

Category 1 Standard

S1100 Load Change Application Requirements for Electrical, Compressed Air and other Services



Please read the Written Notices
attached to this standard

Issue No.: A5

Issue date: August 2014
Review date: August 2019

MAYOR OF LONDON

 **Documents**
Document Sharing Hub



Contents

1	Purpose	3
2	Scope	3
3	Requirements	3
3.1	General	3
3.2	LU Power System Load Change Applications (excluding Traction Loads)	5
3.3	Traction Load Change Applications	6
3.4	Applications for Public Utility Connections	6
3.5	Project Completion and Reporting	7
3.6	Requirements for Matching Loads to Low Voltage Supplies	8
3.7	Evidence of Compliance	8
4	Supporting information	8
4.1	Responsibilities	8
4.2	Safety considerations	9
4.3	Forms	10
4.4	Additional Guidance Notes	11
4.5	Information Required for Power Work Request Form	13
5	References	14
5.1	References	14
5.2	Abbreviations	14
5.3	Definitions	14
5.4	Technical content manager	16
5.5	Document history	16
7	Attachments	17
8	Current Written Notices attached to this standard	19



1 Purpose

- 1.1 The purpose of this Standard is to define the requirements and process to be followed for the connection or disconnection of electrical loads, compressed air, gas and water supplies.

2 Scope

- 2.1 For electricity or compressed air supplies, this Standard applies to:
- a) all LU properties and areas leased to third parties that are supplied from the Distribution Network Operator (DNO) systems or via the LU Power System;
 - b) all staff, their Managers and Supervisors, including staff contracted to LU, requiring new or modified power or compressed air loads or circuits;
 - c) private sector companies working on behalf of LU requiring new or modified power and compressed air loads or circuits;
 - d) the following supplies provided from the LU Power System, a comprehensive list of which is given in Standard S1105:
 - I) 630V and 750V d.c. supplies;
 - II) 400V a.c. three-phase and neutral and 230V a.c. single-phase supplies;
 - III) 440V and 600V a.c. supplies for signalling (including non-50Hz supplies);
 - IV) low voltage d.c. supplies;
 - V) Local Emergency Power Supply (LEPS) systems specified in S1105 ;
 - VI) Central Emergency Power Supply (CEPS) systems specified in S1105 ;
 - VII) Compressed air supplies specified in S1105 ;
 - VIII) the 11kV a.c. supply (Docklands Light Railway only); and
 - e) the connection of loads or equipment to electrical supplies provided by any DNO.
- 2.2 For gas or water supplies, this Standard applies to the Utility Supplier's Delivery Points and approval in no way indicates that the LU Power System is capable of supporting the modified load.
- 2.3 This Standard does not apply to load changes which take place as part of the "day-to-day" switching operations on the LU Power System.
- 2.4 This issue of the standard replaces S1100-A4.

3 Requirements

3.1 General

Note: Specific reference should be made to Standard S1105, as this details the required system performance from the LU Power System, and 1-112 which details the requirements placed on LU's and Direct Users to submit Annual Loading Plans. The inclusion of information within those plans does not relieve the Applicant's responsibility for submitting Load Change Applications.

- 3.1.1 LU Power Load Application Engineer's approval shall be obtained prior to any load changes that impacts on the LU and DNO systems.



- 3.1.2 If a load is to be supplied via the LU Power System the Applicant shall ensure that the system is capable of supporting the load. The Applicant shall comply with the relevant LU procedure for Load Change Applications fed via any LU system.
- 3.1.3 Although low voltage DC supplies are specified in Standard S1105, they are no longer available. If such supplies be found then LU Power should be informed.
- 3.1.4 Applications for new permanent non-traction DC loads shall be rejected by the LU Power Load Application Engineer.

Note: It is an LU requirement that all non-traction DC loads are eliminated to remove the risk associated with such supplies. It is accepted that this will take some years to achieve, but as and when systems are renewed, altered or replaced they should be connected to an LVAC supply.

- 3.1.5 Applications for Load Changes in respect of the signalling, compressed air or 11kV supplies shall be discussed with the LU System Capacity Load Application Engineer prior to submission of a formal application.

Note: LU Power System Minor Load Changes are increases in load which can be accommodated within the Firm Capacity of the Relevant Point, or decreases in load which do not result in a reduction in the Firm Service Capacity. All other Load Changes are classified as Major Load Changes and require either the submission of a Power Work Request Form or appropriate commercial arrangements to be agreed with LU: this includes the provision of a new Delivery Point. DNO Minor Load Changes are increases which can be accommodated within the Agreed Capacity of the Relevant Point, or decreases in load, which do not result in a reduction in the contract banding level. All other Load Changes are classified as Major Load Changes.

- 3.1.6 For all Load Change Applications which are classed as a Major Load Change, the Applicant shall approach the LU Power Load Application Engineer for details of the information necessary to either compile and submit a Power Work Request Form or progress the arrangements for new or upgraded Delivery Points to be made available where applicable.

Note: Projects that have a significant impact on the power supply system shall be defined as Major Applications. The timescales associated with implementing Major Load Change Applications can be significant; hence the LU Power Load Application Engineer should be consulted at the earliest opportunity. For existing infrastructure, a Power Work Request Form will require an accompanying Load Application rejection.

- 3.1.7 Applications for new or modified loads or circuits shall be made by completing the relevant electronic Word Format form, located using the hyperlink given in section 4.3, and e-mailing to the LU Power Load Application Engineer's mailbox loadapplications@tfl.gov.uk. The LU System Delivery Point, as referenced in S1105, or the DNO supply identification must be clearly identified in the Load Change Application Form. This shall apply to load increases and decreases whether permanent or temporary.
- 3.1.8 Load reductions on the signalling, compressed air, non-traction DC and LVAC systems shall be notified to the LU Power Load Application Engineer, including when supplies are no longer required.
- 3.1.9 New loads that require supply from the DNO, gas or water supplier shall be made to the LU Power Load Application Engineer on a completed Utility Form. For minor changes within the capacity of the existing system the application shall be processed within 4 weeks by the Power Utilities Manager.
- 3.1.10 If dual electricity supplies (both the DNO and the LU Power System) are required to support the load, the Applicant must submit both Load Application Forms A and D, and an OLBI Form B where applicable, to the LU Power Load Application Engineer.



The Applicant must state the normal point of supply and the load transfer requirement under loss of the normal supply.

- 3.1.11 Where a load change involves the connection of Variable Speed Drive or Soft Start motor controllers, the harmonic characteristics of the equipment shall be provided with the Load Change Application to allow an assessment to be carried out in accordance with Engineering Recommendation G5/4.
- 3.1.12 For all load changes the applicant shall ensure that connected loads have been balanced across the three phases of supply in accordance with Engineering Recommendation P29 Planning limits for voltage unbalance in the United Kingdom for 132kV and below.
- 3.1.13 The LU Power Load Application Engineer, or authorised deputy, will be the point of contact for all Applicants requiring advice and guidance on the submission of Load Change Applications involving the LU Power System.
- 3.1.14 The results of the equipment resilience assessment as required in LU Standard 1-123 shall be recorded by the Applicant on the appropriate Load Change Application form.

3.2 LU Power System Load Change Applications (excluding Traction Loads)

- 3.2.1 All applications for changes to loads supplied from the compressed air main, signalling supply, DC non-traction (temporary) or LVAC systems shall be made using the relevant application forms (see section 4.3) and submitted to the LU Power Load Application Engineer, who shall gain a response from the LU System Capacity Load Application Engineer within 4-weeks.
- 3.2.2 In accordance with LU's desire to remove non-traction DC loads, only temporary load requests of this nature should be made. The request must state the timescale over which the connection will be required up to a maximum of six months.
- 3.2.3 The LU Power Load Application Engineer may return the application if it is found that the information supplied is insufficient. A clear description of the missing information shall accompany the returned application.
- 3.2.4 Where a Load Change Application is made against an LU Power System LVAC Delivery Point, it is the responsibility of the Applicant to carry out a load flow study to confirm the voltage and equipment rating adequacy of the LVAC system supplying the load in accordance with LU Standards. Where the maximum demand applied for exceeds 10kVA, confirmation and sign off of this load flow study must be included by the Applicant within the Load Change Application.
- 3.2.5 Where a Load Change Application is made against an LU Power System LVAC Delivery Point, it is the responsibility of LU Power to undertake a protection study to confirm the adequacy of the LU Power System protective device supplying the load. Where the maximum demand applied for exceeds 25kVA, confirmation and sign off of this protection study must be included by LU within the response to the Applicant.
- 3.2.6 Applications classified by the LU Power Load Application Engineer as Major Load Change Applications, shall be returned to the Applicant together with notification that a Power Work Request Form submission is required prior to implementation of the Load Change requested.
- 3.2.7 Where applicable to clause 3.2.6, the applicant shall send a completed Power Work Request Form, as well as the rejected load application, directly to the Senior Delivery



Manager – Power and Stations, and a copy to LU Load Engineers and LU System Capacity.

- 3.2.8 The Senior Delivery Manager – Power and Stations will act as the intermediary between the LU Design Engineering team, LU Project Engineers and the Applicant, to enable the preparation of an outline proposal / estimate.
- 3.2.9 The Framework Contract shall then be set up by the Senior Delivery Manager – Power and Stations and discussions between the parties shall establish the feasibility and cost. The Applicant shall request implementation details from LU and define any particular details to be addressed.
- 3.2.10 Applicants have the opportunity to comment on the LU implementation details and then shall inform the Senior Delivery Manager – Power and Stations if they wish to proceed, or not, and how the works are to be funded. The Senior Delivery Manager – Power and Stations shall inform LU System Capacity and LU Load Engineers of the decision.

3.3 Traction Load Change Applications

- 3.3.1 All applications for changes to the traction load shall be made by the Applicant using the relevant form (see section 4.3) to the LU Power Load Application Engineer. Rolling stock refurbishment and replacement may have a significant impact on the power supply system and Applicants shall contact the LU Power Load Application Engineer at the earliest opportunity to discuss the impact of such changes.
- 3.3.2 Traction load changes, such as replacement of train fleets, can result in major up-grades to the Power Supply System. This can take many years to plan and implement, and as such the delivery of design information to the LU Power Team is usually submitted outside the Load Application process. For changes in train timetables, Load Application should be submitted as soon as intended timetable changes are known.
- 3.3.3 The LU Power Load Application Engineer shall inform the Applicant whether the Traction Load Change Application was classified as Minor or Major.

3.4 Applications for Public Utility Connections

- 3.4.1 Where a Utility Provider's supply is required to support a load, the Applicant shall submit a completed Utility Form (see section 4.3) to the LU Power Load Application Engineer. A separate application is required for each Load Change, upgrade or new supply.
- 3.4.2 The LU Power Load Application Engineer shall arrange for the application to be reviewed and if necessary returned to the Applicant, should additional information be required. Once the Utility Form has been completed to the LU Power Load Application Engineer's satisfaction he shall process the Application.
- 3.4.3 Upon receipt of the completed Utility Form D from the LU Load Application Engineer, the LU Power Utilities Manager shall ascertain whether the existing supply has sufficient capacity. If this information is unavailable, the LU Power Utilities Manager shall refer to the Utility Provider for advice or request the Applicant to undertake the required load measurements.
- 3.4.4 If there is capacity available and the Load Change Application is classed as Minor then the Applicant shall be advised that the additional load can be connected.
- 3.4.5 It is the responsibility of the Applicant to ensure that the connection is made into a suitable safe location with the Landlord's approval.