

CENTRAL SECTION DELIVERY

Certification Package Compilation Process

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Learning Legacy Document

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1 Purpose

The purpose of this Guidance Note is to provide additional information to support the Certification process on Crossrail projects and is to be read in conjunction with the CRL Construction Certification and MEP and Systemwide Certification Procedures.

2 Scope

This document applies to Construction packages (Civils, Stations and Architectural Fit-out) and MEP and Systemwide packages that support testing and commissioning phases 1 to 3.

3 Terms & Definitions

CRL	Crossrail
MEP	Mechanical, Electrical & Public Health
DCM	Crossrail Delivery Certification Manager
CE	Crossrail Certification Engineer
F AE	Crossrail Field Assurance Engineer
LFAE	Crossrail Lead Field Assurance Engineer
Supervisor's Rep (PFE)	Crossrail Project representative described in NEC3 ECC Contract for the role of <i>Supervisor</i>
Project Manager (PM)	Crossrail Project representative described in the NEC3 ECC Contract for the role of <i>Project Manager</i>
CMDL	Contract Master Deliverable List
eB	Crossrail's electronic document management system
IFC	Issued for Construction
PTR	Project Technical Request; Crossrail's electronic system for Requests for Information, Non conformance Reports and Field Change Designs
KPI	Key Performance Indicator
ITP	Inspection and Test Plan
CTP	Commissioning Test Plan
Deliverable Record Package, ITP Records Package, Site Assurance File (SAF)	A set of assurance documents/records for an element of works e.g. Piling Records, Comms Cabinet
Package Listing (PL) or Record Package Listing (RPL)	An index of all related deliverable design, construction, test, as-built, operational and maintenance records for the constructed element of works. Templates provided by CRL
Sub-construction Certificate (SCC)	A certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager</i> for a constructed element of the works. Template provided by CRL
Construction Certificate (CC)	A certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager</i> when all agreed Sub-divided activities and Sub-construction certificates for a defined constructed element have been accepted by the <i>Project Manager</i> . Template provided by CRL

Installation Release Notice (IRN)	The document issued by the <i>Contractor</i> certifying its installation and the end of Phase 2.1. Formalising the transfer of responsibility for part of a system (Commissioning Lots) from installation to commissioning.
Pre-Commissioning Certificate (PCC)	A certificate issued by the <i>Contractor</i> that formalises the end of Phase 2.2 when a Commissioning Lot is completely energised and tested.
Partial Acceptance Certificate (PAC)	A certificate issued by the <i>Contractor</i> that formalises the end of Phase 2.3 when a sub-system is completely tested as a stand-alone system with its interface simulated.
Acceptance Certificate (AC)	A certificate issued by the <i>Contractor</i> that formalises the end of Phase 3 when an Elementary System is completely tested along with its interfaces. For some systems the AC can be received at the end of phase 2.3 (if there is no integration testing required with 3 rd parties)
Whole Contract Construction Certificate (WCCC)	A Certificate issued by the <i>Contractor</i> and signed by the <i>Project Manager, Supervisors Rep and Head of Quality, once all activities have been completed and CRL Functional Leads have done their due diligence.</i>
Certification Package	The appropriate level of certificate (part 1) and the Records Package Listing (RPL) (part 2) e.g. SCC + RPL or IRN + RPL
Certification Performance Dashboard	A CRL single page report pictorially indicating the performance of the Contract/Sector against certification KPIs
VAP	Verification Activity Plan

4 Responsibilities

4.1 Delivery Certification Manager (DCM)

The DCM monitors the performance of each Contract for reporting to senior management and provides training for CRL FAE team, CRL Site Engineers (SEs) and the *Contractor*.

4.2 Certification Engineer (CE)

The CE monitors the process against requirements for an assigned contract, supports the *Contractor* and FAE Team/SEs during the review of documentation, updates the CRL tracker and highlights any issues, or potential issues to the DCM and *Supervisor's Rep* (PFE).

4.3 Field Assurance Engineering Team

The FAE Team for the Station, Portal and Shaft contracts and the Site Engineers for the Systemwide contracts reviews and accepts the *Contractor* deliverable records and red lines and assures the certification process is meeting requirements.

4.4 Contractor

The *Contractor* produces and maintains the Package Breakdown Structure and Schedule, collates and submits the deliverable documents and red lines, updates and submits the certification packages.

5 Procedure

5.1 Package Breakdown Structure & Schedule

5.1.1 Package Breakdown Structure (PBS)

The Certification Packages are identified in the *Contractor* Package Breakdown Structure(s) (PBS) which is submitted periodically to the *Project Manager*. These 'packages' consist only of the appropriate certificate for the activity and an accompanying record package listing (where applicable). The Certification Packages provide progressive assurance and lead to the Whole Contract Construction Certificate (WCCC) for each contract.

5.1.2 Certification Schedule

The schedule of 'certification packages' which is submitted alongside the PBS contains the forecast and actual submission dates and the date of acceptance by CRL. Although the requirement is for certification packages to be included on the P6 programme and dates for submission taken from the latest P6, for the process to work efficiently the certification details are best managed in-line with the construction programme, with weekly informal updates and periodic formal submissions.

The Schedule and PBS may contain all activities for the Contract, or for Stations, Portals and Shafts it can be separated-out into Civils/Architectural Fit-out and Testing and Commissioning.

5.1.3 CRL Certification Schedule

The CRL Certification Team are responsible for updating the CRL Master Certification Trackers (stored on CRL SharePoint) to include changes/updates agreed in each certification meeting and following submission of the revised schedule by the *Contractor*.

All the information is to be up-to-date by end of the Friday before the period report cut-off date, to enable the DCM to generate the period reports and dashboards.

This information will be used by other parties e.g. Handover, Testing & Commissioning and Asset Information.

5.2 Deliverable Records Packages

These may also be known as ITP Records, ITP Packages, SAF Files. Essentially this section refers to the collation of deliverable records that provide the assurance required by the ITP/CTPs.

Deliverable records identified in the ITP or CTP, for during and post activity, are to be collated and submitted to Crossrail as a package. These contemporaneous records are compiled by the *Contractor*, or *Sub-Contractor*, and kept in a safe location (from damage, deterioration and loss).

Best Practice has shown these 'packages' or 'files' of records are reviewed by the *Contractor's* nominated person and shared informally with the Crossrail FAE/SEs, *Supervisor's Rep* (PFE) and/or Certification Engineer.

Actions taken prior to being uploaded to eB will help the formal submission being 'right-first-time'.

The review of the records, either informal or formal, shall include completeness of information, traceability, accuracy and references to other records.

As part of the Self-certification requirements, the *Contractor* is responsible for fully checking their documentation prior to providing to CRL. The individual who signs the document as the 'Checker' must be deemed a competent person as identified on the *Contractor's* Competency Management Plan and/or matrix.

All Deliverable Records Packages are to be submitted to CRL for acceptance and include a Record Package Compliance Certificate to the front of the record package, with the relevant signatures obtained.

The submission on eB shall follow the standard document control process and the CMDL code would be C13.003 (Civils, Stations, Portals and Shafts) and S13.005 or S14.021 (Systemwide).

5.2.1 CRL review of documentation

The FAE/SE Team's review must align with what the CRL Heads of Discipline (HoDs) see to be the high risk areas and to allow them to adjust their Verification Assurance Plans (VAPs) based on the level of reviews that are to be carried out by the FAE/SE Team. For example an existing VAP may have been written on the understanding that the FAE/SE Team are carrying out extensive checks which may be viewed as significant mitigation of a risk and will therefore limit the verification the CEG team carry out. But, if the FAE/SEs opt to do fewer reviews then the HoD may determine the CEG team needs to do more.

Full reviews of certification documentation by the FAE/SE Team will be required for the following instances;

- Activities with a safety critical risk which are determined by the site team in accordance with the Office of Rail Regulations e.g.
 - Installation of track, components or structures supporting Permanent Way
 - Installation of Signalling Components
 - Installation of Radio/Mobile Communication Systems
 - Installation of signal and electrification telephones
 - Installation of power supply and distribution system
 - Installation of electrical equipment supplying electricity to telephone and telecommunication systems
 - Safety Critical communications e.g. audible warning systems
- The first instance of a repeated activity to be certified; this is to be used to agree and set the benchmark
- The second instance of a repeated activity; to confirm the benchmark has been met.

5.2.2 Supervisor's Rep Certification Review Plan

In addition to the required full reviews as described in section 5.2.1, the SR will identify which Certification packages are to be reviewed and determine what level of review is appropriate. This determination can be based on various factors such as;

- Risk-based review (critical path or programme sensitive activities)
- Performance-based review (based on *Contractor's* performance / non-conformance)
- Sample review (sample percentage for a repeated activity; to demonstrate progressive review)
- Responsive review (for changing risk profile)
- Coordinated review (joint review with other parties, such as CEG or IMs)

The SR will define whether a full or partial review of the identified packages is required, based on the criteria listed above. A partial review is where only selected sections of the Certification Packages are reviewed. Where a partial review has been carried out, then the records must be accepted code 1. Where a review has not taken place, the records are to be accepted code 4.

5.3 Red Line Drawings

The *Contractor* may follow a similar process for collating the red-line drawings as the Record packages. The review of the drawings may need to involve the designer of the IFC drawing to assure there are no issues. Drawings may be reviewed informally as a 'package' if this helps the review process, however all red lines must be issued formally to CRL on eB as individual drawings. The *Contractor* and CRL will follow the CRL procedure for Red-Lines and As-Builts.

5.4 Certification Packages

5.4.1 Certification Packages

A “Certification Package” consists of two elements; a Package Listing and a Certificate. Depending on the package level, this may be a Sub-construction, Construction or Whole Contract Construction Certificate.

5.4.2 Package Listing – part 2 of 2

The Package Listing is an index of all the related documentation required for and generated from construction. It contains cross-references to the eB document numbers only.

The Package Listing shall be populated and updated alongside construction activities. Best practice has shown where a package listing is progressively maintained the final submission is less problematic and meeting the deadline is highly achievable.

The *Contractor* will review the Package Listing internally prior to sharing with CRL. If any documents are to remain outstanding at the time of the review they must be highlighted to avoid CRL looking for missing records. All documents listed are to be accepted by CRL at Code 1 or 4 and for eB PTR records they are to be closed-out before the Package Listing can be signed.

If a document or PTR records cannot be closed-out on time, then a local agreement with the *Supervisor’s Rep* (PFE) shall be made to include in section 7 of the package listing and added to Punchworks. There can be no Code 3 documents and any NCR at CAT I or with a high safety risk must not be open.

The Package Listing template is a CRL controlled document issued to all *Contractors* to use. No headings may be deleted, but any additions not already included may be added to the relevant sections. This is to be agreed locally with the *Supervisor’s Rep* (PFE) /CE. If items are not applicable, the *Contractor* shall state “not applicable” in the document number column.

If the *Contractor* is unsure where to place a particular document it shall be discussed and agreed with the CE. All future package listings shall be consistent.

Upon completion of the works and the documentation, the RPL shall be signed by three *Contractor* representatives, to include the person who created the ‘certification package’ (e.g. Engineer / *SubContractor*), the person responsible for checking the information (e.g. a Package Manager/Construction Manager) and the Quality Manager.

Crossrail signatories include the person who has carried out the first review (e.g. the FAE/SE) and the *Supervisor’s Rep* (PFE).

5.4.3 Sub-Construction/Construction Certificate – part 1 of 2

The Certificate states the construction activities for the specific elements of work have been completed.

The accompanying Sub-Construction Certificate (or other Certificate level appropriate for the package) will be put on top of the Package Listing and signed by the person from the *Contractor* who has the authority to state the works are complete; generally the Project Manager or Project Director.

If agreed locally, the original package listing and certificate may be given to CRL to sign prior to uploading to eB. The whole document is put onto eB under one document number using the “CER” code and CMDL number C13.006 or S13.011 (for Systemwide).

5.4.4 Installation Release Notice (IRN) – part 1 of 2

The IRN states the equipment has been installed and is ready for testing and commissioning.

The IRN will be put on top of the Package Listing and signed by the parties stated on the form.

If agreed locally, the original Package Listing and IRN may be given to CRL to sign prior to uploading to eB. The whole document is put onto eB under one document number using the “NOX” code and CMDL number C21.001 or S14.011 (for Systemwide).

5.4.5 Pre-commissioning, Partial Acceptance or Acceptance Certificate – part 1 of 2

These Certificates state the testing and commissioning phases have been completed.

The PCC, PAC or AC will be put on top of the Package Listing and signed by the parties stated on the form.

If agreed locally, the original Package Listing and IRN may be given to CRL to sign prior to uploading to eB. The whole document is put onto eB under one document number using the "CER" code and CMDL number C21.018/S14.015 (PCC), C21.019/S14.014 (PAC), C21.020/S14.001 (AC).

Refer to the MEP and Systemwide Certification Process for further details.

5.5 Certification Meetings

There shall be certification meetings held on-site no less than once per period. It is recommended to hold these bi-weekly or weekly depending on the volume/complexity of the packages due for submission. Holding regular meetings maintains focus on certification, but only if they are well attended with meaningful actions/updates.

These meetings are best attended by the *Contractor's* representative for Certification who is responsible for managing the process, the *Contractor* Engineer(s) or Package Manager(s) responsible for the package activities, CRL FE/ *Supervisor's Rep* (PFE) and CRL CE.

Progress of the package(s) and associated documentation shall be discussed. Formal minutes do not need to be produced; however acknowledgement of all agreed actions is required. Best practice has shown that a detailed status tracker, showing individual documents/drawings, actions, actioners and dates helps to ensure the process is well managed. Formal minutes can prove too onerous and time-consuming.

5.6 Performance

The forecast submission dates shall be aligned with the construction programme and a standard period of time added to the end of construction to submission. For Civil works this is generally 28 days, but each *Contractor* is to agree locally with the CRL *Supervisor's Rep* (PFE) how many days are appropriate for their contract/scope of works.

The forecast submission date is the date where the *Contractor* is to have all deliverable records complete and the Package Listing populated. For Systemwide this is generally the Inspection Date. This planned date automatically sets the KPI date.

If the *Contractor* does not submit the 'package' on-time, this puts the KPI result at risk not only for the *Contractor* but for CRL as a whole. For every one failed package, a further nine must be on-time.

The risk to not achieving the KPI is monitored by CRL and included within the Performance Dashboards.

The KPIs for certification form part of the Quality Performance Index (QPI) and are applicable to every contract. The KPIs are;

KPI 1: $\geq 90\%$ of all certification packages is to be submitted and accepted on-time (within 60 days of forecast submission).

KPI 2: Number of and % of certification packages not accepted on time (as per KPI 1) and still open
Also tracked, is

% of MEP Certification packages accepted code 1 and in eB within 28 days of the certificate being signed-off

The Crossrail DCM will produce the certification performance dashboards each period and share with the *Supervisor's Rep* (PFE), *Project Manager* and other senior management. The results will also be shared with the *Contractors*.

6 Reference Documents

Ref:	Document Title	Document Number:
1.	Construction Certification for Structures and Civil Engineering and Works Procedure	CRL1-XRL-O4-GPD-CR001-50006
2.	MEP and Systemwide Certification Process	CRL1-XRL-O8-GUI-CRG03-50001
3.	VAP Implementation and Progressive Assurance Procedure	CRL1-XRL-O7-GPD-CR001-50021
4.		

7 Standard Forms / Templates

Ref:	Document Title	Document Number:
A.	Installation Release Notice (IRN) Template	CRL1-XRL-O-ZFM-CRG03-50005
B.	Pre-Commissioning Certificate (PCC) Template	CRL1-XRL-O-ZFM-CRG03-50004
C.	Partial Acceptance Certificate (PAC) Template	CRL1-XRL-O-ZFM-CRG03-50003
D.	Acceptance Certificate Template	CRL1-XRL-O-ZFM-CRG03-50002
E.	MEP & Systemwide Certification Records Package Listing	CRL1-XRL-O-ZFM-CRG03-50001
F.	AIMS Contract Based Asset Listing Template	CRL1-XRL-Z3-ZTM-CR001-50007
G.	Sub Construction Certificate Template	CRL1-XRL-O4-ZTM-CR001-50028
H.	Construction Certificate Template	CRL1-XRL-O4-ZTM-CR001-50029
I.	Whole Construction Certificate Template	CRL1-XRL-O4-ZTM-CR001-50030
J.	Sub/Construction Certificate Package Listing Template	CRL1-XRL-O4-ZTM-CR001-50027