

QUALITY MONITORING OF CONSTRUCTION PROJECTS

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PURPOSE AND SCOPE

This procedure sets out the requirements for QA / QC monitoring of Network Strategy Construction projects to demonstrate compliance with NGT policy and relevant codes, standards and contract conditions.

Responsibilities and duties at each stage are identified within this procedure.

Monitoring of construction projects will be achieved using a combination of management system audits and technical inspections based on Network Strategy (NS) construction checklists.

Project assessment/technical inspections will be undertaken either by the project team or a nominated third party to demonstrate compliance with requirements.

Audits will be undertaken by the Quality Adviser (QA) and will examine the management of processes, controls, verification, best practice initiatives and lessons learned.

The Network & Business Performance – Business Management team may undertake an independent audit against Network Strategy procedures.

PART 1 - PROCEDURAL

1 APPOINTMENT OF PROJECT MANAGER AND QUALITY ADVISER

A Network Strategy Senior Project Manager will appoint a Project Manager (PM). The PM shall contact the Supplier Development Manager (SDM) who will nominate the Quality Adviser (QA) for the project.

2 TENDERING, EVALUATION AND CONTRACT AWARD

The QA will work as part of the project team to support and advise on Network Strategy's Quality Policy and Project QMS Requirements.

Prior to tender preparation the PM and QA shall discuss and agree the inspection, QA / QC strategy for the project life cycle, including where necessary the need for a project Quality Engineer to assist the QA as required. A guide to the various activities on a construction site is shown in the attached **Appendix 'A'** Quality Assurance Plan for use on both Gas and Electric projects.

The QA must ensure that the relevant QA / QC requirements are included within the Invitation to Tender (ITT) and support the tender evaluation process, attend clarification and pre tender meetings, risk and Contract strategy workshops where required.

The QA should attend the Contract award / inaugural meeting to provide an overview of the Network Strategy QA / QC requirements for the project.

3 POST AWARD / CONSTRUCTION MONITORING

This procedure specifies the requirements for quality monitoring by the inspection and auditing of construction activities associated with Network Strategy Construction projects. This includes extensions to the Gas and Electricity networks and enhancements and modification works associated with existing sites, compressor stations, pipelines, AGIs, substations, cables and overhead lines. The QA will co-ordinate a programme of technical inspections and audits to ensure that all work is undertaken in accordance with requirements.

3.1 Technical Inspection

Inspection is an important tool for identifying problems and conditions. Actions can then be taken to bring the activity back inline with the written procedures. To be effective, it is important that inspections are conducted in a systematic and thorough manner.

On all construction projects it is the responsibility of the Project Manager to ensure that inspections take place as agreed by the QA. A list of construction check sheets for carrying out these inspections can be found on the Network Strategy web site under Forms & Checklists as follows.

Pipeline Design	Bedding, Padding & Backfill
Location of Foreign Services	Hydrostatic Testing
Traffic Control	Cathodic Protection
Drainage	Electric Actuators
Pre-Construction Activities	Site Reinstatement
Trench Excavation	Documentation
Pipe Handling, Storage & Stringing	QMS System
Pipe Bending	Inspection Services
P2 Welding & NDT	Civils
FBE Coating	P9 Welding
MCL Coating	Radiation Safety Monitoring
Painting (PA10)	Impulse Tubing and Small Bore Pipework
Fabrication & Lowering In	GL5 Design Appraisal
Pipe Jack Crossings	Project Services
Auger Bore Crossings	Bolt Tensioning
Crossing NTS Feeders	Insulation & Cladding
Entry Into Pipelines	

3.2 Auditing

Auditing identifies deficiencies in the Management system and the findings must be properly recorded and appropriate attention given to any observations and non-compliances identified.

The audit plan will be formulated by the QA and PM giving consideration to all activities within the project scope of work.

Consultation should be made with the Supplier Development team to identify areas of concern for the Main Works Contractor (MWC) / Supplier to enable a project audit plan to be prepared. Consideration should be given to undertaking ISO9001 or other technical audits on key Sub Contractors, Suppliers including designers in consultation with the Project Manager and QA.

Where required the QA will ensure that quality reviews are held and minuted as per NSBP 134 (appendix D). The QA may also attend project meetings to discuss problems encountered, unresolved QA / QC issues, audit and inspection non-conformances, etc.

The QA will ensure that all relevant QMS procedures, documentation and inspection forms are available to the Project.

The format of the audit will ensure that the Network Strategy meets all internal QMS/external legislative requirements.

The audit checklists need to be prepared to cover the following areas:

- Management of the external Design / Design Control activities
- Quality of Design (Pre contract award)
- QA / QC activities in accordance with the Project Audit Plan
- Manufacturing assurance strategy
- Commissioning activities.

The QA will review the audit findings and amend the audit plan and monitoring frequency accordingly. Significant findings / trends / best practice must be notified to PM to enable lessons learned to be recorded and cascaded to other projects as required.

The PM / QA will ensure the following;

- MWC / Suppliers submit a detailed project specific quality / inspection and test plan, and for Gas projects, an audit plan prior to relevant activities being undertaken, for review, comment and acceptance
- MWC / Supplier work in accordance with the agreed quality, inspection and test plan and submits required audit reports
- Project QMS is developed and implemented.
- A project specific audit plan is produced and audits are undertaken and reported in accordance with **NSBP012**.
- Inspections are reported on standard construction checklists and held in the site QA files
- Procurement of products and materials is in accordance with NGT policy and specifications.

- All relevant procedures are submitted by the Contractor to the appropriate NGT personnel within contract timescales for review.
- Inspection activities are undertaken as per the agreed Inspection and Test Plan and for Gas projects reported in accordance with **NSBP142**.
- For Gas projects, MWC compiles and collates certification records in accordance with **NSBP007** on an ongoing basis.

4 COMMISSIONING FOR PROJECTS

4.1 Commissioning for Electrical Projects is conducted in accordance with UKBP/TP106.

4.2 For Gas Project the QA will participate in the commissioning, operational and asset acceptance process defined in **NSBP153**. The QA will review form NTS/A1/AA/01 (Commissioning Certificate) to ensure that the Project Manager has endorsed Part 1, the QA will then sign Part 2 allowing commissioning acceptance to proceed to the Asset Integrity Engineer for authorisation to enable gassing / powering up.

Upon completion of all commissioning activities Part E (Commissioning Completion Certificate) of the T/PM/G17 process shall be signed off and included within the handover records.

5 DOCUMENT HANDOVER FOR PROJECTS

5.1 For Electrical Projects, documents will be handled by the relevant Live Link.

5.2 For Gas Projects the QA will issue the QA Acceptance certificate (GP41), when records are complete for scanning.

PART 2-DEFINITIONS AND DOCUMENT HISTORY

6 ABBREVIATIONS/DEFINITIONS

QA/QC	Quality Assurance / Quality Control
QA	Quality Adviser
QMS	Quality Management System
NGT	National Grid Transco
ITT	Invitation to Tender
PM	Project Manager
GRM	Gas Requirements Manual
MWC	Main Works Contractor
SDM	Supplier Development Manager

DEFINITIONS- TECHNICAL INSPECTION

This is a regular scheduled inspection of an area or activity of a project, checking employee involvement and working practises. Normally carries it out by Project Supervisor/Site Engineer.

7 AMENDMENTS RECORD

Issue	Date	Summary of Changes / Reasons	Author(s)	Approved By (Inc. Job Title)
1	April 97	Initial issue	Bob Wood Quality Support Unit	Bob Wood Snr Quality Adviser
2	June 00	Changed from flowchart to text document	Paul Seymour Quality Support Unit	Bob Wood Snr Quality Adviser
3	Feb 01	Section 6 Construction Audits amended	Colin Overington Quality Support Unit	Bob Wood Snr Quality Adviser
4	April 02	Rebadged	Colin Overington Quality Support Unit	Bob Wood Snr Quality Adviser
5	July 03	Rebadged NGT Network Strategy and Revisions to Paras, 1,2,3,4,5,6&7	Paul Seymour Quality Support Unit	Keith Harker Construction Services
6	Dec 03	Re-numbered for integration	Paul Seymour Procurement & Logistics	Keith Harker Construction Services
7	Sept05	Revised to reflect new Inspection and Audit strategy. Also integrated Electric and Gas Projects. Change of title and addition of QA Plans	Martyn Hanlon Construction Support Team Manager	Keith Harker Construction Services

PART 3 – GUIDANCE NOTES AND APPENDICES

APPENDIX 'A' Typical Quality Plan (GAS & ELECTRIC PROJECTS).

Project : <i>(insert project number and name)</i>		Project Quality Plan	
GAS Construction Project – Activities Plan			
Ref	ACTIVITY	Policy/Procedure/Specification/Guidance	Verifying Document
1.	Prepare Tender Document	Feasability Report Planning Data Sheet Minimum Functional Specification & Design Brief UKBP/TP137 Pre-Tender SHE Plan Generic ITT NSBP133 Contract Management & Reprting Procedure	ITT
2.	Evaluate Tenders and award contract	NSBP133 Contract Management & Reprting Procedure	Award letter
3.	Initiate GL/5 (Conceptual Design)	T/PM/G/17 – THE MANAGEMENT OF NEW WORKS, MODIFICATIONS AND REPAIRS	Form Part A
4.	Review Contractor Project Specific Quality Plan	NSBP133 Contract Management & Reporting Procedure	Approved Plan
5.	Conceptual Design/Surveys	IGE/TD1 IGE/TD13 T/SP/TR/18 ENGINEERING OF PIPELINES AND INSTALLATIONS OPERATING AT ABOVE 7barg. T/PR/PSR4 Part 1 Procedure For Ensuring Compliance With The Pipelines Safety Regulations 1996 For Above 7 Bar G Natural Gas Pipelines And Installations. T/PL/TR15 Policy for the Design and Construction of Pipelines and Installations Operating at Above 7barg.	- Design Drawings - Design Reports - Ground Investigations - Borehole Reports - Pipeline route - etc
6.	Confirm System Outages	NSBP205 Annual Outage Request & Management Proceudue	Outage Plan