

QA AUDITING REQUIREMENTS (ELECTRICAL)

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PURPOSE AND SCOPE

This procedure sets out the requirements for the Quality Assurance (QA) and Quality Control (QC) monitoring of National Grid UK Construction (Electrical) projects to demonstrate compliance with policy, relevant codes, procedures, standards and contract conditions.

Monitoring of projects will be achieved using a combination of management system audits and inspections undertaken by Construction Services, the Project Manager or acting on behalf of either, a nominated third party.

The Asset Management Business Performance – Business Management team may also undertake an independent audit against Transmission business procedures.

The blue text signifies Project Manager Responsibility and links to the blue in the Figure 1.

PART 1 – PROCEDURAL

The Activity Audit Matrix in Figure 1 illustrates UK Construction (electrical) auditing requirements and these are described in this procedure.

Construction Services or a third party acting on their behalf will undertake project specific audits as per the above table on a sample basis to obtain a global Quality Management System overview, determining quality, confidence, compliance and consistency of approach both internally and externally.

Project Managers will arrange for inspections/audits to be undertaken on projects within their portfolio to obtain confidence in their respective Principal Contractors and Sub Contractors' project/site specific teams and to ensure that they are delivering in compliance with their own Quality Management Systems. See items 6, 7 and 8 in Figure 1.

Refer External Companies to Sally Barlow 474 5063

National Grid – Internal Use Only
UK Construction Business Procedure

QA Auditing Requirements (Electrical)
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At scheme hand over the Project Manager will develop a Project Surveillance/Installation Audit Plan as per the example in Appendix B. The Plan shall address areas of Contractor performance and project risk, leading to the appointment of appropriate external Quality Auditor(s) via the Quality Auditing Framework Agreement (QAFA). This shall be reviewed and updated as necessary throughout the life of the project.

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The Quality-monitoring Framework is defined in Figure 1.

		CLIENT SIDE ACTIVITY				SUPPLIER SIDE ACTIVITY			
	ACTIVITY	PROCESS		OUTPUT		PROCESS		OUTPUT	
		Controlling Document	Audit Carried Out by	Documents to be Audited	Audit Carried Out by	Controlling Document	Audit Carried Out by	Documents to be Audited	Audit Carried Out by
1	Design Development	TP146	X	All documentation referred to in PDP	Const Services	X	X	X	X
2	Enquiry Preparation (Design)	NSBP133	X	Enquiry Document	Const Services	X	X	X	X
3	Tender Return (Design)	X	X	X	X	X	X	Tender Returns	Const Services
4	DID	X	X	X	X	X	X	DID	Const Services
5	Design Compliance Audit	NSBP135	X	NSBP 135 Compliance	Const Services	X	X	Detail Design	Const Services
6	SHE	TP137	X	Pre-Tender SHE Plan	SHEAFA	X	X	Evidence of compliance with SHE Plan	SHEAFA
7	Supplier Surveillance	NSBP139	X	X	X	Supplier Project Quality Plan	QAFA	Inspection Test (Type Reg/FAT)	QAFA, APE, CE
8	Installation	TP163	X	TP163 Documents	Const Services	Site Quality Plan	QAFA & Site Eng	SQP Doc'n & Build Install'n	QAFA, & Site Eng
9	Settings	TP107	Const Services	TP107 Documents	Const Services	TP107	Const Services	TP107 Documents	Const Services
10	Commissioning	TP106	Const Services	TP106 Documents	Const Services	TP106	Const Services	TP106 Documents	Const Services

Figure 1 - Activity Audit Matrix

1 DESIGN DEVELOPMENT

This audit will review the project specific TP146 documentation. It will be based on the documentation list, which forms part of the Project Development Paper (PDP). The audit will be both quantitative in terms of the documentation supplied as per the PDP and qualitative in terms of the quality of the content of these documents. Construction Services have responsibility for undertaking this activity and details can be found in Appendix C.

2 ENQUIRY PREPARATION (DESIGN)

This audit will review the project specific Enquiry documentation. The audit will review the various design specifications in terms of the quality of their content. The Tender Questions received from Suppliers and the outgoing responses from National Grid will also be reviewed as part of this exercise. Construction Services have responsibility for undertaking this activity and details can be found in Appendix C.

3 TENDER RETURN (DESIGN)

This audit will review the project specific Tender return documentation. The audit will be qualitative in terms of the quality of the content provided by the Supplier including responses in design specifications. The Tender Questions forwarded to Suppliers and their incoming responses to National Grid will also be reviewed as part of this exercise. Construction Services have responsibility for undertaking this activity and details can be found in Appendix C.

4 DESIGN INTENT DOCUMENT (DID)

This audit will review the project specific Design Intent Document. The audit will be qualitative in terms of the quality of the content provided by the Supplier. Construction Services have responsibility for undertaking this activity and details can be found in Appendix C.

5 DESIGN COMPLIANCE AUDIT

This audit will review compliance (quantative) with the process as described in NSBP135(E). This audit will also review the quality of the Design Compliance Audits completed by or on behalf of National Grid staff. Construction Services will have responsibility for undertaking this activity and details can be found in Appendix C.

6 SAFETY, HEALTH & ENVIRONMENT (SHE)

The Pre-Tender and Construction phase SHE Plans shall be assessed for compliance and consistency with the requirements given in UKBP/TP137 and qualitatively for the quality and sufficiency of the content provided by both the Client initially and the Supplier in the Construction phase.

Site based audits may be wide ranging depending on the project circumstances. These audits will review aspects of the site-specific SHE management system (including Construction Phase SHE Plan implementation and compliance).

The SHE Audit Framework Agreement (SHEAFA) Suppliers will be used to undertake this role. See NSBP136(E) for details and supporting documentation. The Project Manager has responsibility for arranging the Project SHE Audit Plan as per NSBP136(E).

7 SUPPLIER SURVEILLANCE

A Project Quality Plan (PQP) must be produced by the Contractor. This should highlight what the contractor intends to do and which procedures they have in place to do the work to a good standard.

The PQP can be produced in either a short report format or tabular format. A typical Project Quality Plan Activity Schedule is shown in Appendix D for guidance.

On contract award and for all current live projects with significant life remaining (i.e. site works still to be undertaken), the Project Manager will develop a Project Surveillance and Installation Audit Plan. The plan shall address areas of Supplier performance and project risk.

The Project Manager will then secure the services of a QAFA Supplier.

The Project Manager and the appointed auditor will determine the scope of the audits based on the Project Manager's requirements.

The Project Manager should consult the Supplier Development team to identify areas of concern for the Supplier, in order to facilitate him in the preparation of the Project Surveillance and Installation Audit Plan. Consideration shall be given to undertaking audits on key Sub Contractors as well as Principal Contractors.

This may be a test and inspection (quality control) activity associated with the manufacturing of equipment to be supplied for the contract. This may involve general or specific witnessing at hold points and/or Factory Acceptance Test or witnessing associated with Type Registration issues. These may be undertaken by one or more of the following;

- a) QAFA Supplier i.e. general or specific inspection of project specific equipment /adherence to Supplier Manufacturing Quality Management System or Project Quality Plan. See Appendix A.
- b) Asset Policy Engineer i.e. type registration issues.
- c) Commissioning Engineer i.e. light current equipment FATs.

The Project Manager will review the audit findings and amend the Project Surveillance and Installation Audit Plan and monitoring frequency accordingly. Significant findings, trends and best practice must be notified to Construction Services Manager to enable lessons learned to be recorded and cascaded to other projects as required.

8 INSTALLATION

8.1 Client Side Activity

Construction Services will have responsibility for undertaking this activity. However, it is probable that QAFA Suppliers will be utilised to undertake this activity. These audits will review the site-specific UKBP/TP163 implementation and compliance.

8.2 Supplier Side Activity

The contractor must provide a Site Quality Plan (SQP). It should define the quality management arrangements to be applied during the delivery phase of the project. It should contain information regarding how quality will be maintained on site. A typical Supplier Site Quality Plan Activity Schedule is shown in Appendix D for guidance.

On contract award and for all current live projects with significant life remaining (i.e. site works still to be undertaken), the Project Manager will develop a Project Surveillance and Installation Audit Plan.

The Project Manager will then secure the services of a QAFA Supplier.

The Project Manager and the appointed auditor will determine the scope of the audits based on the Project Manager's requirements but will include the following as a minimum:

A review of the implementation of and compliance with the Supplier's SQP will also be undertaken with a view to confirming:

- a) The adequacy of the SQP.
- b) The completion of all documentation associated with the SQP.
- c) That hold points are being enacted.
- d) The tracability of working documentation.
- e) Confidence by undertaking checks on outputs.

Inspection and monitoring will be carried out by National Grid Site Engineer to confirm Contractor compliance with their Site Quality Plan during the execution of specific elements. This will involve observing that all activities are carried out in accordance with the appropriate procedures and attending 'Witness Points' and 'Notification Points' or other formal verification required by the Client. Such activities will be carried out daily and/or weekly as appropriate.

In addition the Site Engineer will be required to make subjective judgements on workmanship, materials and the quality of the installed components in order to provide feedback on the Site Quality Plan or its application.

9 RELAY SETTINGS

This audit will review the project specific UKBP/TP107 documentation. The audit will be quantitative in terms of the documentation supplied i.e. compliance in full with the process and documentation requirements of UKBP/TP107 by both National Grid and the Supplier.

The audit will be qualitative in terms of the quality of the content of these documents. Construction Services will have responsibility for undertaking this activity and details can be found in UKBP/TP 107 and Appendix C.

10 COMMISSIONING

This audit will be review the project specific UKBP/TP106 documentation. The audit will be quantitative in terms of the documentation supplied i.e. compliance in full with the process and documentation requirements of UKBP/TP106 by both National Grid and the Supplier.

The audit will be qualitative in terms of the quality of the content of these documents. Construction Services will have responsibility for undertaking this activity and details can be found in UKBP/TP106 and Appendix C.