces and energised electrical work 144 > 166
- (QLD) Electrical Safety Regulations 2013 - Division 1, Electrical work on energised equipment 12 >23

Electrical Safety Regulation 2013 (legislation.qld.gov.au)

Electricity (Consumer Safety) Regulation 2015 (nsw.gov.au)

Electricity Safety Regulation 2004 | Subordinate laws (act.gov.au)

Legislation Database (nt.gov.au)

(WA)

WH&S Act 2020 –Division 2 Primary duty of care, 19 (2), 28, 29, Part 4 Authorisations, 41, 42, 43, 44

WH&S Regulations 2022 – Chapter 2 Representation and participation, 25, 26

Part 4.7 General electrical safety in workplaces and energised electrical work 144 > 166

wa_electrical_requirements_-_august_2023.pdf (commerce.wa.gov.au)

Electrical risks at the workplace (fact sheet)

Model Code of practice: Managing electrical risks in the workplace

Managing-electrical-risks-in-the-workplace-COP.pdf (nsw.gov.au)

Electrical installation on construction sites

(SA & Tas)

WH&S Act 2012 –Division 2 Primary duty of care, 19 (2), 28, 29, Part 4 Authorisations, 41, 42, 43, 44

WH&S Regulations 2012 (TAS 2022) –Chapter 2 Representation and participation, 25, 26

Part 4.7 General electrical safety in workplaces and energised electrical work 144 > 166

Electricity (General) Regulations 2012 (legislation.sa.gov.au)

View - Tasmanian Legislation Online

Victorian OHS Act

OH&S Act 2004 –Part 3 General duties relating to health and safety 26, 31 Part 6 Licences, registration, permits and other requirements 40, 41, 42

Part 7 Representation of employees, 73, 74, 75

OH&S Regulations 2017 –

Chapter 2 General dutiesS 18, Chapter 3 Physical hazards 55, 56

Other

Electrical Safety (General) Regulations 2019 - Division 4, Duties related to electrical installation work carried out on energised electrical equipmentEquipment, 508 > 511

Electricity Safety (General) Regulations 2019 (legislation.vic.gov.au)

Australian and New Zealand Standards

AS/NZS 2978 *Insulating mats for electrical purposes.*

AS/NZS 3000 *Electrical installation (Australian/NZ Wiring Rules)*

AS/NZS 3100 *Approval and test specification – General requirements for electrical equipment*

AS/NZS 3017 *Electrical installations – Verification guidelines*

AS/NZS 3190 *Approval and Test Specification – Residual Current Devices*

AS/NZS 3760 *In service safety inspection and service of electrical equipment*

AS/NZS 3820 *Essential safety requirements for low voltage equipment*

AS/NZS 4836 *Safe working on or near low-voltage electrical installations and equipment*

Version Control	
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Version 2 note: Version 1 of the LPA Safety Guidelines were written when the Model WHS was believed to be rolled out in all Australian states and territories. This did not occur, and Victoria maintains its OHS Act and Regulations. The key differences include the use of the terms ‘Employers’ (as opposed to PCBU) and ‘employees’ (as opposed to workers). This version of the Guidelines has been modified to include this difference.