DELIVERING FOR QUEENSLAND

Technical Note 217

Electrical periodic verification procedures for road lighting

December 2025

Queensland Government

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1 Introduction

This document introduces the updated test procedures for electrical Periodic Verification (PV) for road lighting. It provides the general guidelines for RoadTek, external contractors and other personnels who specify and undertake electrical periodic verification works for road lighting.

The updated test procedures in this document shall supersede the existing procedures specified in Appendices B and C in the Traffic and Road Use Management (TRUM) manual Volume 4: Part 6.

This document does NOT supersede the other requirements TRUM Volume 4: Part 6 and shall be read in conjunction with it.

The document also does NOT cover the requirements for safety and risk management and shall be read in conjunction with *Electrical Safety Act 2002*, *Electrical Safety Regulation 2013*, and Queensland *Manual of Uniform Traffic Control Devices (*MUTCD) Part 3.

2 Definitions

Table 2 – Definitions

Term	Definition
AC	Alternating current
DC	Direct current
EFLI	Earth fault loop impedance
HRC	High rupturing capacity
IR	Insulation resistance
ITS	Intelligent Transport Systems
MEC	Main earth conductor
MEN	Multiple earthed neutral
PE cell	Photoelectric cell
PEN	Protective earth neutral
Queensland MUTCD	*Manual of Uniform Traffic Control Devices*
RCD	Residual current device
PV	Periodic verification
TRUM	*Traffic and Road Use Manual*

3 Referenced documents

Table 3 below lists referenced documents in this document.

Table 3 – Referenced documents

References	Title
-	*Electrical Safety Regulation 2013 (Queensland)*
-	*Electrical Safety Act 2002 (Queensland)*
-	*Managing Electrical Risk in the Workplace – Code of Practice – Safe Work Australia*
AS/NZS 3000:2018	*Electrical installations (known as Wiring Rules)*
AS/NZS 3019:2022	*Electrical installations – Periodic assessment*
TRUM Vol 4 Part 6	*Periodic Verification Guide for Traffic Signals, Road Lights and ITS Equipment Installations*

4 Overview of periodic verification for road lighting

Figure 4 – Periodic verification for road lighting overview

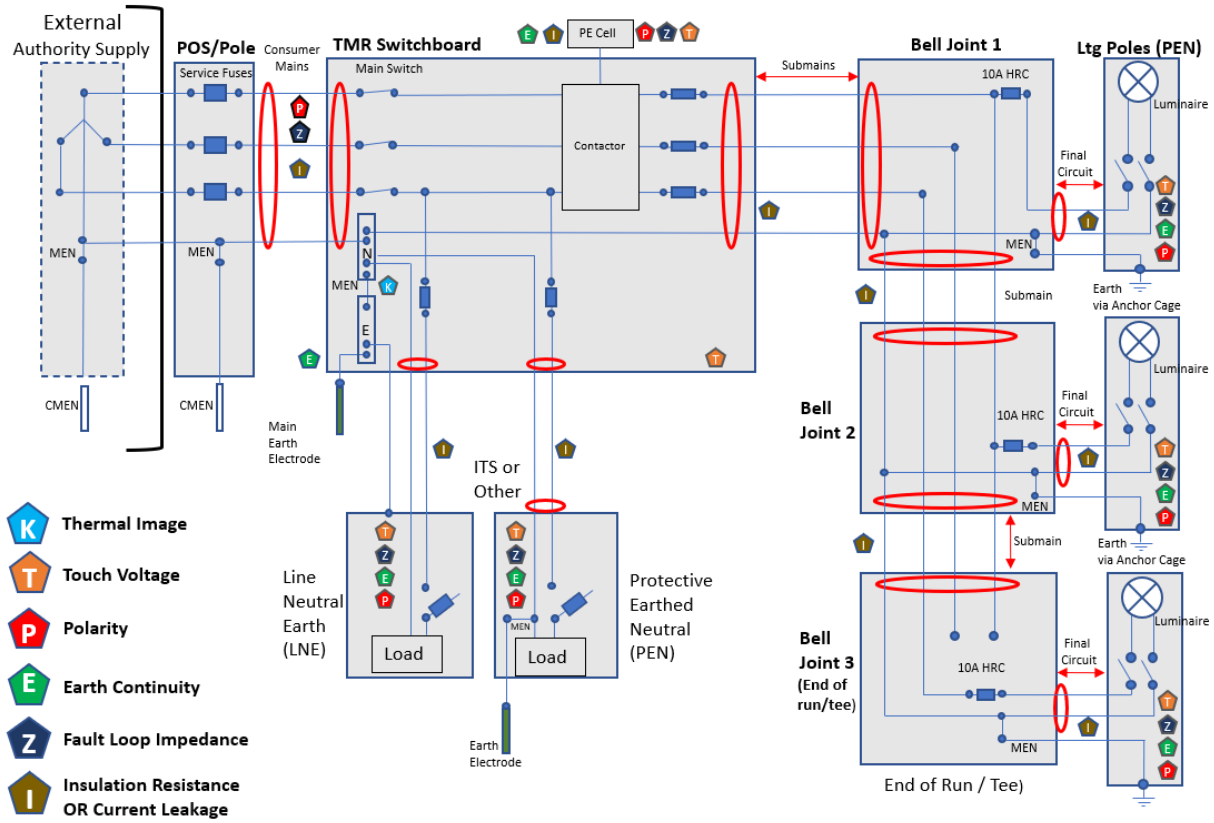


Figure 4 provides an overview of types of periodic verification tests required for each part of road lighting systems, including consumer mains, submains, final circuit, earth and any other ITS enclosures connected to road lighting switchboards. The details of the tests are summarised in Table 4.

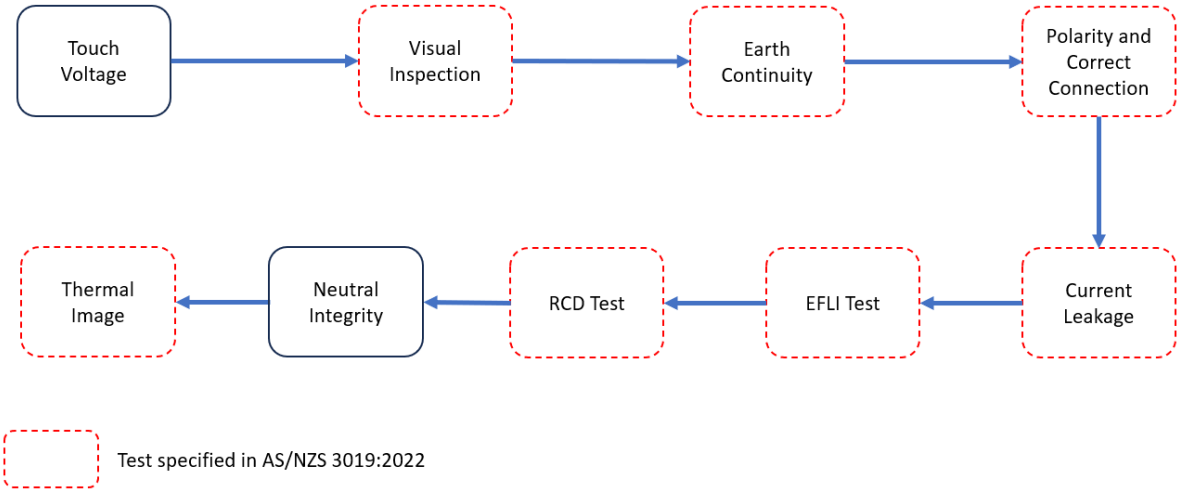
Table 4 – Summary of periodic verification for road lighting

Location	Touch voltage	Polarity	Earth continuity	Fault loop impedance	IR or current leakage	Neutral integrity	Thermal image
Consumer mains		✓		✓	✓	✓	
Switchboards	✓		✓				✓
PE cells	✓	✓		✓	✓		
Submains		✓			✓		
Final circuits		✓		✓	✓		
Lighting poles	✓		✓				
ITS enclosures	✓	✓	✓	✓	✓		

5 Test sequences

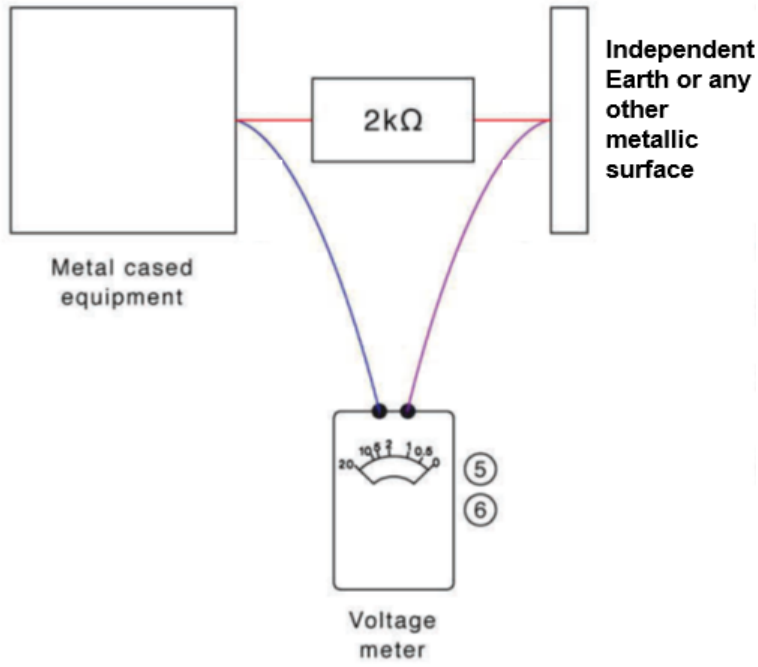
A typical sequence of the periodic verification tests is shown in the flow diagram and shall be completed in accordance with AS/NZS 3019:2022 *Electrical installations – Periodic assessment.*

Figure 5 – Typical test sequence of periodic verification for road lighting



5.1 Touch voltage (live test)

Figure 5.1 – Measurement of touch voltage



i. Install a temporary earth electrode, at least 150 mm but no more than 250 mm, into the ground and at least 2 m away from the switchboard or lighting poles.

ii. Connect leads from a 2 kΩ resistor between exposed metallic surfaces, including:

- each switchboard and the independent earth
- each switchboard and any earthed metallic surface, such as safety barriers, pipes or Rate 2 poles, within 2.5 m from the switchboard
- each lighting pole and the independent earth, and
- each lighting pole and any earthed metallic surface, such as safety barriers, pipes or Rate 2 poles, within 2.5 m from the switchboard.

Note: A 2 kΩ resistor is used to simulate the body resistance of a typical person in poor atmospheric conditions with full hand to hand contact between structures.

iii. Test the voltage between the resistor connection points on both conductive parts via using a high impedance meter.

iv. If a 2 kΩ resistor is not available, alternatively, measure the touch voltage between 2 conductive parts via using a low impedance multimeter, and

v. The test result should be within the touch voltage limits. The table below shows the corresponding actions based on the test results.

Table 5.1 – Touch voltage limits

Voltage range (V)	Action
0 V ≤ Result < 4 V	No action required.
4 V ≤ Result < 6 V	Notify supervisors, record the result, and investigate it later.
Result ≥ 6 V	Confirm the absolute voltage and voltage source. Notify supervisors, and repair or isolate the circuit. If source is from another entity, notify the asset owner to resolve.

5.2 Visual inspection

Assessment by basic visual inspection of accessible parts of an electrical installation can confirm that the installation is in good repair / working order and does not exhibit indications of misuse, excessive damage, or deterioration.

The visual inspection requirements have been specified in Section 3 of *AS/NZS 3019:2022 Electrical Installations – Periodic Assessment*. The detailed inspection checklist has been developed according to this standard. Refer to the periodic verification Excel spreadsheet for details of the checklist.

5.3 Earth continuity test

5.3.1 Earth continuity of switchboard main earth conductor

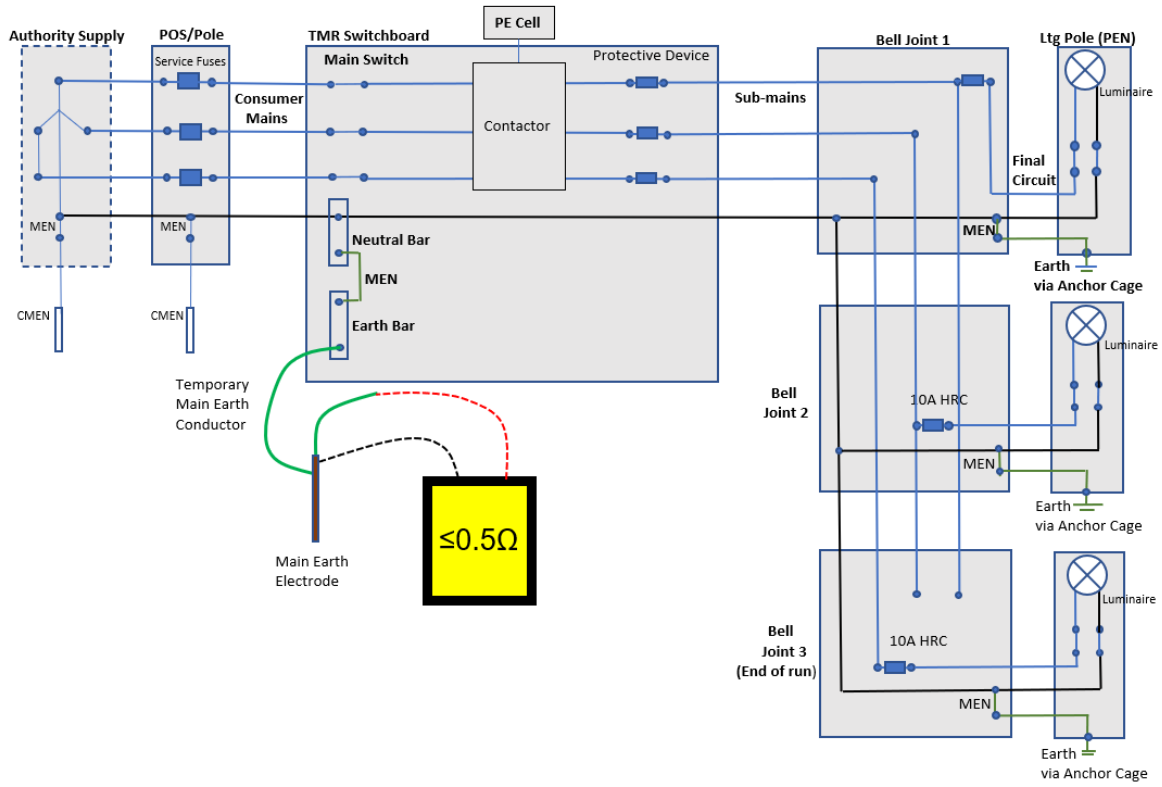
This section provides details of 2 different methods to undertake the earth continuity test for the switchboard main earth conductor: live test and supply isolation.

As road lighting is considered important for road safety while in operation, live test is preferred to avoid interruption of normal operation if the work is carried out at night. This method meets the requirements of electrical work on energised electrical equipment stipulated in Section 14(a) of *Electrical Safety and Other Legislation Amendment Regulation 2024*.

When road lighting is not in operation, such as during the day, the supply isolated method is recommended to mitigate electrical risk.

5.3.1.1 Method 1 – Live test

Figure 5.3.1.1 – Main Earth Conductor continuity test procedures (live)



i. Test a temporary main earth conductor to ensure it is less than 0.5 Ω.

ii. **Complete the following noting any possible risk.** Connect the temporary main earth conductor with the existing main earth electrode.

iii. Disconnect the main earthing conductor from the earth bar in the switchboard.

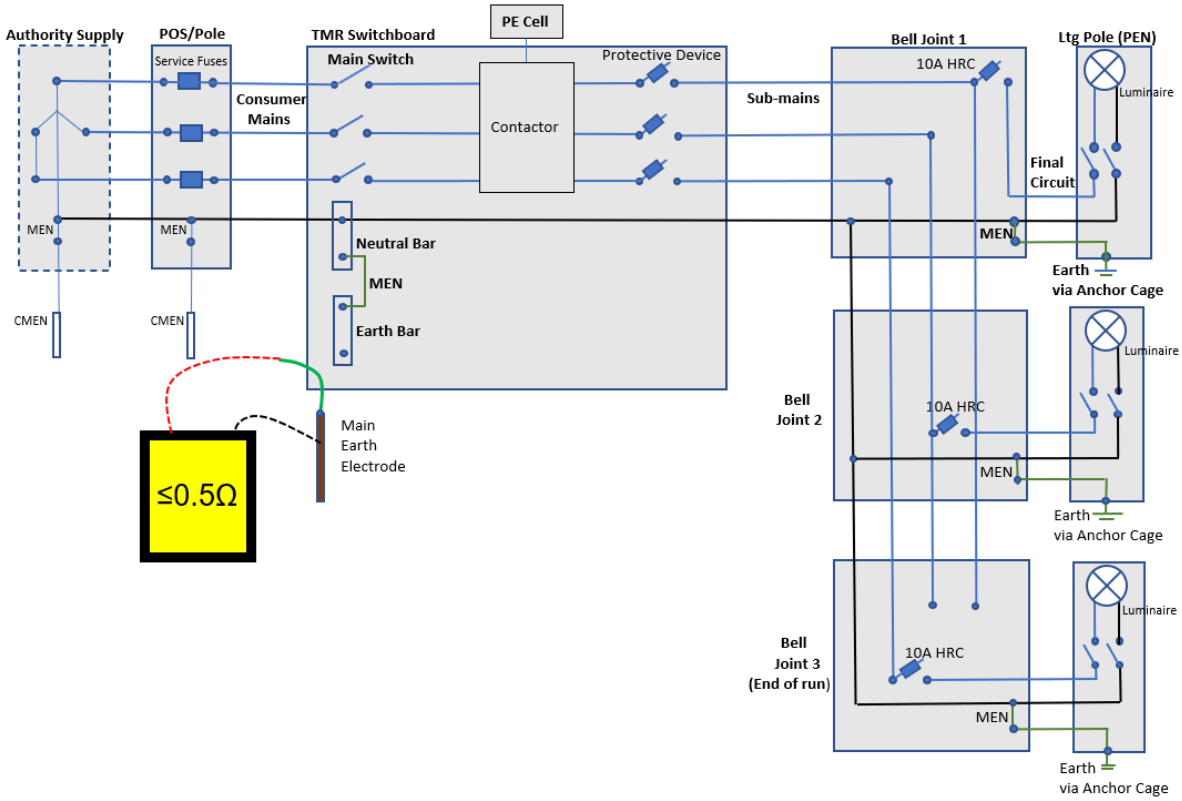
iv. Use an ohmmeter to measure the resistance between the disconnected end of the main earth conductor in the switchboard and the body of the main earth electrode.

v. Check that the main earthing conductor resistance is ≤ 0.5 Ω, and

vi. If satisfactory, reconnect the main earth conductor to the earth bar.

5.3.1.2 Method 2 – Supply isolated

Figure 5.3.1.2 – Main Earth Conductor continuity test procedures (de-energised)



i. Isolate supply **at the switchboard** and confirm no voltage present on load side of main switch and neutral.

ii. Test the main earth conductor via AC current leakage clamp meters to confirm there is no stray leakage current.

iii. **Complete the following noting any possible risk.** Disconnect the main earth from the earth bar. Disconnection point is the earth bar.

iv. Use an ohmmeter to measure the resistance between the disconnected end of the main earth conductor in the switchboard and the body of the main earth electrode.

v. Check that the main earthing conductor resistance is ≤ 0.5 Ω, and

vi. If satisfactory, reconnect the main earth conductor to the earth bar.

5.3.2 Earth bonding continuity test

Figure 5.3.2 – Measurement of earth bonding continuity

i. Visually inspect connection and the earth bond between the door or hinged escutcheon and the enclosure

ii. Use an ohmmeter to measure the resistance between each side of any earth bond, and

iii. Check that the earth bond resistance is ≤ 0.5 Ω.

5.3.3 Earth continuity at lighting poles

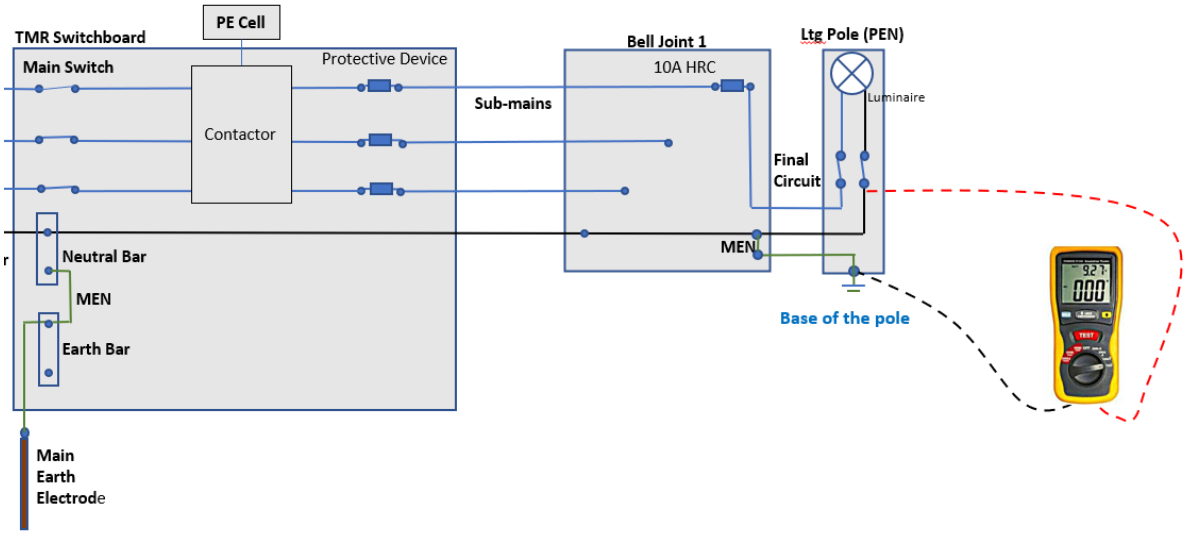
Similar to Section 5.3.1, 2 different methods, live test and supply isolation, have been provided for earth continuity at lighting poles.

Live test is the preferred method while the road lighting is in operation to avoid interruption of normal operation to ensure road safety. This method meets the requirements of electrical work on energised electrical equipment stipulated in Section 14(a) of *Electrical Safety and Other Legislation Amendment Regulation 2024*.

Supply isolation method is recommended when the road lighting in operation. It should also be used for further investigation when live test fails.

5.3.3.1 Method 1 – Live test

Figure 5.3.3.1 – Earth continuity test procedures at lightning poles live)



i. **Complete the following noting any possible risk.** Test and confirm no voltage between neutral in the lighting pole access hatch and the base of the lighting pole.

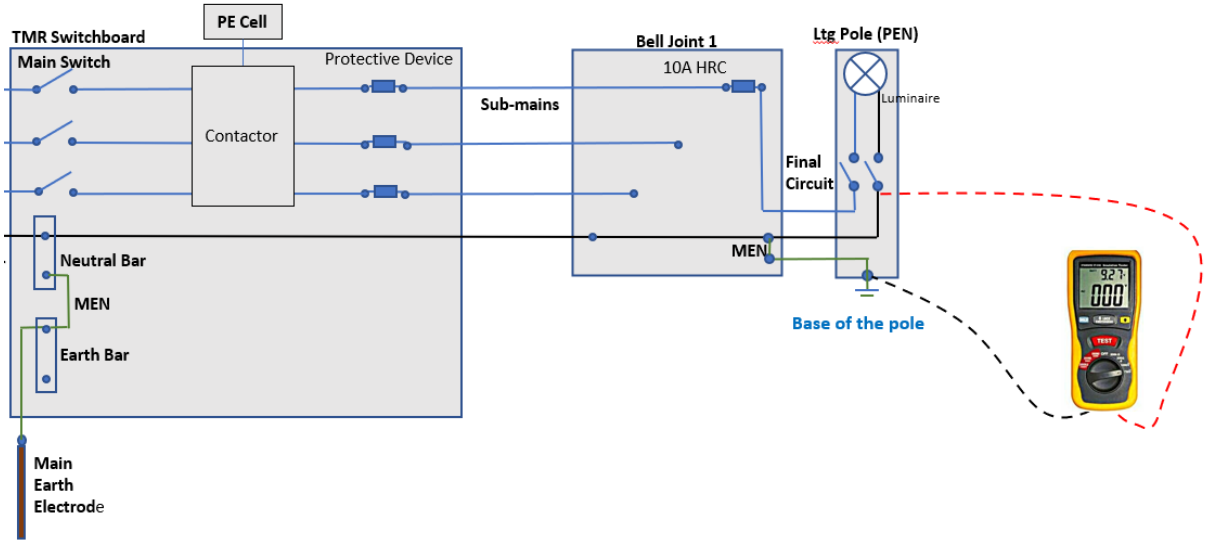
ii. Use an ohmmeter to measure the resistance between the neutral in the lighting pole access hatch and the base of the lighting pole.

iv. Check if the resistance is ≤ 0.5 Ω, and

iii. If the ohmmeter is not working, undertake the test with supply isolated as described in Section 5.3.3.2.

5.3.3.2 Method 2 – Supply isolated

Figure 5.3.3.2(a) – Earth continuity test procedures at light pole with MEN connected (de-energised)



i. Isolate supply **at the switchboard** and confirm no voltage present on load side of main switch and neutral.

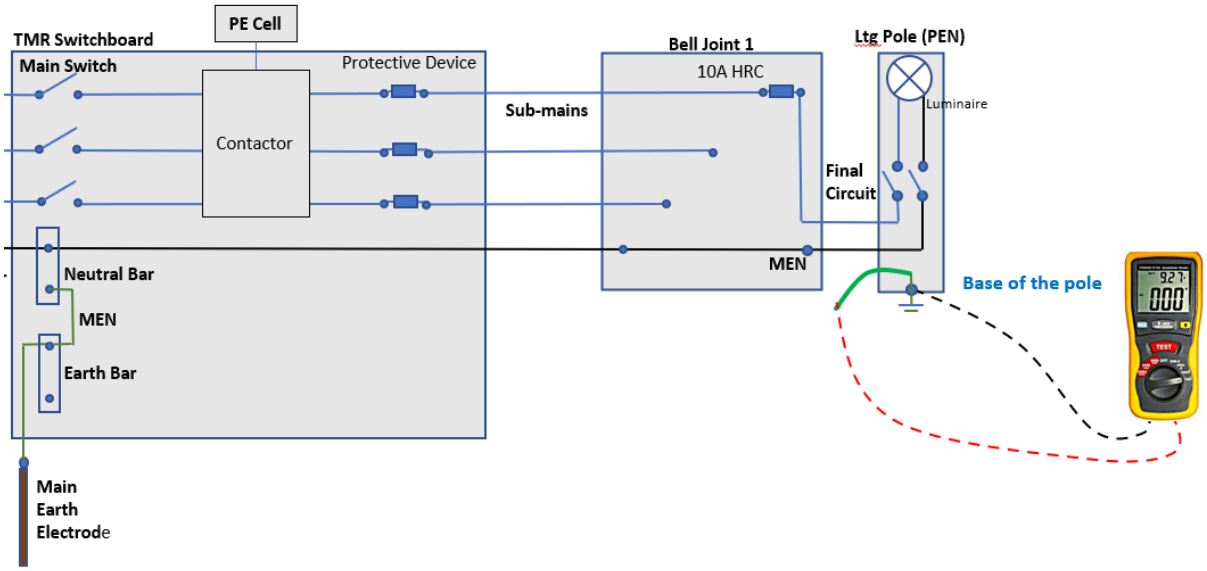
ii. Use an ohmmeter to measure the resistance:

- between the neutral in the lighting pole access hatch and the base of the lighting pole for slip base pole, and
- between the neutral in the lighting pole access hatch and the footing bolts.

iii. Check if the resistance is ≤ 0.5 Ω. If yes, record the result.

iv. If the resistance is ≥ 0.5 Ω, undertake steps (v) to (ix) as below.

Figure 5.3.3.2(b) – Earth continuity test procedures at light pole with MEN removed (de-energised)



v. **Complete the following noting any possible risk.** Test and confirm no voltage between active and neutral. The supply remains isolated from the switchboard since step (i).

vi. Disconnect the protective earthing conductor from the bell joint MEN.

vii. Use an ohmmeter to measure the resistance between the disconnected end of the protective earth conductor and the base of the lighting pole.

viii. Check if the main earthing conductor resistance is ≤ 0.5 Ω. If the earth continuity fails:

- For slip base poles with no connector for earth (2 pin plugs), upgrade to 3 connector arrangement as per departmental Standard Drawings 1389 and 1400. Re-measure the resistance, and
- For slip-based poles with 3 connectors already or base plate mounted poles, check if there are any loose connections inside the base of the pole.

ix. If satisfactory, reconnect the protective earth conductor to the bell joint MEN, and

x. Also check the O-ring of the bell joint. If damaged, replace it and regrease before closing the joint.

For earth continuity test at lighting pole with supply isolated, the recommended method is to use mains switch in the switchboard to disconnect the supply. However, the supply can also be isolated from the joint by removing the fuse if only particular pole needs to be further investigated.

However, the department has recently experienced electrical incidents where the joint failed due to water ingress and matter build-up inside of the bell joint. As a result, the fuse holder remains connected at “closed” position even without a fuse, resulting in electric shocks.

In order to avoid such incidents in the future, when using a joint to provide isolation for a road lighting pole, it is critical to examine the condition of the joint to ensure the fuse holder or terminal does not provide unexpected connectivity that might result from moisture and matter build-up. Therefore, the following steps shall be followed to check the unexpected connectivity:

i. Always utilise correct safe systems of work and personal protective equipment when working live.

ii. Remove the fuse and set the fuse holder to the “closed” position.

iii. Isolate the luminaire from the circuit within the pole. For example, 2 pole isolator is in the “off“ position or equivalent method.

iv. Use a high impedance multimeter to measure the open voltage between active and neutral at the road lighting pole.

v. Consider replacing the fuse holder or terminal inside the joint, or replace the existing joint with a new one if:

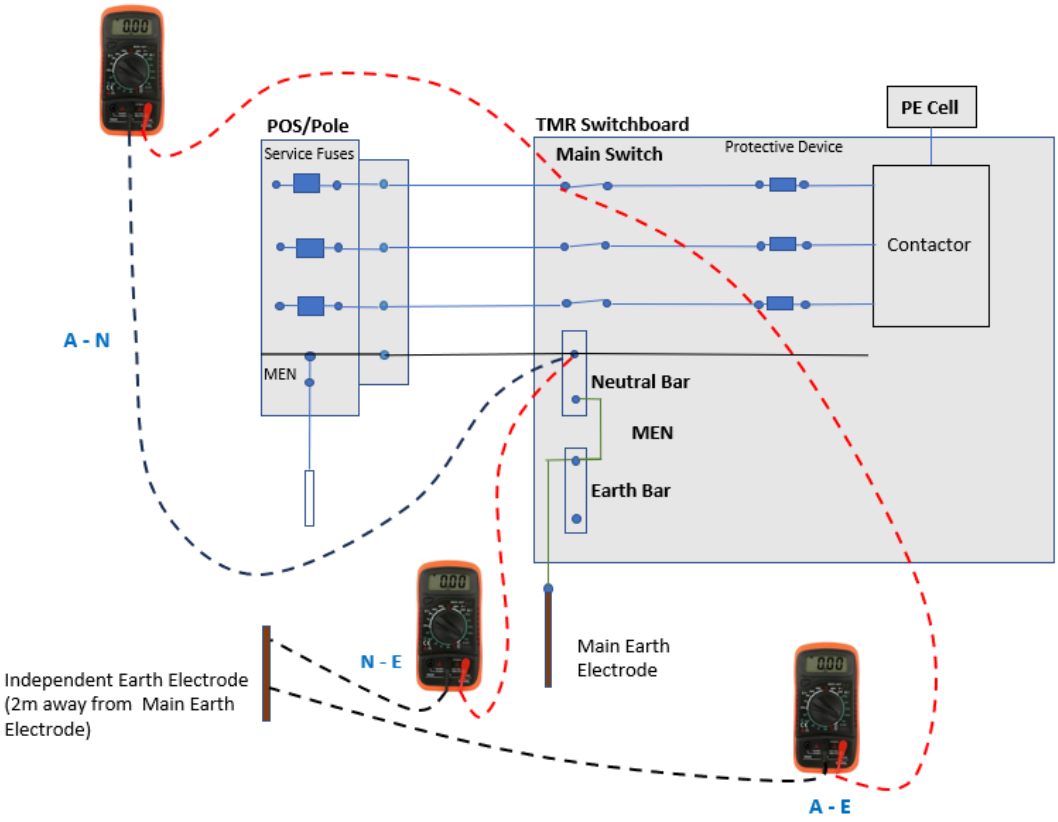
- the voltage is detected in step (iv), or
- the bell joint or fuse holder has been wet or contaminated.

vi. Re-verify electrical isolation.

5.4 Polarity and correct circuit connection

5.4.1 Polarity test of consumer mains (live test)

Figure 5.4.1 – Consumer Mains polarity test procedures (live)



i. Install an independent earth electrode, at least 150 mm but no more than 250 mm, into the ground and at least 2 m from the switchboard earth electrode. **DO NOT** use the system earth as it may provide false indications.

ii. **Complete the following, noting any possible risk.** Test the voltage of active (all 3 phases) to neutral, active (all 3 phases) to independent earth, and neutral to independent earth. The test shall confirm all phases are present.

iii. Record the measurement. The results should be as follows.

Table 5.4.1 – Correct polarity test results

Test	Result
Active (all 3 phases) to neutral	230 Vac
Active (all 3 phases) to independent earth	230 Vac
Neutral to independent earth	0 Vac

iv. If test results are as follows, then polarity is reversed and this needs to be corrected immediately:

Table 5.4.1(b) – Reversed polarity test results

Test	Result
Active (all 3 phases) to neutral	230 Vac
Active (all 3 phases) to independent earth	0 Vac ✕
Neutral to independent earth	230 Vac ✕

5.4.2 Polarity test of remote PE cells (live test)

i. Install an independent earth electrode, at least 150 mm but no more than 250 mm, into the ground

ii. Remove the PE cell from the pedestal

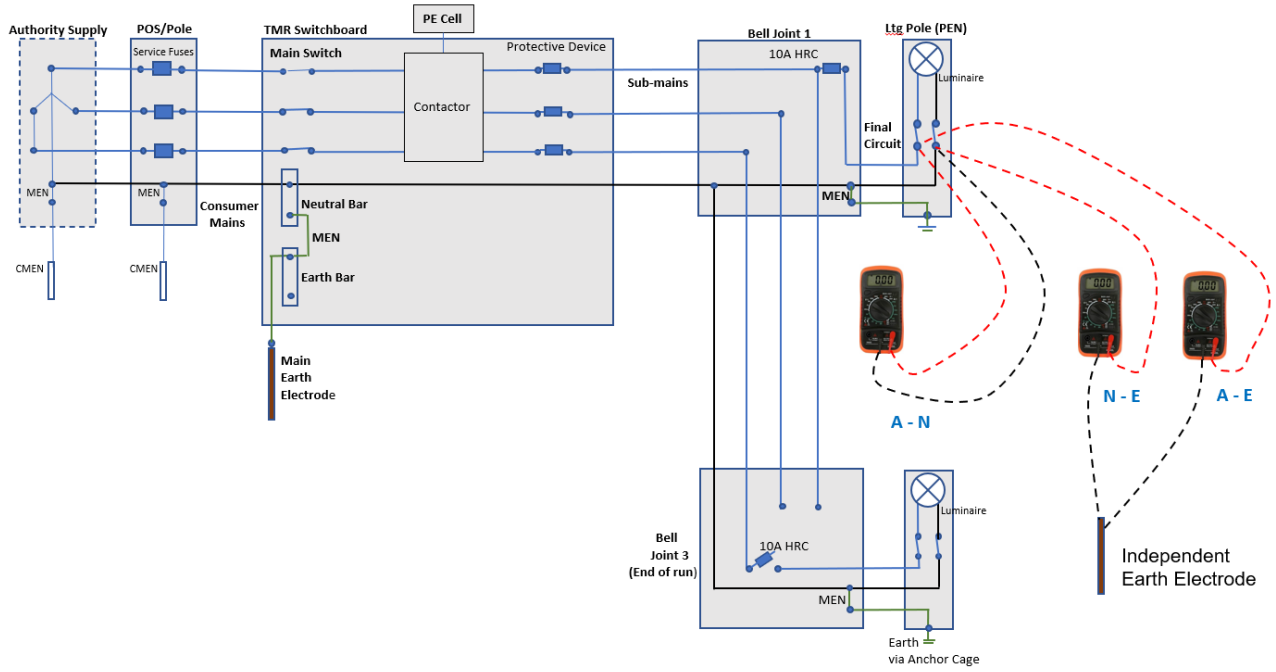
iii. Test the voltage of active to neutral, active to independent earth and neutral to independent earth at the base of the PE cell, and

iv. The result should be identical to the table in Section 5.4.1. If not, then polarity is reversed and this needs to be corrected immediately.

5.4.3 Polarity test of joints and poles (live test)

5.4.3.1 Polarity test of poles

Figure 5.4.3.1 – Polarity test procedures at poles (live)



i. Install an independent earth electrode, at least 150 mm but no more than 250 mm, into the ground and at least 2 m from the lighting pole anchor cage. The MEN link can remain intact.

ii. At the lighting pole hatch access, test the voltage of active to neutral, active to independent earth, and neutral to independent earth. Record the results.

iii. If the voltage between neutral and independent earth is equal or greater than 10 V, disconnect the MEN from the pole and recheck, and

iv. If the results are not identical to the table in Section 5.4.1, conduct the polarity test of joints as described in Section 5.4.3.2 if necessary and rectify the fault immediately.

5.4.3.2 Polarity test of joints

Note: Conduct polarity test of joints only if polarity test of light poles in Section 5.4.3.2 fails.

i. Visually inspect the joint for polarity and ensure a correct size fuse is in place (10A HRC).

ii. Install an independent earth electrode, at least 150 mm but no more than 250 mm into, the ground and at least 2 m from the lighting pole anchor cage. The MEN link can remain intact.

iii. At joint connectors, test the voltage of each active to neutral, each active to independent earth, and neutral to independent earth. Record the results, and

iv. The result should be identical to the table in Section 5.4.1. If not, then polarity is reversed and this needs to be corrected immediately.

If any moisture, water ingress, rust or matter build-up is found at the bell joint, the joint may not be in a usable condition. Therefore, it is critical to examine the joint to ensure there is no unexpected connectivity. Replace the bell joint if it is not in usable condition.

5.4.4 Correct connection test

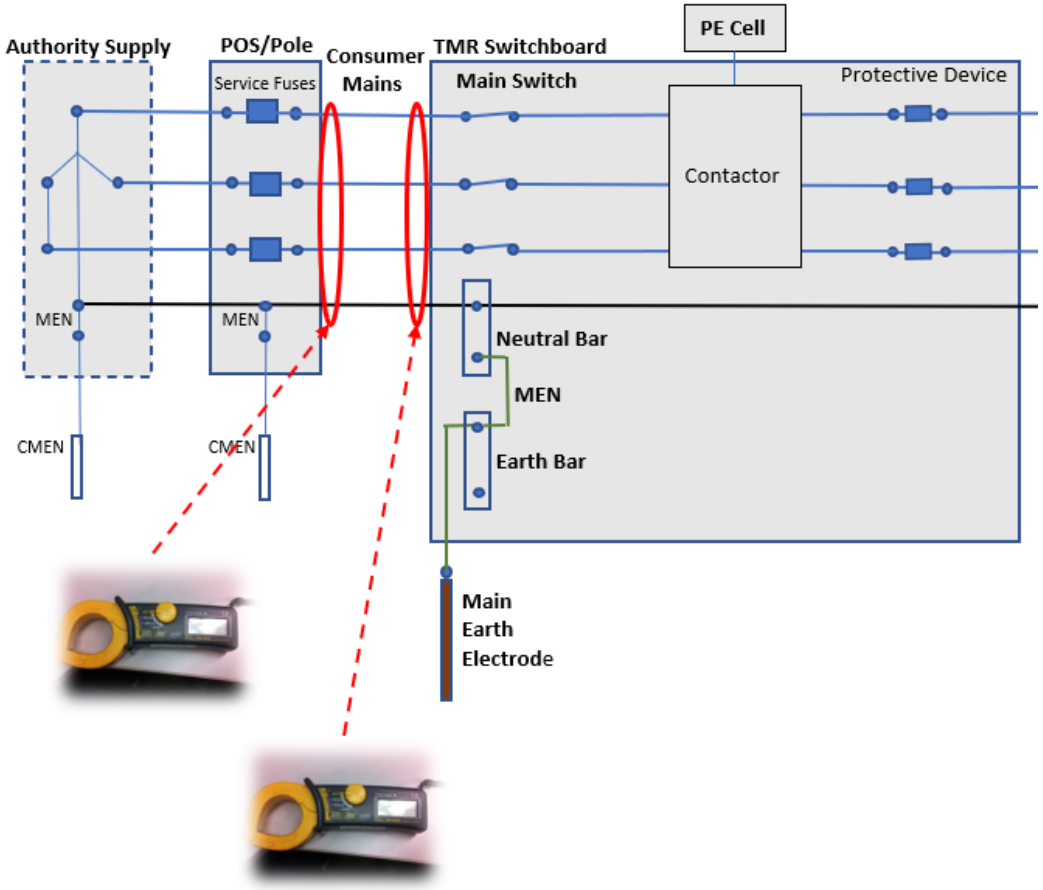
The polarity tests for road lighting installations will suffice for confirming correct circuit connections.

5.5 Insulation resistance and leakage current test

5.5.1 Consumer mains cables

5.5.1.1 Leakage current test of consumer mains (live test)

Figure 5.5.1.1 – Leakage current test procedures for consumer mains (live)



i. Calibrate 2 AC current leakage clamp meters of the same model type

ii. Ensure the meter jaws are undamaged, clean and can close together completely without air gap

iii. Place the meter jaw as close as practical to each end of the consumer mains

iv. Simultaneously record the cable current with the clamp meter set on "Peak Hold"

v. Check the difference in leakage current. If the difference is ≤ 10 mA, record the result

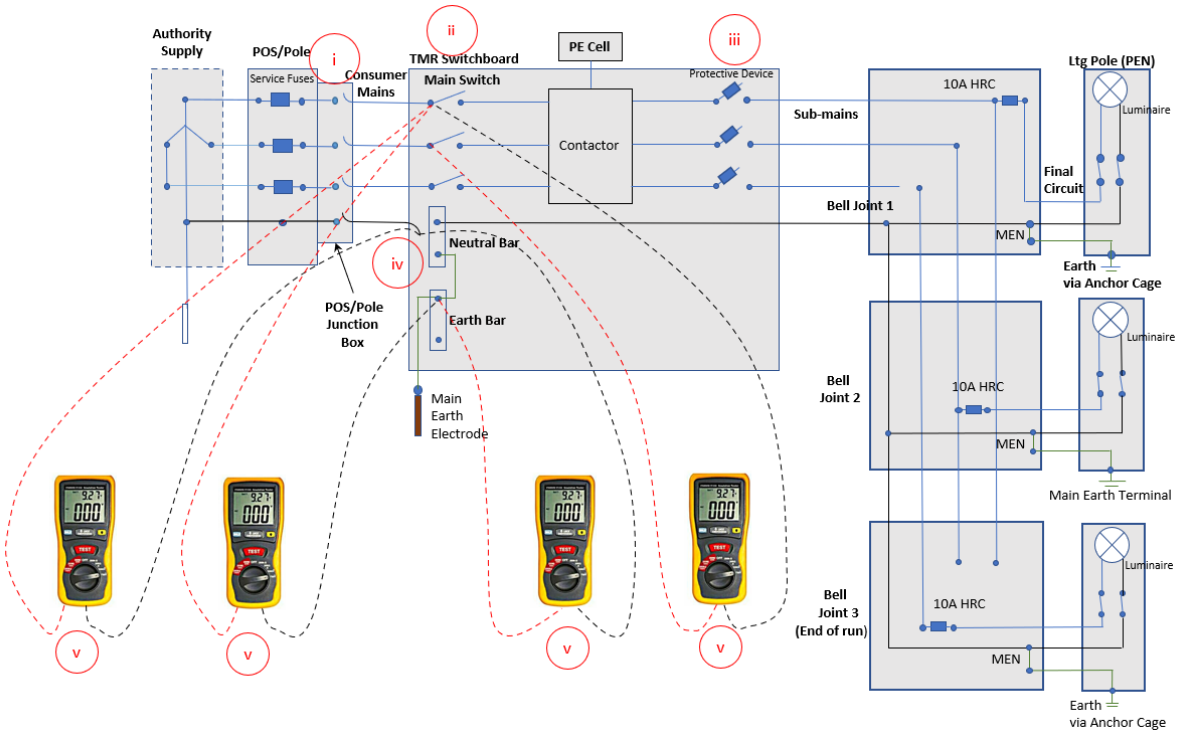
vi. Remove the meters from the consumer mains, and

vii. If the difference is > 10 mA, conduct further investigation including Insulation Resistance Test outlined in Section 5.5.1.2.

5.5.1.2 Insulation resistance test of consumer mains (supply isolated)

Note: Conduct insulation resistance test only if the leakage current test in Section 5.5.1.1 fails.

Figure 5.5.1.2 – Insulation resistance test procedures for consumer mains (de-energised)



i. Ensure all conductors from the supply are NOT connected to the installation

ii. Turn main switch OFF

iii. Place all protective devices, such as circuit breaker or fuses switches, in the OFF position

iv. Disconnect main neutral (PEN) from the neutral bar

v. Set the insulation resistance meter to MΩ range and 500 V to measure the resistance between:

- each active at the main switch and the main earth at the earth bar
- each active at the main switch and the main neutral
- the main neutral and the main earth at the earth bar, and
- each active at the main switch and each other active for multiple phases supplies.

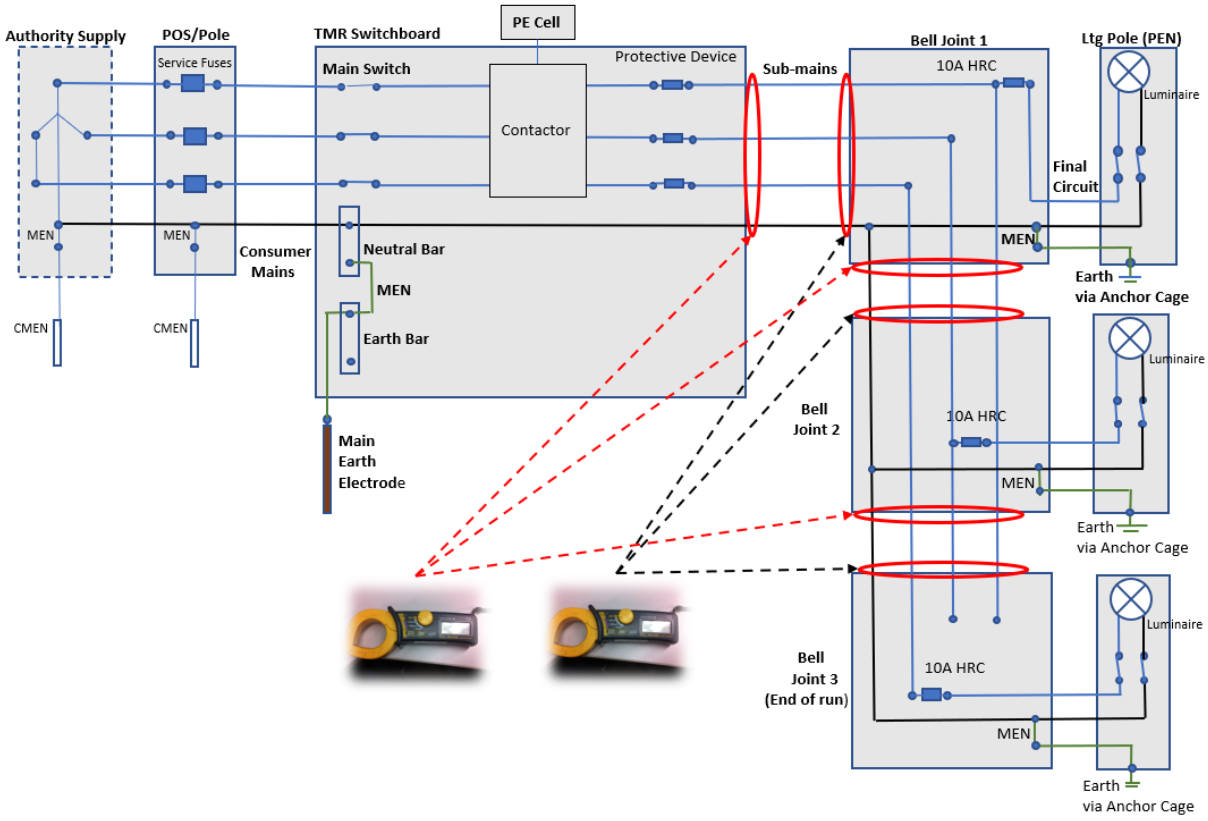
vi. Check if the results is ≥ 1 MΩ. If yes, record the results. Otherwise, notify supervisors and repair it, and

vii. After completing the test, reconnect supply neutral to neutral bar and live conductors to the supply.

5.5.2 Submains cable between switchboard and joint or between joints

5.5.2.1 Leakage current test of submains (live test)

Figure 5.5.2.1 – Leakage current test procedures for submains (live)



i. Calibrate 2 AC current leakage clamp meters of the same model type

ii. Ensure the meter jaws are undamaged, clean and can close together completely without air gap

iii. Place the meter jaw as close as practical to each end of the submains

iv. Simultaneously record the cable current with the clamp meter set on "Peak Hold"

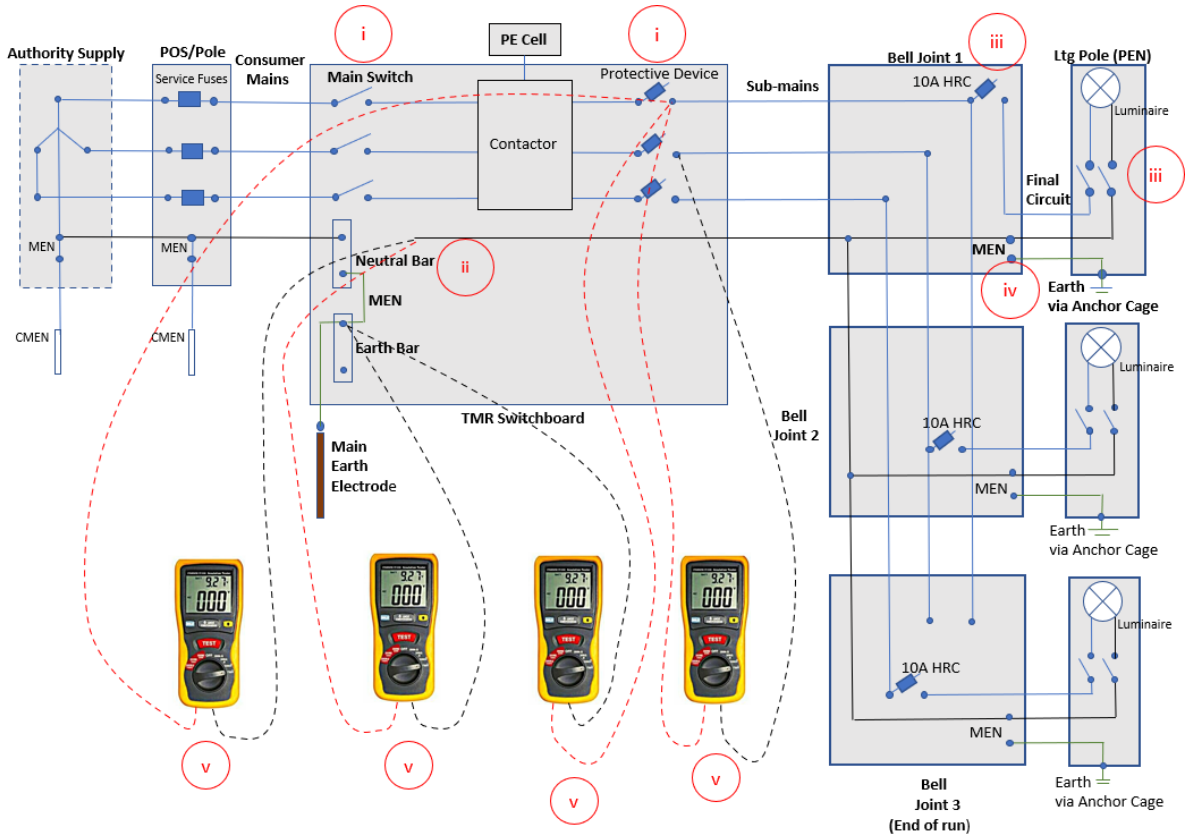
v. Check the difference in leakage current. If the difference is ≤ 10 mA, record the result

vi. Remove the meters from the consumer mains, and

vii. If the difference is > 10 mA, conduct further investigation including insulation resistance test outlined in Section 5.5.2.2.

5.5.2.2 Insulation resistance test of submains (supply isolated)

Figure 5.5.2.2 – Insulation resistance test procedures for submains (de-energised)



i. Open all circuit fuse switches or circuit breakers at the beginning of the submains.

ii. Disconnect the submains neutral from the neutral bar.

iii. Disconnect loads on the circuit so that there is no connection through the load to neutral, e.g., switch off the isolator on the panel within each road lighting pole on the circuit so the luminaires are out of circuit and remove the fuse from the bell joint.

iv. Remove the MEN link in the bell joint.

v. Set an insulation resistance meter to MΩ range and 500 V to measure the resistance between:
   - each submains active and the main earth at the earth bar
   - each submains active and the submains neutral
   - the submains neutral and the main earth at the earth bar, and
   - each active at the main switch and each other active for multiple phases supplies.

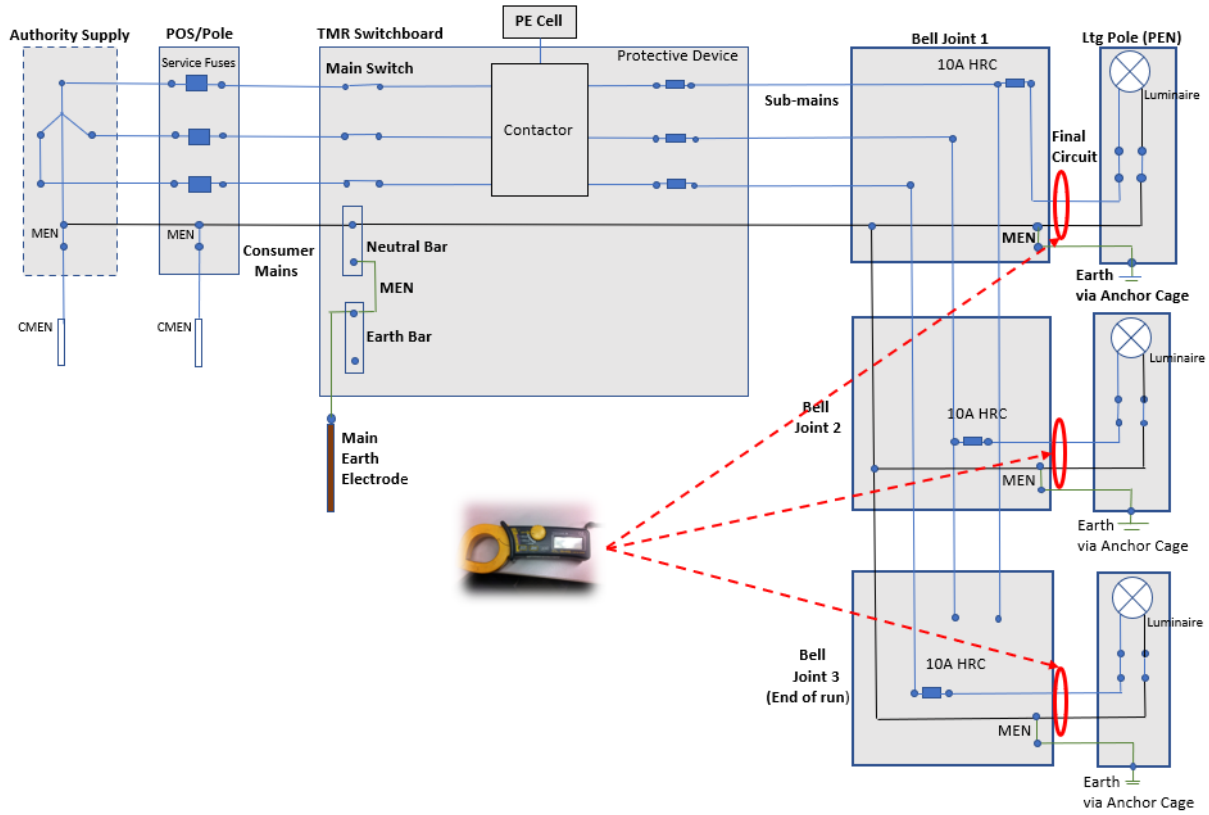
vi. Check if the results are ≥ 1 MΩ. If yes, record the results. Otherwise, notify supervisors and repair it.

vii. After completing the test, reconnect loads, e.g. switch on the isolator on the panel within each road lighting pole so the luminaire is in circuit, and

viii. Close circuit fuse switches or circuit breakers at the beginning of the submains and connect submains neutral to the neutral bar.

5.5.3 Leakage current test of final circuits (live test)

Figure 5.5.3 – Leakage current test procedures for final circuit (live)



i. Ensure the meter jaws are undamaged, clean and can close together completely without air gap.

ii. Place the meter jaw as close as practical to the end of the final circuit at joint exit. Measure active and neutral only.

iii. Record the cable current with the clamp meter set on "Peak Hold".

iv. Check the leakage current. If the difference is ≤ 10 mA, record the result.

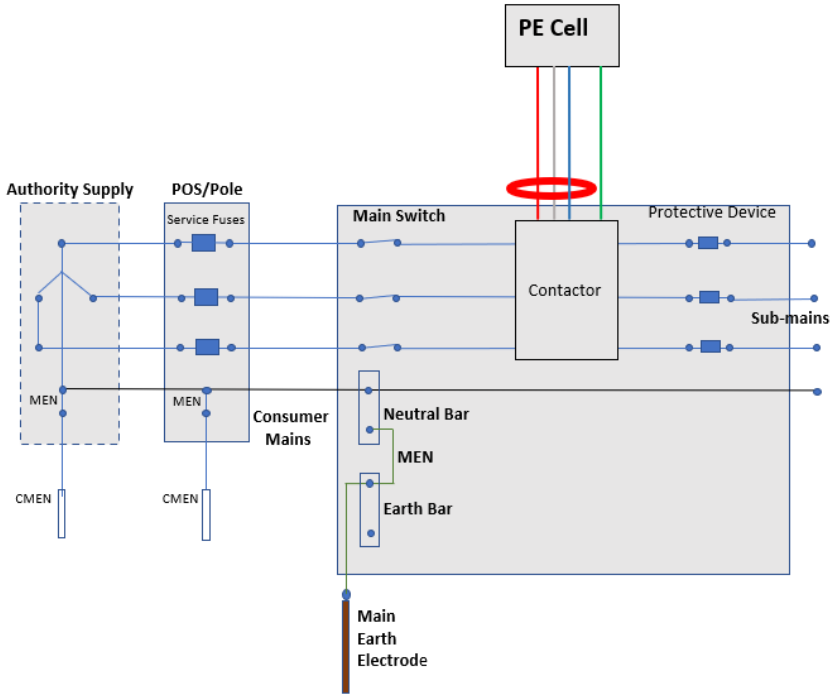
v. Remove the meters from the final circuits, and

vi. If the difference is > 10 mA, conduct further investigation and repair the final circuit.

5.5.4 Leakage current test at PE cells

Note: This step only applies to pillar mounted switchboards with photoelectric control switches on standalone pedestals.

Figure 5.5.4 – Leakage current test procedures for PE cells (live)



i. Ensure the meter jaws are undamaged, clean and can close together completely without air gap

ii. Place the meter jaw over the cable to the remote PE cell at the switchboard. Measure active and neutral only

iii. Record the cable current with the clamp meter set on "Peak Hold"

iv. Check the leakage current. If the difference is ≤ 10 mA, record the result

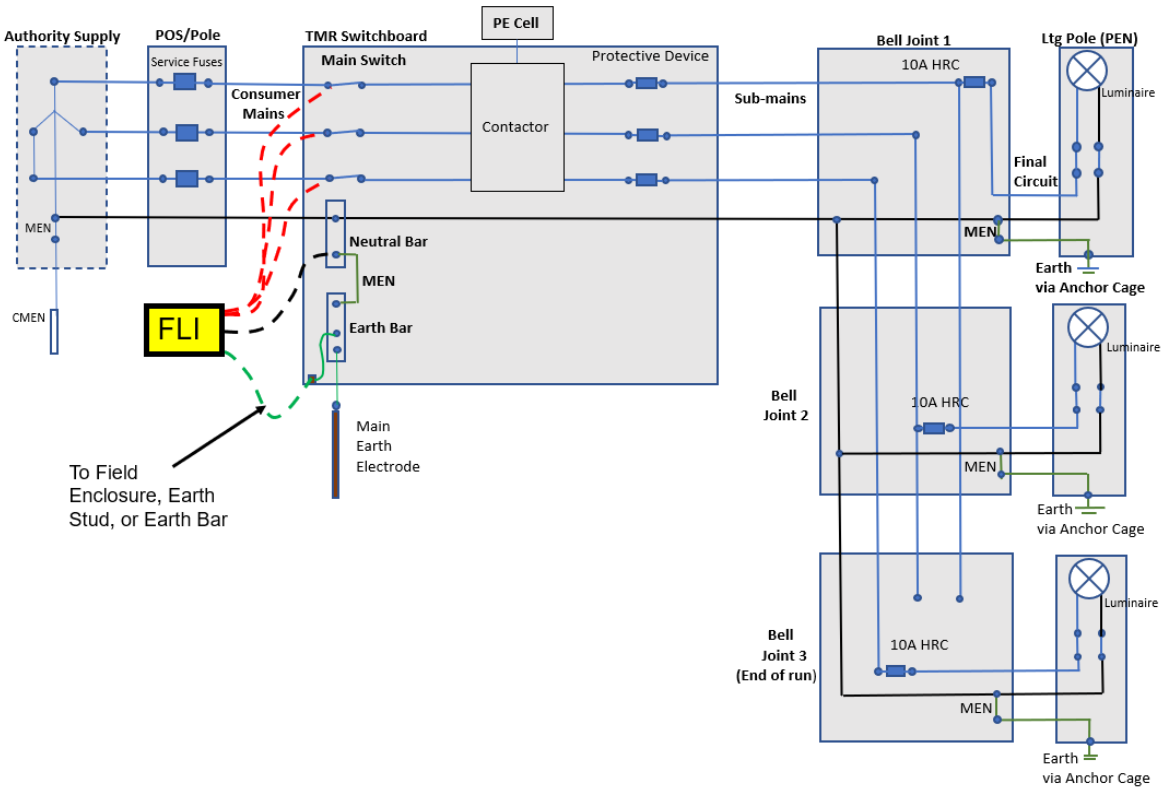
v. Remove the meters from the cable, and

vi. If the difference is > 10 mA, conduct further investigation and repair the cable to the PE cell.

5.6 Earth fault loop impedance (EFLI)

5.6.1 EFLI of consumer mains cable (live test)

Figure 5.6.1 – EFLI test procedures for consumer mains cable (live)



i. Connect EFLI meter (loop meter) to supply side of the main switch active, neutral and earth (cabinet enclosure, earth stud or earth bar).

ii. Measure the impedance of each active to earth and active to neutral. Record the results.

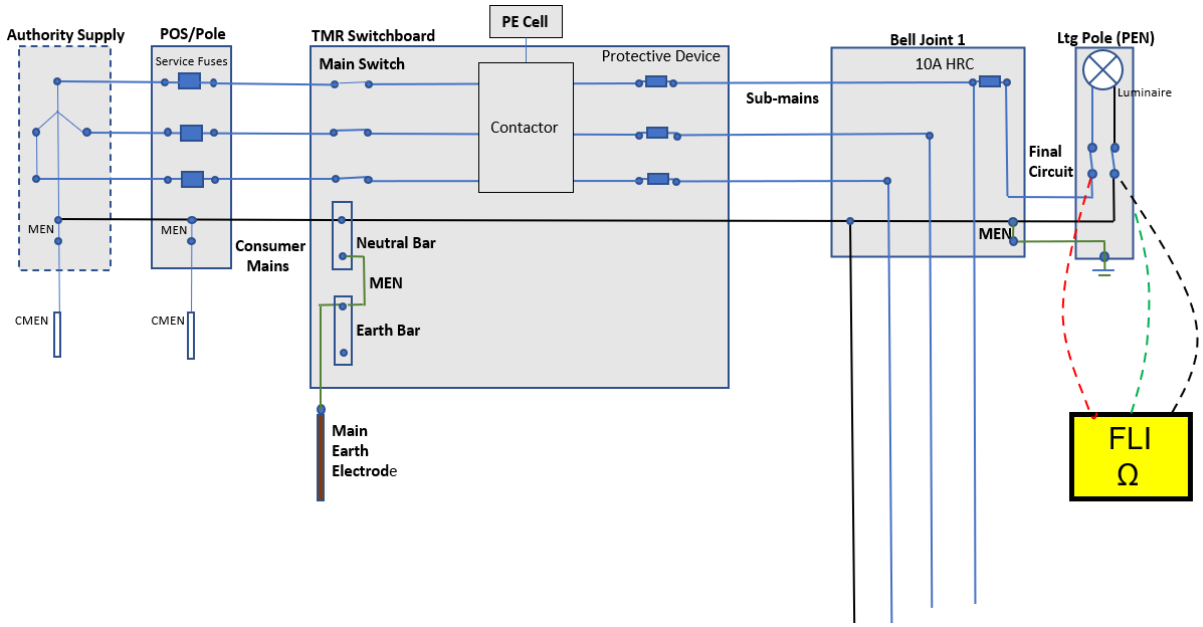
iii. Confirm the service fuse rating. If the service fuse rating is not available, assume the service fuse is 80 A and record the impedance of active to earth as well as active to neutral.

iv. Check compliance with EFLI calculated based on the operating temperature (refer to the periodic verification Excel spreadsheet). The recorded impedance shall not exceed the values in the table for the given protective device, and

v. If the disconnection time is not complied, notify supervisors and rectify the non-compliance.

5.6.2 EFLI at final circuit (live test)

Figure 5.6.2 – EFLI test procedures for final circuits



i. Connect EFLI meter (loop meter) to supply side of the active, neutral and earth (the body of the pole that is 1.2 m from the ground).

ii. Measure the impedance of each active to earth and active to neutral of each lighting pole. Record the results, particularly noting the EFLI at the end of run (the furthest pole).

iii. Confirm the protective fuse or circuit breaker rating.

iv. Check compliance with EFLI calculated based on the operating temperature (refer to the periodic verification Excel spreadsheet). The recorded impedance shall not exceed the values in the table for the given protective device, and

v. If the disconnection time is not complied, notify supervisors and rectify the non-compliance.

5.6.3 EFLI of PE cells (live test)

Note: This step only applies to pillar mounted switchboards with photoelectric control switches on standalone pedestals.

The purpose of this test is to ensure that the earth wire to the pedestal can clear the fault current in 400 ms. This test is conducted in lieu of a separate earth continuity test.

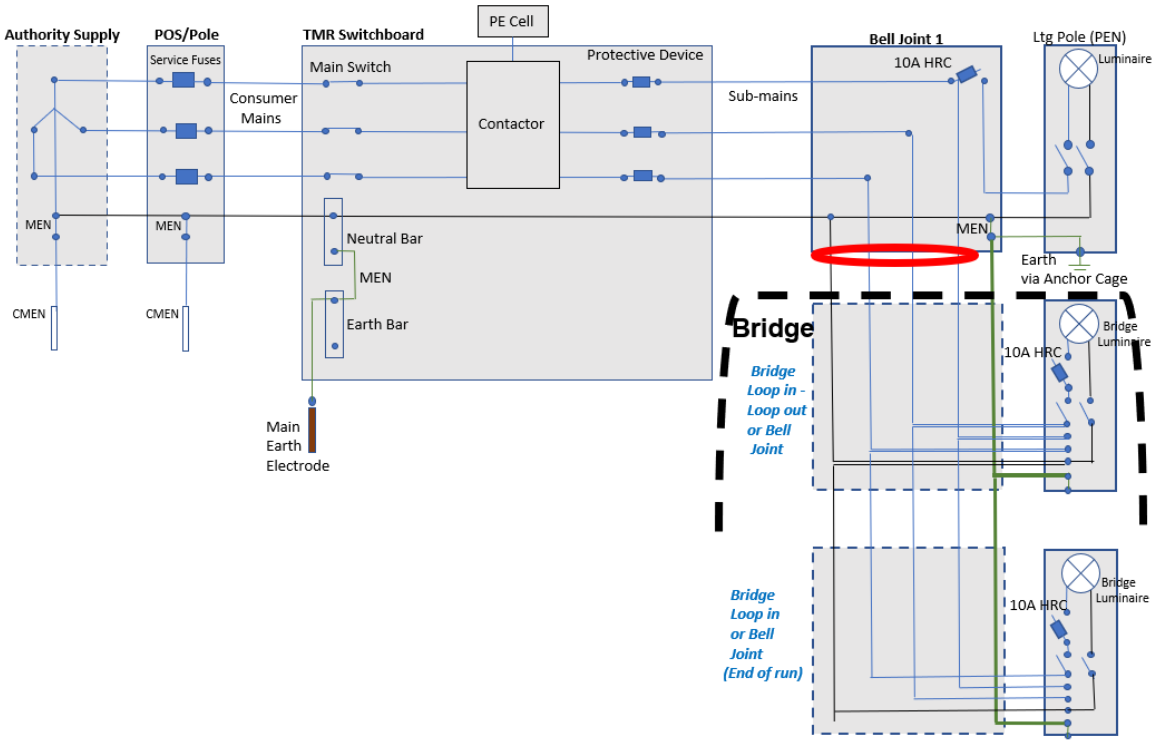
i. Measure the impedance between active to earth and active to neutral

ii. Check the compliance with EFLI based on the maximum allowable EFLI at 25 degrees for the given protective device, and

iii. If the disconnection time is not complied, notify supervisors and rectify the non-compliance.

5.7 Road lighting on bridges and other structures with additional protective earth wires

Figure 5.7 – Electrical test procedures for road lighting on bridges and other structures with additional protective earth wires



The difference between the road lighting and bridge lighting is that the bridge lighting has additional protective earth wires. However, the test procedure shall be similar. For expediency, the test on bridge lighting circuit shall be undertaken last.

Polarity test – This test should be conducted in similar way as previously demonstrated in Section 5.4.3.

EFLI test – This test should be conducted in the same way as previously demonstrated in Section 5.6.2.

Leakage current test – This test should be conducted in the same way as follows:

i. Ensure the meter jaws are undamaged, clean and can close together completely without air gap.

ii. Place the meter jaw as close as practical to the end of the submain circuit at joint exit (the last joint with MEN connection). Measure active and neutral only.

iii. Record the cable current with the clamp meter set on "Peak Hold".

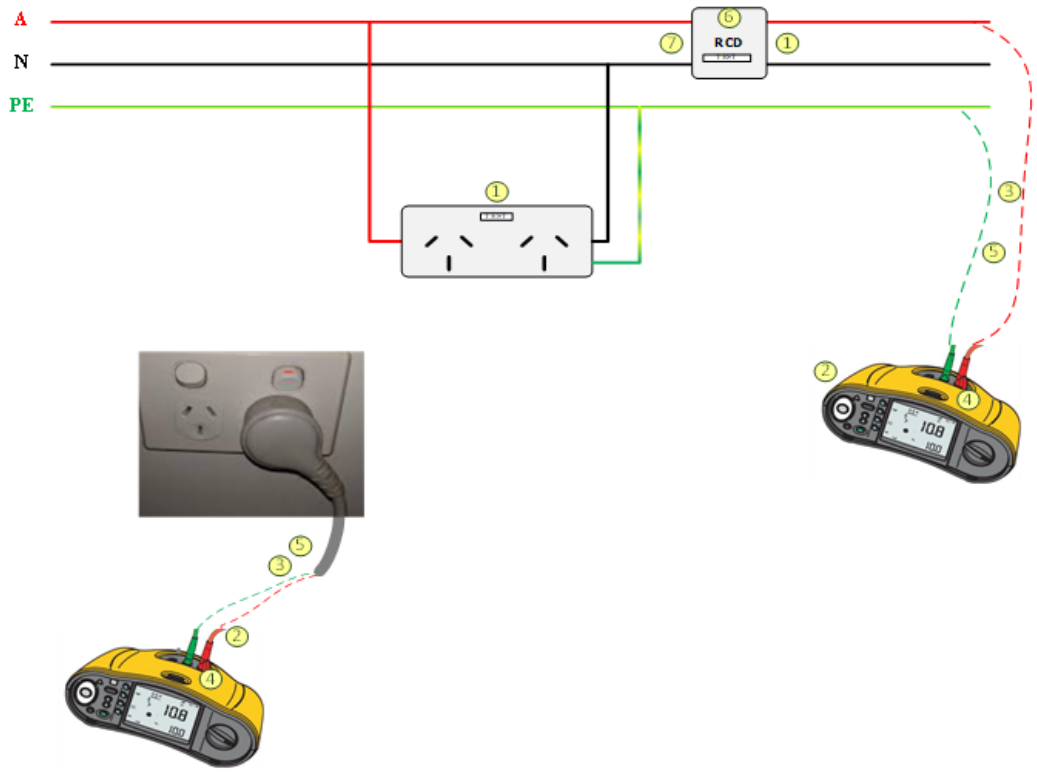
iv. Check the leakage current. If the difference is ≤ 10 mA, record the result.

v. Remove the meters from the final circuits, and

vi. If the difference is > 10 mA, conduct further investigation and repair the final circuit.

5.8 RCD test (live test)

Figure 5.8 – RCD test procedures (live)



Note: Earthing system checks must be carried out prior to this test.

i. Check correct operation of RCD integral test button. Note: A mechanical test of an RCD is a requirement of AS/NZS: 3000. The function of each RCD shall be verified initially by operation of its integral test device which, when operated, shall cause the RCD to trip and disconnect the designated circuit. However, this test alone is not enough to determine the RCD is operating correctly (that is, disconnects within the specified time and with a specified current limit). Thus, the electrical tests below must be also conducted.

ii. Check operation instructions of the RCD tester:
   - Select RCD trip current rating of 30 mA
   - Select Type AC test current waveform
   - Select test current multiplier as auto (tests for 0 degrees and 180 degrees for each of 50%, 100% and 500% RCD trip current rating), and
   - If no auto function, carry out and record individual tests for 0 degrees and 180 degrees for each of 50%, 100%, and 500% RCD trip current rating.

iii. Connect the tester plug into the socket outlet or the test leads to the active and earth points.

iv. Press Test button and record results, including the test current and trip time, once the tests are complete. The trip time for any current over 30 mA must be under 300 ms.

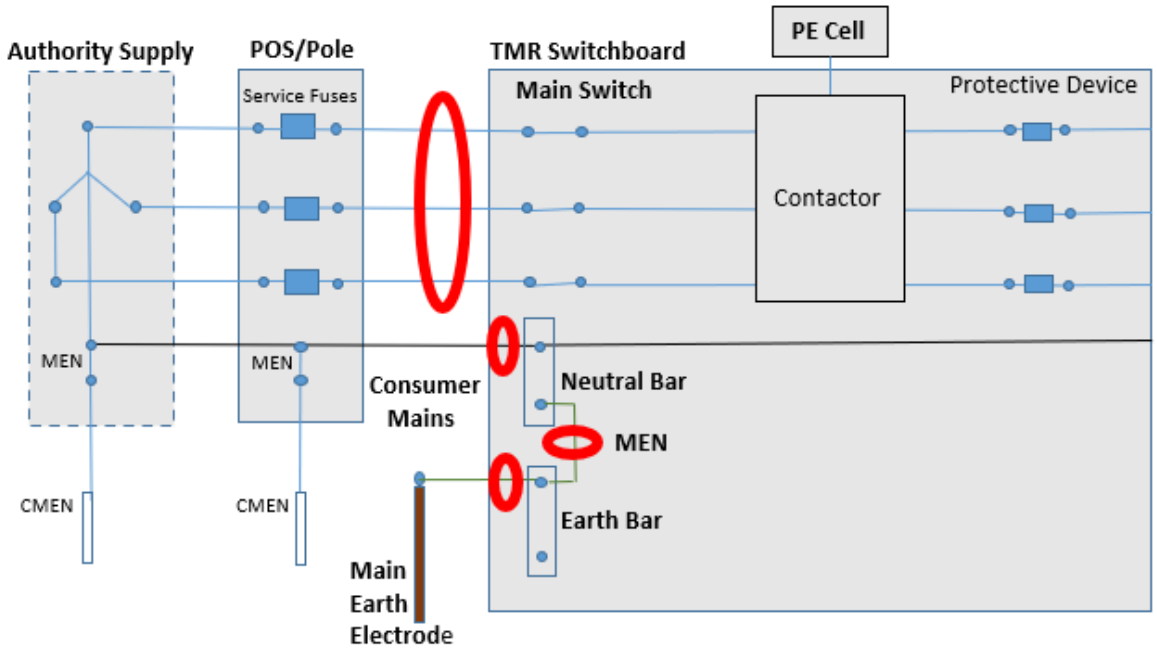
v. Remove tester plug or leads.

vi. Check that all switched poles of the RCD have been isolated after the operation of the RCD, and

vii. Replace RCD if any of the tests fail.

5.9 Neutral integrity test (live test)

Figure 5.9 – Neutral integrity test procedures (live)



i. Ensure tester meter jaws are undamaged, clean and close together completely without air gap

ii. When testing, place jaws of clamp meter around the cable ensuring the jaws are closed completely and that twisting of the jaws has been avoided

iii. Measure and record the current in the supply active, supply neutral, MEN link and main earthing conductor

iv. If active and neutral current are substantially the same, the neutral integrity should be okay

v. If a large proportion of the active current is flowing in the MEC and MEN connection, there is a possibility of a continuity problem with the consumer mains neutral connections for that installation, and

vi. If currents in MEC and MEN exceed that in active, it means external fault. Notify supervisors and record the results.

5.10 Thermal imaging (live test)

Note: Glass and perspex are opaque to infrared radiation, and it is not possible to thermal image through these or other common construction materials.

i. Allow the installation to stabilise on normal operating load for 30 minutes prior to test

ii. Follow the manufacturer’s instruction for the thermal imaging device

iii. Prior to testing, remove any removable covers over terminals that may affect the readings

iv. Measure and record the ambient temperature

v. Measure and record terminal temperatures

vi. Replace any removed covers, and

vii. Where high temperatures are found, further investigation into the cause shall be carried out and remedial action taken as required.

Figure 5.10 – Examples of thermal images

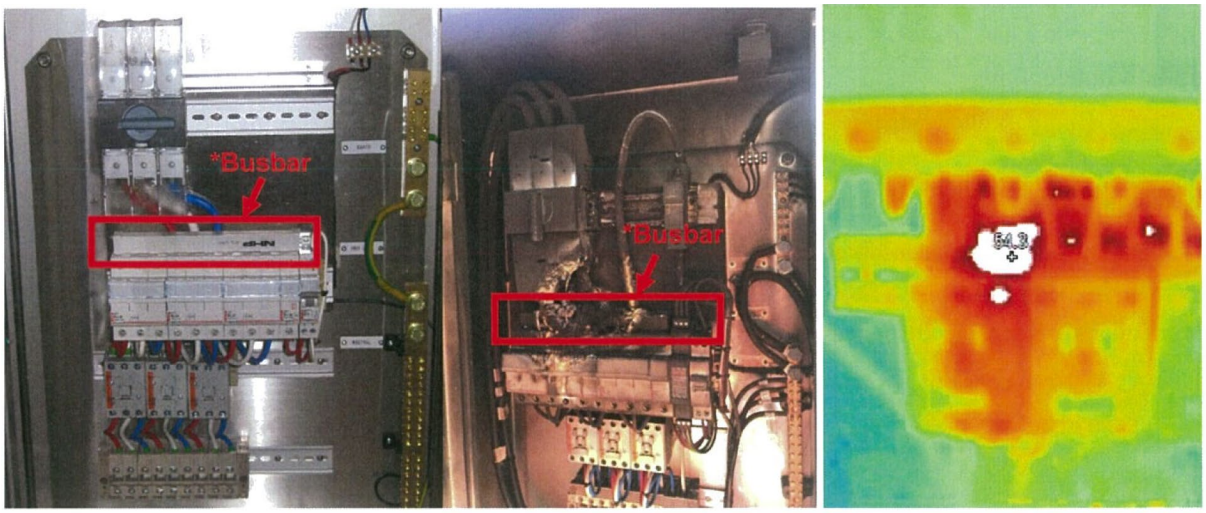


Fig1: New Fig 2: Fire Damage Fig 3: Thermal Testing