
Electrical Services Isolation and Switching Policy

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UCL Estates Electrical Services Isolation and Switching Policy

Version Control

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V 1.0	05/06/2015	First draft	L D Markwell	<i>[Signature]</i>	<i>[Signature]</i>

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1.0 Introduction

The University recognises its statutory obligations under the Health & Safety at Work Act 1974, The Management of Health & Safety at Work Regulations 1999 and The Electricity at Work Regulations 1989 to identify and control the risks to staff, contractors and electrical and other maintenance operatives and engineers on site from exposure to electrical dangers. It aims to do this by having procedures in place which provide for the safe operation, switching and maintenance and the inspection and testing of electrical systems and equipment to prevent such danger.

This policy outlines systems and procedures to control the risks of danger from electrical fires, burns or electric shock from the operation and maintenance of the university's HV and LV electrical systems and equipment.

For the purposes of this standard "electrical systems and equipment" are defined as anything used, installed to be used or intended to be used to generate, provide, transform, rectify, convert, conduct, distribute, control, store, measure or use electrical energy, and this includes high voltage and low voltage fixed electrical installations and equipment and "portable appliances" or mobile in-service electrical equipment connected to the electrical system. Also, for the purposes of this standard "low voltage" is defined as up to 1 000V ac or 1 500 V dc, and high voltage is anything above this level. (Extra Low Voltage falls within the Low Voltage definition).

The Electricity at Work Regulations defines isolation as:

"Isolation" means the disconnection and separation of the electrical equipment from every source of electrical energy in such a way that this disconnection and separation is secure.

This applies to all voltages. Generally an isolator must be able to break and make the load current (an "off-load" device would be suitable if it is only operated off load), it must have a minimum clear contact gap opening when off and have clear indication of "On/Off" directly operated from the switch mechanism. It must also be capable of being secured in position (generally "Off" position) by a locking device. Not all switchgear or distribution equipment is suitable to use as an isolator or to be secured by a lock so the proposed points for secure isolation for a project must be identified and agreed by all parties, as for safety it may be necessary to isolate further "up-line" and isolate more than the anticipated system or equipment.

In LV systems the word "disconnecter" is now being used instead of "Isolator" in some systems, but generally the requirements for both are similar and the device manufacturer should be consulted for detailed clarification. See BS EN 60947 "Specification for low-voltage switch-gear and control-gear" for specific details, and in accordance with this BS devices that are suitable for isolation are marked with the following symbol on the device:



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Isolation devices must be secure to prevent unauthorised or accidental operation. The use of tape, warning labels, the removal of fuses etc. on LV systems is not acceptable and a secure locking device such as a padlock, with a secure mechanism and a single key must be used.

Specific trained and experienced persons are to be selected and appointed by the UCL Estates Authorising Engineer as “Authorised Persons” and “Competent Persons” to carry out risk assessments, prepare method statements and switching schedules, carry out isolations and switching and issue work permits. These requirements are more fully detailed in the UCL Estates Authorisation of Technical Competence and UCL Estates Electrical Services Policies and the Electrical Services and Isolation and Switching Standard Operating Procedures which form part of this Policy.

The switching risk assessment required before any operations must include the requirements necessary to protect operating personnel and “Arc flash” protection PPE may be necessary. The provision of rubber matting in switchrooms is not a suitable safety precaution as the switchgear itself should be safe to operate.

2.0 Purpose

The purpose of this document is to detail the UCL management arrangements to be followed to ensure compliance with its legal duty to control the risk associated with the dangers of electrical fires, burns or electric shock and covers the following:

- Roles and responsibilities
- Records
- Training
- Monitoring & review

3.0 Scope

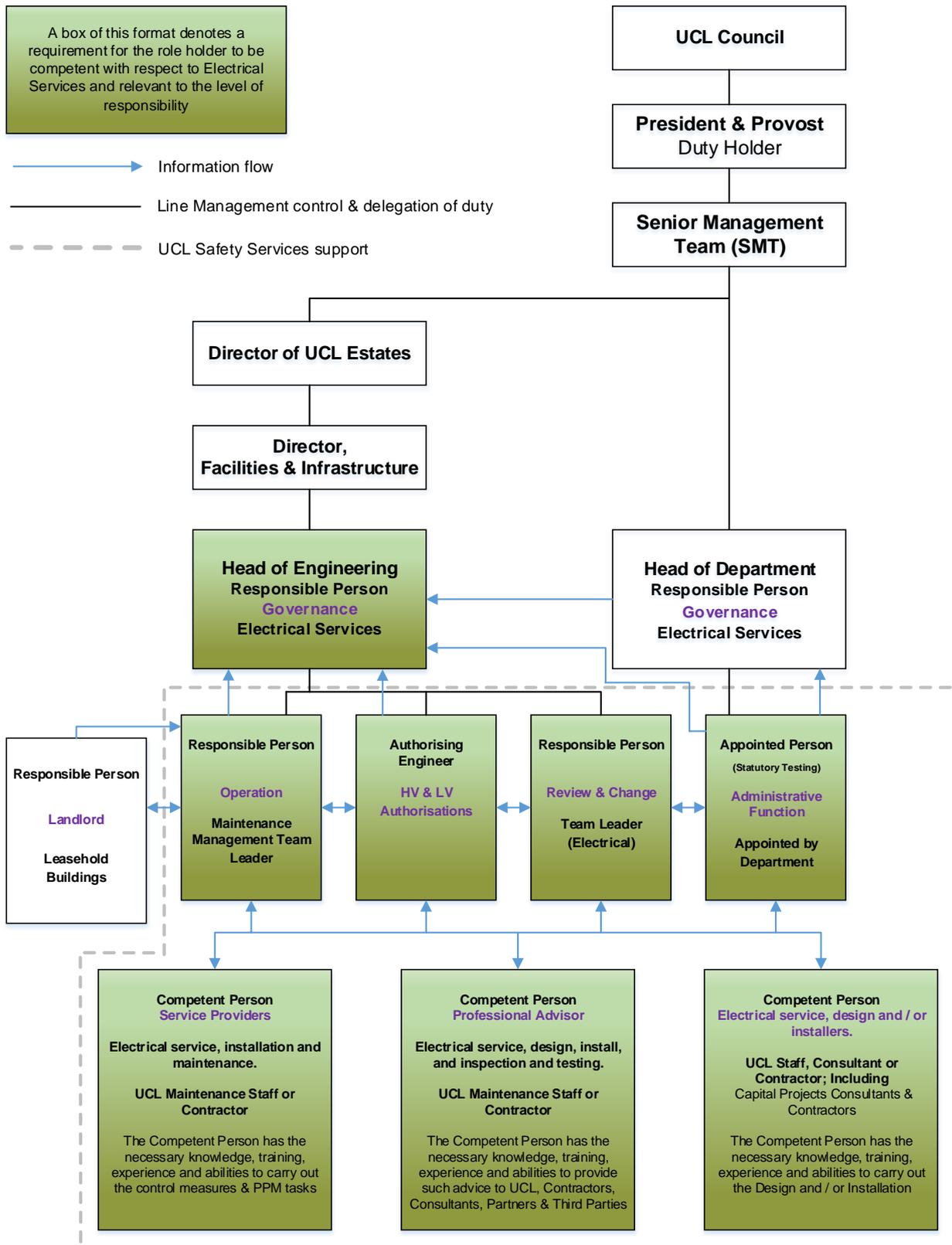
This document details how UCL will address the issue of the safety of electrical systems and equipment and the exposure of persons to electrical dangers. The University has a duty of care to all staff, contractors and electrical and other maintenance operatives and engineers on site across its entire Estate and as such, this Estates Policy shall be applicable to all UCL UK buildings, as listed on the UCL Building Register.

The only exception to this is with regards to leasehold buildings, where UCL does not hold the maintenance or repair obligations. In such areas, the UCL Responsible Person – Electrical Systems and Equipment Safety Governance shall ensure that the Landlord is carrying out such tasks to the same level of conformity and diligence.

Where UCL has members of staff and students using these buildings there is a duty of care to ensure that the duty holder in those buildings has adequate risk assessments and management in place for controlling electrical safety risks, or that UCL completes an assessment for the area under our control.

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4.0 Management responsibilities



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4.1 Roles and responsibilities

The principal responsibilities for the management of health and safety are stated in the UCL Safety Policy. Specific responsibilities relating to the management of electrical systems and equipment are stated below.

4.1.1 UCL Council – Duty Holder

UCL Council, as the employer, has the ultimate responsibility for health and safety and is the duty holder for UCL.

UCL Council has delegated the duty of the day-to-day running of UCL, which includes the management of health and safety, to the President and Provost.

4.1.2 The President and Provost

The President and Provost is the duty holder responsible to UCL Council for the day-to-day duty holder responsibilities of UCL in all of its activities, including the safe management of electrical systems and equipment.

The role takes overall responsibility to ensure that the standard for the management of electrical systems and equipment is implemented and that appropriate funding is made available to carry out works.

The Council has constituted the Health & Safety Committee (HSC) to determine a policy framework for health and safety and the executive arrangements therein, which includes the management of electrical systems and equipment.

4.1.3 Senior Management Team

The SMT are responsible to the Council for the planning, consultation and dissemination of the arrangements made within this Estates Policy and shall maintain details of appointees with responsibilities for the management of electrical systems and equipment and the reporting of relevant information to UCL Estates.

4.1.4 UCL Safety Services

UCL Safety Services are responsible for the provision of independent competent safety advice and for reviewing departmental organisation and arrangements.

4.1.5 UCL Director of Estates

The UCL Director of Estates has responsibility for the strategy and budget allocation for the management of the safety of electrical systems and equipment at UCL.

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The UCL Director of Estates through the Director of Engineering and Faculty Directors is responsible for day-to-day management control of electrical systems and equipment with the technical support from Safety Services.

4.1.6 Director, Facilities & Infrastructure

The Director, Facilities & Infrastructure is responsible for the allocation of finances and resources for the assets under the Directors control which are subject to potential dangers from electrical systems and equipment.

The Director allocates resources to ensure training and competency is sufficient and the required PPE is provided for the responsible persons to undertake their duties.

4.1.7 Head of Engineering – Responsible Person - Electrical Systems and Equipment Safety Governance

In all instances the term ‘Responsible Person’, and the associated duties, apply equally to any nominated Deputy formally appointed to act on all occasions when the nominated Responsible Person is unavailable.

The Head of Engineering has managerial responsibility for the governance of electrical systems and equipment risk compliance and providing supervision for implementation of the precautions throughout the UCL estate through:

- Managerial responsibility for the UCL Estates Policy and SOP for the management of UCL’s, electrical systems and equipment risks.
- Appointing, in writing, ‘Responsible Persons’ to be responsible for the day-to-day management of UCL’s electrical systems and equipment risks and compliance with statutory regulations, current standards and requirements, UCL Policy and Standard Operating Procedure.
- Ensuring that the Responsible Persons are aware of their roles and responsibilities and that they are competent to carry them out.

The full details, expectations and requirements of this role are contained within the UCL Electrical Systems and Equipment Standard Operating Procedure, which is controlled by UCL Engineering, Maintenance and Infrastructure. The Standard Operating Procedure forms part of this policy.

4.1.8 Responsible Person – Electrical Systems and Equipment - Operation

In all instances the term ‘Responsible Person’, and the associated duties, apply equally to any nominated Deputy formally appointed to act on all occasions when the nominated Responsible Person is unavailable.

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The Responsible Person – Electrical Systems and Equipment - is a duty holder and has been delegated the primary role to act as administrator in the management of electrical systems and equipment in accordance with the UCL policy and SOP and has managerial responsibility for supervising the implementation of this policy, the standard operating procedure, and the policy management of the electrical systems and equipment under the control of UCL Estates.

The full details, expectations and requirements of this role are contained within the UCL Electrical Systems and Equipment Standard Operating Procedure, which is controlled by UCL Engineering, Maintenance and Infrastructure. The Standard Operating Procedure forms part of this policy.

4.1.9 Responsible Person – Electrical Systems and Equipment – Review & Change

In all instances the term ‘Responsible Person’, and the associated duties, apply equally to any nominated Deputy formally appointed to act on all occasions when the nominated Responsible Person is unavailable.

The Responsible Person – Electrical Systems and Equipment – Review & Change is a duty holder and has been delegated the managerial responsibility for reviewing the compliance and performance against this policy.

The Responsible Person - Electrical Systems and Equipment – Review & Change produces and develops the estates policy and standard operating procedures for the management of electrical systems and equipment risks on behalf of the Head of Engineering, and periodically audits their implementation.

The Responsible Person – Electrical Systems and Equipment – Review & Change has also been delegated the managerial responsibility for supervising the implementation of this policy and the policy management of any changes, additions to, or replacements of existing fixed electrical systems, or any new installations of fixed electrical systems and equipment under the control of UCL Estates.

The full details, expectations and requirements of this role are contained within the UCL Electrical Systems and Equipment Standard Operating Procedure, which is controlled by UCL Engineering, Maintenance and Infrastructure. The Standard Operating Procedure forms part of this policy.

4.1.10 Responsible Person – Authorising Engineer (Electrical)

In all instances the term ‘Responsible Person’, and the associated duties, apply equally to any nominated Deputy formally appointed to act on all occasions when the nominated Responsible Person is unavailable.

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The Authorising Engineer (Electrical) is a duty holder appointed in accordance with the requirements of the UCL Authorisation of Technical Competence document to select and appoint electrical “Authorised Persons” and “Competent Persons” to specific duties for isolation and switching on both HV and LV systems once they are deemed competent for these duties by the Authorising Engineer (Electrical).

The Authorising Engineer (Electrical) is to appoint sufficient persons as the Engineer considers necessary to fulfil the required HV and LV isolation and switching duties, and maintain a register of their qualifications, training and experience and periodically audit their operations. See the Standard Operating Procedure for details of these requirements.

The Authorising Engineer (Electrical) is also to maintain an electrical equipment “Operational Restrictions” register to ensure the operational integrity of electrical equipment. The Engineer shall also maintain a register of UCL electrical test equipment and ensure its regular safety inspections and calibration as required.

The engineer shall also witness the handover of all contractors’ electrical works to UCL along with all UCL operatives training and maintenance documentation.

See the Standard Operating Procedure for details of these requirements.

4.1.11 UCL Estates (Project Managers, University Project Officers and University Service Managers)

Project Managers, University Project Officers and the consultants they appoint are responsible for ensuring that fixed electrical systems and equipment are designed and installed and suitable for operation in compliance with the documents contained in the Reference section of this document, and the UCL Estates Electrical Services Policy and Standard Operating Procedure.

The Responsible Person – Electrical Systems and Equipment – Review & Change is to approve each stage of the design and acceptance.

The Project Managers, University Project Officers and University Service Managers will be responsible for ensuring that plant and services are suitable for safe and secure operation, and for the provision of operation and maintenance documentation and as-fitted drawings at the time of handover, together with all commissioning data.

They will also ensure that the required Authorised and Competent Persons have been identified and trained on the operation, isolation and switching of the systems before they are commissioned and put into service.

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No system will be accepted unless the Responsible Person – Electrical Systems and Equipment – Review & Change has given the final written approval.

4.1.12 Contractors (and managers employing contractors)

Those who employ contractors to work on fixed low voltage electrical systems and equipment shall be responsible for ensuring the work complies with the requirements of this policy and that the works comply with relevant statutory regulations and the requirements of BS 7671.

For contractors working on the estates high voltage system the employing manager shall be responsible for ensuring the work complies with relevant statutory regulations and the high voltage requirements of this estates policy and standard operating procedure.

Reasonable enquiries are to be made to confirm the competency and training of contractors in the area of work, before entering into contracts for the installation of new fixed electrical systems or equipment or the replacement, extension, repair, maintenance or inspection and testing of existing fixed electrical systems and equipment.

Contractors are to be made fully aware of the duties and responsibilities assigned to them, and are to be familiar with the UCL Standards.

Only UCL Approved Contractors are permitted to work on UCL electrical systems. Contractors are to have completed the necessary UCL Safety Questionnaires and that their responses have been accepted.

<http://www.ucl.ac.uk/estates/procedures/new-project-management/forms/>

Contractors are to comply with the UCL Safety Policy 'Safety Rules for Contractors employed on UCL Premises', and sign the document accordingly.

Contractors shall also be registered on Constructionline.

4.1.13 Heads of Departments (other than UCL Estates), Responsible Person – Electrical Systems and Equipment - Systems Governance

Heads of Departments are responsible for identifying, assessing and controlling the isolation and switching risks from any electrical systems or equipment installed within their department, and/or departmental equipment that could present risk of electrical danger.

Where departmental equipment is not managed by Estates, a local inventory of both specific items and types of equipment that could present a risk of danger

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should be maintained by the Appointed Person (Statutory Testing) to ensure that all equipment is assessed and subject to appropriate controls.

4.2 Records

Records must be kept to confirm compliance with the statutory regulations, the requirements of BS 7671 and this standard, and retained for the periods stated.

- Job specific H&S risk assessments and method statements must be completed to conform to statutory requirements and design requirements for both the electrical system and equipment to identify the risks in any isolation and switching requirements, with the safety provisions to be provided, for any switching, maintenance, inspection or testing works upon it. The documents will categorise the level of risk of the building, the systems and equipment and the appropriate management control necessary for the risks in that building, especially if “live working” is considered to be necessary.
- Any significant findings and action points of the risk assessment must be prioritised and actioned accordingly, and “designed out” where possible in new installations by modifications to the proposed design.
- Deviations of test readings outside required values, or the identification of damage, deterioration or dangerous conditions during inspections, which are likely to lead to non-compliance are to be reported to a Responsible Person for management action. The Responsible Persons are to take all immediate action to reduce/mitigate non-compliance.

These records must be retained throughout the period for which they remain current and for at least two years after that period. The results of any monitoring, inspection, test or check carried out, and the dates should include details of the state of operation of the system i.e. in use/not in use. All maintenance, inspections and testing must be recorded on the appropriate forms and the data should be reviewed periodically to assess trends.

4.3 Training and competence (See also UCL Authorisation of Technical Competence)

Electrical safety awareness training will be provided at 3 levels to suit the different roles of staff:

- Management – for supervision of electrical systems and equipment and operational staff, including the Authorising Engineer (Electrical)
- Technical / maintenance staff – for new installations, operations, isolation and switching, maintenance, repairs or inspection and testing, including Authorised Persons and Competent Persons as required

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- Operator / user training – including Authorised Persons and Competent Persons as required.

The training for maintenance and operations staff shall ensure that they are aware of the correct operation of the system or equipment and its isolation and switching and maintenance requirements, and ensure that they obtain the prescribed qualifications; training and experience required, and are made aware of any operational and record keeping requirements. Records of training and competence shall be maintained on a UCL records system file.

Training records/evidence of competence must be provided by contractors and confirmation that they hold the prescribed qualifications and training required for the work they are required to carry out. Records of training and competence shall be maintained on a UCL records system file.

4.4 Monitoring & Review

The Estates Standard Operating Procedure(s) and Risk Assessments detail the procedures for preventing, monitoring and controlling risk. These documents along with this standard shall be annually reviewed to ensure they remain up to date.

5.0 References

- Health & Safety at Work etc. Act 1974
- The Electricity at Work Regulations 1989
- Management of Health and Safety at Work Regulations 1999
- HSE Electricity at Work – Safe Working Practices (HSG85) 2013
- HSE Memorandum of Guidance on the Electricity at Work Regulations, 2nd Ed 2007
- HSE Five Steps to Risk Assessment (INDG163) 2011
- HSE Construction (Design and Management) Regulations 2015
- HSE The Safe Isolation of Plant and Equipment (HSG 253) 2006
- HSE Electrical Test Equipment for use by Electricians (Guidance note GS 38) 1995
- BS EN 60947 Specification for low-voltage switch-gear and control-gear, Parts 1 to 8.
- BS 7671 IEE Wiring Regulations 17th edition
- IET Guidance Note 2 on Isolation and Switching

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- IET Electrical Maintenance Guide (2nd edition)
- CIBSE Guide M on Maintenance
- CIBSE Guide K on Electrical Installations
- Guide to Ownership, Operation and Maintenance of Building Services – CIBSE
- Application Guide 1/87.1 Operating and Maintenance Manuals for Building Services Installations - BSRIA

Safety Services References

Author(s)	
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HSC Approval	
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