



# **Rate 2 Public Lighting Design Parameters**

## **INFORMATION HANDOUT**

## **Scope**

This information handout, specifies the general design parameters applicable to developer designed and constructed estates.

## **General**

This standard is subject to amendment by ENERGEX at any time. Any proposed deviation from this document must be submitted to ENERGEX for approval before it is implemented.

## **Updates & Subscription**

This document, when down loaded or printed, is uncontrolled.

Users are responsible for ensuring they are using the latest information. This can be achieved by registering on ENERGEX's Internet subscription service. Once registered subscribers are notified of updates as they occur.

## **Disclaimer**

This handout has been developed using information provided by ENERGEX construction, planning and design staff and as such is suitable for most situations encountered. The requirements of Australian Standards, Building Codes and all other statutory bodies are regarded as the accepted minimum. Where this document exceeds those requirements, this document is to become the accepted minimum.

ENERGEX will not accept any liability for work carried out to a superseded standard.

ENERGEX may not accept work carried out which is not in accordance with current standard requirements.

ENERGEX standards are subject to ongoing review. If conflict exists between standard documents, the most recent standard is to be adopted.

## **Interpretation**

In the event that any user of this booklet considers the content uncertain, ambiguous or otherwise in need of interpretation, the user should request ENERGEX to clarify the provision. ENERGEX's interpretation shall then apply as standard and is final and binding. No correspondence will be entered into with any person disputing the content published in the standard or the accuracy of ENERGEX's interpretation.

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## 1 Applicable Standards & Manuals

All designs and drawings must comply with the following standards & manuals:

- SWP 2 – Construction of the Underground Electricity Distribution System.
- SWP 12.1 – The Installation and Replacement of Low Voltage Overhead Service Lines
- SWP 23 – Installation of Conduits Using Underground Directional Boring
- SWP 25 - Construction of overhead mains (up to 33 kV)
- SWP 31 – Operating The High Voltage and Low Voltage Distribution Networks
- SWP 34.2 –Testing of Earthing Systems
- SWP 34.3 –Installation and Maintenance of Earthing Systems
- SWP 37 – Supply and Installation of Rate 2 Lighting Poles and Luminaries
- SWP 47.1 – Consultancy Services for Design of Estates
- SWP 47.3 – Design of Rate 2 Public Lighting Installations
- SWP 61 – Civil Works for Underground Distribution Networks
- ENERGEX Public Lighting Construction Manual
- ENERGEX Public Lighting Policy Manual
- Electricity Act & Regulations 1994
- Workplace Health & Safety Act 1995 & Regulations 1997
- Environmental Protection Act 1994
- Transport Operations (Road Use Management) Act 1995
- Transport infrastructure Act 1994
- Manual of Uniform Traffic Control Devices (MUTCD), Part 3 Works on Roads, 2001
- Electricity Safety Act and Regulation 2002
- Code of Practice – Electrical Work – “Electrical Safety Act 2002”
- Code of Practice – Working Near Exposed Live Parts – Electrical Safety Act 2002
- Code of Practice – Works (Protective Earthing, Underground Cable Systems and Maintenance of Supporting Structures for Powerlines) – Electrical Safety Act 2002
- AS 1158 Public Road Lighting Standard
- ENERGEX Overhead Design Manual
- ENERGEX Overhead Construction Manual
- ENERGEX Underground Distribution Construction Policy
- ENERGEX Underground Distribution Construction (UDC) Standard
- ENERGEX “As Constructed” Drawing Standard
- ENERGEX Conditions of Supply and Metering of Consumer’s Installations
- ENERGEX Supply & Planning Manual
- ENERGEX Network Labelling and Signage Manual
- ENERGEX Works Plan Standard
- ENERGEX Quality Assurance Requirements for Suppliers of Services

## 2 General

Extensions to the ENERGEX Overhead & Underground Network and relocation of existing ENERGEX Assets, other than street lighting assets, are not covered under SWP47.3 and therefore not contestable works. These works will be completed by ENERGEX at the Local Authority/Developers expense.

ENERGEX will arrange the design & installation of the supply point for the Rate 2 public lighting scheme, upon request in writing from the local authority/developer or their representative.

All SWP47.3 designs must be certified by an RPEQ prior to a Public Lighting Supply Agreement being issued by ENERGEX.

All correspondence relating to a proposed lighting project must be specific in its intent and contain the ENERGEX project number. In addition all correspondence must contain the documentation as detailed in SWP47.3 – Appendix B Work Procedure (refer section 6).

The SWP47.3 rated electrical consultant is responsible for the provision of an approved design and the SWP47.2 rated service provider is responsible for the construction of the electrical reticulation.

ENERGEX will issue a Public Lighting Certificate for Electricity Supply only after the Public Lighting Supply Agreement has been executed by the appropriate developer or public body, made the required payments and nominated an SWP47.2 Service Provider. Construction works are not to commence prior to the issue of the Public Lighting Certificate for Electricity Supply.

Copies of ENERGEX's maps will be made available upon request, at the discretion of ENERGEX. Please forward all requests to [subdivision@energex.com.au](mailto:subdivision@energex.com.au).

Concept Plans are not required to be submitted for every project, however a concept plan should be submitted for projects where there specific issues that need to be resolved prior to detailed design.

Streetlighting must comply with Local Authority Requirements & the design must specify the category of lighting installed. The RPEQ design certification must also apply to the lighting design.

It is necessary for you to obtain the approval of the Local Authority and to construct in accordance with the final design plan for all service alignments. A copy of these approvals are to be forwarded for our advice, prior to the Public Body Supply Agreement being issued. Where the public lighting works are being completed by the controlling authority, approval will be deemed to have been granted & formal notification is not required.

The SWP47.3 rated electrical consultant is responsible for ensuring that the design is in accordance with the relevant ENERGEX Standards & Specifications and the SWP47.2 rated Service Provider is responsible for ensuring that all construction work is completed in accordance with the relevant ENERGEX Standards & Specifications.

Switching/commissioning is to be in accordance with the SWP31 and a minimum charge of \$110 will apply to the switching & commissioning of all Rate 2 Public Lighting LV circuits. There is no switching charge applicable to the installation & connection of street lights on existing overhead poles, or to the replacement of luminaires only on existing outreaches & brackets.

Statutory Ground Clearance & Inter Circuit clearances are to be maintained.

For information with regard to 33kV and 110kV U/G cables it will be necessary for you to contact Queensland Call Before You Dig Service on phone 132 129.

The number of copies of works plan required to be submitted to ENERGEX are as follows:

- Design Lodgement – 2 Copies
- Master Works Plan – 1 Copy
- As Constructed Works Plan – 1 Copy

For overhead constructions, the clearing &/or trimming of vegetation is to comply with SWP1.6. Should assistance be required in meeting the requirements of SWP 1.6, the developer may take the option of hiring a Vegetation Consultant to survey the route and submit a tailored clearing plan.

### 3 Technical Design Parameters

#### 3.1 Underground Supply to Streetlights

Individual streetlights are supplied from a fuse in a nearby service pillar via a minimum 4 mm<sup>2</sup> 2 core Copper XLPE/PVC cable run in PVC conduit. Several lights may be fed from a single fuse within a pillar. Normally this will be via separate cables from pillar to streetlight, although looping from one light to the next may be used. It is preferable that streetlights shall be supplied from a pillar on the same side of the road rather than on the opposite side of the road.

For 3-phase supply, lights are connected to successive phases along the length of the circuit in a 'ABCCBA' pattern to ensure overall phase balancing and uniform voltage drop. Run currents are to be taken into consideration in the design of the circuit.

All steel street lighting standards installed after 1 April 2003 are to be either Base Plate Mounted or Slip Base Mounted.

Where a number of streetlights are supplied from a single pillar, eg along a major roadway, two configurations are possible:

##### Loop In/Loop Out

Cable may be looped in and out of base plate mounted (BPM) streetlights. Small precast pits (no.4 pit max.) adjacent to each light shall be installed where the proposed route would impede cable installation.

##### Junction Box Tee-Off

This arrangement is mandatory for supply to slip base mounted (SBM) streetlights and where 3-phase cables are used. The take off cable shall be a minimum 2 core 4 mm<sup>2</sup> copper. The main cable shall be 16 mm<sup>2</sup> or larger copper.

#### 3.2 Voltage Drop

Voltage drop calculations are required to be submitted only where the total run current in a circuit is greater than 10amps per phase.

Voltage Drop is to be calculated using run currents as per the Public Lighting Policy, Design & Equipment Manual. Voltage Drop is to be calculated using one of the following options:

1. LV Drop (Minimum Version 5.43)
2. Voltage Drop calculated manually, with the results presented in a single sheet format

The single sheet format is to contain the following information as a minimum:

- Project Description
- ENERGEX Project Number
- Lamp type installed (ie. S100,S150 etc)
- Lamp currents used in calculations
- Segment identification (ie. stn 1 – 3)
- Segment cable size
- Segment cable route length
- Segment current
- Total voltage drop for each circuit

Maximum voltage drop of 12.0 V from the ENERGEX point of supply to the end of the lighting circuit, for both underground and overhead supply.

### **3.3 Cables**

Underground Public Lighting LV reticulation to be a minimum of 16mm<sup>2</sup> CU PVC cables on through mains and 4.0mm<sup>2</sup> CU PVC cables elsewhere.

Overhead Public Lighting LV reticulation is to be 6 mm<sup>2</sup>, 16 mm<sup>2</sup>, 25mm<sup>2</sup>, 35mm<sup>2</sup> or 95 mm<sup>2</sup> LVABC as determined by Voltage Drop.

PVC protective strip to AS 4070 shall be installed above all direct laid cables, joints and conduits (where the conduits are outside the footpath electricity alignment) with less than 900 mm of cover to provide identification and mechanical protection.

### **3.4 Conduits**

Public Lighting LV cables shall be installed in the following conduits:

80NB orange light duty (to AS2053) LV mains & cross road LV service mains

40NB orange heavy duty (to AS2053) Streetlight circuits

PVC conduits and fittings shall comply with AS/NZS 2053.

Where directional boring techniques are applied, conduits utilised shall be installed in accordance with ENERGEX SWP23 – "Installation of Conduits Using Underground Directional Boring"

Where street lighting conduits are being installed in the standard ENERGEX underground alignment, provision is to be made in the Public Lighting Design for 11kV & LV Conduits for future use. ENERGEX will determine the size & quantity of such conduits on a per project basis, which are to be installed by the Local Authority/Developers. ENERGEX will negotiate a suitable cost sharing arrangement on a per project basis.

### **3.5 Standard Equipment**

Rate 2 Street Lighting will only be accepted subject to the installation of Standard ENERGEX equipment as detailed in the QTSC Public Lighting Manuals.

The standard ENERGEX Underground preformed Pit is a Number 4 Pit. ENERGEX will not accept rate 2 Schemes where larger preformed pits are installed.

ENERGEX will accept Street Light poles with high access panels, installed in steel/concrete traffic barriers under Rate 2 conditions, subject to the general guidelines as detailed in the QTSC Public Lighting manuals.

### **3.6 Existing Network**

The existing OH & UG distribution networks are to be clearly identified on the design where they are located within the work site of the lighting project. The minimum requirement to be shown for the OH network is the voltage of the lines (ie. 33kV, 11kV, LV etc.) & the conductor type (ie, Copper, Aluminium, ABC etc.). The minimum requirement to be shown for the UG network is the voltage of the lines (ie. 33kV, 11kV, LV etc.) & the conductor type (ie, Copper or Aluminium).

## 4 Implementation, Amnesty Period & Amnesty Sunset Clauses

Technical Standards have advised that standard Implementation, Amnesty Period & Amnesty Sunset Clauses are to be applied for all Standards Updates, including but not limited to manual updates, SWP updates and policy updates, as follows:

1. **Implementation** - Initial implementation shall occur as defined in the standard alert or SWP amendment.
2. **Amnesty Period** - An amnesty period shall commence from the implementation date of the standard alert or SWP amendment, for all new designs as detailed in the standard alert or SWP amendment.
3. **Sunset Clause for Amnesty Period** - All designs shall conform to the new standard within a maximum of 3 months of the implementation date of the standards alert or SWP amendment.

Designs lodged during the amnesty period will be required to be amended to the new standards where the following has occurred:

1. The amnesty period has lapsed and a supply agreement has not been requested.
2. A supply agreement issued during the amnesty period has not been executed by the supply agreement expiry date.
3. A supply agreement issued during the amnesty period has been executed by the supply agreement expiry date, but construction has not commenced within 6 months or been completed within 9 months of the execution date of the supply agreement.

## 5 Further Information

For further information regarding this document please contact one of the Subdivision Department Staff listed below.

Subdivision Department  
524 Bilsen Rd, Geebung Qld 4034  
Fax.(07) 3407 5863  
e-mail: subdivision@energex.com.au

Subdivision Coordinator  
Ph. (07) 3407 5866

Subdivision Planning Officer  
Russell Galloway  
Ph. (07) 3407 5888

Subdivision Planning Officer  
Jason Farrell  
Ph.(07) 3407 5844

Subdivision Planning Officer  
Bill Harris  
Ph.(07) 3407 5892

Subdivision Planning Officer  
Ian Reeves-Smith  
Ph.(07) 3407 5879

Subdivision Planning Officer  
Darrell Tuting  
Ph.(07) 3407 6903

## **Amendment Record**

5 November 2004  
Version 3.0

Implementation, Amnesty Period & Amnesty Sunset Clauses updated.

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20 September 2004  
Version 2.0

Run Currents to be used for VD, SL OH Cables updated, Implementation, Amnesty Period & Amnesty Sunset Clauses added to document.

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29 September 2003  
Version 1.0

Initial issue of Handout

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