1 PURPOSE

To guide employees, contractors, students and other in the identification of electrical hazard, assessment of associated ensure risks and control of these risks so far as is reasonably practicable.

2 SCOPE

This guide applies to:

- permanent and temporary electrical installations;
- alternative electrical energy sources, such as solar, battery or generators;
- selection, operation, inspection and testing of electrical equipment;
- inspection and testing of electrical safety equipment such as Residual Current Devices (RCD);

The guide applies to electrical hazards located at/in campuses, buildings, structures, plant and equipment under the management control of the University of Melbourne

3 ELECRICAL EQUIPMENT PROCUREMENT

Employees responsible the procurement of electrical equipment must ensure that prior to the electrical equipment meets relevant Australian Standards and electrical authority requirements.

It is important that the pre-purchasing process includes ensuring the electrical equipment meets relevant Australian Standards and is listed in the Australian Certification Database verifying the equipment has been approved for use by the Australian Electrical Regularities Council.

Employees responsible the design and manufacture of electrical equipment must ensure that prior to the electrical equipment meets relevant Australian Standards and electrical authority requirements.

4 COMMISSIONING OF ELECTRICAL EQUIPMENT

Employees, contractors, students and others commissioning new electrical equipment into service shall ensure:.

- Where required, the equipment is included in the area's portable electrical equipment & appliances inspection, testing & tagging program.
- To verify the above steps have been completed a commissioning tag shall be attached to the equipment electrical lead near the plug end.

Non-portable electrical equipment that can be connected to a 240-volt power supply by a flexible cord or connecting device can also initially be tagged with the electrical commissioning tag. All other non-portable, hard wired electrical equipment will require initial testing and by a competent person.

5 INSPECTION OF ELECTRICAL APPLIANCES & EQUIPMENT

Experience has shown that greater than 90% of defects are detectable by visual inspection. (AS/NZS 3760)

Large numbers of electrical appliances are use throughout the University's workplaces. Additionally, there are significant variations in the characteristics of these electrical appliances, including:

- age of the appliance;
- size of the appliance;
- frequency of use; and
- environmental conditions in which the electrical appliances are used

Considering the variation in the characteristics and the importance of visual inspection all electrical appliances must be inspected by the operator prior to use to confirm that:

- the appliance has not been tagged out of service;
- the plug and lead are free of obvious damage (e.g., damaged lead, damaged plug. burn marks, damaged casing); and
- the socket-outlet is free of obvious damage (e.g., broken casing, socket-outlet not fixed to the wall, cable to suspended socket-outlets not damaged)
- Functionality: Check if the electrical appliances and equipment are functioning properly, including switches, outlets, and controls
- Safety Features: Ensure that safety features, such guards, operation buttons, warning labels or instructions and all controls are in place and working properly
- Physical Condition: Inspect the physical condition of the appliances and equipment for signs of damage, wear, and tear, such as damaged cords, cracks, or loose parts
- Electrical Connections: Check the electrical connections, including plugs, wires, and terminals, to ensure they are secure and free from corrosion

6 STORAGE

When electrical equipment is not in use, it should be stored safely taking the following points into consideration.

- Environment: The storage area should be dry, cool, and free from extreme temperatures, dust, moisture, and chemicals that can cause damage to electrical appliances and equipment.
- Space: Adequate space should be provided for storage to prevent overcrowding and ensure easy access to the appliances and equipment.
- Protection: Appliances and equipment should be protected from physical damage, such as impact, scratches, and dents, and from electrical damage, such as short circuits and surges.
- Power: Electrical appliances and equipment should be disconnected from power sources,
- Ventilation: The storage area should be well-ventilated to prevent heat build-up and to allow for air circulation that can help prevent mould, mildew, and other moisture-related issues.
- Security: The storage area should be secure, with locks or other physical barriers to prevent theft or unauthorized access/use.
- Stored equipment should that is included in the testing & tagging schedule shall be made available to the testing contractor at the time of testing.

7 MAINTENANCE/AD-HOC MAINTENANCE

It is important to follow the manufacturer's maintenance and inspection schedules to ensure appliances and equipment continue to function properly and safely.

When planning maintenance and addressing breakdowns, the following factors should be considered:

- Engage a competent person to undertake the maintenance;
- Raise a ServiceNow ticket with campus management to engage one of the universities incumbent contractors where possible
- Retain the maintenance records and detailed documentation of the maintenance process to track the problem and to inform future maintenance schedules and planning
- Operational impacts should be considered when planning maintenance and addressing breakdowns as some problems may need to be addressed quickly to minimize downtime or disruption.
- Record the scheduled maintenance times on a Health & Safety: Cyclic events checklist or other relevant form, such as a Plant register. For information on plant registers refer Health & Safety: Regulated plant requirements

8 HOSTILE ENVIRONMENT

A hostile environment is one which the equipment or appliance is normally subject to events or operating conditions likely to result in damage to the equipment or a reduction in its expected life span. This includes, but not limited to mechanical damage, exposure to moisture, heat, vibration, corrosive chemicals, and dust.

Examples of hostile environments within the University of Melbourne could include;

- laboratories including wet labs, PC2/PC3, BC2 and prep areas,
- workshops,
- art and performance studios,
- surgical and treatment areas,
- commercial kitchens,
- swimming pools,
- gymnasium,
- childcare facilities, and
- outside areas

It is the responsibility of the Faculty Head of Department or their nominee to determine the locations that are hostile environments.

All portable electrical equipment and appliances that are used within an area classified as hostile shall be Inspected, tested & tagged at 6 monthly intervals.

9 RESIDUAL CURRENT DEVICES & PORTABLE ELECTRICAL EQUIPMENT TESTING AND TAGGING

i. Residual Current Devices (RCD) testing and tagging

Fixed RCD installations must be installed to the requirements of AS/NZS 3000 and accessed by authorised personnel only. As outlined in AS/NZS 3760:2010, RCDs should be tested at regular intervals to ensure they are functioning properly and providing adequate protection. The standard recommends the following testing frequencies:

- RCDs should be tested immediately after installation, repair, or modification, and before being placed into service
- Portable RCDs: at least every 3 months
- Fixed RCDs: at least every 12 months

The Director, Campus Management must ensure RCD's and portable electrical equipment testing and tagging is conducted by a competent person.

ii. Portable electrical equipment testing and tagging

The Director, Health & Safety in consultation with health and safety representatives and the Director, Campus Management have conducted a risk assessment based on AS/NZS 3760 and determined the University of Melbourne testing and tagging criteria for portable electrical equipment.

Where all general power outlets in a building are protected by a residual current device (RCD), Faculty Head of Department or their nominee have the opportunity to "Opt-In" to the Campus Management Electrical Inspection & Testing Guideline's risk assessment-based approach. The following applies;

- where all general power outlets in a building are protected by a residual current device (RCD), portable electrical equipment will not require scheduled testing and tagging in non-hostile environments; and
- all portable electrical equipment will require scheduled testing and tagging in hostile environments.

Where no or not all socket-outlets in a building have residual current device protection the following applies;

- portable electrical equipment will require scheduled testing and tagging in accordance with the frequencies outlined within AS/NZS 3760

The Director, Campus Management must ensure that an electrical testing and tagging service is available to all University departments and that the service is;

- In line with the Campus Management Electrical Inspection & Testing Guideline's and AS/NZS 3760; OR
- In accordance with the Health & Safety: Electrical testing and tagging criteria. and AS/NZS 3760
- Conducted by a competent person.

The Faculty Head of Department or their nominee must;

- retain overall responsibility for ensuring that portable electrical equipment is in good working order, including testing and tagging; and
- make portable electrical equipment available to the service provider engaged by Campus Management for testing and tagging; or

- where they chose to use their own testing and tagging service ensure that it is consistent with the University of University of Melbourne criteria, Campus Management Electrical Inspection & Testing Guideline's and AS/NZS 3760.

Where the Faculty Head of Department or their nominee engage their own testing and tagging service the Faculty Head of Department or their nominee must notify the Director, Campus Management in writing.

10 DAMAGED OR UNSAFE ELECTRICAL APPLIANCES OR INSTALLATIONS

When electrical appliance, plug, socket-outlet or other part of an electrical installation is damaged or identified as unsafe to use it must be removed from service immediately following the Health & Safety: Unsafe plant and equipment requirements. This can be done by anyone.

In general, when someone becomes aware of faulty or unsafe equipment the procedure requires;

- turn off or de-energise plant or equipment, if safe to do so;
- make safe the plant or equipment;
- complete an "Out of service tag" ensuring that the tag describes the:
    - plant or equipment that is out of service;
    - reason the plant or equipment is out of service;
    - if applicable, conditions under which the plant or equipment can be used safely;
    - name of the person completing the tag; and
    - date;
- place the completed "Out of service tag" on the plant or equipment by:
    - tying the tag around the electrical lead close to the plug end; or
    - attach at the point of isolation from the energy source; or
    - on the main control panel; or
    - in a prominent position;
- notify the supervisor/manager responsible for the plant or equipment; and
- make arrangements (directly or through the supervisor/manager) for the plant or equipment to be repaired or removed from the work area.
- managers and supervisors must ensure that faulty/damaged portable electrical equipment is tagged out, in accordance with the Health & Safety: Unsafe plant and equipment requirements and where reasonably practicable removed from general access for repair or disposal. Portable electrical equipment that cannot be removed from general access must be made unusable by appropriate methods. For example, power cords may be cut off as close as possible to the body of the equipment to prevent its use.
- Unless deemed as a competent person staff, students, and any other person are prohibited from removing a tag and/or using equipment that has been tagged out.

- The Faculty Head of Department or their nominee must ensure that faulty/damaged electrical equipment is inspected and repaired by a competent person in accordance with manufacturer's/supplier's instructions prior to recommissioning.
- In instances where the faulty electrical equipment is considered a part of the building's internal electrical installation i.e., RCD's, campus management shall be notified. The Director, Campus Management must ensure that all "parts of the buildings internal electrical installation" are inspected and repaired by a competent person prior to recommissioning.

"Out of service tag"	Damaged electrical socket-outlet and plug
	

11 DISPOSALS OF PORTABLE ELECTRICAL EQUIPMENT

The Faculty Head of Department or their nominee must ensure portable electrical equipment that has been identified for disposal will be rendered inoperable by suitable means prior to disposal. For example, power cords may be cut off as close as possible to the body of the equipment to prevent its use.

Faculties can raise a service now ticket to have electrical equipment responsibly disposed of by a competent person.

12 DOUBLE ADAPTORS AND POWER BOARDS

Double adaptors are prohibited for use at the University of Melbourne's campuses and each of the University's controlled entities.

Power boards that comply with AS/NZS 3105 may be used where additional electrical outlets are required. Preference must be given to power boards that provide a separate controlling switch at each outlet.

Power boards shall comply with the Portable electrical equipment testing and tagging requirements outlined within this document, the Campus Management Electrical Inspection & Testing Guideline's and AS/NZS 3760.

13 EXTENSION LEADS

Where extension leads are used, they must comply with AS/NZS 3199 and be positioned to avoid damage. This must include;

- keeping the extension lead away from water and corrosive substances;

- where reasonably practicable, running the extension lead off the ground; and
- ensuring the extension lead cannot be damaged by being struck, rubbed against, or pinched/bent.

Extension leads shall comply with the Portable electrical equipment testing and tagging requirements outlined within this document, the Campus Management Electrical Inspection & Testing Guideline's and AS/NZS 3760.

14 UN-INSULATED PINS

This includes a requirement that electrical appliance plug pins are insulated to prevent live parts of insulated pins being exposed when the plug is partially or fully engaged with the associated socket-outlet.

From April 2005 suppliers of 240-volt 10–15-amp single phase electrical appliances are required to ensure the pins on the electrical appliance plug are insulated in accordance with AS/NZ 3112. However, prior to this date most electrical appliances were supplied with un-insulated plug pins. Whilst this rule is not retrospective, workplace manages shall mitigate risks associated with appliances that do not have insulated pins by;

- conducting Risk assessments & developing standard operating procedures for the safe use of the portable electrical equipment accordance with UoM Health & Safety: Risk management requirements
- understand if the risks associated with continued use of electrical appliances with un-insulated plug pins to determine if any short-term actions action are required;
- where required, the item should be removed from service in accordance with the Health & Safety: Unsafe plant and equipment requirements
- plan and prioritise the eventual replacement of uninsulated plugs based on level of risk. This may include raising a service now ticket

The Director, Campus Management must ensure that identification of un-insulated pins is included in the electrical testing and tagging service.

15 TEMPORARY EVENTS

Temporary events electrical safety is critical for ensuring the safety of UoM staff, students, and visitors during these events. Neglecting electrical safety can result in electrical incidents such as shocks, fires, and equipment damage. By following safety standards outlined within AS/NZS 3000:2018, ensuring all electrical equipment has been inspected, tested, and tagged in accordance with AS/NZS 3760:2010, organizers can ensure a safe and successful event for all participants. The universities minimum expectations for the safe supply of power to temporary events includes, but is not limited to:

- All circuits supplying temporary events shall be protected by Residual Current Devices (RCD)
- All RCD;s and Portable electrical equipment including as power boards and extension leads & appliances:
    - shall be in good condition
    - appropriately rated for the electrical load
    - have in date inspection tags attached
- Electrical cable management: Ensure that electrical cables are managed safely, with adequate clearance and protection from damage

- Weather protection: Electrical equipment should be protected from the elements, including rain, wind, and extreme temperatures, to prevent damage and ensure safety
- Temporary electrical distribution boards shall be IP rated, positioned to prevent mechanical damage & secured to against falling over
- Generators are adequately rated & where applicable, earthing requirements neutral connections & certification requirements are implemented by a suitable qualifies electrician
- Temporary events, temporary electricity supply arrangements shall be installed by a competent person (Preferably the universities incumbent electrical contractor that has a current service agreement in place)

16 ELECTRICAL COMMISIONING TAGS FOR NEW PORTABLE EQUIPMENT

For use in conjunction with the Health & Safety: Electrical inspection and testing requirements.

Purpose

This tag template is suggested for use in creating commissioning tags for brand new portable electrical equipment.

The *Electrical inspection and testing procedure* states that:

- For new portable electrical equipment managers and/or supervisors shall ensure that a tag or sticker is placed on the lead showing the date the item was commissioned

Instructions for use

The second page of this document should be printed on A4 printable label sheets with Avery standard label layout of 14 labels per page at 99.1x38.1mm each.

This document is set to print to your "Stack Bypass" tray – you will need to change this through Page Setup if not appropriate for your printer.

Some compatible products for **indoor office** use:

- Avery Laser Labels L7163 or QuickPeel Laser Labels L7163
- Avery Smudge Free InkJet Labels J8183
- OfficeMax Premium Laser Labels L7163.

Suggestions for **outdoor or workshop** use:

- use a label designed for outdoor/industrial use, such as Avery Durable Heavy-Duty Laser Labels L7063, or
- forgo paper labels and hand-write with permanent ink on a more durable material, such as gaffer tape.

Once printed, the label should be completed with the requested details and then folded in half and adhered to itself around the equipment's lead, close to the plug.

PLEASE NOTE:

This form has been created to assist departments with commissioning electrical equipment. Any label showing the commissioning date of brand new portable equipment suffices: for example, a plain paper label handwritten or printed with "Commission date: dd/mm/yyyy".

Further information

Refer to the following resources:

- *Health & Safety: Electrical inspection and testing requirements*
- Consult your local *Health and Safety Business Partner*

COMMISSIONING DETAILS

Date: _____

Dep't: _____

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Person: _____

COMMISSIONING DETAILS

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Date: December 2023 **Version**: 1.1 **Authorised by**: Director, Health & Safety **Next Review:** October 2028

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