

Ref:	NR/L3/ELP/27406/MOD G
Issue:	1
Date:	3 December 2011
Compliance date:	3 March 2012

Engineering Deliverable Requirements for Electrical Power Asset Design

Module G: Lighting

1 Typical Lighting Requirements

Only the appropriate items described in clauses 2 to 4 should be specified in the PRS along with the requirements identified in Module A. Additional requirements may be specified in the PRS for complex or unusual schemes.

2 Lighting - Form A

The required items may be incorporated into the associated GRIP 3 option selection report instead of providing standalone deliverables. The level of detail for each item should only be sufficient to satisfy the approval in principle of single option selection.

a) Single Line Diagram.

Outline single line diagram detailing DNO cubicles, distribution cubicles, lighting ways and other circuits. Where known the type of DNO supply should be shown and the earthing arrangements that are to be implemented identified. Details of the existing load and the increase in load per phase should be shown.

b) General Arrangements.

Indicative positions of DNO supply cubicles, distribution cubicles, lighting luminaires, lighting control strategy, adjacent infrastructure, cable routes and containment, and access arrangements. Details of retained, relocated/amended and/or new equipment should be identified.

c) Lux Levels.

Statement identifying the lux levels to be achieved (including uniformity and/or vertical values where applicable) Where the scheme is an extension of an existing lighting area and a uniformity requirement exists then the submission should confirm the existing lux values to offer compliance. If required basic lux calculations may be presented.

d) Environmental Considerations.

Where applicable basic lux calculations will be presented to confirm that considerations had been given to energy efficiency, glare, signal sighting and obtrusive lighting.

3 Lighting - Form B

a) Single Line Diagram.

This should show all assets to be installed with reference to details including cable type and cross sectional area, cable lengths and methods of installation. Additionally the ELI, PSSC and volt drop should be identified at all points of cable terminations.

b) General Arrangement Drawings.

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- Copies of all relevant General Arrangement drawings including DNO cubicles, distribution boards, equipment arrangements, circuit diagrams, general layout diagrams, earthing arrangements and lighting control systems.
- List of all system ratings including IP rating, temperature parameters of assets (cable and switchgear), cable sizes. The details outlining the rationale for these ratings should be identified.
- Load details of system under max load conditions demonstrating that adequate spare capacity is available at all times.
- DNO supply ratings at each intake point (if listed in Form A then this can be referenced).
- Confirmation that a bonding plan has been updated and approved if Lighting earthing and bonding is connected to traction return.
- Details of cross track cable management.
- Luminaires/lamp type/details, column lowering method, and numbering sequence.

c) Electrical Calculations Report.

A series of calculations should be included using Network Rail approved software. The calculations should include but not necessarily be restricted to the following:

- Load details
- PSSC values (based on actual values and not maximum allowable values)
- Voltage drop
- Protection calculations and trip times
- Cable sizes (including CPC)
- Discrimination is achieved for all feeding scenarios
- Lux calculations - clearly listing the required values against the actual values proposed including, where appropriate, vertical and/or uniformity values.

d) Earthing and Bonding Strategy.

Include details of any connections to traction return and if required provide details of any staging works. Distances between all bonded equipment should be clearly identified.

e) Interface with Existing Infrastructure and Facility Users.

Confirm proposals will be acceptable to other disciplines (e.g. signalling, operations) and the main users of the facility being installed/renewed. Assess impact of works on other infrastructure (e.g. if a connection is to be made to a DNO supply already serving safety critical equipment).

4 Lighting Form E

The following information is required to support the Lighting Form E submission:

Parts 1 - 3 Entry into Service