

Technical Bulletin

TB 0248C – Public Lighting Control Circuits

Date: 5/11/2024

Content Owner: Kieran Shanahan - Engineering Delivery Manager

Approved By: Peter Langdon - Head of Asset Planning & Performance

Purpose

To clarify system requirements for the transition of streetlights to individual photoelectric cells (PE cell) or approved Smart Node control.

Noting - All new Public Lighting (greenfield developments or asset relocations) are to be controlled by individual PE cells or approved Smart Node.

Actions

Transition Arrangement for Streetlight Control (As previously communicated)

Endeavour Energy's intent is to as far as reasonably practical move all streetlight control points (SLCPs) to photoelectric cells (PE cell) or approved Smart Node control and remove / reduce the need for additional overhead street lighting circuits and also allow the eventual de-commissioning of substation AFIC systems once we get to high penetration of smart meters.

Greenfield Scenarios

In overhead reticulated areas, no additional street lighting circuits are permitted to be installed unless an LV network does not exist or is not required on the poles (e.g. 11kV line only). In these instances, a dedicated streetlighting circuit may be installed, however the lights shall be controlled by individual PE cells (e.g. no common control point).

In underground areas dedicated street lighting circuits (e.g. 16mm² or 25mm² cables) may also still be installed where it is not practical to get supply from LV pillars, however each light shall be controlled by an individual PE cell or approved Smart Node.

Streetlight Control related Defect Rectification

As defects of the existing Public Lighting network occur, the strategy outlined below is to effectively migrate the existing network to the current design philosophy (e.g. PE cell or approved Smart Node control). A number of minor amendments to this previously issued table are highlighted in grey.

Underground Network:

Impacted Asset	LV Supply Type	Quantity	Management Strategy
All Lighting Related Defects or Augments	-	-	Where practical, convert affected lights to PE cells or approved smart node control and permanent LV/SL supply. Where impractical, no migration to the current greenfield design requirements is necessary. E.g. SLCP's may be replaced/repared.

Table 1: Underground SL Circuit Strategy

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Overhead Network:

Impacted Asset	LV Supply Type	Quantity	Management Strategy
Streetlight Control Point (SLCP)	LV Supply Available	≤ 10 Lights on circuit	Disconnect existing SLCP and all lights on control circuit shall be converted to PE Cells or approved smart node control and connected individually to the LV supply. The dedicated street lighting circuit is to be disconnected from the network. A priority defect will be raised for the removal of the Streetlight circuit.
		> 10 Lights on circuit	SLCP to be repaired (or address as per above).
	No LV supply Available (e.g. streetlight circuit only)	-	SLCP to be repaired or where possible convert street light circuit to LV supply with an LV/SL Isolation box installed and submit a white sheet to have mapping systems updated.
LV/SL Isolation Box	LV Supply Available	≤ 10 Lights on circuit	Disconnect existing LV/SL isolation box and all individual lights shall be connected to the LV supply. Lights must be PE cell or smart node controlled. The dedicated street lighting circuit is to be disconnected from the network. A priority defect will be raised for the removal of the Streetlight circuit.
		> 10 Lights on circuit	LV/SL isolation box to be repaired.
	No LV supply Available	-	LV/SL isolation box to be replaced.
Dedicated Lighting Circuit	LV Supply Available	≤ 10 lights on circuit (beyond fault)	Convert all lights beyond the fault to PE cell or approved Smart node and connect individually to the LV supply. Remove dedicated streetlight circuit beyond fault site. Submit a white sheet to have mapping systems updated. This does not apply to cascading street lighting circuits (as they need to remain continuous), unless the fault is at the end of the cascading system.
		> 10 Lights on circuit (beyond fault)	Street light circuit to be repaired.
	No LV supply Available	-	Street light circuit to be repaired.
Luminaire	LV Supply Available	-	If rewiring of the luminaire is required and connection to the LV network is practical, move luminaire from the dedicated street lighting circuit to the LV network and install PE cell or approved Smart Node control.
	No LV supply Available (eg. Street light circuit only)	-	Repair or replace luminaire.

Table 2: Overhead SL Circuit Strategy

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Streetlight Control Network Design Preference

Ideally as per the table above the only time a streetlight circuit is connected to the LV is when there is no available LV supply to supply those assets.

In such instances if more than 1 bay of streetlight circuit is connected to LV supply an LV/SL isolation box must be installed to provide an isolation point for the permanent streetlight supply. Approved material number is shown in table 3 below. And a white sheet submitted to update relevant systems.

All circuitry modifications including bonding/fusing must be installed in accordance with the cable size standards where there are 2 or more bays affected.

You may encounter other scenarios on the network where the streetlight circuit has been direct connected to the LV supply at some time in the past (perhaps driven by F&E scenarios). If you encounter these instances they must be defected, so that follow-up work can be triggered to have the LV/SL isolation box installed and relevant systems updated.

Only where a single bay conductor can be visually traced, an LVSL isolation box at the point of bonding is not required. As per Figure 1 below:

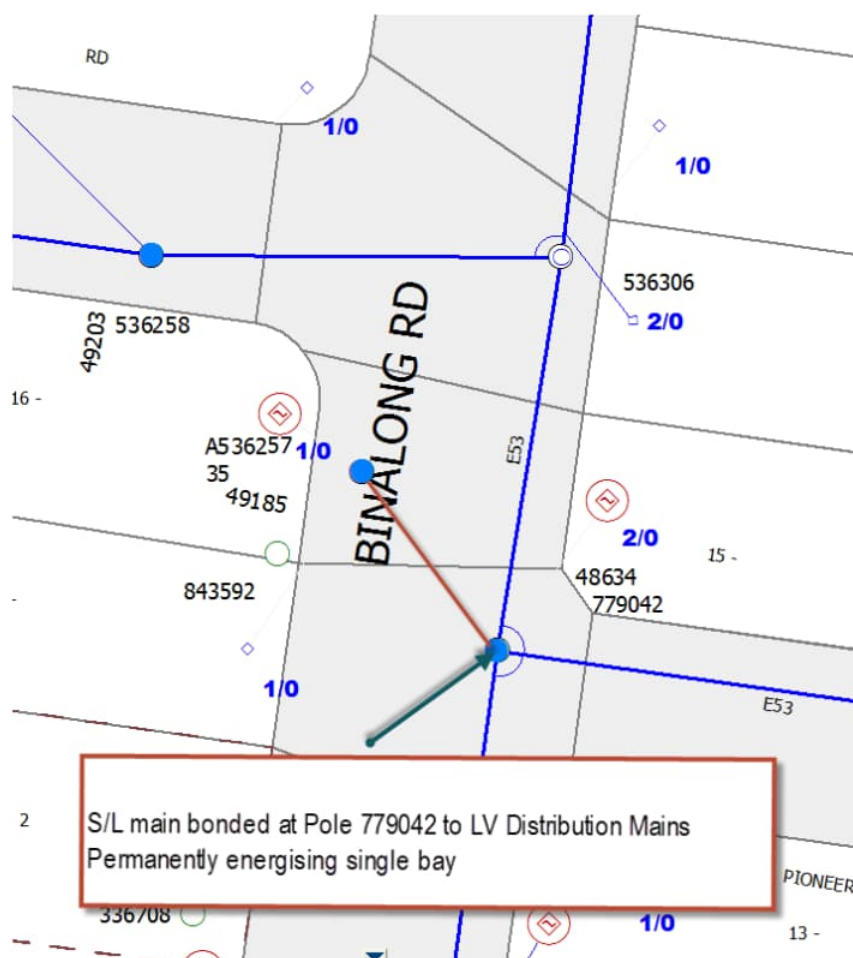


Figure 1: Single Bay Example

Streetlight Permanent Supply Isolation Point

A LV/SL isolation box provides the Endeavour Energy network the ability to establish a streetlight permanent supply isolation point for dedicated overhead streetlighting circuits.

The installation of new LV/SL isolation boxes are permitted in overhead reticulated areas with no LV network only.

Where modification of existing dedicated overhead streetlighting circuit occurs, the LV/SL isolation box shall be removed where practical, and all streetlights must be connected to the LV supply. Where removal is impractical, refer to Table 2 for further guidance.

The following material is now available:

Item Description	Material Number
BOX, LVSL, ISOLATION,3 PHASE, POLE MOUNT	1000010500
BOX, LVSL, ISOLATION,1 PHASE, POLE MOUNT	1000010510

Table 3: New Material Number/s

LV/SL Isolation Boxes

LV/SL isolation boxes consist of a fuse and circuit breaker and have been introduced to provide an isolation point to the permanent supply. These boxes are outwardly identical in appearance to SLCPs, consisting of a plastic enclosure. The front cover of the enclosure is labelled with "streetlight permanent supply isolation point" as shown in photo 2 below:



Photo 1: Single Phase SLCP

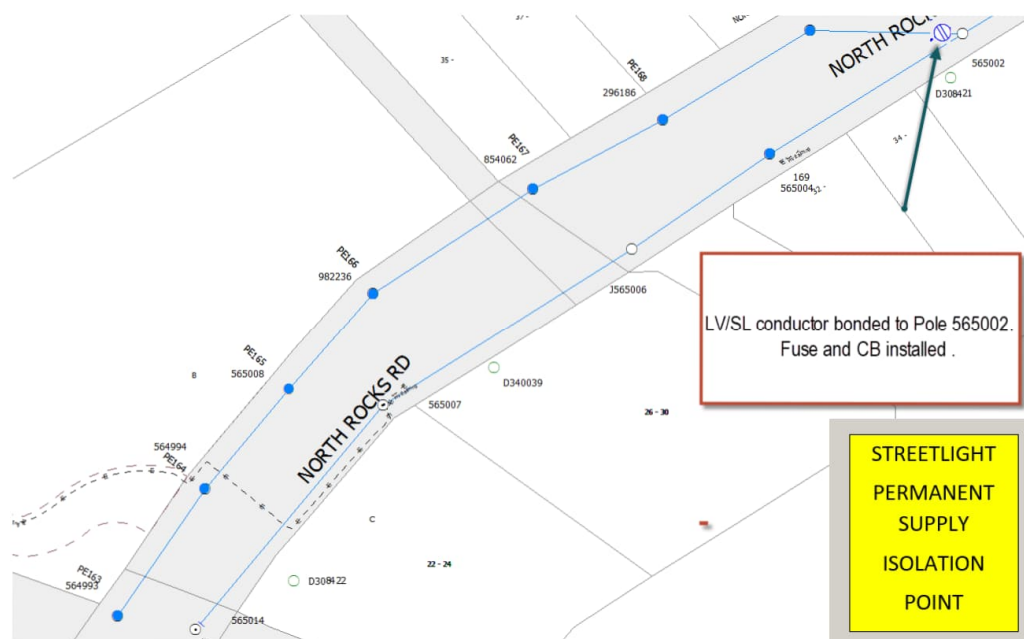


Photo 2: LV/SL isolation box

GIS System Representation of LV/SL Isolation Boxes

Where the overhead and/or underground SLCP supplied circuit has been modified to a permanent streetlight supply or where multiple lights are energised via a singular SL conductor with permanent supply to the LV network, this will now be identified as a LV/SL circuit.

Care shall be taken to record instances where the LV/SL isolation box are found or installed on site. The white sheet must be submitted updating GIS to display "closed" LV Links at the point of bonding. See example below in Figure 2.



Implementation / Impacted Specification

- Please be aware that during this transition the current process for securing isolations and testing of the existing street light circuits remains in place.
- Please note some circuits can have a combination of both PE Cell controlled Street lights and SLCP controlled Street lights.
- Staff need to understand and control the risks from Street light circuits on each job before commencing work.
- For staff involved in planning outages refer to Annexure 1 which provides details for ADMS.
- The content of the technical bulletin is effective immediately. Existing internal and external designs currently under way (at the time this technical bulletin is released) may continue to proceed as per the previous requirements.
- The contents of this technical bulletin will be included in the next revision of LDI 0001.

Contacts

For further information contact:

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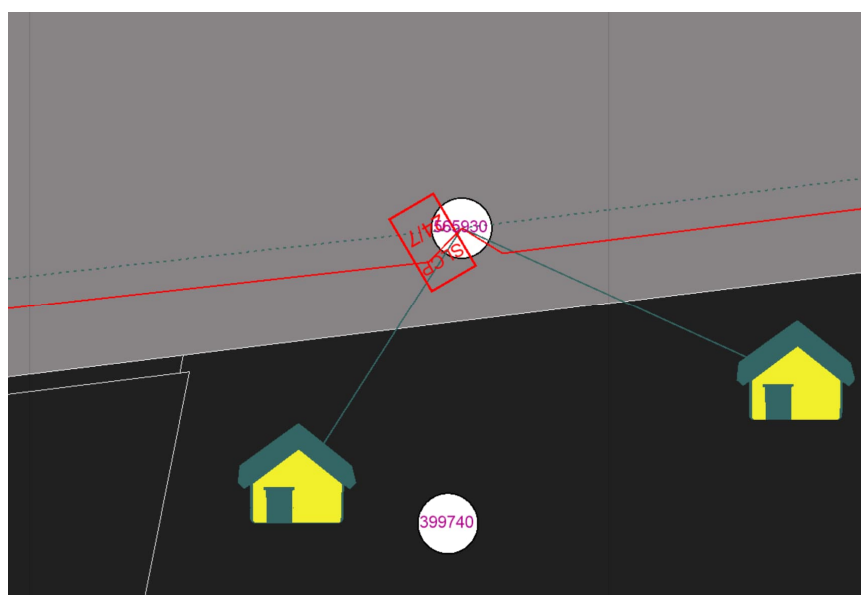
Mobile: 0497 100 449

Annexure 1: ADMS System Representation of Permanent Connected (24/7) Streetlight Mains

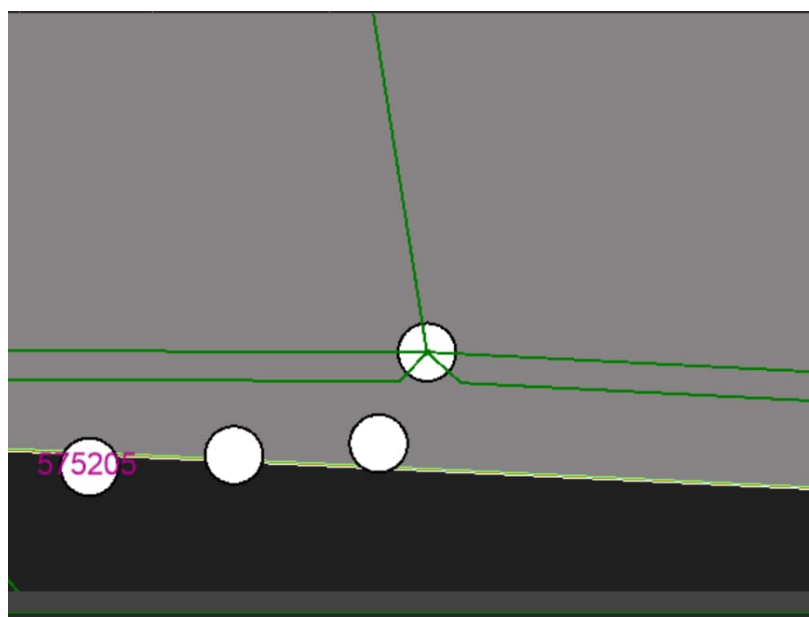
For staff requesting outages

24/7 SL mains are visible on LV layer, it is no longer visible on the Streetlight layer once it has been converted to 24/7.

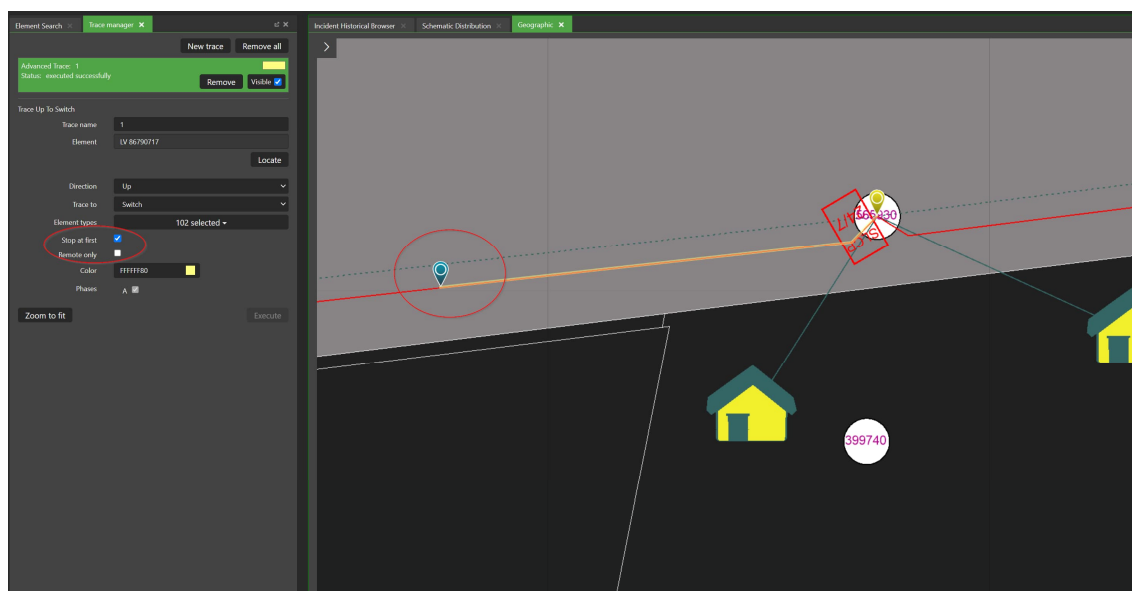
“Streetlight Permanent Supply Isolation Point” is identified by the below symbol. This operates the same as an LV link (can be opened/closed) Red = Closed, Green = Open but visually different with “SLCP 24/7” written inside. Note: The symbol is offset from pole centre to keep pole numbers visible, but results in text SLCP text rotation.



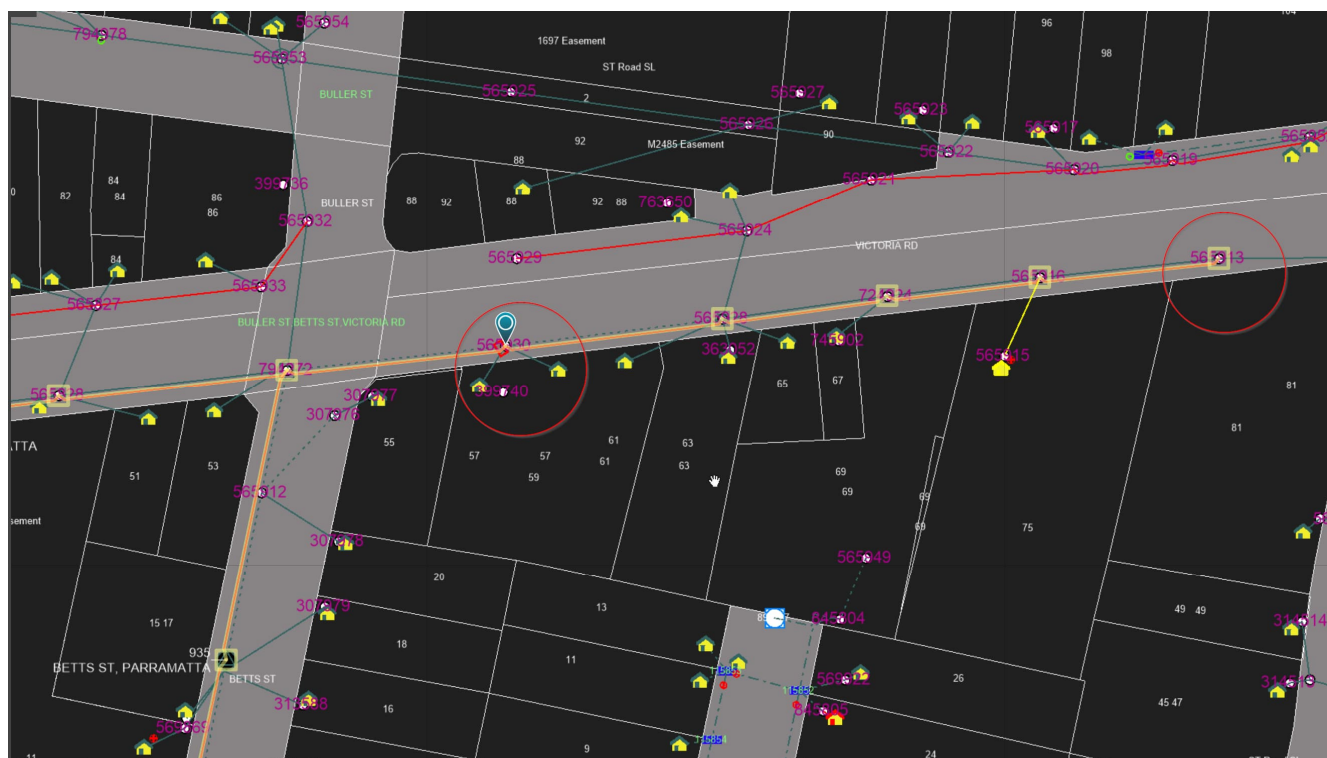
24/7 streetlighting mains can be identified by the way that they turn in and out of the pole as below, whereas LV mains run directly through the pole in a straight line.



To locate an isolation point you can trace the 24/7 SL main “UP to Switchable Device”. When the “Trace Manager” appears select “Stop at first” and execute. If you do not select “Stop at First” the Isolation point will be located where the first icon is placed from the point at which you set the trace.



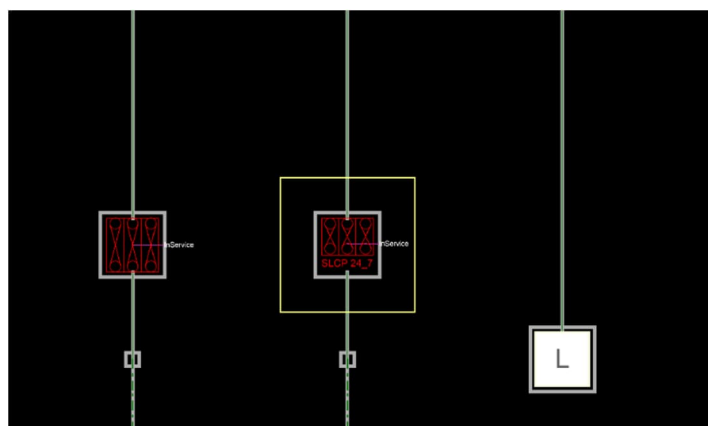
To Find all open points you can trace 24/7 SL mains “Down to extent” the trace colouring will then end at all open point.



Ensure that you trace in all directions from the isolation point as it may feed in multiple directions.

Dedicated 24/7 SL circuits supplied from Pad Substations - Symbol

Where a dedicated Padmount Substation LV supply distributor is present, symbology has been added to the substation Internal View



Isolation point naming convention has been changed to indicate that it is a 24/7 isolation for clarity on ADMS Switching Instructions i.e

Pole (Also applies to Pillars/Columns)

Old – LVSW POLE-XXXXXX

New – LVSW POLE-XXXXXX SL_247_ISOLATION-SWITXXXXXXXX

Substation LV Distributor

Old – SWITXXXXXXXXTL

New – SWITXXXXXXXXTL SL_247_ISOLATION