

Guidance Document

G0900

Quality Inspection Completion Certificate (QICC)

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CONTENTS

1	Purpose	3
2	Scope	3
2.1	General Scope	3
3	Requirements	4
3.1	General	4
3.2	Minor Works Completion Certificate (MWCC)	6
3.3	Categorisation and Management of Snags	7
3.4	Special Considerations when Independent Quality Inspection is not practicable	9
3.5	Scope of QICC	9
3.6	Supplier Works Description & Detailed Design Declaration (QICC Part 1)	10
3.7	Supplier Installation Declaration (QICC Part 2)	11
3.8	LU Quality Inspection (QICC Part 3)	12
3.9	Supplier's Pre-Commissioning Declaration (QICC Part 4)	13
3.10	LU's endorsement of Pre-commissioning completion	14
3.11	LU Power Supply Manager Acceptance (QICC Part 5A)	15
3.12	LU Line / Depot Operations Manager Acceptance (QICC Part 5B)	16
3.13	LU Maintainer Acceptance (QICC Part 6)	16
3.14	LU Head of Power Engineering Acceptance (QICC Part 7)	17
3.15	Head of Power Engineering's Representative	17
3.16	QICC Part 7 Checklist	18
3.17	Conditional Acceptance	18
3.18	Supplier Commissioning Declaration (QICC Parts 8 and 8A)	18
3.19	Sequential Commissioning	19
3.20	LU Assurance Manager Check (QICC Part 9)	20
3.21	Evidence of compliance	21
3.22	LU's right to Witness Pre and Final Commissioning	22
4	Responsibilities	22
4.1	QICC Responsibilities	22
5	Supporting information	23
5.1	Safety considerations	23
6	Informative References	24
6.1	References	24
6.2	Abbreviations	24
6.3	Definitions	25
6.4	Person accountable for the document	25
6.5	Document history	25
7	Attachments	26
7.1	Attachment 1 – Quality Inspection Completion Certificate	26
7.2	Attachment 2 – QICC Part 8A	38
7.3	Attachment 3 – QICC Part 7 Checklist	39
7.4	Not Used	41
7.5	Attachment 5 – MWCC Form	42
7.6	Attachment 6 – Snag List Template	44
Appendix A		45
	Data Pack Contents List Guidance	45

1 Purpose

1.1.1 This guidance document supports the S1900 standard by providing guidance on each clause of the Standard together with informative attachments on particular documents relating to the QICC and MWCC processes. This document is structured such that each clause of the S1900 standard from Clause 2 onwards is given followed by guidance where it is considered appropriate. The clause numbering replicates the numbering used within the S1900 standard for ease of cross-referencing.

1.1.2 In creating this guidance document particular focus has been applied from the Supplier and the Project Manager perspective. The guidance document sets out to expand the S1900 standard into a cohesive process. It identifies potential pitfalls whilst unwrapping some of the local interfaces that are needed to ensure both the Supplier and the Project Team achieve a successful outcome.

Guidance:

This Guidance has been prepared with the users of the standard but particularly the project managers and engineers engaged in power projects on London Underground. This is your key to success and by reading this guidance and owning the outcomes you will be in the best possible position to achieve the correct outcomes, first and every time.

1.1.3 This guidance document is designed to assist in understanding and application of the QICC process detailed in the S1900 standard. It is vitally important for responsible parties and QICC applicants to interface and engage with other QICC signatories and LU stakeholders to ensure that each QICC and associated data pack contains sufficient information to facilitate sign-off at each stage of the process. Collaboration is key to ensure that the QICC and the data pack being presented is well received and is signed off at each process stage in a timely manner. It is an opportunity to demonstrate the Projects' professionalism, quality of workmanship and documentation to the various LU QICC stakeholders.

Note: The QICC process provides certain verification activities as required by S1538, however it is not intended to fully discharge all the requirements of S1538.

2 Scope

2.1 General Scope

2.1.1 This Standard applies to Power equipment, systems and assets for which the LU Head of Power Engineering is accountable.

Note: Assets associated with power that may form part of Works such as Civil, Premises and Fire are to be checked via the competent authorities. However, use of the QICC form and process may be used to indicate assurance from these bodies.

2.1.2 When work involves non-power assets but requires the Commissioning of a supply from a power asset, such as a low voltage ac power supply from a LU substation, this QICC standard shall be applied to the work.

2.1.3 This Standard shall be applied, with reference to 2.1 above, for all Works on the LU power system.

2.1.4 This Standard is not applicable to the hand-back of assets that have been withdrawn from service during non-traffic hours or for maintenance i.e. no material change has been made to the asset in question.

3 Requirements

3.1 General

- 3.1.1** The means by which the purpose of this standard will be met is through the systematic completion of the Quality Inspection Completion Certificate (QICC). The certificate shall be completed and signed at key stages in the process by the responsible parties.
- 3.1.2** The QICC forms which shall be used are enclosed in the Attachments to this document.

Note:

Electronic versions of the QICC forms listed in Attachment 1, Attachment 2 and Attachment 3 of this document are available for download via the LU Management System Library. The form number and latest revision is listed in the header of the respective attachment. The published version of the S1900 Standard and G0900 Guidance document will always refer to the latest revision of the forms.

Guidance:

In order to standardise the process and ensure that the appropriate controls are in place for each stage of the QICC process, the QICC and MWCC forms have been incorporated within the S1900 standard and therefore any changes or modifications to the contents of the forms can only be achieved by revision to the actual S1900 standard.

- 3.1.3** Completion of the QICC is a sequential process which requires the Supplier responsible for a package of Works to provide assurance to LU at various points in the completion of the Works. The QICC provides LU's Head of Power Engineering and others within LU with the minimum assurances required as power assets are commissioned into service. It does not replace the responsibility of a Supplier to ensure that equipment is correctly designed, installed and commissioned prior to being put into service.

Guidance:

The QICC process is a sequential gated process that runs in parallel to the Works. The QICC form is signed at each part or gate and is the formal record that the Works have progressed to that particular stage and the necessary designs, reviews, installation, inspections, testing, commissioning and final records for that particular finite element, have been undertaken by the Supplier responsible for the Works and the required assurance has been provided and reviewed to achieve signature for that particular part.

Guidance:

Although the QICC form is contained within the S1900 standard and therefore the form cannot be modified, it is recognised that there may be certain circumstances when some of the bullet points contained within the different QICC Parts cannot be achieved. In these rare circumstances and only with the expressed prior written approval of the LU's Head of Power Engineering can these be modified or deleted. It should also be noted that the LU's Head of Power Engineering has not delegated this approval to any other party.

Note: The QICC form attached to this document is colour coded to highlight the Parts of the form which are completed by the Supplier to provide assurance to LU (blue), the Parts where LU accepts the Supplier's assurance (yellow) and the independent quality inspections undertaken by LU's Assurance Manager (green).
It is not usual for the LU Managers receiving assurance from the Supplier to have personally checked the Works on site prior to signing a QICC form, except where novel equipment may be concerned. LU Managers instead have a reliance on the quality inspection process and subsequent report or snagging list to provide 'eyes and ears' on the ground.

- 3.1.4** The LU_Supplier shall liaise with LU_Managers receiving assurance early in the Works to explain the nature and design of the works and to agree at an early stage in the process what information, training and other deliverables are adequate for each LU area identified on the QICC form. These agreed lists shall be contained in the data pack.
- 3.1.5** The LU_Project Manager tasked with acting as the LU client for the Works shall liaise with the Supplier and the LU receivers of assurance to ensure that there is early agreement over the information, training and deliverables required for each LU area identified on the QICC form.
- 3.1.6** The LU_Power Supply Manager shall advise the Supplier what information and training are required for operational control.
- 3.1.7** The LU_Line / Depot Operations Manager shall advise the Supplier what information and training are required for line or depot operations staff.
- 3.1.8** The LU_Maintainer shall advise the Supplier what information, training, spares etc. are required for maintenance.

Guidance:

It is essential that early in the Works the LU Project Manager and the Suppliers' Project Manager meet with the LU Network Control Manager and LU Power Supply and Maintenance Manager to discuss and agree what information, training, spares and other deliverables are required to facilitate signature at the associated QICC parts. Any agreement should be formally documented by the Project management team and issued to the meeting attendees as a record of the requirements to be provided.

- 3.1.9** The QICC requirements, process and forms shall be met in full, except where agreement in writing has been reached in advance with the LU_Head of Power Engineering.
- 3.1.10** Each QICC and MWCC shall be allocated a unique reference number. QICC and MWCC reference numbers shall be obtained from the LU_Assurance Manager.

Guidance:

The LU Assurance Manager allocates and issues the QICC and MWCC numbers to each Project. In order to ensure that requests are dealt with in a timely manner, requests are made by the project using a Request for Information (RFI) form. The RFI form can be project specific, although LU PCU team have utilised a standard format on previous projects. The form should contain the following information and should be formally issued via the Project document control. Further guidance can be obtained from the Engineering Assurance Manager.

Site	Plant	Contractor	Scope	Project No	Booking No	Manager
XXXXX Substation	DC Switchboard	A. Contractor	Installation of DC Switchboard, cable tails and associated earthing.	SSR1B	ZZZ-YY-ZZXX	P. Manager

It is essential that the stages and sequence of the Works are fully reviewed to ensure that each finite element is standalone to enable the QICC process to be completed without the reliance of other finite elements of the Works. Large projects have in the past requested hundreds of QICC numbers to cover each finite element. The interface elements for example a high voltage switchboard may also include cable tails to facilitate changeovers. Remote end modifications also need to be considered and included within the scope of the main QICC for the finite element.

- 3.1.11** Where parts of the form require the deletion of a choice between two options for example 'IS NOT / IS SAFE and FIT FOR SERVICE', this shall be done by hand by the person responsible for signing that Part of the form at the point the form is signed.

Guidance:

The QICC form has '**is not / is safe**' strikeouts in the various QICC parts that form part of the providing assurance process. It is important that the Suppliers Engineers have a disciplined approach to ensuring that these are annotated when the specific QICC part is signed.

- 3.1.12** Where a QICC form concerns work on assets which will be maintained by the LU's asset performance power group, the QICC form shall refer to the approved power method statement number or agreed work package plan.

- 3.1.13** Where the installation, Pre-commissioning and Commissioning activities are 'safety critical tasks' the Supplier shall provide the following records to LU for the Supplier's staff undertaking the activities:

- means of identification for carrying out 'safety critical tasks' in line with LU standard S1548; and*
- record or accurate summary of the record to establish that the individual is competent and fit in line with the ROGS Regulations and LU standard S1548.*

Guidance:

The Supplier needs to provide a competency statement for individuals carrying out commissioning activities.

3.2 Minor Works Completion Certificate (MWCC)

- 3.2.1** In the case of Works that are of a minor nature e.g. relocation of small electrical installations and minor alterations to domestic type substation Works; a Minor Works Completion Certificate (MWCC) may be utilised as an alternative to the QICC, subject to prior written agreement of the LU Head of Power Engineering. Any such MWCC offered for use shall be compliant with the requirements of BS 7671 Appendix 6. However, where new equipments are installed and they are subject to LU standards, the QICC requirements shall be met in full.

3.2.2 The basis for use of an MWCC shall be subject to all the following criteria being satisfied:

- a) *Like for like replacement or relocation of minor plant or equipment;*
- b) *Work which is simple to verify by sight, inspection or test; and*
- c) *Work normally taking one shift or less to complete.*

3.2.3 Where a MWCC is used, the MWCC, together with appropriate service sheets, work orders, inspection reports, snag list, test results (if applicable), guarantees and warranties shall be assembled into a job file. The job file shall be accepted and processed by the maintenance organisation to ensure asset records are modified accordingly.

3.3 Categorisation and Management of Snags

3.3.1 The Supplier shall create and manage a single list containing all the identified snags, the snag list. The snag list shall be identified by the QICC number and individual snags shall be given a unique number appended to the snag list number.

Guidance:

The Supplier is required to formally issue a Witness Notice to all interested parties including the LU Project Team and LU Assurance Manager inviting them to attend the Factory Inspection, Site Inspection and Commissioning Tests for each QICC number allocated. Others may also be required to attend the inspection and this depends on the actual Works being inspected. i.e. SCADA; Fire Detection; Ventilation; and Drainage & Pumps would require their representatives to be included in the witness notice. Details of Witness Notice distribution list should be provided by the LU Project manager.

The Witness Notice needs to reference the QICC number and contain information about the inspection type, date & time, applicable standards, inspection site and contact details and be issued to the associated LU Project document control for the attention of the LU Project delivery team and the Power Engineering Assurance team.

The notification period should be in line with contractual requirements but generally requires a minimum of 10 working days advance notice of the inspection dates. The snag list commences at the factory inspection and is used to capture and record snags from the initial FAT through to Commissioning of the equipment into service.

Sufficient time should be allocated to each inspection to ensure that a detailed inspection of the installation and workmanship, as well as equipment compliance and verification can be undertaken. Although this is very much dependent on the type equipment being inspected, as general guidance, four hours should be allowed for each type of equipment being inspected. In order to avoid having to reschedule inspections due to time constraints and workload, it is perhaps advantageous to discuss with the Power Engineering Assurance Manager if the Project is proposing to conduct multiple equipment inspections in one day.

- 3.3.2** All snag lists shall be produced in the format shown in the snag list template in Attachment 6.

Guidance:

In order to facilitate the inspections it is important that the Suppliers personal are available on site during the inspections to operate the switchboard, circuit breakers, earth switches, interchange circuit breakers, operate interlock schemes and remove panels as required by the inspection team.

In order to ensure that snag items can be cleared and verified in a timely manner, the snag description and remedial action should be clear and concise. The description should also reference the snag location, such as, equipment, panel number, front or rear etc.

- 3.3.3** All snags shall be classified to reflect their potential impact on Pre-commissioning, Commissioning and putting into service, as follows:
- a) *Category A - major impact, including safety related issues that prevent the system and equipment from being Pre-commissioned and /or Commissioned;*
 - b) *Category B - will prevent the system and equipment being put into service; and*
 - c) *Category C - minor impact issues which could be cleared following Commissioning within defined and declared timescales.*
- 3.3.4** All category B snags with the exception of those which can only be cleared during final commissioning shall be cleared prior to the completion of Part 4 of the QICC.
- 3.3.5** Where snags are disputed they shall be included in the Supplier's snag list as category B snags until agreement is reached between the Supplier and LU.

Guidance:

A meeting should be arranged between the LU Project Manager, Assurance Manager and the Contractors' Project Manager to resolve any disputed snag items. Evidence and justification should be presented at the meeting to ascertain whether the particular item is or is not a snag. In order to maintain the integrity of the snag list, the disputed snag must remain on the snag list for record purposes with an appropriate statement in the action column outlining the outcome of the meeting and any mitigation required.

- 3.3.6** All outstanding items to be completed, including any conditions raised within any associated concession, shall be clearly identified on the agreed snag list and shall include details as highlighted by the quality inspections. The agreed snag list shall include categorisation of the snags indicating the date by which they shall be cleared.
- 3.3.7** The Supplier's snag list shall be reviewed as part of the quality inspection undertaken in Part 3 of the QICC. Once the snag list is agreed by the LU Assurance Engineer it becomes the agreed snag list.
- 3.3.8** Where issues are identified following the initial Part 3 inspections or by signatories to the QICC form they shall be added to the snag list, noted in the comments box on the QICC form and classified in line with 3.3.3.
- 3.3.9** The Supplier shall ensure that snags are only cleared when there is sufficient and appropriate evidence to do so. The Supplier shall keep records of the clearance of snags such that they can be reviewed by the LU Assurance Manager.
- 3.3.10** Snags are only agreed as complete once they have been evidenced to and accepted by LU.

Guidance:

Snags are submitted as complete by the contractor and are verified by the LU project engineer, who signs the accepted column on the snag list. In order to provide further assurance that the snag list is the latest version and captures the issues raised during inspections, the LU project engineer also signs the last page of the snag list prior to presentation at the QICC Part 5 & 6 review surgery. Where snag items would be inaccessible as the installation work progresses. Then consideration should be given to providing supporting evidence i.e. photographic evidence in the data pack that the snag item has been cleared. This may be particularly relevant to cable through joints, thus providing additional evidence of the joint make up and earthing arrangements.

3.4 Special Considerations when Independent Quality Inspection is not practicable

- 3.4.1** For certain types of work the nature of the work makes it impracticable to facilitate an independent quality inspection between the installation of equipment and the final commissioning of equipment.

Guidance:

This normally applies to the changeover of feeder circuits, where the actual spike, cut and divert of the circuit from the old to new equipment and the jointing is being completed during the outage in engineering hours. In these situations strong assurance arrangements need to be agreed and in place. This could involve utilising very experienced cable jointers and engineers during the cabling Works or verification of the jointing or termination can be verified by testing.

It should be noted that the occasions where this occurs is rare and that the majority of Works can be inspected prior to the final commissioning stage. It is only really the phasing joints and final terminations that would fall into this category. Cable runs are normally sections of Works being installed over several weeks and as such inspections should be planned well in advance.

- 3.4.2** In these cases the agreement of the Head of Power Engineering shall be sought to not undertake an independent quality inspection.
- 3.4.3** For this type of work special emphasis shall be placed on identifying the tests, checks and quality inspections which need to be undertaken during the Commissioning of equipment so as to mitigate the risk associated with the Works.
- 3.4.4** The checks, tests and inspections shall be set out in Part 8 of the QICC in advance of the work. Completion of the tests, checks and inspections during the Commissioning of the works shall be used to ensure that Works are safe and fit before they are put into service.
- 3.4.5** Where an independent quality inspection is not practicable to undertake the Supplier shall, unless agreed otherwise with the LU Project Manager, provide photographic evidence at the key points during the final Commissioning of the work and include this evidence as part of the data pack.

Note: It is particularly important to ensure that Works on traction power supplies are adequately checked prior to being made live.

3.5 Scope of QICC

- 3.5.1** The scope shall be defined such that asset Commissioning can be achieved in realistic timescales and without undue delay.

Note: Determining the scope of the QICC is critical to achieve successful consents.

- 3.5.2** The chosen scope shall be such that it shall not result in prolongation of the process and / or a failure to properly follow all the requirements of the process as a result of being too extensive.

Note: This usually involves breaking down large Projects into smaller more manageable Project elements.

For repetitive work within the same overall Project scope, multiple QICC's could result if the QICC scope is too limited. The QICC process as illustrated and described in the Commissioning part of the QICC form and defined in Clause 3.19 may be used in such situations by agreement with the LU Head of Power Engineering.

Guidance:

In order to avoid multiple QICC's covering repetitive Works it may be more appropriate to utilise the QICC Part 8A to cover this type of work as defined in Clause 3.19 Sequential Commissioning, provided this is formally agreed with the LU Head of Power Engineering.

3.6 Supplier Works Description & Detailed Design Declaration (QICC Part 1)

- 3.6.1** The scope of Works for which the QICC applies shall be clearly defined and included within Part 1 of the QICC. This shall include a list of applicable project specifications and the identification of the sites where the Works are taking place.

Note: Care needs to be exercised when grouping works at different sites under a single QICC to ensure that implementation of a single QICC is practical.

Guidance:

The scope of the finite element needs to include all installation Works associated with the QICC. Depending on the type of equipment and how the Works are being implemented, for an 11kV Switchboard it should include the cables tails and through joints that may be installed as part of the Works to facilitate the changeover sequence, remote end protection modifications, cable box modifications and local earthing connections all need to be captured within Part 1 of the QICC form.

Guidance:

Where projects are providing new SCADA network communication switches as part of a SCADA installation, these should be subject to a separate QICC document and SAT. This is to allow the network design/topology/connection/maintenance/monitoring to be Quality Assured and therefore controlled before any equipment is connected to the network switches in question. If a wholesale extension to the SCADA network is being implemented, a QICC document covering all network switches on the network extension shall be submitted, with individual QICC Part 8A signatures for each network switch connection node. The overall QICC shall not be signed at Part 8 until functionality of the network extension and its expected resilience has been proven.

- 3.6.2** The Supplier's Designer for the Works shall confirm, following examination of the relevant documentation and the implementation of an appropriate design review process that the detailed design for the Works is complete, has been checked and is approved.
- 3.6.3** Applicable design references shall be included.
- 3.6.4** The Supplier's Designer shall confirm following review, that the Works are suitable to progress to installation.

3.6.5 The Supplier's Designer shall ensure that:

- a) *the designs for the Works are compliant with the applicable Standards and Specifications (except where concessions are in place), and the requirements of the relevant contract;*
- b) *LU has been given the opportunity to review the design; and*
- c) *LU has 'accepted' or 'accepted except as noted' the design of the Works and all LU design review transmittal responses are included in item 2 of the data pack.*

3.6.6 The Supplier's Designer shall ensure that the results of the checks, approvals and compliance statements required by Clause 3.6 are appropriately documented.**Guidance:**

When a Project has multiple interface elements and sub-elements these may involve using multiple Designers. The Designer responsible for the Power interface design and who will provide the project warranty shall be deemed as the party that signs the QICC Part 1.

Example: A large prime contractor has a contract to re-develop a LU major tube station and surrounding area, as part of this redevelopment the power substation equipment requires upgrading and replacing. The prime contractor then sub-contracts this element of the Works out to an electrical contracting company to provide the detail design and installation of the replacement power substation equipment. The sub contractor has their own design department but also sub contract some specialist elements of the design out. The party signing QICC Part 1 for the power substation upgrade and replacement Works would be the electrical contracting company's design department Manager.

3.7 Supplier Installation Declaration (QICC Part 2)**3.7.1** The Supplier's nominated senior Manager accountable for the Works shall confirm that the Works have been installed and are substantially complete in accordance with the approved design.**3.7.2** The Supplier's nominated senior Manager accountable for the Works shall confirm that the Works are safe and fit to progress to Quality Inspection and Pre-commissioning.**3.7.3** The Supplier's nominated senior Manager shall ensure the following and provide adequate supporting information:

- a) *all installation tests are complete and results documented;*
- b) *all identified installation snags are recorded on the snag list and categorised in line with 3.3.3;*
- c) *that all category A snags are cleared;*
- d) *that the installed Works are compliant with applicable standards, except where concessions are in place as listed in the QICC documentation and the requirements of the relevant contract;*
- e) *where the installation activity was a 'safety critical task' those undertaking the activity were competent and fit to undertake the work or were supervised by someone who was, in line with the ROGS Regulations and LU standard S1548; and*
- f) *sufficient data and information to enable Quality Inspection and Pre-commissioning to proceed subject to other related checks.*

3.7.4 Installation tests and checks, for example bus bar resistance tests, are an essential part of the installation process and these shall be completed prior to the signature of Part 2 of the QICC.

Guidance:

Substantially complete means that all major components, circuit breakers, voltage transformers, protection relays, interlocking schemes, remote end protection modifications, earthing, test bays, labelling and associated circuit breaker trolleys are installed and complete. Where cable tails are used to facilitate the circuit changeover and transfer from an existing switchboard to a new switchboard, these need to be installed and made off at the new switchboard end awaiting final termination. Any associated cable containment system is complete as far as practicable throughout the run up to the jointing location. It is important to ensure that the major components have been included within the inspection process.

Adequate supporting information for the above points should be included within the data pack under the relevant data pack section. It is not intended to include large volumes of information in the data pack but to only provide sufficient information to facilitate signature at the various QICC Parts. This includes cross-referencing to approved documentation or test procedures and test results rather than including a copy of these documents within the data pack. As an example the complete list of drawings should be referenced in the data pack but only the Single Line Diagrams (SLDs), General Arrangements (GA) and layouts are normally included as supporting information.

3.8 LU Quality Inspection (QICC Part 3)

3.8.1 An independent check shall be undertaken by the LU Assurance Manager, or equivalent personnel with similar responsibilities, such as a quality inspector, to confirm:

- a) *that appropriate quality checks in accordance with standards and processes have been followed during the undertaking of the Works;*
- b) *if appropriate an inspection has been undertaken at the manufacturing stage to ensure adequate quality of work. This may include witnessing of manufacture and type testing as appropriate for assurance of the Works; and*
- c) *an inspection of the installation Works has been undertaken and that any deficiencies have been identified and classified on a snag list.*

Guidance:

The Engineering Assurance team is developing inspection checklists to facilitate the inspection of major equipments being supplied under the power upgrade Projects. If Projects or Suppliers wish to utilise these checklists as part of their inspection process please request via the Engineering Assurance Manager.

Inspectors must be competent to undertake FAT & SAT inspections, having a skill set to understand the various Standards and technical specifications together with knowledge of the installation techniques being used and the ability to systematically conduct an inspection with multiple parties in attendance.

3.8.2 Once the Supplier's snag list has been checked by the LU Assurance Manager as part of the Quality Inspection it becomes the agreed snag list.

Note: It is important that all parties understand the importance of these outputs as they form the basis for assurance to all parties at the various subsequent stages.

3.8.3 Inspection Report and agreed snag list as appropriate to demonstrate adequate technical assurance, shall be included with the information forming the QICC data pack presented to the LU receivers of assurance in subsequent Parts of the QICC.

Guidance:

On substantial completion of a finite element of the Works, a joint inspection of the Works is to be undertaken by the Contractor, LU Assurance Team and the LU Project Management Team prior to QICC Part 3 signature. The issues identified during the inspection are to be reviewed during a site post inspection close out meeting to finalise snags and categorisation. The snag list is updated and formally issued to LU Project team and the Engineering Assurance team. There may be category B snags that can only be completed during the actual commissioning stage, these items may necessitate a further verification inspection of the completed installation works on the actual night. This verification inspection could be conducted by the commissioning engineer or others in attendance during the final commissioning stage.

Guidance:

The LU Assurance Engineers will produce and issue an inspection report base on the items identified during the joint inspection that has been undertaken. The LU inspection report(s), Contractors' report(s) and the agreed QICC snag list shall be included within the data pack as evidence that the Works have been inspected.

Guidance:

Shortly after the QICC joint inspection, the Supplier is required to arrange a convenient time with the LU Assurance Manager for the data pack and associated QICC form to be reviewed and signed at QICC Part 3. The data pack should be submitted for review two or three days prior to being reviewed at QICC Part 4. As part of the overall assurance and because the time frame between Part 3 and Part 7 can be short, the LU Assurance Engineers also conduct a overview of the data pack to ensure that the contents and quality of the information contained within the data pack are sufficient to enable progression through the remaining QICC Parts.

The Assurance team use a local QICC Part 3 checklist that has been developed over time to ensure that the salient points are provided and evidence is included in the data pack.

3.9 Supplier's Pre-Commissioning Declaration (QICC Part 4)

3.9.1 The Supplier's Project Manager or Project Engineer accountable for the Works shall confirm that all Pre-commissioning tests have been completed satisfactorily and the results have been checked and are acceptable.

3.9.2 It shall also be confirmed that the Works are safe and fit for Commissioning.

3.9.3 The Supplier's Project Manager or Project Engineer accountable for the Works shall ensure that:

- a) *the only category B snags outstanding are those which can only be cleared at Commissioning;*
- b) *where the Works involve substation domestic supplies all electrical inspection and test certificates to BS 7671 are complete and issued;*
- c) *arrangements have been made to make any changes required to LU asset database including any appropriate deletions;*
- d) *sufficient spares, special tools and equipment are with the Maintenance Manager;*
- e) *sufficient documentation and training is in place to ensure the ongoing healthy condition and performance of the installed assets;*
- f) *SCADA end to end testing is complete, except where it cannot take place until the Commissioning due to the nature of the Works;*

- g) *the protection study for the equipment concerned is complete, reviewed and approved;*
- h) *the QICC Part 7 checklist is in place;*
- i) *where Pre-commissioning was a 'safety critical task' those undertaking the activity were competent and fit to undertake the work or were supervised and checked by someone who was, in line with the ROGS Regulations and LU standard S1548; and*
- j) *sufficient data and information has been made available on site and in the data pack to enable subsequent parts of the QICC to proceed (as a minimum this shall include the final draft operation and maintenance manuals and the red line drawings).*

Guidance:

In order to ensure that the associated protection study is produced and completed in a timely manner, reference should be made to both the AC Electrical Protection Requirements Standard S1110 and the DC Protection and Commissioning Standard S1111.

- 3.9.4** All Pre-commissioning tests and checks shall be completed before Part 4 of the QICC is signed, with the exception of those, which by their very nature, need to be undertaken as the equipment is Commissioned and put into service.

3.10 LU's endorsement of Pre-commissioning completion

- 3.10.1** The LU Project Manager who is tasked with acting as LU client for the Works shall endorse the Supplier's declaration in Part 4 of the QICC form that the Works are ready to progress to Commissioning.

Guidance:

Where the Supplier's role has been undertaken by LU directly, QICC Part 4 should not be signed by the same person in both parts of the form.

- 3.10.2** Prior to endorsing the Supplier's declaration, the LU Project Manager shall:

- a) *check the validity of the Supplier's declaration in Part 4 of the QICC form, particularly the detailed items identified in Part 4 of the form;*
- b) *meet with the Supplier to review progress of the Works to date;*
- c) *confirm with the Supplier by annotation of Part 8 or 8A of the QICC form whether the final Commissioning works contain any safety critical elements;*
- d) *discuss and agree with the Supplier whether Part 5B and the additional Part 6 are required; and*
- e) *where the final Commissioning is a 'safety critical task', seek confirmation from the Supplier that the Supplier's Commissioning Engineer is competent and fit to undertake the work or is going to be supervised and checked by someone who is, in line with the ROGS Regulations and LU standard S1548.*

Guidance:

The Supplier needs to identify where the final Commissioning is deemed a 'safety critical task' and provided a declaration and confirmation in the data pack that the Supplier's Commissioning Engineer is competent and fit to undertake the works as defined in the LU Standard S1548 and the Railways and Other Guided Transport Systems (ROGS) Regulation.

- 3.10.3** Where Parts 5B and / or additional 6 are not required the LU Project Manager shall annotate these parts as 'not required' at the same time as Part 4 is endorsed.

- 3.10.4** The LU_Project Manager shall assist the LU receivers of assurance to gain the necessary assurance by liaising with the Supplier and the relevant LU managers to ensure that the Supplier has fully discharged the agreed list of adequate requirements referred to in various parts of the QICC form and that the Works are delivered in accordance with this standard.

Guidance:

Projects are normally supported via the Power & Cooling Upgrades (PCU) Team and the LU_Project Manager is defined as the PCU Manager or Engineer who is responsible for delivering or supporting the Project.

Note:

This stage of the sequential process offers the opportunity for detailed planning of the subsequent stages to be checked to enable a smooth work flow. For example, decisions on what tests or which works require witnessing by LU and by whom can be taken at this stage.

Guidance:

The QICC data pack is submitted to the PCU Team for review at least one week prior to being submitted for the QICC Part 5A and 6 review surgery. The Supplier shall review the nature and number of category B snags to ensure that those outstanding can only be cleared during the final Commissioning. Category B snags that can be cleared prior to the final Commissioning shall be completed prior to submitting.

3.11 LU Power Supply Manager Acceptance (QICC Part 5A)

- 3.11.1** Where Works include equipment for which the LU_Power Supply Manager has operational control Part 5A of the QICC shall be completed.
- 3.11.2** The LU manager responsible for the operational control of the equipment forming part of the Works shall confirm:
- that an agreed list of adequate documentation and training has been received / is in place;*
 - that operational control can be undertaken safely following satisfactory completion of all appropriate Commissioning checks; and*
 - responsibility for the future operational control of the equipment following satisfactory completion of all appropriate Commissioning checks.*

Guidance:

A QICC surgery is held each week to facilitate the review of the data packs and signing of the QICC at Parts 5 and Parts 6. These are normally held every Wednesday and the Supplier should request / submit via the LU PUC team Project Manager the data packs to be included on the QICC surgery agenda; time scales and date changes may apply for the agenda and QICC surgery, but the data packs should be supplied at least one week prior to the QICC surgery.

The Suppliers Project Engineer responsible for the Works should attend the QICC surgery to ensure that any technical queries that are raised during the review can be adequately discussed and appropriate assurances provided. Failure to provide such technical expertise during the review may result in the QICC data pack not being reviewed and could delay the planned Works. Testing procedures referenced or included in the QICC data pack should fully cover the proposed Works and clearly show the pass / fail criteria.