Inspection and Test Plan

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| **{Insert Project Name}** | | | |
| **{Insert Plan Title (If more than one plan is required)}** | | | |
| I&T Plan No. | **{Insert}** | File No. | **{Insert}** |

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| Prepared By: Commissioning Engineer | {Insert Name} |
| Date | {Insert Date} |

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| Reviewed and Approved By: |
| **See Authorisation Of Inspection & Test Strategy, Outline Plan and Detailed Plan in Parts 1, 2 and 3** |

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| Date of issue |  | Revision |  | Copy Number |  |

Part 1 – Inspection and Testing Strategy

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| Project Name |  |

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| Inspection and Testing Plan No. |  |

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| Commissioning Engineer |  |

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Inspection and Testing Strategy Details

Provide detail and analysis where applicable:

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| Section 1 | Implementation Strategy |
| Section 2 | Inspection and Testing Strategy including requirements from the Scope of Works, Project Safety Agreement and the Interface Coordination Plan |
| Section 3 | Quality Assurance Strategy including requirements from the Scope of Works, Project Safety Agreement and the Interface Coordination Plan |
| Section 4 | Interface and Stagework requirements |
| Section 5 | Scope, methodologies and access limitations for inspection and testing of interface work |
| Section 6 | Scope, methodologies and responsibilities at commissioning – interlocking and design Integrity testing |
| Section 7 | Practices to be used to confirm the condition of existing signalling |
| Section 8 | Signalling Safeworking and relocation or removal of infrastructure requirements: |
| Section 9 | Provisions to ensure that no ambiguity exists regarding the signalling system in use |
| Section 10 | Possession and Worksite Protection requirements |
| Section 11 | Inspection and testing personnel requirements |
| Section 12 | Organisation Chart for inspection and testing program |
| Section 13 | Access requirements or restrictions |
| Section 14 | Requirements for the coordination with other works |
| Section 15 | Test equipment and site communication requirements |
| Section 16 | Training and accreditation requirements |
| Section 17 | Special requirements |
| Section 18 | Schedule of reviews and approvals |
| Section 19 | Complete the Quality and Inspection & Testing Strategy Check Lists |

Quality Assurance-Strategy

including – Notification, Witness and Hold Points

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| Version No |  |  | |  | | Page 1 of |
| Date: |  |  | |  |  |  |
| Number/s / Location | | Activity Type | Activity Details | N / W / H | Activity Details | N / W / H |
| Eg. Foundations:  Signal. No:  Ground Frame:  Telephone:  Other: | | Design Control Activities | Verify construct drawings |  | Pre-Site Testing |  |
| Process Inspections | Excavation |  | Supplier inspection |  |
| Pre-pour |  | Delivery Inspection |  |
| Back fill |  | Methodology |  |
| Client Requirements |  |  | 3rd Party requirements |  |
| Eg. Cable Routes:  Buried. From to  G.S.T. From to  G.L.T. From to  Pits Turning Chambers: | | Design Control Activities | Verify construct drawings |  | Pre-Site Testing |  |
| Process Inspections | Excavation |  | Supplier inspection |  |
| Pre-pour |  | Delivery Inspection |  |
| Back fill |  | Methodology |  |
| Client Requirements |  |  | 3rd Party requirements |  |
| Eg Trackside Installation:  Cabling / jointing.  Track circuit.  Level Crossing.  Other: | | Design Control Activities | Verify construct drawings |  | Pre-Site Testing |  |
| Process Inspections | Excavation |  | Supplier inspection |  |
| Pre-pour |  | Delivery Inspection |  |
| Back fill |  | Methodology |  |
| Client Requirements |  |  | 3rd Party Requirements |  |
| Eg. Locations:  Base.  Cabinet.  Earth mat.  Other: | | Design Control Activities | Verify construct drawings |  | Pre-Site Testing |  |
| Process Inspections | Excavation |  | Supplier inspection |  |
| Pre-pour |  | Delivery Inspection |  |
| Back fill |  | Methodology |  |
| Client Requirements |  |  | 3rd Party requirements |  |
| Eg. Signalling Equipment:  Signals:  Points:  Trainstop.  Relays.  Track Circuit Equipment.  Equipment Racks.  Power Supply / Surge.  Control Systems equipment | | Design Control Activities | Verify to design drawings |  | Pre-Site Testing |  |
| Process Inspections | Relay Testing |  | Supplier inspection |  |
| Trainstop Cycling |  | Delivery Inspection |  |
| Storage/Transport |  | Methodology |  |
| Others: |  |  |  |  |
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Signalling Inspection and Testing Strategy Check List

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| System / Apparatus | | Design Control | | | Site Integrity Agreement | Accept Testing of Equipment | Inspection of Apparatus | | Circuit Testing | Apparatus Function Testing | System Function Testing |
| Correlation of Existing to Design | Document Status Control | Document Certification | General | Warding Indexing Pin Coding |
| 1 | Train Describer |  |  |  |  |  |  |  |  |  |  |
| 2 | Remote Control Panel |  |  |  |  |  |  |  |  |  |  |
| 3 | Remote Diagram |  |  |  |  |  |  |  |  |  |  |
| 4 | Telemetry System (control, ind.) |  |  |  |  |  |  |  |  |  |  |
| 5 | Local Control Panel |  |  |  |  |  |  |  |  |  |  |
| 6 | Local Diagram |  |  |  |  |  |  |  |  |  |  |
| 7 | Communications External |  |  |  |  |  |  |  |  |  |  |
|  | (voice/data) Local |  |  |  |  |  |  |  |  |  |  |
| 8 | Interlocking |  |  |  |  |  |  |  |  |  |  |
| 9 | Distributed Controls |  |  |  |  |  |  |  |  |  |  |
| 10 | Interfaces At limit of work |  |  |  |  |  |  |  |  |  |  |
|  | Within limit of work |  |  |  |  |  |  |  |  |  |  |
| 11 | Distributed Indications/Data Capture |  |  |  |  |  |  |  |  |  |  |
| 12 | Electrical Power Supply |  |  |  |  |  |  |  |  |  |  |
|  | Distribution |  |  |  |  |  |  |  |  |  |  |
| 13 | Compressed Air Supply |  |  |  |  |  |  |  |  |  |  |
|  | Distribution |  |  |  |  |  |  |  |  |  |  |
| 14 | Cable Routes |  |  |  |  |  |  |  |  |  |  |
| 15 | External Cabling |  |  |  |  |  |  |  |  |  |  |
| 16 | Locations |  |  |  |  |  |  |  |  |  |  |
|  | Earthing / Surge protection |  |  |  |  |  |  |  |  |  |  |
|  | D.C. Power Supplies |  |  |  |  |  |  |  |  |  |  |
|  | Local A.C Power Supplies |  |  |  |  |  |  |  |  |  |  |
|  | Relays |  |  |  |  |  |  |  |  |  |  |
|  | Wires/Cables/Terminals |  |  |  |  |  |  |  |  |  |  |
|  | Structure |  |  |  |  |  |  |  |  |  |  |
| 17 | Trackside Apparatus |  |  |  |  |  |  |  |  |  |  |
|  | Signals |  |  |  |  |  |  |  |  |  |  |
|  | Train Stops |  |  |  |  |  |  |  |  |  |  |
|  | Points |  |  |  |  |  |  |  |  |  |  |
|  | Releasing Arrangements |  |  |  |  |  |  |  |  |  |  |
|  | Track Circuits |  |  |  |  |  |  |  |  |  |  |
|  | Level Crossings |  |  |  |  |  |  |  |  |  |  |
|  | Indicators / Notice Boards |  |  |  |  |  |  |  |  |  |  |
|  | Safeworking phones |  |  |  |  |  |  |  |  |  |  |
| 18 | Mechanical Ground Frames |  |  |  |  |  |  |  |  |  |  |

Control Systems Inspection and Testing Strategy Plan

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| **Checklist 1**  **Control Systems FAT Testing Strategy Check List** | Database Integrity Verification | Installation and Rollback | System Startup, Shut Down, Logging | Map Layout | Security Commands | Control Workstation Certification | View Only Workstation Certification | Overview Workstation Certification | Arbitration | Signalling Commands | Trip Commands | Restriction Commands | Timetables | Train Stepping | ARS | Alarms | Reports | RCS Monitor | OSS/ESS | Simulator | IO Correspondence - Controls & Indications | TDTES | Network | Backup Restore | Housekeeping | Telemetry | TDLink |
| Release: XXXXXX |
| CR1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CR2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| CR3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| etc. |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

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| **Add more lines as required**  Refer to PR S 47112 | **Instructions:** Individually review the details of each System being delivered in this project. Place a check mark in each column that results in a ‘yes’ response. Each checkmark will result in one of more tests being conducted during the construction and/or commissioning of the project. |

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| **Checklist 2**  **Control Systems**  **Configuration Change**  **Testing Strategy**  **Check List** | I/O | Alarm Conditions | Maps | Restrictions and Blocking | ARS | Trip Stepping | Time table (Trip Projections and Queues | RCS Boundary | Interfaces With Other Systems | Other Specific Tests |
| Release ID: XXXXXX |  |  |  |  |  |  |  |  |  |  |
| Release ID: XXXXXX |  |  |  |  |  |  |  |  |  |  |
| Release ID: XXXXXX |  |  |  |  |  |  |  |  |  |  |
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| **Check List 3a**  **Control Systems**  **Apps and Systems**  **Inspection & Testing  Strategy Check List** | | Design Control | | | Site Integrity Agreement | Acceptance Testing of Equipment | Inspection of Apparatus | Circuit Testing | Apparatus Function Testing | System Function Testing |
| Correlation of Existing to Design | Document Status Control | Document Certification |
| ATRICS Applications | |  |  |  |  |  |  |  |  |  |
|  | Communications Manager |  |  |  |  |  |  |  |  |  |
|  | Telemetry Data Manager |  |  |  |  |  |  |  |  |  |
|  | STPS |  |  |  |  |  |  |  |  |  |
|  | Signalling Simulator |  |  |  |  |  |  |  |  |  |
|  | Dynamic Plan |  |  |  |  |  |  |  |  |  |
|  | Train Manager |  |  |  |  |  |  |  |  |  |
|  | ARS |  |  |  |  |  |  |  |  |  |
|  | Timetable Server |  |  |  |  |  |  |  |  |  |
|  | Security Manager |  |  |  |  |  |  |  |  |  |
|  | RCS Manager |  |  |  |  |  |  |  |  |  |
|  | TWS |  |  |  |  |  |  |  |  |  |
|  | Time Table Scrolls |  |  |  |  |  |  |  |  |  |
|  | ATRICS Controller |  |  |  |  |  |  |  |  |  |
|  | Arbitration |  |  |  |  |  |  |  |  |  |
|  | Event Logger |  |  |  |  |  |  |  |  |  |
|  | Report Server |  |  |  |  |  |  |  |  |  |
|  | Report Viewer |  |  |  |  |  |  |  |  |  |
|  | Centralised Timetable Manager |  |  |  |  |  |  |  |  |  |
|  | Utilities |  |  |  |  |  |  |  |  |  |
|  | Train Describer Link |  |  |  |  |  |  |  |  |  |
| ATRICS Hardware | |  |  |  |  |  |  |  |  |  |
|  | Domain Controller |  |  |  |  |  |  |  |  |  |
|  | RCS Server |  |  |  |  |  |  |  |  |  |
|  | Workstation (Panel) |  |  |  |  |  |  |  |  |  |
|  | Workstation (Maintainer) |  |  |  |  |  |  |  |  |  |
|  | Thin client |  |  |  |  |  |  |  |  |  |
|  | Overview Workstation |  |  |  |  |  |  |  |  |  |
|  | Log server |  |  |  |  |  |  |  |  |  |
|  | Backup Restore Server |  |  |  |  |  |  |  |  |  |
|  | Train Describer Link |  |  |  |  |  |  |  |  |  |

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| **Add more lines as required**  Refer to PR S 47112 | **Instructions:** Individually review the details of each System being delivered in this project. Place a check mark in each column that results in a ‘yes’ response. Each checkmark will result in one of more tests being conducted during the construction and/or commissioning of the project. |

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| Check List 3b  Control Systems  Apps and Systems  Inspection & Testing  Strategy Check List | | Design Control | | | Site Integrity Agreement | Acceptance Testing of Equipment | Inspection of Apparatus | Circuit Testing | Apparatus Function Testing | System Function Testing |
| Correlation of Existing to Design | Document Status Control | Document Certification |
| **OSS Applications** | |  |  |  |  |  |  |  |  |  |
|  | RCS Bridge |  |  |  |  |  |  |  |  |  |
|  | Web Services |  |  |  |  |  |  |  |  |  |
|  | Synchronised SQL Servers |  |  |  |  |  |  |  |  |  |
|  | Replayviewer |  |  |  |  |  |  |  |  |  |
|  | Mapviewer |  |  |  |  |  |  |  |  |  |
| **OSS Hardware** | |  |  |  |  |  |  |  |  |  |
|  | OSS App server |  |  |  |  |  |  |  |  |  |
|  | OSS SQL Server |  |  |  |  |  |  |  |  |  |
|  | OSS WEB server |  |  |  |  |  |  |  |  |  |
|  | Metronet Server |  |  |  |  |  |  |  |  |  |
|  | OSS IFS |  |  |  |  |  |  |  |  |  |
| **TDTES Hardware** | |  |  |  |  |  |  |  |  |  |
|  | TDTES Workstation |  |  |  |  |  |  |  |  |  |
|  | TDTES FileServer |  |  |  |  |  |  |  |  |  |
|  | TDTES REP |  |  |  |  |  |  |  |  |  |
|  | TDTES IFS |  |  |  |  |  |  |  |  |  |

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| Add more lines as required  Refer to PR S 47112 | Instructions: Individually review the details of each System being delivered in this project. Place a check mark in each column that results in a ‘yes’ response. Each checkmark will result in one of more tests being conducted during the construction and/or commissioning of the project. |

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| Check List 3c  Control Systems  Apps and Systems  Inspection & Testing  Strategy Check List | | Design Control | | | Site Integrity Agreement | Acceptance Testing of Equipment | Inspection of Apparatus | Circuit Testing | Apparatus Function Testing | System Function Testing |
| Correlation of Existing to Design | Document Status Control | Document Certification |
| Network Peripherals | |  |  |  |  |  |  |  |  |  |
|  | Cisco Firewalls (Control Centre) |  |  |  |  |  |  |  |  |  |
|  | Cisco Catalyst Firewall |  |  |  |  |  |  |  |  |  |
|  | Cisco Switches (Control Centre) |  |  |  |  |  |  |  |  |  |
|  | Routers (Control Centre) |  |  |  |  |  |  |  |  |  |
|  | Cisco Router |  |  |  |  |  |  |  |  |  |
|  | Routes/Switches (Remote) |  |  |  |  |  |  |  |  |  |
|  | Boundary Interface servers |  |  |  |  |  |  |  |  |  |
|  | Jump Server/Bastion Host |  |  |  |  |  |  |  |  |  |
| System | |  |  |  |  |  |  |  |  |  |
|  | Operating System |  |  |  |  |  |  |  |  |  |
|  | IOS |  |  |  |  |  |  |  |  |  |
| Telemetry | |  |  |  |  |  |  |  |  |  |
|  | SCADA 2000 |  |  |  |  |  |  |  |  |  |
|  | Dupline |  |  |  |  |  |  |  |  |  |

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| Add more lines as required  Refer to PR S 47112 | Instructions: Individually review the details of each Release being delivered in this project. Place a check mark in each column that results in a ‘yes’ response. Each checkmark will result in one of more tests being conducted during the construction and/or commissioning of the project. |

Control Systems - Preliminary Project Hazard Analysis Check List

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | Change Requests (CRs) | | | | | | | | | |
| System /Apparatus | | No. | No. | No. | No. | No. | No. | No. | No. | No. | No. |
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Part 2 – Inspection and Testing Outline Plan

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| Project Name |  |

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| Inspection and Testing Plan No. |  |

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| Commissioning Engineer |  |

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Prepared by

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| Inspection and Testing Plan No. |  | Outline Plan Stage |  |
| Project Name |  | Commissioning Engineer |  |

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| Activity | System / Apparatus | Certified By | Certification Documents | Standards/ Procedures | Time |
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Part 3 – Inspection and Testing Detailed Plan

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| Commissioning Engineer |  |

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Prepared by

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| Name |  |
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| Signature |  |
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| Inspection and Testing Plan No. |  | Detailed Plan Stage |  |
| Project Name |  | Commissioning Engineer |  |

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| Activity  No. | Activity  Description | Apparatus | Time | | Resources | | Work Package |
| When  Date / Time | Duration  Days / Hours | Team No. | Special  Equipment | Work  Package  Reference |
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