

# QUALITY

## Technical Surveillance Procedure

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**Revision Changes:**

| Revision | Status / Description of Changes  |
|----------|--|
| 5.0      | General update. Reference to Technical Directorate removed. Amendments to surveillance notification and planning process.  |
| 6.0      | Periodic Review minor amendments e.g. organisation changes: Head of Quality no longer Supervisor; Sector Quality Manager (QM) removed now SSP QM and Systemwide QM; No engineers in the Quality Team - removed. Surveillance model updated. Added reference to Programme Assurance Functional Strategy – 3 Lines of Defence. |
| 7.0      | Update to allow for Quality Surveillance now Verification Team has demobilised.  |

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## 1 Purpose

This procedure describes the process for the performance of independent risk-based quality surveillance through sampling in order to check that the Contractor's detailed design or samples of completed work, or work under construction, installation, testing and commissioning are compliant with processes, drawings, specifications and standards defined by the contract Works Information and CRL requirements.

## 2 Scope

Surveillance undertaken by CRL is carried out on Tier 1 Contractors and their supply chain within the Crossrail Central Section. Technical surveillance will generally be carried out on permanent works to check that the Contractor is compliant with processes, drawings, specifications and standards defined by the Works Information and CRL requirements. Surveillance of temporary works, demolition works and utility works will only be performed if requested or if a particular concern is identified.

The Quality Team are independent of delivery and may carry out surveillances as required on specific areas where a risk is highlighted.

This procedure applies to surveillance performed by the Quality Team. Surveillance performed by Delivery is controlled by the Central Section Works *Monitoring and Surveillance Procedure* (Ref 1).

Implementation of Technical Surveillance across the programme is in support of Crossrail's 'Three Lines of Defence' Integrated Assurance Framework (3LoD IAF) that provides integrity & compliance for programme delivery. This is detailed in *Project and Programme Assurance - Functional Strategy* (Ref 9) – 3 Lines of Defence Model (Fig 1).

## 3 Abbreviations and Definitions

| Subject | Definition   |
|---------|--|
| SSP     | Stations Shafts and Portals                              |
| SSPT    | Stations Shafts Portals and Tunnels                      |
| CEG     | Chief Engineers Group                                    |
| CRL     | Crossrail Limited  |
| DT      | CRL Delivery Team  |
| EDMS    | Electronic Document Management System - eB               |
| EM      | Engineering Manager                                      |
| LFAE    | Lead Field Assurance Engineer                            |
| FAE     | Field Assurance Engineer                                 |
| HoD     | Head of Discipline (CEG)                                 |
| PM      | Project Manager  |
| PMC     | Project Manager's Communication                          |
| SCM     | Supervisors Communication                                |
| PTR     | Project Technical Request                                |
| NCR     | Non-Conformity Report – a reporting mechanism for a non- |

|                      |  |
|----------------------|--|
|                      | conformance in a part of the works, activity or process that does not conform to the Works Information.  |
| OBS                  | Observation – a finding with no perceived immediate risk or a condition which if not corrected may give rise to a non-compliance.  |
| INR                  | Internal Non-Conformance Report – a non-conformity against a requirement identified outside of the audit process. A report detailing an internal (CRL) non-conformity.             |
| Supervisor Rep (PFE) | Supervisor Representative (Project Field Engineer). The role as described in the NEC3 ECC contract.  |
| Surveillance         | Monitoring of the Works to obtain evidence to assure CRL that the Works are being constructed in accordance with the Works Information (specs/drawings) to demonstrate compliance. |

## 4 Responsibilities

### Head of Quality

Surveillance may be performed by the CRL Quality Team, led by the Head of Quality, who is responsible for the following:

- Organising resources to carry out surveillance requests on perceived risk activities.
- Managing the preparation, coordination, conducting and reporting of surveillance visits.
- Approval of surveillance reports.
- Ensuring that findings identified during surveillances are reported as Observations, NCRs or INRs as appropriate.

### CRL Quality Team (Assessor) - as on *CRL Organisation Chart - Quality (Ref 10)*

- Preparation of surveillance checklists.
- Coordinate surveillances with the site teams in consultation with the *Supervisor's Representatives*, Chief Engineer and CEG HoDs.
- Conducting surveillance visits.
- Completion of an Opening Meeting (as applicable) at the start of the surveillance and Exit Meeting to discuss and agree findings arising from surveillance.
- Preparation and issue of detailed surveillance reports for acceptance.
- Distribution of surveillance reports as applicable.
- Analyse surveillance findings for trends.
- Promote the Surveillance Process to CRL and Contractor teams.
- Review NCRs raised resulting from surveillance to ensure adequacy of corrective action as part of the PTR NCR workflow (Inspection Stage).
- Review INRs raised resulting from surveillance to ensure adequacy of corrective action as part of the PTR INR workflow.
- Advising the delivery teams of past problems with a view to prevent recurrence and the provision of guidance within own field of expertise.

### **CEG - Heads of Discipline (HoD)**

- Advise the Quality Team in the selection of topics and location.
- Supporting the Quality Team by the allocation of technical expertise.

### **Project Manager (PM)**

- The Project Manager is responsible for ensuring that the Contractor carries out their duties in accordance with the requirements set out in the Works Information.

### **Supervisor Rep (PFE) / Engineering Manager / Field Assurance Engineer**

- Supporting the Quality Team in setting the time of the surveillance and identifying Contractor contacts to enable a surveillance visit to take place.
- Report surveillance requirements and output to the Project Manager.
- Delegates at the Inspection Stage surveillance raised NCRs to the Quality Team for comment before processing and closure.
- Collaborates with the Quality Team in identifying activities for surveillance on a risk-based approach.
- Issues the Surveillance Notification to the Contractor via a PMC or SCM as produced by the Quality Team.

## **5 Procedure**

### **5.1 Definitions of Surveillance**

- 5.1.1 Surveillance is defined as the monitoring of the Works to obtain evidence to assure CRL that the Works are being constructed in accordance with the Works Information (specification, drawings etc.) to demonstrate compliance.

The Crossrail Quality Surveillance model illustrates this integrated surveillance function in Appendix A. Surveillance is a single integrated function of the Crossrail organisation with clear lines of accountability mandated.

- The **Contractor** is accountable under their Contract for providing surveillance and self-certification as set out in the Works Information
- The **Project Manager** - is accountable for ensuring that the Contractor carries out surveillance duties in accordance with their Works Information
- The **Supervisor's Rep (PFE)s** – have delegated authority from 'The Supervisor' and are responsible for discharging the surveillance requirement for and on behalf of Crossrail
- The **Heads of Discipline (HoDs)** – are competent persons within the Chief Engineer's Group with delegated technical authority for their discipline by the Chief Engineer, and are recognised as the asset stewards for Crossrail
- **CRL Quality Managers (Stations, Shafts and Portals / Systemwide)** - support the Supervisor's Reps through providing reviews, advice and guidance on the Contractors' Quality Management Systems; and ensuring consistency across multiple projects.
- The **Quality Team** – perform independent risk-based surveillance to check that the Contractor is compliant with processes, drawings, specifications and standards defined by the Works Information and CRL requirements in consultation with the CEG HoDs, Supervisor's Rep (PFE)s and Delivery team.

The Technical Surveillance process is explained further within the Monitoring and Surveillance Procedure (*Ref 1*).

## **5.2 Technical Surveillance**

- 5.2.1 Technical surveillance is defined as a check of a sample of selected aspects of the works (Contractor's detailed design, work under construction or installation, completed work or testing and commissioning) to assure compliance with contract requirements, drawings, specifications and standards defined by the contract Works Information and CRL requirements.
- 5.2.2 Technical surveillance does not certify the work; this remains the responsibility of the organisation as defined by contract.

## **5.3 Surveillance Planning**

- 5.3.1 Surveillances will be based on the following; perceived risk of particular activities in collaboration with the Supervisor Rep (PFE)/FAE or CEG HoD; Contractor programmes, technical complexity of a particular activity etc.); risk register information, current trends of NCRs, Quality Performance Index (QPI) scoring trends and previous experience.
- 5.3.3 The person carrying out the surveillance (assessor) will issue a *Surveillance Notification (Ref F)* to the Supervisor Rep (PFE) **one week** before the planned surveillance date. The Supervisor Rep (PFE) will be responsible for communicating the Surveillance Notification to the Contractor through a SCM or PMC. Where required surveillances will consist of a visit by the assessor. Particular arrangements will be the responsibility of the assessor in co-ordination with the Crossrail DT and Contractor Representatives.

**Note 1:** As part of the Works Information Part 20 Section 20.2 General Requirements; "*The Employer, the Project Manager, the Supervisor and any third parties authorised by the Project Manager, including LUL, NR, DLR, TfL, statutory authorities and statutory undertakers, shall have the right to conduct audits, inspections and tests of any part of the works that are being executed in connection with their assets by the Contractor and to observe the execution of these activities*".

**Note 2:** In extenuating circumstances surveillances may be carried out without warning (unannounced).

## **5.4 Surveillance Preparation**

- 5.4.1 A checklist shall be prepared using the *Technical Surveillance Checklist template (Ref A)*. The checklist shall be produced from details of contract and DT requirements based on:
- The Contract / Works Information.
  - Specifications.
  - Drawings.
  - Standards (National, CRL, Network Rail, London Underground etc.).
  - Inspection & Test Plans (ITPs).
  - Quality Check Sheets.
  - Method Statements.
  - Legislation (e.g. Construction Product Regulations).

Each surveillance shall focus on the work activity as instructed which could relate to design, work in progress or completed works. Details of the current drawings and specifications applicable to the contract should be confirmed with the DT site team before preparation of the checklist.

Note: It is acceptable to attach extracts from specifications and drawings etc. to the checklist to form part of the checklist.

- 5.4.2 An eB number will be generated by the assessor and set as a placeholder until such time as the report has been completed. Any findings identified from surveillance will be linked to the eB placeholder as a document relationship.

## **5.5 Conducting Surveillance**

- 5.5.1 The Supervisor Rep (PFE) / EM, the relevant CRL Quality Manager, Contractor Quality Manager or their nominee and Contractor Representative responsible for the works shall be requested to attend a surveillance Opening Meeting. The Opening Meeting will detail the surveillance format, the topics to be covered, and the process following completion of the surveillance. An *Attendance Record (Ref G)* will be completed recording those present during the Opening and Closing Meetings.
- 5.5.2 The surveillance may consist of but not be limited to the following:
- Review of contract documentation (see 5.4.1 above) to confirm that requirements have been met;
  - Examination of work in progress and completed work to confirm that requirements have been met;
  - Review of records in progress and completed work to confirm that requirements have been met.
- 5.5.3 The checklist shall be the basis of the assessment to be made during the surveillance. The checklist shall be completed with notes of observations and findings made, and references to the work, documents and records examined. Any extracts from specifications and drawings etc. attached to the checklist may be marked up with notes of observations made.
- Note: The checklist serves as an aide-memoire and it is not necessary to rigidly follow up all items on the checklist. Compliance with requirements not listed on the checklist may be examined or items on the checklist may be omitted dependant on the completion status of the subject of the surveillance and findings identified as the surveillance progresses.
- 5.5.4 A representative of the Contractor responsible for the work undergoing surveillance is required to be present during the surveillance.
- 5.5.5 Those in attendance at the Opening Meeting (see 5.5.1) will be requested to attend an Exit Meeting to discuss and agree any findings arising from the surveillance, and any documentation/information required for post visit review. An Exit Note may be prepared by the assessor using the *Technical Surveillance Exit Note* template (Ref C). This shall be signed by the Contractor Quality Manager or their nominee or Contractor Representative.
- 5.5.6 Documentation and/or information requested for post visit review shall be provided by the Contractor within 3 days of completing the surveillance. Unless a valid reason (at the discretion of the assessor) is presented, failure to provide the requested information within the allotted time frame will result in a non-conformance.



## **5.6 Surveillance Findings**

- 5.6.1 The surveillance assessor shall record findings as an Observation, NCR or CRL INR, where applicable. Those Observations and NCRs identified in the signed and agreed Exit Note will be raised by the surveillance assessor following the surveillance visit. Where NCRs are identified following post review of documentation/information requested within the Exit Note, a follow up meeting shall be arranged where the NCRs will be discussed and agreed with the Contractor. All findings resulting from surveillance will be raised by the assessor.
- 5.6.2 Observations shall be reported using the Field Engineering Observation Report on eB. Observation Reports will be raised where an NCR is not deemed suitable. Observations will be reported as satisfactory where good practices are witnessed, or unsatisfactory where requirements have not been met but is not deemed a Non-Conformance.
- 5.6.3 Contractor Non-Compliance with requirements shall be reported for rectification in line with *Project Technical Requests (RFI, NCR, FCD) Procedure (Ref 2)*.
- 5.6.4 CRL Non-Compliance (INR) with requirements shall be reported for rectification in line with *Nonconformity, Corrective & Preventive Action Procedure (Ref 3)*.
- 5.6.5 The assessor will assist with NCR close out for surveillance raised NCRs. The Supervisor Rep (PFE) will delegate the NCR to the assessor within the PTR workflow at the Inspection Stage to enable assessor comment on the proposed answer and proposed corrective and preventative actions before closure.

## **5.7 Surveillance Reporting**

- 5.7.1 A Technical Surveillance Report shall be produced by the assessor using the *Technical Surveillance Report* template (Ref B).
- 5.7.2 Details of the surveillance conducted shall be completed as indicated on the front sheet. An executive summary shall be produced that provides an overview of the works, the activities examined and findings.
- 5.7.3 The main body of the Technical Surveillance Report is an account of the results of examination of the various activities that are taking or have taken place during the surveillance visit. It is divided into sections labelled "Topics Verified" to show the various aspects and activities that were examined. The detail of each topic shall include references to identify the work examined (e.g. pile number, location of excavation, design process, design output), references to records, supporting documents and documents that specify requirements as appropriate.
- 5.7.4 When necessary, photos will be used to support the detail of the topics and any findings identified. The inclusion of photos will be at the discretion of the assessor.
- 5.7.5 A draft copy of the Technical Surveillance Report shall be issued to the Supervisor Rep (PFE) for comment. In the case of design surveillances, a follow up meeting will be held with the Supervisor Rep (PFE) and EM and the Contractors representative where appropriate to agree the draft surveillance report.
- 5.7.6 Following review by the Supervisor Rep (PFE) the report shall be approved by the Head of Quality and distributed using the eB EDMS to the respective Director, Project Manager, SSP and Routeway Quality Managers, Field Engineering Manager, Supervisor Rep (PFE). Where appropriate, the Chief Engineer, Stations Manager, CEG Heads of Discipline, Engineering Manager and any others deemed necessary shall be included in the distribution. The Contractor's copy of the surveillance report shall be formally issued via the project EDMS (eB) by PMC.
- 5.7.7 The completed Surveillance Report should be finalised and issued within 3 weeks of conducting surveillances. The assessor will maintain a *Quality Surveillance Reports Register and Tracker (Ref 5)* recording all issued surveillance reports.

## 5.8 Joint Surveillances

- 5.8.1 The Contractor is required to perform surveillance as detailed in Works Information Volume 2B Part 20. The Quality Team shall accompany the Contractor on selected Contractor surveillances as agreed with the Supervisor Rep (PFE). The Quality Team may observe the conduct of the Contractor's surveillance and provide input and support as necessary. A summary report of the joint surveillance will be produced by the assessor.
- 5.8.2 Training and support on surveillance processes will be offered to the Contractors team by the Quality Team where joint surveillances identify areas for improvement.

## 6 Reference Documents

| Ref: | Document Title  | Document Number:            |
|------|---|-----------------------------|
| 1.   | Monitoring and Surveillance Procedure                   | CRL1-XRL-Z-GPD-CR001-50001  |
| 2.   | Project Technical Request (RFI-NCR-FCD) Procedure       | CRL1-XRL-Z-GPD-CR001-50006  |
| 3.   | Nonconformity, Corrective & Preventive Action Procedure | CRL1-XRL-O4-GPD-CR001-50026 |
| 4.   | Not Used  |                             |
| 5.   | Technical Surveillance Report Register/Tracker          | CRL1-XRL-O4-LRG-CR001-50007 |
| 6.   | Not Used  |                             |
| 7.   | Not Used  |                             |
| 8.   | Not Used  |                             |
| 9.   | Project and Programme Assurance - Functional Strategy   | CRL1-XRL-O7-STP-CR001-50011 |
| 10.  | CRL Organisation Chart - Quality                        | CR-XRL-Z-HRR-CR001-50001    |

## 7 Standard Forms/Templates

| Ref: | Document Title                         | Document Number:            |
|------|--|-----------------------------|
| A.   | Technical Surveillance Checklist       | CRL1-XRL-O4-ZTM-CR001-50014 |
| B.   | Technical Surveillance Report          | CRL1-XRL-O4-ZTM-CR001-50011 |
| C.   | Technical Surveillance Exit Note       | CRL1-XRL-O4-ZTM-CR001-50035 |
| D.   | Not Used                               |                             |
| E.   | Not Used                               |                             |
| F.   | Technical Surveillance Notification    | CRL1-XRL-O4-ZTM-CR001-50042 |
| G.   | Technical Surveillance Attendance Form | CRL1-XRL-O4-ZTM-CR001-50041 |

8 Appendix A - Crossrail Quality Surveillance model

