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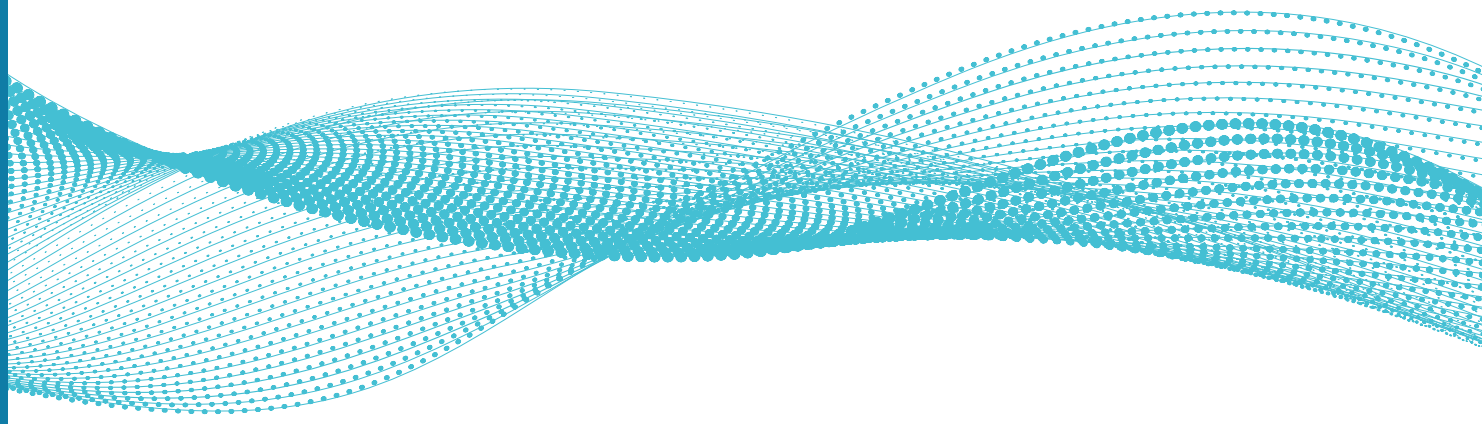
AS/NZS 3019:2022

AUSTRALIAN/NEW ZEALAND STANDARD

Electrical installations – Periodic assessment

Superseding AS/NZS 3019:2007

AS/NZS 3019:2022



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Australian Energy Council
Australian Industry Group
Communications, Electrical and Plumbing Union – Electrical Division
Consumers Federation of Australia
Electrical Regulatory Authorities Council
Electrical Safety New Zealand Inc
Electrical Workers Registration Board
ElectroComms & Energy Utilities Industry Skills Council
Energy Networks Australia
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Australian/New Zealand Standard

Electrical installations – Periodic assessment

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-001 Wiring Rules, to supersede AS/NZS 3019:2007, *Electrical installations — Periodic verification*.

The document aims to provide the means to determine, as far as reasonably practicable, whether the installation and all its constituent equipment is in a safe condition for continued use, and that the electrical installation complies with safety requirements for the prevention of fire and the protection of persons and livestock from electric shock, see Clause 2.6.

AS/NZS 3019 may be applied through legislative requirements, made in each State and Territory of Australia and in New Zealand.

This document includes general requirements for periodic assessment of electrical installations. Additional requirements for particular types of installations may be set by the relevant Standard. For example; AS/NZS 3001.1 for caravan parks and camping grounds, AS/NZS 3002 for installations at shows, carnival and event sites, AS/NZS 3004.1 for marinas, AS/NZS 3012 for installations at construction and demolition sites, AS/NZS 3003 for installations in medical areas, and the AS/NZS 60079 series for installations in hazardous areas.

The major changes in this edition are as follows:

(a) The Sections are intended to be applied cumulatively rather than each section standing alone.

(b) The testing requirements in Section 4 are intended to minimize disruption to the continued use of the installation while the assessment is carried out.

(c) Inspection and testing requirements have been updated to maintain alignment with AS/NZS 3000.

(d) For New Zealand, a new Section 6 has been added; to be applied where the safety of an existing installation should be of a higher standard than that which applied at the time(s) of original construction of the various parts of the installation, but where full compliance with the current requirements for a new installation is not warranted or required. NZ

(e) Sample reporting forms have been revised to be more appropriate for purpose.

This Standard is accompanied by additional data in a ZIP file. The ZIP file contains editable PDF forms. The ZIP file may be obtained on purchase of the Standard in any format.

The terms “normative” and “informative” are used in Standards to define the application of the appendices to which they apply. A “normative” appendix is an integral part of a Standard, whereas an “informative” appendix is only for information and guidance.

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Contents

Preface ii

1 Scope and general 1
1.1 Scope 1
1.2 Types of assessment covered 1
1.3 Exclusions 1
1.4 Normative references 2
1.5 Terms and definitions 2

2 General requirements 3
2.1 Safe practices 3
2.2 Risk assessment 3
2.3 Reporting of electrically unsafe installations 3
2.4 Previous records 3
2.5 Assessment requirements 3
2.5.1 General requirements 3
2.5.2 Benchmarks or criteria for assessment 4
2.5.3 Assessment methods 4
2.5.4 Dismantling of installation for inspection 4
2.5.5 Test methods 4
2.6 Danger to persons, livestock or property 4
2.7 Test equipment 4
2.8 Required competency 5
2.9 Frequency of periodic assessment 5
2.10 Reporting of periodic assessment 5

3 Assessment by basic visual inspection 6
3.1 General 6
3.2 Requirements 6
3.2.1 General 6
3.2.2 Switchboards 6
3.2.3 Metering equipment 6
3.2.4 Wiring systems including consumer mains and sub mains 7
3.2.5 Aerial wiring and catenary systems 7
3.2.6 Underground wiring systems 7
3.2.7 Earthing systems 7
3.2.8 Equipment 7

4 Assessment by detailed visual inspection and limited testing 8
4.1 General 8
4.2 Requirements 8
4.2.1 Detailed visual inspection 8
4.2.2 Limited testing requirements 9

5 Assessment by visual inspection and additional testing 11
5.1 Requirements 11
5.2 Insulation resistance 11
5.3 Polarity and correct connection 11
5.4 Polarization 11
5.5 Earth fault loop impedance 11
5.6 Protective device fault current rating 12
5.7 RCD assessment 12
5.8 Thermographic survey of switchboard equipment 12
5.9 Testing of final subcircuits supplied from an electrically separated supply 12

6 Assessment of enhanced safety 13
6.1 General 13
6.2 All installations 13

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6.2.1 General 13
6.2.2 Inspection 13
6.2.3 Testing 13
6.3 Domestic and residential electrical installations 14
6.3.1 General 14
6.3.2 Inspection 14
6.4 Educational and childcare facilities 14
6.4.1 General 14
6.4.2 Inspection 14
Appendix A (informative) **Periodic assessment report forms** **15**
Appendix B (informative) **Thermography** **19**
Bibliography **22**

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Australian/New Zealand Standard

Electrical installations — Periodic assessment

1 Scope and general

1.1 Scope

This document sets out the requirements for periodic assessment of existing electrical installations which are connected to a low voltage a.c. supply system (exceeding 50 V a.c. but not exceeding 1 000 V a.c.).

Inspection and/or testing is intended, as far as reasonably practicable, to determine whether the installation and all its constituent equipment is in a safe condition for continued use.

The assessment criteria in Sections 3, 4, 5 and 6 are intended as benchmarks against which the installation is to be assessed.

This document does not require existing installations to be upgraded to meet the benchmarks. However, the document includes requirements for reporting any deficiencies identified.

NOTE Inspection and testing to this document does not necessarily provide evidence that the installation complied with the relevant requirements at the time of its construction.

1.2 Types of assessment covered

This document provides for periodic assessment by —

(a) basic visual inspection;

(b) detailed visual inspection and limited testing;

(c) visual inspection and additional testing; and

(d) assessment of enhanced safety (in New Zealand). NZ

1.3 Exclusions

This document does not apply to the periodic assessment of the following electrical installations:

(a) Installations designed and constructed to AS/NZS 3000 provisions relating to specific design and installation. Refer to the verification specification prepared for the installation as required by AS/NZS 3000.

(b) Installations of the following types:

(i) Relocatable units and their site installations. Refer to the AS/NZS 3001 series.

(ii) Marinas and boat installations. Refer to the AS/NZS 3004 series.

(iii) Hazardous areas. Refer to AS/NZS 61241 series and AS/NZS 60079 series.

(iv) Electro-medical areas. Refer to AS/NZS 3003.

(v) Shows, carnivals and event installations. Refer to AS/NZS 3002.

(vi) Construction and demolition sites. Refer to AS/NZS 3012.

In New Zealand it does not apply to— NZ

(i) Electrical installations and equipment which operate at non-standard voltages and frequencies. Refer to NZS 6114;

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(ii) Mobile electro-medical relocatable installations. Refer to NZS 6115; and

(iii) Areas of electrical installations where electrical animal stunning or meat conditioning occurs. Refer to NZS 6116.

NOTE Periodic testing of appliances is covered by AS/NZS 3760.

1.4 Normative references

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

NOTE Documents referenced for informative purposes are listed in the Bibliography.

AS/NZS 3000, *Electrical installations (known as the Australian/New Zealand Wiring Rules)*

AS/NZS 3112, *Approval and test specification — Plugs and socket-outlets*

AS/NZS 3123, *Approval and test specification — Plugs, socket-outlets and couplers for general industrial application*

IEC 60309 (series), *Plugs, socket-outlets and couplers for industrial purposes*

1.5 Terms and definitions

For the purposes of this document the terms and definitions of AS/NZS 3000 and the following apply:

1.5.1
competent person
person who has acquired, through education, training, qualification or experience or a combination of these, the knowledge and skill enabling that person to perform the required task correctly

1.5.2
earth fault-loop impedance
EFLI
impedance of the earth fault-current loop (active-to-earth loop) starting and ending at the point-of-earth fault

1.5.3
may
indicates the existence of an option

1.5.4
reduced low voltage
RLV
supply voltage giving additional protection against electric shock

Note 1 to entry: For example, a single-phase system in which—

(a) the nominal line-to-line voltage does not exceed 110 V a.c.;

(b) the nominal line-to-earth voltage does not exceed 55 V a.c.; and

(c) all exposed conductive parts are connected to the protective conductor.

1.5.5
shall
indicates a statement is mandatory

1.5.6
should
indicates a recommendation

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2 General requirements

2.1 Safe practices

Electrical inspection and testing inherently involves a degree of hazard. A competent person performing the inspection and tests should ensure that safe practices are used.

This document prescribes some tests methods which require supply to be disconnected.

Tests where the supply is not connected minimize the risk of electric shock; however some tests require that the supply is connected and therefore additional precautions are required. AS/NZS 3017 and AS/NZS 4836 provide additional guidance.

2.2 Risk assessment

Before commencing inspection and testing, a site-specific risk assessment is required to identify risks and establish control methods.

The risk assessment and resulting control measures should consider the following:

(a) The age and condition of the equipment being tested that may expose additional hazards.

(b) Requirements of the regulatory authorities for the jurisdiction.

(c) The safe work practices in work, health and safety legislation and as outlined in AS/NZS 4836.

(d) Use of Personal Protective Equipment (PPE) that is suitable for the inspection and testing task.

(e) Wearing of conductive body adornments and devices

(f) Equipment and material containing asbestos.

2.3 Reporting of electrically unsafe installations

Defects which constitute an electrical hazard to persons, livestock or property (see Clause 2.6) shall be immediately reported to the owner or occupier. The owner or occupier shall be advised that immediate action is required to make the installation safe, e.g. disconnection or isolation.

NOTE Legislation may have other requirements regarding the reporting and making safe any electrically unsafe installations.

2.4 Previous records

Wherever possible, the records and recommendations of previous periodic assessments shall be acknowledged.

2.5 Assessment requirements

2.5.1 General requirements

Periodic assessment shall be performed to confirm whether the installation is electrically safe by —

(a) confirming that the installation is not damaged or has not deteriorated so as to impair electrical safety; and

(b) identifying installation defects and departures from the requirements of this document that may give rise to danger.

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These requirements are intended to ensure the following:

(i) The protection of persons and livestock against electric shock and burns (see Clause 2.6); and

(ii) The protection against damage to property by fire and heat arising from an installation defect (see Clause 2.6).

NOTE Existing installations may have been designed and installed to conform to legislative requirements applicable at the time of their design and installation. These installations may have been subsequently repaired using methods that were acceptable when the installation was originally installed. This does not necessarily mean that they are unsafe provided that the installation and repair methods satisfy the fundamental safety principles of AS/NZS 3000, Part 1.

2.5.2 Benchmarks or criteria for assessment

The various parts of the installation shall —

(a) not represent a risk of electric shock or electrically-initiated fire; and

(b) comply with the relevant requirements that were applicable when that part of the installation was installed.

There is no requirement or expectation that older installations be upgraded to comply with current requirements of the relevant standard.

2.5.3 Assessment methods

The installation shall be assessed in accordance with one of the following:

(a) A basic visual inspection, in accordance with Section 3.

(b) A detailed visual inspection and limited testing, in accordance with Sections 3 and 4.

(c) A detailed visual inspection and full extensive testing, in accordance with Sections 3, 4 and 5.

(d) In New Zealand only; inspection and testing in accordance with Sections 3, 4, 5, and 6. NZ

2.5.4 Dismantling of installation for inspection

The dismantling of the electrical installation for the purpose of inspection and testing shall be carried out as far as is reasonably practicable to properly assess the condition of the installation.

2.5.5 Test methods

The tests required by Sections 4, 5 and 6 may be carried out using test methods as set out in AS/NZS 3017. Alternative methods may be used provided they deliver equally valid results.

2.6 Danger to persons, livestock or property

Precautions shall ensure that the process of periodic assessment does not cause danger to persons or livestock, nor damage to property and equipment, even if the circuit is defective.

2.7 Test equipment

For guidance on the selection and use of test equipment, refer to AS/NZS 3017.

Measuring instruments should comply with either AS 61010.1 and the IEC 61557 series or provide the same or better levels of performance and safety.

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All measuring instruments shall be —

(a) checked for damage and correct operation prior to testing;

(b) used in accordance with their design operating criteria; and

(c) confirmed as accurate at appropriate intervals.

2.8 Required competency

Assessment shall be undertaken by a competent person.

NOTE Regulatory requirements may specify persons who are permitted to undertake this work.

2.9 Frequency of periodic assessment

The frequency of periodic assessment of an installation shall be based on the type of installation and equipment, its use and operation, the frequency and level of maintenance and the external influences on which it is subjected.

NOTE 1 The maximum intervals between periodic assessments may be set by legislation.

NOTE 2 The interval may be, for instance, some years (e.g. 4 years), with the exception of the following cases where a higher risk exists and shorter periods are required:

(a) Working places or locations where risks of electric shock, fire or explosion exist due to degradation.

(b) Working places or locations where both high and low voltage installations exist.

(c) Communal facilities.

(d) Safety installations (e.g. emergency luminaires).

NOTE 3 For domestic dwellings, longer periods (e.g. 10 years) may be appropriate. When occupancy of a domestic dwelling has changed, an assessment of the electrical installation is recommended.

The periodic assessment report should include advice on the next date for a further assessment.

In the case of an installation under an effective management system for preventive maintenance in normal use, periodic assessment may be replaced with an adequate regime of continuous monitoring and maintenance of the installation and all its constituent equipment by competent persons. Records shall be kept.

2.10 Reporting of periodic assessment

A written report (hard copy or digital) shall be prepared as evidence of completion of the periodic assessment. The report shall include details of those parts of the installation covered by the report, and any limitations of the assessment. The report should record the results of the testing undertaken.

If any deficiencies are identified during assessment or testing, the report may contain recommendations for repairs and improvements, such as upgrading the installation to comply with the AS/NZS 3000 requirements.

Reports shall be compiled and signed or otherwise authenticated by a competent person (or persons). The report shall be provided to the person requesting the assessment by the person undertaking the assessment.

NOTE 1 Examples of the reports are given in Appendix A.

NOTE 2 National Building Codes may have additional periodic inspection and maintenance requirements for emergency lighting, fire detection and/or protection systems.

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3 Assessment by basic visual inspection

3.1 General

This Section details requirements for assessment by basic visual inspection of accessible parts of an electrical installation to confirm that the installation is in good repair/working order and does not exhibit indications of misuse, excessive damage or deterioration.

Dismantling or removal of equipment is not required, except when assessing switchboards.

This level of assessment does not include any electrical testing. However, inspection may be carried out in conjunction with testing detailed in Sections 4 and 5.

NOTE 1 Legislation may have additional requirements regarding the manner in which a visual inspection is required to be performed and reported.

A check for recalled electrical equipment should also be undertaken as part of the visual inspection.

NOTE 2 If the basic visual inspection reveals evidence of an unsafe condition, further assessment in accordance with Sections 4 or 5 may be necessary to determine whether the installation is safe.

3.2 Requirements

3.2.1 General

Visual inspection of electrical equipment and conductors, including consumer mains shall include checks described in Clauses 3.2.2 to 3.2.8.

3.2.2 Switchboards

For switchboards, it shall be checked that—

(a) the location and accessibility are suitable for the environmental conditions;

(b) the enclosure is in working order;

(c) the fire proofing of the switchboard is in working order;

(d) the wiring shows no evidence of insulation or sheath deterioration or damage;

(e) all main switches/isolators are labelled in a legible manner and the function is identified;

(f) the current rating of protective devices is appropriate for the current carrying capacity of the conductor(s) immediately connected to the device;

NOTE The possibility that circuits may include a reduction of needs to be considered.

(g) the switchboard equipment including residual current devices (RCDs), miniature circuit breakers (MCBs), fuses, switches, bars and links show no evidence of damage or deterioration;

(h) the multiple earthed neutral (MEN) connection has been installed where required; and

(i) semi-enclosed rewireable fuses, where fitted, have not deteriorated due to arcing and have no exposed live parts when the fuse carrier is fitted into the fuse base and the correct rated fuse wire and fuse wedge is fitted.

3.2.3 Metering equipment

For metering equipment, it shall be checked that—

(a) the enclosure for metering equipment is in working order; and

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(b) the metering and associated equipment is in working order.

3.2.4 Wiring systems including consumer mains and sub mains

For wiring systems, including consumer mains and sub mains, it shall be checked that—

(a) the cables do not show evidence of excessive insulation or sheath deterioration and have appropriate mechanical protection for the environment in which they are installed; and

(b) the current carrying capacity of consumer main and sub main is adequate.

3.2.5 Aerial wiring and catenary systems

For aerial wiring and catenary systems, it shall be checked that—

(a) the overhead lines and their entry points into buildings have no evidence of the following:

(i) Insulation deterioration.

(ii) Deterioration of anchorages.

(iii) Deterioration of line-connection boxes; and

(b) the safety distance clearances have not been compromised by the introduction of, or modification to, any structures, vegetation or by raising of the ground level under overhead lines.

3.2.6 Underground wiring systems

For underground wiring systems, as far as practicable, it shall be checked that they—

(a) have not been disturbed; and

(b) remain sufficiently buried.

3.2.7 Earthing systems

For earthing systems, it shall be checked that —

(a) the exposed parts of the earth electrode show no evidence of corrosion, damage or poor connection of the main earthing conductor;

(b) the metallic water piping used as an earth electrode has not been replaced with non-conductive piping; and

NOTE In installations constructed before 1976, metallic water pipe may have been used as the earth electrode. Recent work practice in the water supply industry has been to replace metallic pipes with non-conductive pipes. A dedicated earth electrode should be installed in such installations.

(c) the exposed earth conductors show no excessive evidence of insulation or sheath deterioration and have appropriate mechanical protection for the environment in which they are installed.

3.2.8 Equipment

Electrical equipment shall be checked that —

(a) it exhibits no mechanical damage or deterioration, arcing and there is no evidence of overheating;

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(b) the covers are not broken or missing giving access to live parts or basic insulation. Where basic protection is provided by barriers or enclosures, removal shall require use of a tool or key;

(c) electrical equipment in damp areas have the correct ingress protection (IP) rating and are appropriate for the zone and environment; and

(d) fixed appliances are in good working condition.

NOTE This includes hand-held appliances, such as permanently connected hairdryers.

The use of double adaptors, extension cords and electrical portable outlet devices (EPODs) should be discouraged.

4 Assessment by detailed visual inspection and limited testing

4.1 General

This Section provides requirements for detailed visual inspection and limited testing of an electrical installation to assess that the installation is in good repair/working order and does not show signs of misuse or damage and passes the limited testing requirements.

This assessment is intended to limit the need for disconnection of supply to the installation and the need to access live parts.

Dismantling or removal of equipment is not required, except when assessing switchboards.

In accordance with Clause 2.5.3, the requirements of this Section are in addition to the requirements of Section 3.

NOTE An inspection and test may be required to be performed and reported in a specific manner by legislation.

4.2 Requirements

4.2.1 Detailed visual inspection

4.2.1.1 General

Where practicable, the applicable items described in Clauses 4.2.1.2 to 4.2.1.5 shall be included in this inspection.

4.2.1.2 Equipment

Inspection of the equipment shall include checks that —

(a) conductors are securely held in terminals of fittings and are not subject to tension at the terminations;

(b) electrical equipment is adequately supported and secured;

(c) electrical equipment is designed for the environment in which it is located or is suitably enclosed;

(d) lamps do not exceed the rating of the fittings in which they are installed; and

(e) fittings are undamaged and serviceable. If fittings show evidence of overheating, the condition of the wiring shall be checked.

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4.2.1.3 Main earthing conductor

Inspection of the main earthing conductor shall include checks that —

(a) the main earthing conductor is the correct size;

(b) the main earthing conductor is connected to the earth electrode by a corrosion-resistant connection;

(c) the main earthing conductor terminations are accessible;

(d) connections are mechanically sound and fitted using the correct arrangement;

(e) connections are protected against mechanical damage, corrosion, and any vibration likely to occur;

(f) connections do not impose any appreciable mechanical strain on the component fittings of the connection;

(g) the main earthing conductor is correctly connected at the main switchboard;

(h) required labelling of the main earth connection is correct; and

(i) the location of the earth electrode is recorded at the switchboard.

4.2.1.4 Directly connected appliances

Inspection of directly connected appliances shall include checks that —

(a) they are correctly positioned and are suitable for the environment in which they are located;

(b) where connection is via flexible cord the cord is anchored at both the electrical appliance and the supply fitting;

(c) electrical appliances are correctly mounted and protected against mechanical damage; and

(d) covers are in place preventing access to live parts or basic insulation.

4.2.1.5 Overhead lines

Inspection of overhead lines that form part of the installation shall include the removal of connection box covers. This will reveal if there is evidence of deterioration to the conductor insulation and connections.

4.2.2 Limited testing requirements

4.2.2.1 General

The assessment of electrical installations shall include —

(a) earth continuity testing in accordance with Clause 4.2.2.2;

(b) equipotential bonding testing in accordance with Clause 4.2.2.3; and

(c) polarity and correct connections testing in accordance with Clause 4.2.2.4.

The assessment of electrical installations should also include —

(i) leakage current testing in accordance with Clause 4.2.2.5 and

(ii) RCD testing in accordance with Clause 4.2.2.6, providing interruption of the supply is tolerated.

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NOTE AS/NZS 3017 sets out common test methods required to test low voltage electrical installations.

4.2.2.2 Earth continuity tests

Earth continuity tests shall be carried out to determine, as far as is practicable, that —

(a) the main earthing conductor between the main switchboard earth terminal, point or bar and the earth electrode is continuous and the resistance of the main earthing conductor does not exceed 0.5 Ω;

(b) the connection between any point on the installation required to be earthed and the switchboard earth terminal, point or bar or terminal is continuous;

(c) the resistance of protective earthing conductors does not exceed the maximum permitted; and

NOTE AS/NZS 3000 provides guidance of values of maximum resistance for various conductor sizes and protective devices.

(d) directly connected appliances requiring earthing (Class I) are connected to earth.

4.2.2.3 Equipotential bonding tests

Equipotential bonding tests shall be carried out to check that —

(a) the connection between any point on the installation required to be equipotentially bonded and the switchboard earth terminal, point or bar is continuous; and

(b) the resistance of each equipotential bonding conductor does not exceed 0.5 Ω.

4.2.2.4 Polarity and correct connections

Polarity testing shall be performed to the extent that is reasonably practicable, with any significant omission being reported. Testing is intended to confirm correct connections, polarity and phase rotation of socket-outlets.

NOTE 1 Testing polarity of consumer mains interruption of supply to the installation.

NOTE 2 Polarity testing of energized sockets cannot detect neutral/earth transpositions. However, this is not required by this clause.

4.2.2.5 Leakage current testing

Due to the risks associated with insulation failure, a leakage current test may be conducted using a leakage current clamp meter. The test is conducted by simultaneously measuring the current in the active and neutral conductors of the circuit under test. If the leakage current is greater than 10 mA on any final sub-circuit with appliances connected, further testing may be required.

NOTE Insulation resistance testing requires that the supply be disconnected. Therefore, for limited testing only, such testing is not specified.

4.2.2.6 RCD testing

The correct operation of RCDs shall be tested by operation of the integral testing device —

(a) Operating the integral testing button;

(b) Confirming that the RCD operates in the active conductor(s) of the circuit(s) to which it is connected, and in the neutral conductor where required; and

(c) Resetting the RCD, then operating the integral test button a second time.

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NOTE The second operation is to confirm that the integral test circuit and the tripping mechanism have not been adversely affected during the first operation.

5 Assessment by visual inspection and additional testing

5.1 Requirements

This Section details requirements for visual inspection and additional testing of an electrical installation to confirm that the installation is in good repair/working order and does not show signs of misuse or damage and passes the additional testing requirements as detailed in this document.

The inspection and testing of this Section requires the disconnection of supply to all or parts of the installation.

Inspection and testing of electrical equipment shall include those items specified in Sections 3 and 4 together with the additional requirements of this Section.

5.2 Insulation resistance

An insulation resistance test shall be carried out with test instruments to ensure, so far as practicable, that there is adequate insulation between live parts and earth.

5.3 Polarity and correct connection

Polarity testing shall be carried out to check that —

(a) every single-pole switch or protective device of the electrical installation operates in the active conductor of the circuit in which it is connected;

(b) neutral conductors of circuits are connected to the neutral bar of the switchboard from which the circuit is supplied; and

(c) the consumer main neutral is connected to the neutral bar of the main switchboard.

5.4 Polarization

Polarization testing shall be carried out to check that —

(a) single phase socket-outlets are connected so that, when viewed from the front of the socket-outlet, earth, active and neutral are connected in a clockwise order and for sockets complying with AS/NZS 3112 (three-pin flat-pin) the earth is connected to the slot on the radial line; and

(b) where multi-phase socket-outlets of the same type form part of an electrical installation the phase sequence of the socket-outlets shall be the same.

Refer to AS/NZS 3000:2018 Clause 4.4.5 for information on polarization and phase sequence.

5.5 Earth fault loop impedance

The earth fault loop impedance of final subcircuits shall be measured in accordance with the requirements of AS/NZS 3000.

The method used for testing the earth fault loop shall show the loop impedance in ohms.

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5.6 Protective device fault current rating

All circuit protective devices have an adequate interrupting capacity.

NOTE 1 The prospective short circuit current (PSCC) at the location of the device may be measured, calculated or assessed for comparison with the rating of the device.

NOTE 2 To assist assessment or calculation, the prospective fault current at the point of supply may be sought from the electricity distributor.

NOTE 3 A measurement of PSCC derived from measurement of EFLI, and which does not exceed the rated interrupting capacity of the device, is always acceptable.

NOTE 4 The PSCC at the particular location may be less than the figure derived from measurement of EFLI, due to the influence of upstream devices.

5.7 RCD assessment

Tests shall be performed on each RCD to assess whether the RCD operates as required to disconnect the circuit(s) it protects. The correct operation of the RCDs shall be assessed by the use of test equipment to –

(a) initiate operation of the RCD, and

(b) confirm that the RCD operates in the active conductor(s) of the circuit(s) to which it is connected, and in the neutral conductor where required.

EXCEPTION: Where this function has been tested under Clause 4.2.2.5, the test need not be repeated under this clause.

In addition, correct operation of RCDs should be further assessed by the use of test equipment to —

(i) test, by applying a gradually rising a.c. residual current, whether the RCD operates before the rated residual current is exceeded, and

(ii) test, by applying rated a.c. residual current, whether the RCD operates within the required time limit.

NOTE Type A, Type B and Type F RCDs have additional functionality, including sensitivity to residual d.c. currents as well as residual a.c. currents. It is not a requirement of this Standard to test the performance of RCDs using residual current waveforms other than a.c. When testing with d.c. currents, the operating residual current may exceed the rated residual current label on the RCD. The RCD manufacturer should be consulted for more information.

5.8 Thermographic survey of switchboard equipment

With normal operating loads being supplied for at least 30 min, the temperature of switchboard components shall be measured and compared to the ambient temperature to ensure that there is no excessive rise in temperature.

EXCEPTION: This requirement need not apply to single domestic installations.

NOTE See Appendix B for information on thermographic imaging.

5.9 Testing of final subcircuits supplied from an electrically separated supply

Final subcircuits supplied from an electrically separated supply shall be tested in accordance with AS/NZS 3000.

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6 Assessment of enhanced safety

NZ

6.1 General

In New Zealand only, this Section is intended to be applied where the safety of an existing installation should be of a higher standard than that which applied at the time(s) of original construction of the various parts of the installation; but where full compliance with the current requirements for a new installation is not warranted or required.

Compliance with this Section should extend the safe life of the installation.

An installation which is to be assessed for compliance with this Section shall first be assessed in accordance with Sections 3, 4, and 5.

Installations intended to meet requirements for enhanced safety shall be assessed in accordance with Clause 6.2 and the relevant clause as follows:

(a) See Clauses 6.2 and 6.3 for domestic and residential installations or part-installations.

(b) See Clauses 6.2 and 6.4 for educational and childcare facilities.

6.2 All installations

6.2.1 General

This Clause applies to all installations including both residential and non-residential.

6.2.2 Inspection

Inspection shall assess all of the following:

(a) Whether any semi-enclosed rewireable fuses remain in service.

(b) That general purpose low voltage socket-outlets comply with AS/NZS 3112, AS/NZS 3123 or IEC 60309.

EXCEPTION: Other types may be used where permitted by AS/NZS 3000.

(c) That electrical equipment is not likely to contain asbestos. Items identified as being likely to contain asbestos shall be specifically included in the report. Where presence of asbestos is suspected, care shall be taken to avoid disturbing the material or any associated dust.

NOTE 1 Government requirements for labelling and reporting asbestos may also apply.

NOTE 2 Refer to Worksafe New Zealand for guidance on electrical items likely to contain asbestos; and AS/NZS 4836 for guidance on identifying asbestos and use of appropriate PPE.

6.2.3 Testing

Testing shall be undertaken to assess all of the following:

(a) That socket-outlets with current rating not exceeding 30 A have additional protection by RCD in accordance with AS/NZS 3000 requirements for new sockets.

EXCEPTIONS:

1. RCD protection is not required for final subcircuits, only for socket-outlets.

2. This requirement need not apply to sockets that are —

(a) *not using automatic disconnection of supply as the means of fault protection; or*

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(b) *supplied from a monitored earth system; or*

(c) *supplied at reduced low voltage (see Clause 1.5.4).*

NOTE In domestic and residential installations; this requirement need not apply to sockets for fixed or stationary electric cooking appliances; provided that the socket-outlet is —

(i) located in a position that is not likely to be accessed for general purposes; and

(ii) clearly marked to indicate its restricted purpose.

(b) That subcircuits are protected by arc fault detective devices (AFDDs) in accordance with AS/NZS 3000 requirements for new subcircuits.

6.3 Domestic and residential electrical installations

6.3.1 General

This Clause applies to the following:

(a) Domestic installations.

(b) Residential installations, including parts of installations provided for common use by residents or guests.

(c) Other installations used for residential accommodation, whether short or long term.

EXAMPLE Installations that have areas classed as residential include hotels, motels, boarding houses, rest homes, hospitals and emergency accommodation facilities.

This Clause does not apply to areas of non-domestic and non-residential installations that are not provided for common use by residents or guests of the facility; or that are open to the public.

6.3.2 Inspection

Inspection shall assess all of the following:

(a) That overhead services do not use single-core conductors.

(b) That all living and sleeping areas have a minimum of two socket-outlets per room.

(c) That switchboards have space for additional 6 circuit protection devices.

6.4 Educational and childcare facilities

6.4.1 General

This Clause applies to childcare facilities, schools, and areas of tertiary training and vocational training facilities that are primarily used for teaching or training.

6.4.2 Inspection

Inspection shall assess that overhead services do not use single-core conductors.

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Appendix A
(informative)

Periodic assessment report forms

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A.1 General

This Appendix details the information that is to be entered on the report as follows:

(a) This report should only be used for reporting on the condition of an existing installation.

(b) This report consists of two forms, AS/NZS 3019 Form 1, which contains the documentation of the periodic assessment, and AS/NZS 3019 Form 2, which details results obtained during inspection and testing. It is intended that both of these forms be used for domestic and commercial installations. When more than one switchboard is installed in the installation an AS/NZS 3019 Form 2 should be prepared for each switchboard.

(c) The intended purpose of the report should be identified, together with the recipient's and inspector's details in the appropriate boxes.

(d) The maximum prospective short-circuit current recorded on AS/NZS 3019 Form 1 should be at the main switchboard. The prospective short-circuit current of the incoming supply to the additional switchboard(s) should be recorded on AS/NZS 3019 Form 2 together with the final subcircuit test results recorded for that switchboard.

(e) The "Limitations of inspection" box on AS/NZS 3019 Form 1 should identify the elements of the installation that are not covered by the report, this aspect having been agreed in consultation with the client, before the periodic assessment is carried out.

(f) Safety defects requiring attention, if any, should be graded into items which require urgent attention and those which do not in terms of overall electrical safety of the installation. Specific remedial action(s) should be recommended for each item..

(g) Where the assessment has resulted in a satisfactory overall result, the recommended time interval to the next assessment should be provided. If the assessment reveals that parts of the installation require urgent attention, an earlier periodic assessment date should be stated with regard to the degree of urgency and extent of the necessary remedial work.

(h) Additional pages may be provided as necessary, and be included in the total page count.

NOTE 1 Legislation may require specific action (disconnection, isolation, maintaining safety etc.) or reporting of any defect which constitutes an electrical hazard to persons, livestock or property (also see Clause 2.6).

A.2 Guidance for recipients (to be attached to the report)

This report is intended for reporting on the condition of an existing electrical installation.

This report should be retained in a safe place. It is recommended that this report or a copy of it be placed in or near to the main switchboard of the electrical installation for the information of any competent person undertaking inspection or work on the electrical installation. If vacating the property, the copy in the main switchboard should remain as it provides the details of the condition of the electrical installation at the time the report was issued.

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The “Limitations of inspection” box should identify any limitations on the inspections and tests. The competent person undertaking the testing should confirm these aspects before the inspection is carried out.

The report should contain a list of recommended actions necessary to bring the installation up to an electrically safe condition as detailed in the current electrical Wiring Rules.

NOTE 2 Legislation may require specific action (disconnection, isolation, maintaining safety etc.) or reporting of any defect which constitutes an electrical hazard to persons, livestock or property (also see Clause 2.6).

For items classified as “requiring URGENT attention”, the safety of those using the installation may be at risk, and arrangements should be made for a competent person to undertake the necessary remedial work without delay.

For safety reasons, the electrical installation should be re-assessed at appropriate intervals by a competent person. The maximum time interval recommended before the next assessment is stated in the report.

The report is only valid if the total number of pages stated on page 1 is present.

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AS/NZS 3019 Form 1
REPORT OF PERIODIC ASSESSMENT

Installation details	
Client	
Address of installation	

This report covers the following: (tick one and complete as required)

☐ Basic visual inspection in accordance with Section 3 of AS/NZS 3019

☐ Assessment by detailed visual inspection and limited testing in accordance with Sections 3 and 4 of AS/NZS 3019.

☐ Assessment by visual inspection and additional testing in accordance with Sections 3, 4 and 5 of AS/NZS 3019.

☐ Assessment of enhanced safety in accordance with Sections 3, 4, 5 and 6 of AS/NZS 3019.

Estimated age of installation (years):		
Evidence of alterations or additions since last assessment (Y, N or Not Apparent):		
If yes, estimate when carried out (years ago)		
Date of last assessment: / /	Previous records available (Y or N):	

Previous Records available:

Limitations of inspection: (Detail any limitations of the periodic inspection)

Observations: (Detail items requiring attention)

Items requiring URGENT attention:

Other items requiring attention:

REPORT

Having carried out an assessment of the above installation in accordance with the requirements of AS/NZS 3019, I hereby confirm that, subject to the type of assessment and limitations as detailed above, the installation satisfies the requirements of AS/NZS 3019 for the issue of this report.

Name of person who carried out the assessment:

License or registration type and number:

Signature:

Date: / / This report consists of pages

Recommended period for next periodic assessment is ___ years, provided that any observations detailed above "requiring URGENT attention" are repaired without delay.

ATTENTION

This report is a valuable document on the safety status of the electrical installation and should be retained for future reference. Placing in or near the main electrical switchboard is recommended.

For safety reasons, the electrical installation should be re-inspected at the recommended period by a competent person and this copy given to the person carrying out the next assessment.

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AS/NZS 3019 Form 2

SCHEDULE OF TEST RESULTS

Switchboard / distribution board ID	**Page of**	**Test date / /**
Address and Location		
All live wiring and terminals screened from touch without use of tool: Yes / No		

Circuit phase and no.	Protective short circuit current at switchboard input kA		Conductor		Polarity and correct connections	Insulation resistance to earth	Insulation resistance between conductors	RCD push button or current trip test	RCD open circuit resistance test	Refer to Form 1 Obser-vations
	Type	Fault rating/kA	Type	mm^2	Correct	MΩ	MΩ	Trip/ m Sec	No circuit	(✓)

Appendix B
(informative)

Thermography

This Appendix, including Figure B.1, has been reproduced and the text modified with permission from the Australian Professional Thermography Association.

Thermographic imaging of an electrical installation is an additional test method performed by a competent person to identify the possibility of faults that may not be apparent by visual inspection or electrical test measurement.

Thermography is not a requirement under this document but may be used where a visual inspection or test measurement indicates further investigation is warranted.

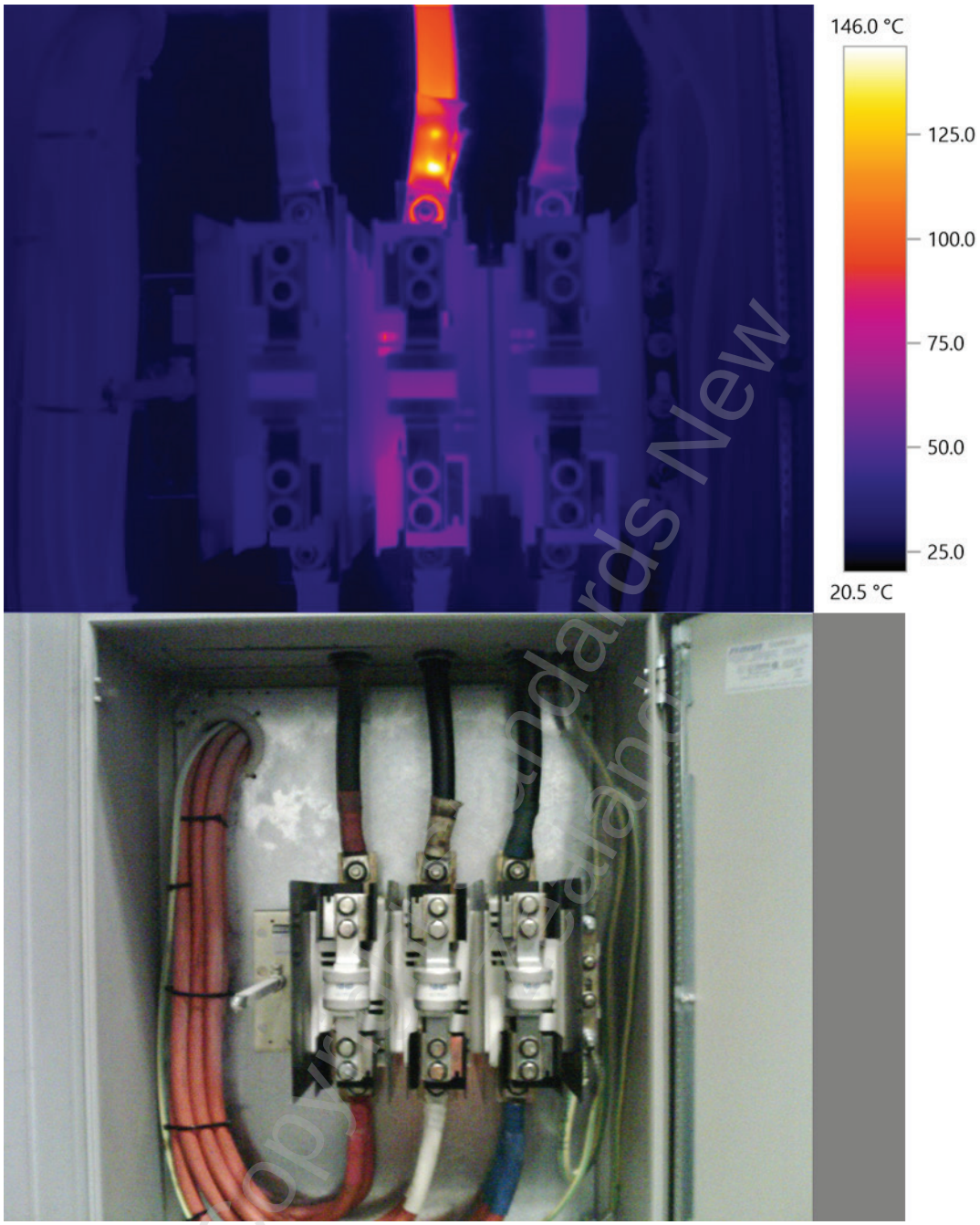
Thermography detects surface heat; it cannot see through opaque or clear acrylic covers over electrical components.

Thermography provides a non-contact method of assessing and/or recording temperatures of electrical equipment. See Figure B.1 which has been reproduced with permission by the Australian Professional Thermography Association.

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Figure B.1 — Example of thermographic imaging

Infrared thermography may be useful to identify the following:

(a) Overloaded or unbalanced circuits.

(b) High resistance connections.

(c) Faulty components.

(d) Potential fire risks.

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Regular thermography inspection may contribute to the following:

(i) Improving electrical system safety and reliability.

(ii) Avoiding the costs and inconvenience of an electrical failure that may otherwise go undetected.

The installation and equipment under test should be assessed under normal, or higher than normal, electrical load to identify possible faults.

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AS/NZS 3003, *Electrical installations — Patient areas*

AS/NZS 3004 (series), *Electrical installations — Marinas and boats*

AS/NZS 3012, *Electrical installations — Construction and demolition sites*

AS/NZS 3017, *Electrical installations — Verification by inspection and testing*

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

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

AS/NZS 60079 (series), *Explosive atmospheres*

AS/NZS 61241 (series), *Electrical apparatus for use in the presence of combustible dust*

NZS 6114, *Electrical installations — Requirements for the safe supply of electricity to installations and equipment operating at non-standard voltages and frequencies*

NZS 6115, *Electrical installations — Mobile medical facilities*

NZS 6116, *Safe application of electricity in the meat processing industry*

IEC 61557 (series), *Electrical safety in low voltage distribution systems up to 1 000 V AC and 1 500 V DC — Equipment for testing, measuring or monitoring of protective measures*

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