

Ref:	NR/L3/ELP/27406/MOD E
Issue:	1
Date:	3 December 2011
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Engineering Deliverable Requirements for Electrical Power Asset Design

Module E: Signalling Power Supplies

1 Signalling Power Supplies 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 for complex or unusual schemes.

2 Signalling Power Supplies - 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) Route Section Details.

Details of the route section covered by the scheme and details of how the scheme relates to strategic renewal policy of the signalling power along the route. The details should identify any potential effects on any adjacent or abutting signalling power assets.

b) Delay Cost Assessment.

Conclusions of the delay cost assessment to establish the system architecture required in relation to NR/SP/ELP/27243.

c) Schematic Diagrams.

For the power distribution system this will be a single line schematic diagram representing the DNO and traction derived supplies, PSPs, APSPs and FSPs for which the scheme relates to. A PSP specific schematic diagram should show the internal power arrangements of PSPs and APSPs, major electrical components and their interconnections, protective devices and system reconfiguration equipment.

d) Site Location Drawing.

The drawing should show proposed new DNO, PSP and APSP site details including land ownership, physical features, site and vehicle access, adjacent track, including the OLE contact zone and adjacent overhead cable routes. Drawings are not required for existing assets.

e) Protection Study.

Conclusions of a protection study undertaken using the Network Rail ELPOD calculation package. The study will establish that the proposed spacing of PSPs and APSPs and distribution protection is feasible in terms of the cable size and discrimination to confirm that protection disconnection times, voltage touch potentials, in-rush currents and volt drop comply with standards. In the case of modification of an existing system the protection study must confirm compliance with standards or else demonstrate adherence to any agreed non-compliance. The protection study may have to rely on load assumptions if the finalised signal engineering information is not available at this stage.

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f) Earthing and Bonding Strategy.

On electrified routes, or routes identified for future electrification, a bonding design statement is required giving an outline of the mutual traction and signal power distribution bonding strategy to be adopted.

g) Alarms and Remote Condition Monitoring.

A strategy should outline how indications, alarms and remote monitoring should be dealt with including the location of the staff to monitor the information identifying where reliance will be placed on other equipment of other asset disciplines.

If the Telecoms network is used, the data and voice circuits AIP should be accepted by a Telecoms PE in accordance with NR/L2/TEL/30022 Engineering Assurance Arrangements for Communications Engineering Schemes and Services.

h) Staging Strategy.

The outline strategy should address how the proposed design will allow any new signalling equipment to be commissioned or existing to be migrated onto the new or modified distribution. The strategy will also include how existing equipment will be fed until it is decommissioned.

3 Signalling Power Supplies - Form B

a) Schematic Diagrams.

Schematic diagrams should be produced for each of the lineside feeder cables. The diagram should contain details of the switching arrangements in the FSPs, all fuse sizes, all cable sizes and all cable types and lengths for each section. Where applicable the drawing should illustrate the signal power transformers and rectifier arrangements.

A schematic diagram should be produced for the principle supplies detailing all PSPs and APSPs, major electrical components and their interconnections (i.e. UPS, generators, DNO supply, traction supplies, protective devices and remote monitoring equipment).

If necessary the schematics produced at Form A will be updated to reflect amendments as part of the detailed design.

b) Site Layout Drawings.

A power distribution layout drawing representing a geographic overview of the system arrangements. It should include all track, stations, bridges, and significant structures and earthworks, DNOs, PSPs and APSPs, FSPs, REBs, HABDs, FTN installations, new and existing UTXs and URXs.

c) Site Location Drawing.

Update of Site Location Drawing to confirm final location details.

d) Cable Schedule and Route Diagrams.