UNITING CHURCH IN AUSTRALIA

PRESBYTERY OF ILLAWARRA

ABN: 74 041 246 188

*Focused on God’s Mission – Providing Leadership – Growing Discipleship*

# ELECTRICAL THERMOGRAPHY INSPECTION AND REPORTING

# SCOPE OF WORK

**Overview**

The purpose of a thermal inspection is to identify and document apparent temperature anomalies or exception items, including those exceeding normal operating parameters. This includes, and is not limited to, high resistance electrical connections, current overload, faulty components and/or devices that have an internal defect.

**The Thermographer**

The Thermographer is to be:

* A licensed electrician or,
* A technician accompanied by a licensed electrician or
* A technician with training and experience to be competent in the removal and refitting of escutcheons on live electrical boards as well as having an understanding of the components which are inspected in both normal and abnormal conditions.

The Thermographer is to be trained and/or certified to a minimum Category/Class/Level 1.

Suggested Contacts for Thermal Imaging

1. Previously used by Illawarra UC congregations

**O'Brien Electrical, North Wollongong**

<https://www.obrien.com.au/locations/electrical-north-wollongong/>

Ph: (02) 4244 1332 for new enquiries

37 Jardine Street Fairy Meadow

Business Manager: Richard Attwood

**IJED Electric & Data**

<https://ijed.com.au/>

Ph: (02) 4423 4686

Email: admin@ijed.com.au

[1/6 Victa Way, Bomaderry](https://protect-au.mimecast.com/s/z1otC81ZkqiA8ZAcnoBIh?domain=goo.gl)

Testing carried out on 25/3/21 for $300.

1. From the Internet (not used by an Illawarra UC congregation)

**Simmark**

<https://www.simmark.com.au/contact/>

Ph: (02) 4231 4950

79 Gipps St, Wollongong

Have offices in Southern Highlands and Shoalhaven

**The Infrared Camera**

To be suitable for electrical inspections the Infrared Camera:

* Must be able to record thermal images.
* Should have a minimum 320 x 240 matrix detector. This resolution is recommended to be able to identify faults on the smallest electrical components.
* Should preferably have a temperature range of up to 250°C.
* May include a built in visual digital camera to record visual images corresponding to thermal images.

Alternatively, a separate digital camera should be used to record visual images for the report.

**The Inspection**

A thorough and comprehensive Job Safety Analysis (JSA) or Safe Work Method Statement (SWMS) must be completed prior to the inspection, which would also include any specific site requirements.
The inspection must follow the procedures written in the JSA/SWMS.

The inspection is performed when the site is operating under normal or higher electrical loads. This ensures the best conditions for the detection of temperature anomalies (exceptions). Where possible, load shall be applied to a circuit or equipment which is not running at the time of the inspection, such as lighting in car parks during day light hours etc.

A dwelling’s loads may be higher in the early morning or late afternoon/early evening, depending on the occupant’s situation, or higher when air conditioning/heating and white goods are running.

Infrared energy is detected on surfaces. It is not transmitted through acrylic (clear or opaque) or metal covers. Where safe to do so, switch board covers are to be removed from switch boards to expose internal components.

Switchboards must comply with current Australian standards including AS/NZS 61439.1: 2016 and AS/NZS 3000:2007 which sets out the minimum requirements including wiring, fault protection and access.

Subject to the congregation’s actual site requirements, the Thermal Inspection should include, and not be limited to, the following items:

HV/LV Main Supply Transformers; Points of Attachment (external inspection). Main Switch Boards, Metering and Link Boxes; Distribution & Sub-Distribution Boards; Fuse panels.

Thermal Inspection of these items should include, and not be limited to, the following components:

Incoming Supply; Main & Sub-Main Switches. Bus bars and cabling. Isolators, Circuit Breakers, RCDs/ELCB's; Fuses and connections. Contactors & Overloads; Relays and PLC I/O blocks.
Active, neutral, earth links and terminals.

All exception items are recorded with a Thermal and Visual Image. Field Notes are to include:

Location and name of panel.
Description of component and exception item with relevant comments.

Serious faults are to be brought to the immediate attention of the congregation, and a list of all exception items should be provided and/or discussed with the congregation member at the end of the inspection or at the end of each day.

**The Report**

The Thermal Imaging Survey/Inspection report shall contain a covering page showing:

* Site location and date of inspection.
* Recipient’s name and contact details; Thermographer’s name and contact details. Other details as may be applicable.
* The report shall have a summary table of exception items. Each thermal image page shall contain the following:
	+ Name and location of panel.
	+ A thermal Image of the item and a digital visual image of the item.
	+ Component identification; A description of the condition.
	+ Apparent temperature indications of the item and if needed a reference temperature. A temperature scale for the image to give an indication of surrounding temperatures. Comments on repair and recommended priority level for repair.

The report shall include a statement which describes how repair priorities are determined. A suggestion for the congregation is attached.

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| Priority | Hazard  | Risk  |
| #5 | 0 C | Passed |
| #4 | 0°C to 10°C  | Continue to monitor on a regular basis  |
| #3 | 10°C to 20°C  | Repair at next convenient opportunity  |
| #2 | 20°C to 40°C  | Repair immediately  |
| #1 | >40°C  | Failure imminent; shut down for repair  |

The report shall also include a list of all the items inspected including those which were not able to be inspected, for whatever reason. The report shall be available in both hard and soft copies.

**Responsibilities**

The Thermographer shall:

Perform the inspection, in accordance with safety requirements, at a time when environmental and physical conditions favour the gathering of accurate data.
Have sufficient knowledge of the equipment to interpret the infrared images in both normal and abnormal conditions or be accompanied by a person with such technical and relevant safety knowledge.

The Client shall:

Provide or assist in the development of a list of all equipment to be inspected. Provide authorization and access to the equipment to be inspected.
Provide all necessary inductions and site safety information.
Provide where possible, the equipment operating at higher load for sufficient time to ensure optimum stable conditions for inspection.