

OVERVIEW

This Safety Practice outlines the requirements for safely managing electrical testing, energisation, de-energisation and commissioning activities undertaken on Perkins Builders projects. It applies to preliminary testing and inspections, functional performance testing, and the commissioning of new or modified electrical installations.

Electrical work presents significant hazards and must be planned, risk assessed and undertaken by competent and licensed persons using appropriate controls to eliminate or minimise risks to workers and others.

All electrical work shall be carried out in accordance with applicable legislation, regulations, Australian Standards, Codes of Practice and project requirements. Hazards associated with electrical work must be identified, risks assessed, and suitable control measures implemented before work commences.

RESPONSIBILITIES

Management	Provide resources and ensure safe systems for electrical work.
Project Manager	Plan and coordinate electrical works and ensure compliance with project requirements.
Site Manager	Approve permits, coordinate activities and ensure work is carried out safely.
HSEQ Team	Monitor compliance and provide safety advice.
Electrical Contractor / Supervisor	Prepare required documentation, supervise electrical work and complete testing and commissioning safely.
Workers	Follow approved procedures, use required PPE, report hazards and work within their competency.

1. TESTING AND COMMISSIONING PRELIMS**Guidance:**

Before carrying out testing energising, de-energising and / or commissioning, the Contractor shall take the following steps:

- Develop a JHA/SWMS detailing the job steps, hazards, risks and controls for the relevant activity to be conducted.
- Submit SWMS / JHA to the Site Manager for acceptance.
- All relevant workers shall review and sign onto the accepted JHA/SWMS prior to commencing works.
- Ensure all Additional PPE or other safety equipment is worn or installed
- Provide marked up drawings (Site Layout and/or single line) to show what will be energised
- Identify equipment in the field that will become energised. Install signage on all Boards and Pits. Cable trays containing live cables must have a sign every 5m where accessible.
- Make arrangements for communication with other workers on site for what circuits and/or equipment will become live. ie Toolbox

NOTE: The testing and commissioning SWMS / JHA shall include essential procedures mentioned in this procedure plus additional testing and commissioning procedures required for specific installations as well as manufacturer's recommendation;

- Obtain design drawings and specifications and to be thoroughly acquainted with the design intent;
- Obtain copies of approved shop drawings and equipment schedules;
- Review approved shop drawings and equipment schedules;
- Check manufacturer's operating instructions and statutory requirements;
- Physically inspect the installation and equipment to determine variations from designs and/or specifications
- Check individual components, e.g. key switches, control equipment, circuit breaker status, etc. for proper position and settings for completeness of installation
- Check inclusion of manufacturer's typical equipment testing data or factors before testing and commissioning of particular equipment.
- Complete and submit Energisation Permit (Form 986 / Hammertech) via Hammertech online project portal to Site Manager for approval. No works shall commence until Permit is reviewed and approved by the Site Manager.

Note: At least 24hrs notice must be given to Site Manager before energisation can take place.

2. TESTING AND COMMISSIONING DURING CONSTRUCTION**Guidance:**

Before carrying out any testing, the Contractor shall ensure the installation complies with all applicable legislation, regulations, Australian Standards, Codes of Practice and site safety requirements.

3. STATUTORY TEST AND INSPECTION**Guidance:**

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The statutory test and inspection herein stated in this testing and commissioning procedure shall refer to the Work Health and Safety (General) Regulations 2022 Div5 r163. Electrical installations on construction etc. sites, duties of employer etc.

If work of a type referred to in clause 1.1 of AS/NZS 3012 is to be done then a person who, in relation to the workplace is an employer, the main contractor or a self-employed person must ensure that the requirements of AS/NZS 3012 are complied with in relation to matters within the scope of AS/NZS 3012.

4. FUNCTIONAL PERFORMANCE TESTS

Guidance:

The purpose of functional performance tests is to demonstrate that the equipment/installation can meet the functional and performance requirements as specified in the General/Particular Specifications. Functional performance tests should proceed from the testing of individual components to the testing of different systems in the installation.

The Contractor may have to make temporary modifications as the test proceed.

The specific tests required, and the order of tests will vary depending on the type and size of systems, number of systems, sequence of construction, interface with other installations, relationship with the building elements and other specific requirements as indicated in the Australian Standard 3000 – 2018.

The testing of systems may have to be carried out in stages depending on the progress of work or as proposed by the Contractor.

Any performance deficiencies revealed during the functional performance tests must be evaluated to determine the cause and whether they are part of the contractual obligations. After completion of the necessary corrective measures, the Contractor shall repeat the tests.

If any test cannot be completed because of circumstances that are beyond the control of the Contractor, it shall be properly documented and reported to the Site Manager, whom shall then liaise with the relevant parties to resolve the situation.

The Contractor shall resume his testing work immediately upon the attainment of a suitable testing environment.

5. DOCUMENT AND DELIVERABLES

Guidance:

The Contractor shall submit their proposed testing and commissioning procedures together with the Testing and Commissioning Progress Chart, Commissioning Program and Commissioning Plan, where applicable, to the Site Manager for approval.

All inspection and testing and commissioning results shall be recorded by the Contractor in the appropriate test record forms, the reference of which is shown against each individual test.

An Energisation Permit shall be signed off by the engaged contractor and Perkins Site Manager on completion of works to the effect that the agreed testing and commissioning works have been duly carried out.

Functional test reports covering all measured data, data sheets, and a comprehensive summary describing the operation of the system at the time of the functional tests shall be prepared and submitted to the Perkins Site Manager by the contractor.

Deviations in performance from the design intent should be recorded, with a description and analysis included.

Where required the Contractor shall conduct a final evaluation of the performance of the Electrical Installation, the results of which shall be included in the commissioning report.

The Contractor shall sign work completion certificate(s) and issue to the Site Manager after completion of the electrical installation or any work subsequent to repair, alteration or addition to an existing installation.

This should be done before the installation is energized.

6. TESTS AND INSPECTIONS DURING CONSTRUCTION

Guidance:

For those tests to be carried out on different systems of the installation during construction to ensure their suitability for operating at the design conditions, certificates of such tests shall be issued together with certificates of any work tests.

The Contractor shall submit the details of the tests and inspection during construction to Site Manager for approval on commencement of the installation work.

The tests and inspection shall include, but not limited to, the followings:

- Visual inspection;

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- Earth electrode resistance; and
- Continuity of protective conductor.

Details of these tests shall be in accordance with relevant sections of this procedure.

7. TRAINING

Guidance:

All personnel working on electrical installations shall be appropriately licenced in accordance with the Electricity (Licencing) Regulations 1991.

Apprentices must be supervised by a Qualified tradesperson at all times.

All other personnel utilising electrical equipment and installations onsite but not directly working on them shall be informed of electrical safety requirements via the induction process and any further task specific requirements shall be identified in their JHA / SWMS for the task.

REFERENCES

- Electricity Act 1945 (WA)
- Electricity Regulations 1947
- Electricity (Licencing) Regulations 1991
- Work Health and Safety Act 2020
- Work Health and Safety (General) Regulations 2022
- AS 1319:1994 Safety signs for the occupational environment
- AS 61439.4 Low voltage switchgear and control gear assemblies – Part 4: Particular requirements for assemblies for construction sites.
- AS/NZS 3000:2018 Electrical installations (Wiring Rules)
- AS/NZS 3012:2019 Electrical installations - Construction and demolition sites
- Code of Practice – Persons Working on or near Energised Electrical Installations

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