

**ELECTRICAL SAFETY POLICY  
HIGH VOLTAGE AND LOW VOLTAGE**

Approved by: **Trust Executive Committee**

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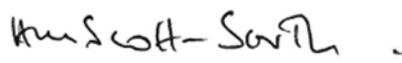
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# Burton Hospitals NHS Foundation Trust

## POLICY INDEX SHEET

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2	Review	September 2014	Review and update.
3	Review - PBF	April 2017	Major changes, including: General Review and Update. References to guidance, reporting structure. Live working procedures Isolation Procedures

# **ELECTRICAL SAFETY POLICY HIGH VOLTAGE AND LOW VOLTAGE**

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# **Burton Hospitals NHS Foundation Trust**

## **ELECTRICAL SAFETY POLICY**

### **1. PURPOSE**

- 1.1. To protect persons and property against dangers and damage which may arise in the reasonable use of electrical installations / equipment.
- 1.2. To ensure that all staff are aware of their responsibilities towards electrical safety. Management policy towards electrical safety, control and safe use of electrical equipment and rules for those working on electrical installations and equipment.
- 1.3. This policy applies to all Trust staff and all persons working within Trust properties.

### **2. OWNERSHIP OF POLICY**

- 2.1. The Trust's Estates and Facilities Directorate is responsible for this document and any alterations which require to be made.

### **3. INTRODUCTION**

- 3.1. It is the responsibility of the owners and occupiers of premises, General Managers and Chief Executives to ensure that their premises comply with all statutes.
- 3.2. Employers have a duty, under the Health & Safety at Work Act 1974, so far as is reasonably practicable, to ensure the health, safety and welfare of their employees, contractors, residents and visitors to the premises.
- 3.3. The principle statutory requirement for electrical safety in the workplace is the Electricity at Work Regulations 1989. The purpose of the Regulations is to require safe precautions to be taken against the risk of death or personal injury arising from electricity in the workplace.
- 3.4. Health Technical Memoranda 06-02 (Escore-LV) and 06-03 (Escore HV), produced by NHS Estates and Executive Agency of the Department of Health, set down electrical safety codes for Low and High voltage systems respectively. These apply to all healthcare and personal social services premises, including homes covered by the Registered Homes Act 1984. The guidance in HTM.06-02 and HTM.06-03 is intended to assist employers to meet the requirements of the Electricity at Work Regulations 1989.

## 4. DEFINITIONS

### 4.1. Low Voltage:-

- Band 1 Nominal Voltage not exceeding 50 Volts ac or 120 Volts dc.
- Band 2 Nominal Voltage 51 - 1000 Volts ac or 121 - 1500 Volts dc.

### 4.2. High Voltage:-

- Nominal Voltage Greater than 1500 Volts dc.
- Nominal Voltage Greater than 1000 Volts ac.

## 5. GENERAL PROVISIONS

Burton Hospitals NHS Foundation Trust shall adopt Health Technical Memorandum (HTM) 06-01 / 06-02 / 06-03 as the basis for its electrical safety policy; this is to be read in conjunction with BS7671 IEE Requirements for Electrical Installations. The Trust shall be responsible for the implementation and for the monitoring of the effectiveness of this policy.

## 6. NOMINATED PERSONS

**Duty Holder** - Management deemed to have the resources and the authority necessary to ensure a safe place of work.

**Designated Persons** - The nominated Designated Persons, appointed in writing, shall have overall authority and responsibility for the low and High voltage systems within the Trust's estate.

**Authorising Engineers** - The nominated Authorising Engineers, appointed in writing, shall monitor the safety arrangements including individual appointments for operation of the Trust's low and high voltage systems.

**Authorised Persons (HV & LV)** - The nominated Authorised Persons, appointed in writing, shall have overall responsibility for the practical implementation of the Electrical Safety Policy within the designated Estates areas only. Deputy Authorised Persons shall be appointed to cover holidays, sickness and out-of-hours periods where appropriate. 1 Authorised Person shall be nominated as "Co-ordinating" AP and should be aware of all HV and LV safety documents being used on site.

The full duties and responsibilities of the Designated Persons, Authorising Engineers and Authorised Persons shall be as outlined in HTM 06-02 / 06-03 and, in particular, as detailed in their letters of appointment. Copies of appointment letters are held in the Estates Department.

## **7. MANAGEMENT RESPONSIBILITIES**

The Board of Directors has the responsibility to provide the Estates and Facilities Department with sufficient resources to enable it to discharge its duties. As the Estates Manager is only responsible for his own management area, it requires the co-operation of other Senior Managers and Executives in fully meeting the requirements of legislation.

Individual Directorate Managers and Heads of Departments will:-

- a. Provide, at all reasonable times, access to Estates staff and their contractors in order that they can:-
  - i) Carry out repairs to equipment and installations.
  - ii) Carry out routine inspection and testing of equipment and installations.
- b. Ensure that all faults on electrical equipment and installations are reported to the Estates Department.
- c. Ensure that personnel with responsibilities for electrical safety within their department are made fully aware of their responsibilities in writing and are given the necessary information and training to properly understand them and carry them out.

The Electrical Safety Policy shall be monitored by management at all levels to ensure its effectiveness. Any concerns regarding the effectiveness of the policy shall be reported in writing to Estates Department.

## **8. EXECUTION OF WORK**

It is Trust policy to employ only competent persons or approved electrical contractors for work on low and high voltage electrical systems and equipment; the only exception being a person under training with personal supervision. All such work will be arranged and supervised by the Estates Department, the only exceptions being:-

- a. Maintenance and repair of specialist medical electrical equipment, which has been contracted out, or under the control of the Medical Engineering department.
- b. Repair of information technology (IT) equipment where specialist knowledge is required. Such repairs shall be arranged by the IT department.

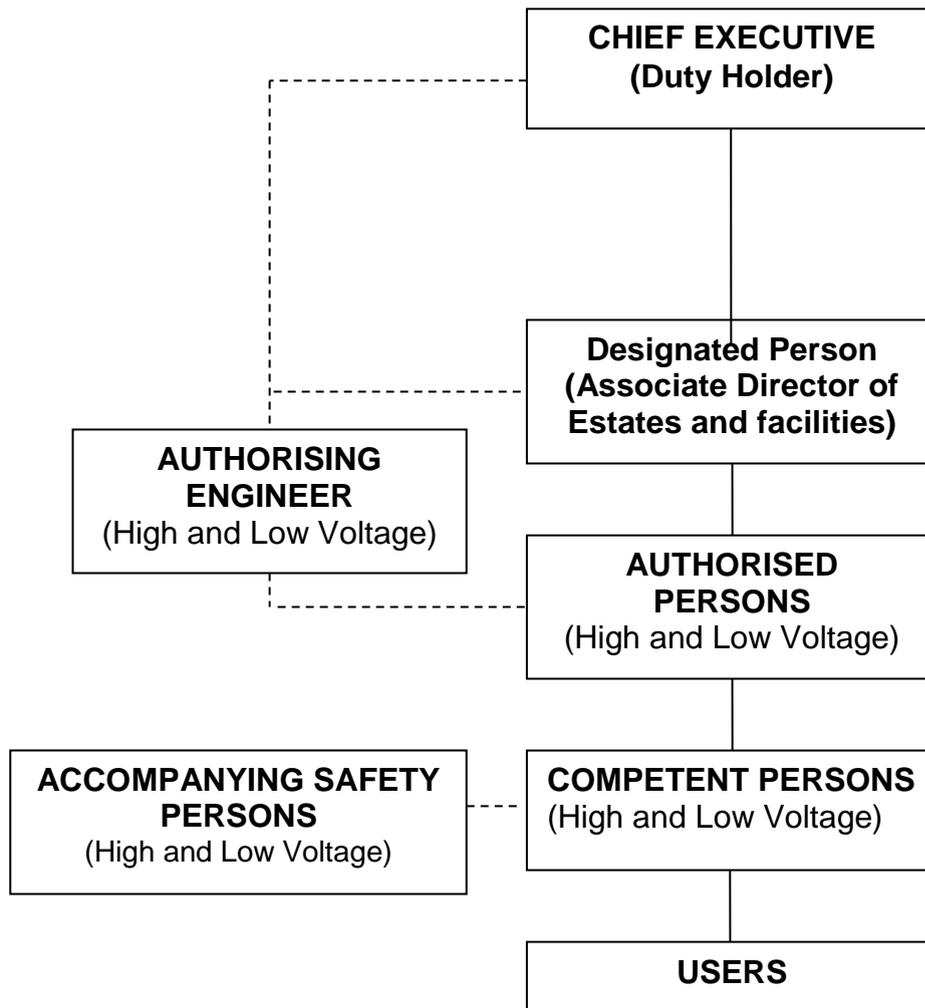
All persons working on low and high voltage installations and equipment shall comply with the Electrical Safety Rules for Low and High Voltage Systems issued by the Trust, the Electricity at Work Regulations 1989, BS7671 IEE Wiring Regulations, and all relevant Health Technical Memorandum and Statutory Requirements.

To assist in the assessment of their competency, contractors may be required to complete a pre-qualification questionnaire or demonstrate their operatives competence.

Electrical installation work and the inspection and testing thereof shall only be undertaken by contractors registered with the National Inspection Council for Electrical Installation Contracting (NICEIC). Where, in exceptional circumstances, NICEIC registered companies are not available, contractors shall provide other evidence of their competency to carry out such work.

Where the work is of a specialist electrical nature, further evidence of competency shall be provided by the contractor.

## 9. MANAGEMENT HIERARCHY



## 10. DEFINITION OF RESPONSIBILITIES

### 10.1. Duty Holder - The Chief Executive

The Chief Executive is responsible on behalf the trust for ensuring the implementation, monitoring and review of the Electrical Safety Policy as required by the Electricity at Work Regulations 1989 and in Health Technical Memoranda 06-02 and 06-03.

Named Person:- See Appendix A.

### 10.2. Designated Person – Associate Director of Estates and Facilities

The Head of Estates, as the Designated Person (in accordance with HTM's 06-02 and 06-03), has overall authority and responsibility for the high and low voltage electrical systems at all properties owned or occupied by the Trust. The Designated Person is responsible for advising the Duty Holder in respect of all technical matters concerned with the electrical safety affecting property or equipment. The Designated Person will liaise with all parties and arrange training as necessary to enable the Electrical Safety Policy to be fully implemented.

Named Person:- See Appendix A.

### 10.3. Authorising Engineer

The Authorising Engineer is responsible for advising the Duty Holder, Designated Person and Authorised Persons on all matters concerning the implementation, administration and monitoring of the safety arrangements for the high and low voltage electrical supply and distribution systems at all properties owned or occupied by the Trust, to ensure compliance with the Electricity at Work Regulations. The Authorising Engineer will advise on the number of staff to be appointed as Authorised Persons and will be responsible for the appointment, in writing, of candidates after an assessment of their suitability.

Named Person:- See Appendix A.

### 10.4. Authorised Person – High Voltage

The Authorised Persons are responsible for the day-to-day practical implementation and operation of the Electrical Safety Policy and Procedures on defined electrical systems including the operation of the "Permit to Work" and end user notification procedures. The Authorised Person will be responsible for the appointment, in writing, of competent persons.

Named Persons:- See Appendix A.

## 10.5. Authorised Person – Low Voltage

The Authorised Persons are responsible for the day-to-day practical implementation and operation of the Electrical Safety Policy and Procedures on defined electrical systems including the operation of the “Permit to Work” if required and end user notification procedures. The Authorised Person will be responsible for the appointment, in writing, of competent persons.

Named Person:- See Appendix A.

## 10.6. Competent Persons

The Competent Persons will have sufficient technical knowledge and experience necessary to organise, supervise and control skilled persons and to prevent danger whilst carrying out work on defined electrical systems. It is the Trust’s policy that such person shall hold a certificate to prove the understanding of the latest Regulations and hold a certificate in Inspection and Testing (2391). A Competent Person may be a member of the Estates Department or a Contractor appointed to undertake defined installation or maintenance work.

Named Person:- See Appendix A.

# 11. NEW PROJECTS

Where the specific departmental areas have been formally handed over to the contractor under terms laid out in the contract, the contractor shall not be obliged to comply with the requirements of this policy. However, all statutory regulations shall be complied with and all work shall be carried out in accordance with the contract conditions, specifications and good working practices.

Where interface between a new electrical installation and an existing electrical installation is necessary, consultation shall take place between the Project Manager and the Authorised Person at an early stage of the project and at other times as necessary to prevent danger or the inadvertent loss of supply.

Prior to a new installation being handed over to the Estates Department for maintenance purposes the appropriate personnel shall become familiar with the installation. The extent of familiarisation will vary depending on the complexity of the installation. In the case of complex installations the Project Manager shall liaise with the Estates Department at an early stage to establish the exact requirements of familiarisation. The operating and maintenance instructions, together with an installation drawing shall be handed to the Estates Department maintenance team in advance of the handover meeting to assist familiarisation and providing training if required, this should be part of the contract procedure.

Where the contractor is only responsible for part of a system or installation, the exact extent of the contractor’s responsibility shall be defined in the contract.

## **12. FIRST AID TRAINING**

All Trust staff employed on the installation, maintenance, or operation of electrical distribution equipment and installation wiring are to be trained in First Aid treatment for electric shock. The Authorised Person along with the Trusts' L&D department shall be responsible for arranging Basic Life Support training and maintaining the records. Refresher training shall also be arranged, at intervals not exceeding three years.

Contractors employed by the trust must also ensure that they have relevant suitable access to their own First Aid facilities at all times.

## **13. RECORDS**

Records of electrical training / toolbox talks to ensure the awareness of staff on the use of electricity and general electrical safety shall be maintained by departmental managers.

Records of planned and emergency maintenance on electrical equipment shall be held by the Estates Department. It shall be the responsibility of individual departments to inform the Estates Department of all new equipment purchased, movement of equipment and equipment found to be faulty, so as testing can be done.

The reporting of injuries or dangerous occurrences resulting from an electrical accident at work comes within the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations, 1995 (RIDDOR), Any incident involving electrical equipment, whether or not reportable under RIDDOR, shall be reported to the Authorised Person.

## **14. ADVICE**

Advice relating to electrical procedures and electrical safety shall be sought, via line managers from the Authorised Person within the Estates Department. (see Appendix A).

## **15. EMERGENCIES**

Emergencies during normal working hours (0800 to 1630, Monday to Friday) shall be reported to the Estates Department, via bleep 444. Outside normal working hours, emergencies shall be reported to the Queens Hospital Switchboard, Telephone 01283 566333.

## **16. RULES FOR THE CONTROL AND SAFE USE OF ELECTRICAL EQUIPMENT**

### Management Responsibility

Departmental managers shall be responsible for ensuring that the appropriate procedures are in place within their designated area, to meet the requirements of the Electricity at Work Regulations 1989 and in particular, the requirements of this policy. Particular attention shall be paid to:

- Ensuring that persons within their control are suitably trained in the correct operation of any electrical equipment that they may be expected to use.
- User safety checks.
- Ensuring new electrical items are reported for testing and all existing equipment has an in date safety test label
- Control of the movement of portable electrical equipment.
- Control in the procurement of electrical equipment.
- Management of patient owned electrical equipment brought onto Trust property, all items must be tested before being put into service.
- Precautions for staff working away from Trust properties, e.g. patients' homes.

Relevant training can be accessed via the Estates Department.

## **17. USERS OF ELECTRICAL EQUIPMENT**

Every user of electrical equipment has a legal responsibility to co-operate with management to ensure that equipment is maintained in a safe, efficient condition.

The primary responsibility for day-to-day safety of portable equipment when in service lies with the user(s), who should be trained in its use and made aware of the need to be constantly vigilant for defects which may put individuals at risk. Any person using portable electrical equipment should, before using it, personally check that the equipment, including the flexible cable and plug top, is free from mechanical damage and that the in-date test label is attached.

Before using any item of electrical equipment the user shall:-

- a. Confirm test label is in date. If this is not the case then consult the relevant Estates Department before further use.
- b. Consider whether he/she (the user) is aware of any fault in the equipment and whether it works properly.
- c. Disconnect the equipment where practical or switch it off at the main switch if a fault is suspected and notify the Estates Department.

d. Inspect the equipment in particular looking at:-

- The flex - is it in good condition? Is it free from cuts, fraying and damage? Is it in a location where it could be damaged? Is it too long, too short or in any way unsatisfactory? Does it have inadequate joints?
- The plug (where fitted) - is the flexible cable secure in its anchorage? Is it free from any sign of overheating? Is it free from cracks or damage?
- The socket outlet or flex-outlet - is there any sign of overheating? Is it free from cracks and other damage?
- The appliance - does it work? Does it switch on and off properly? Is it free from cracks, contamination, damage to the case, or damage which could result in access to live parts? Can it be used safely?
- Users - are they satisfied that the equipment works properly?
- The environment - is the equipment suitable for its environment?

When the work environment is harsh or hazardous, e.g. if the equipment is exposed to mechanical damage, the weather, high or low temperatures, pressure, wet or dirty or corrosive conditions, flammable or explosive substances, particular care needs to be taken when selecting the equipment, and additional safety precautions may also be required.

Example 1. A vacuum cleaner should not be used for the removal of water or other spillage from a carpet or floor unless it has been specifically designed for the purpose.

Example 2. Equipment designed for internal use should not be used externally with an extension lead in wet conditions or where it may be liable to mechanical damage.

Where there is an area of particular concern advice should be sought from the your Line Manager or, alternatively from the Estates Department.

- Suitability for the job - is the equipment suitable for the work it is required to carry out? e.g. an electric drill designed for DIY use may not be suitable for continual use in an industrial workshop.
- Take action on faults/damage. Faulty equipment must be:-
  - Switched off and unplugged from the supply where possible, or switched off if directly connected to the supply.
  - Labelled to identify that it must not be used.
  - Reported to the Estates Department.

## **Test Labels**

No person shall use an item of electrical equipment unless it bears a label indicating a current pass status of safety inspection and test as issued by the Estates Department, its nominated contractor or in the case of specialist medical electrical equipment Medical Engineering. The date for re-testing should also be indicated. Failure to comply with this instruction may lead to disciplinary proceedings.

## **Damaged Equipment**

Where equipment is found to be damaged or faulty an assessment shall be made by the manager in charge as to the suitability of the equipment for the use/location. Further advice may be obtained from the Estates Department.

## **New Equipment**

When new equipment is purchased, it shall be inspected and tested prior to it being put into service. A PAT testing request must be logged with Estates as soon as possible and it must be tested within 12 months of use and labelled with a pass status of safety inspection and given a Trust identity number. The same procedure shall apply to patients' equipment brought on to Trust property.

## **Information Technology (I.T.) Equipment**

When new I.T. equipment is purchased via the I.T. department, the I.T. department will arrange with the Estates Department for the equipment to be inspected and labelled prior to issue of the equipment. The Estates Department will need to know the eventual destination of the equipment so that the correct identity number is issued.

Where I.T. equipment has been repaired, unless the repairs have specifically included electrical safety inspection and test, then the equipment shall be retested by the Estates Department prior to re-use. Responsibility for requesting the retest shall lie with the user.

## **Personal Property**

Employees, patients and visitors of the Trust shall not bring on to Trust property any private item of electrical equipment without first having obtained permission from their ward or department manager. Where such permission is granted the equipment shall be subject to the same inspection procedure that applies to new equipment and the user may be liable for the costs incurred.

## **Extension Leads**

Extension leads are often inappropriately used, leading to the increased risk either of an electrical accident or of trips/falls. Their use is generally not permitted, the only exceptions being:

- To facilitate a temporary requirement for extra sockets and where a permanent solution is not reasonable practicable.
- Where there are insufficient permanent socket outlets in a particular location and application has already been submitted to the Estates Department for the installation of additional socket outlets.
- Where their use is in conjunction with mobile equipment such as overhead projectors, etc.
- Use by nursing staff working within the community outside of Trust properties, where there is a lack of socket outlets. In such cases, they shall be fitted with plugs incorporating a safety trip for increased protection.

In all of the above cases, prior written approval for their use shall be obtained from the departmental manager.

As with all other portable equipment, extension leads shall be subjected to a portable appliance test (PAT) before use. Due to the difficulty in keeping track of the locations of extension leads, it will be the user's responsibility to inform the Estates Department as to when further PAT tests are required.

## **Misuse**

Wilful misuse of and unauthorised modifications to electrical equipment is potentially dangerous and strictly forbidden. Such action will lead to disciplinary proceedings.

## **18. ELECTRICAL SAFETY RULES FOR LOW VOLTAGE SYSTEMS**

These rules based upon HTM 06-01, HTM 06-02, HTM 06-03 and amended by the Trust's local house rules, are only applicable to persons working on electrical systems and equipment. They will, therefore, only be issued to Estates staff working on such systems and equipment and Estates approved electrical contractors. A copy will be accessible on Burton Hospitals Intranet for reference when required by interested parties.

The Authorised Persons, in conjunction with the Authorising Engineer, shall be responsible for monitoring and reviewing the Electrical Safety Rules to ensure that they are effective and continue to meet Trust requirements and Health & Safety legislation.

## **Low Voltage Electricity System Safety Rules**

### 18.1. Introduction

- a. These Safety Rules are based on established safety guidelines and to HTM 06-02.
- b. The Safety Rules state the basic safety requirements for work on Burton Hospitals (LV) Distribution Systems.
- c. These rules are designed to provide:-
  - Protection to persons working on low voltage equipment, plant & apparatus to which they apply.
  - A guide to safe working on or in the vicinity of low voltage electrical systems.
  - Set out the responsibilities & control systems for individuals operating on or working in the vicinity of low voltage plant and equipment.
- d. It is the responsibility of line managers & supervisors to give details to their staff and individuals so they are conversant with these rules before operating equipment on the LV distribution system.

### 18.2. General

All persons who operate or work on the low voltage electrical equipment and systems of Burton Hospitals have a duty to:-

- Comply with all Safety Rules, Codes of Practice and Risk Assessment requirements as required by Burton Hospitals.
- Comply with the legal obligations of statutory regulations governing the work which they carry out, the Health and Safety at Work Act 1974 and regulations pertinent to it, the Electricity at Work Regulations 1989 & the IEE Wiring Regulations BS 7671.
- Carry out their duties and work so as to prevent harm or injury to themselves, and others.

### 18.3. Objections to working arrangements & conditions

- a. When any person has concerns regarding the operation of or work upon the LV system, they shall refer them to the person issuing the instructions, their supervisor, line manager in the first instant or to a higher authority. The matter shall be investigated, and reviewed before proceeding.

#### 18.4. Accidents, incidents & near misses

- a. All employees must report accidents, which cause injury, to their supervisor as soon as possible after the accident has occurred. They must be recorded using the Trusts incident reporting system.
- b. All employees are also encouraged to report “near miss” incidents, where an occurrence may have created a hazard but where the occurrence did not cause injury, it must be recorded using the Trusts incident reporting system.

#### 18.5. Treatment for Electric Shock

- a. All persons who may be involved with the operation or work on the LV system shall be conversant with the treatment for electric shock and be suitably trained to administer first aid assistance.

#### 18.6. Definitions

**NB:** Within these rules where reference is made to a definition below it will appear in CAPITALS within the text.

APPROVED	Relates to working practices, tools, instruments, testing equipment (see GS 38) locks, safety notices, temporary screens and barriers which are provided by the employer and are inspected and tested by the user as appropriate.
CIRCUIT	An assembly of electrical equipment supplied from the same origin & protected against over current by the same protective device
CIRCUIT MAIN EARTH	The point at which an electrical CIRCUIT is connected to EARTH to safeguard against it becoming LIVE
DUTY HOLDER	The DH appointed is to be responsible for the application of these safety rules.
DANGER	A risk to health or of bodily INJURY
DEAD	At or about zero voltage and disconnected from any LIVE CIRCUIT
EARTH	The conductive mass of the earth.
EARTHED	Connected to EARTH through switchgear or by adequately rated earth leads
INJURY	Death or personal injury from electric shock, burns, explosion or arcing (relevant where a COMPETENT person is working where there is DANGER and INJURY needs to be prevented).
ISOLATED	Disconnected from all associated electrical equipment, plant, apparatus and conductors by an isolating device in the open position, or by adequate physical separation, or sufficient gap
LIVE	Electrically charged or energised.
LIVE PART	A conductor or conductive part intended to be

	energised in normal use, including neutrals
CAUTION NOTICE	A notice conveying a warning or restriction against interference or operation as issued by the HVAP
DANGER NOTICES	A notice reading 'DANGER', warning of electrical or physical danger as issued by the HVAP
LOW VOLTAGE (LV)	A voltage not exceeding 1000 volts AC or 1500Volts DC
LOW VOLTAGE APPARATUS	Electrical equipment or its component parts that are connected to a LOW VOLTAGE CIRCUIT
LV PERMIT-TO-WORK	A document that specifies the low voltage apparatus, which has been made safe to work on, and the work which is to be carried out, the means of proving DEAD should be stated on the permit.
PERSONS	<p><b>DUTY HOLDER</b> The statutory duty holder is either the employer or the person in control of the healthcare premises. Typically these could be the owner, chief executive, board of directors, or other person who is ultimately accountable, and on whom the duty falls, for the safe operation of healthcare premises.</p> <p><b>DESIGNATED PERSON</b> Appoint in Writing an Authorising Engineer (HV &amp; LV) for all systems and installations for which management has responsibility. Audit the Authorising Engineer annually to ensure that the Authorising Engineer's duties have been carried out in accordance with relevant guidance.</p> <p><b>AUTHORISING ENGINEER (HV &amp; LV)</b> Responsible for administering and monitoring the application of this policy and other relevant guidance. Any other duties defined in HTM 06-02 and HTM06-03 including: Assess and recommend in writing sufficient Authorised Persons, both HV and LV to provide the necessary cover for all systems and installations for which management has responsibility. Define the exact extent of the systems and for which each Authorised Person is responsible If necessary, recommend the suspension or cancellation of the appointment of an Authorised Person and withdraw the certificate.</p> <p><b>AUTHORISED PERSON (HV &amp; LV)</b> Responsible for the practical implementation and operation of this policy and other relevant guidance. Any other duties defined in HTM 06-02 and HTM06-03.</p>

	<p>A <b>COMPETENT PERSON</b>, over the age of 18years, who has been appointed in writing by the Authorised Person to carry out specified duties, which may include receipt of <b>SAFETY DOCUMENTS</b> during the course of their work. Any other duties defined in HTM 06-02 and HTM06-03.</p> <p><b>ACCOMPANYING SAFETY PERSON</b> The Accompanying Safety Person is a person, not directly involved in the work or test, who should have adequate knowledge, experience and the ability to avoid danger. They are required to keep watch, prevent unauthorized interruption of the work or test, be able to supply first aid and summon help.</p>
<b>SAFETY DOCUMENTS</b>	A document recording the apparatus to be worked on, the limitations of the work & switching procedures that need to be followed to avoid <b>DANGER</b>
<b>SAFETY LOCK</b>	A lock that has a unique* key, being different from all other standard locks used on the LV system.
<b>KEY SAFE</b>	<p>*Spare keys may be retained securely for sole use of the Co-Ordinating AP</p> <p>A lockable enclosure for the retention of all safety lock keys. This enclosure will require 2 keys to unlock. 1 will be held by the LVAP and the other by the LVCP. Thus ensuring no Points Of Isolation can be removed without both parties consent.</p>
<b>SUPERVISION</b>	<p><b>IMMEDIATE SUPERVISION</b> - Supervision by a person (having adequate technical knowledge or experience) who is continuously available at the location where work or testing is in progress.</p> <p><b>PERSONAL SUPERVISION</b> - Supervision by a person (having adequate technical knowledge or experience) who is at all times in the presence of the person being supervised</p>
<b>SWITCHING</b>	The operation of circuit breakers, isolators, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of <b>CIRCUIT MAIN EARTHS</b>

#### 18.7. Access to Low Voltage Switch rooms

- a. It is a safety requirement of Burton Hospitals Foundation Trust that access to Low Voltage switch rooms is restricted to persons

deemed COMPETENT to carry out this function. The restriction is as follows:-

- LVAPs, LVCPs, AE(LV)
- Competent Persons (CP's) and Accompanying Safety Persons (ASP's) when carrying out their work as instructed by a LVAP and issued with a PERMIT-TO-WORK, SANCTION FOR TEST or LIMITATION OF ACCESS.
- Only LVAPs, shall give authority for any third party access to low voltage switch rooms, a PERMIT-TO-WORK, SANCTION FOR TEST or LIMITATION OF ACCESS may be required.

18.8. Access and Work in Areas protected by Automatic Fire Suppression Systems

a. Before access to any LV switch room protected by automatic fire extinguishing equipment :-

- The automatic control shall be rendered inoperative and left 'OFF' in hand control.
- A CAUTION NOTICE shall be attached.
- The precautions taken shall be recorded on any SAFETY DOCUMENT or written instruction issued, including conditions when the automatic control may be temporarily restored.
- The automatic control shall be restored immediately after persons engaged in work activity have left the LV switch room or for any reason & render it inoperative when they return.

18.9. Low Voltage Switching of all circuits excluding "final" circuits.

a. LOW VOLTAGE SWITCHING will only be carried out by persons deemed COMPETENT to carry out this activity. Switching should be carried out in compliance with the following:-

- Where a Safety Programme is in place then the LV SWITCHING should be carried out strictly in compliance with this Safety Programme.
- Where no Safety Programme is in place the person in charge will carry out a specific risk assessment prior to carrying out the work.

## 18.10. Safety Precautions and Procedures for Work on Low Voltage

### Systems

#### a. General

- When work or testing is carried out on or near LOW VOLTAGE APPARATUS precautions shall be taken to prevent INJURY from electric shock or burn injury due to electric arc, if the CIRCUIT is exposed.
- If the CIRCUIT is covered with insulation or screening, the adequacy of these materials to prevent INJURY shall be assessed with regard to the nature of the work or testing.
- INJURY may arise in the following circumstances:-
  - i. A person mistakes a CIRCUIT which has been made DEAD with one which remains LIVE.
  - ii. A DEAD CIRCUIT is accidentally or inadvertently made LIVE.
  - iii. A person accidentally or inadvertently makes contact with adjacent a LIVE CIRCUIT.
  - iv. Inadequate precautions are taken during LIVE working or testing.
- Work or testing of LOW VOLTAGE APPARATUS and CONDUCTORS shall only be carried out by a COMPETENT PERSON.

#### b. Isolation

- Isolations shall be either "Simplex" or "Complex"
- Simplex are isolations to final circuits, and where none of the Complex criteria below apply.
- Complex Isolations will be covered by a LV Safety Programme and include those isolations:
  - Of Non-Final circuits required by contractors
  - Out of sight of the point of work
  - Where there is more than one source of power (UPS, Generators, etc)
  - Where there is more than one activity in progress simultaneously
  - Any part of the distribution system
- Simple Isolations may be carried out by a Competent Person in accordance with the trusts LV isolation Procedure

#### c. Requirements for Work on Dead, Low Voltage Apparatus and

## Conductors

- Before any work is carried out on DEAD LOW VOLTAGE equipment, the following must be carried out.
  - It shall be:-
    - i. Switched off and ISOLATED from all sources of electrical supply.
    - ii. SAFETY LOCKS, if practicable and CAUTION NOTICES should be fitted at all points of isolation. If locking facilities are not available isolation must be made secure by other means e.g. removal of fuses, which should be retained in a secure place by the person in charge.
    - iii. DANGER NOTICES should be fitted at all adjacent LIVE equipment.
    - iv. EARTHED if appropriate.
    - v. Be proved DEAD at the point of work by means of an “approved testing device” (see GS38). In order to prove its integrity, the voltage testing device shall be tested immediately before and after its use.
    - vi. Where isolation is carried out by a COMPETENT person on behalf of an authorised person in order that work may be carried out by a third party, the competent person shall issue a written PERMIT-TO-WORK, to the third party.
  - If the work requires a point of isolation to be established on the HIGH VOLTAGE SYSTEM, full isolation and earthing shall be carried out and a HV PERMIT-TO-WORK issued.
- c. Work on Live Low Voltage Apparatus and Conductors (see also appendices a-g)
- No LIVE, LOW VOLTAGE work, other than Fixed Installation and Functional (Diagnostic) testing shall be carried out unless a job specific risk assessment has been undertaken and a written procedure including an LV PERMIT-TO-WORK being issued is in place to prevent INJURY from electric shock and inadvertent short-circuiting of the CIRCUITS.

Where LIVE work is to be carried out the following requirements shall be assessed:-

- i. The CIRCUIT to be worked on shall be visually inspected to see that it is in a satisfactory condition.
  - ii. There shall be adequate working space and safe means of egress.
  - iii. The working space and the CIRCUIT to be worked on shall be adequately illuminated.
- If the work is outdoors, the weather conditions shall not be unduly adverse. Suitable temporary cover shall be provided to

avoid water ingress into CIRCUITS.

- No person shall carry out work, which involves, or is equivalent to, the manipulation of bare LIVE CONDUCTORS.
- Where work is to be carried out in situations where the LIVE equipment is not housed in a secure location eg switchroom, then additional precautions in the form of barriers and DANGER NOTICES must be in place to protect non-FM staff, students and the general public from the DANGER, which exists.
- Only APPROVED tools and equipment shall be utilised for all live working.
- APPROVED personal protective equipment shall be worn as per the job specific Risk Assessment.

#### 18.11. Testing & Inspection or Adjustment of Low Voltage Apparatus

- a. Testing or adjustment, including functional testing, may be made on LIVE, LOW VOLTAGE CIRCUITS provided that APPROVED insulated tools and instruments are used (see GS38) and other appropriate APPROVED protection methods taken to prevent INJURY, for example the use of temporary screens or barriers.
- b. If testing or adjustment requires covers to be removed so that terminals or connections that are LIVE are exposed, precautions shall be taken to prevent unauthorised access to protect non-FM staff, students and the general public from the DANGER which exists from the APPARATUS. Such precautions shall include the erection of suitable barriers or screening and the display of DANGER NOTICES.
- c. Approved LIVE work should not be undertaken alone.
- d. Where an existing circuit is modified or changed a “Minor Electrical Works Certificate” shall be completed. This work to include the addition or replacement of any sockets, spur units, light fittings or cable repairs on an existing circuit. This will ensure that the circuit integrity is not compromised. The Certificate to be passed to the AP and retained on Estates record system

#### 18.12. Access to a Switch Room or Substation – General Safety Requirements

**BEFORE YOU ENTER** - Unlock and open substation door.

**STOP**

**SMELL** - for BURNING, GAS, OZONE, Sulphur Hexafluoride.

**LISTEN** -for a CRACKLING or HISSING sound (it is normal for transformers to hum or buzz)  
Use your torch  
Check the access i.e. is there a step down?  
Find the light switch and switch on.

**LOOK**- Is the access clear and unobstructed?  
Any open trenches in floor?  
Enter substation.

**CHECK** -Is there an automatic fire protection system installed. If so refer to Section 18.8 – Access and Work in Areas protected by Automatic Fire Suppression Systems

KEEP CLEAR OF HIGH VOLTAGE SWITCHGEAR,  
TRANSFORMERS AND LOW VOLTAGE SWITCHGEAR.  
DO NOT TOUCH ANY EQUIPMENT OTHER THAN THAT  
YOU HAVE BEEN INSTRUCTED TO DO SO.

- Carry out work
- Leave substation or LV switchroom switch off light

**LOCK THE DOOR AND CHECK IT IS SECURE. IF YOU NOTICE ANY ABNORMALITIES SHOULD BE REPORTED TO YOUR SUPERVISOR IMMEDIATELY**

## **19. ELECTRICAL SAFETY RULES FOR HIGH VOLTAGE SYSTEMS**

### 19.1. Introduction

- a. These Safety Rules are based on the Electricity Association Model Distribution Safety Rules. This ensures that employees work to recognised industry standards.
- b. The Safety Rules state the basic safety requirements for work on the Burton Hospitals HV Distribution Systems.
- c. Burton Hospitals is the “System Owner” and the DUTY.
- d. These rules are designed to provide:-
  - i. Maximum protection to persons working on plant or apparatus to which they apply.
  - ii. A guide to safe working on or in the vicinity of high voltage electrical systems.
  - iii. Controls and responsibilities for individuals operating on or

working in the vicinity of high voltage plant and equipment.

- e. It is the responsibility of HVAP & NOMINATED DEPUTIES (ND) to be conversant with these rules before switching the distribution system.

## 19.2. Basic Requirements

No person shall, other than the HVAP or AE.

- a. Enter a substation without a PERMIT-TO-WORK, SANCTION FOR TEST or LIMITATION OF ACCESS, whichever is relevant.
- b. Interfere with any item of electrical equipment without first having been given instructions in writing to do so by the HVAP.
- c. Disturb a "LIVE" cable.
- d. No person shall commence work until they have undertaken and have approved a Risk Assessment & Method Statement, fully understand their instructions and are conversant with the nature and extent of the work to be carried out. Under no circumstances shall the instructions be exceeded. RA & MS to be submitted by contractors before HV permit is issued & work starts.
- e. Should any person consider they are unable to carry out the work safely, the matter must be referred to a higher authority, Second HVAP or HVAE for a decision before continuing.
- f. No person shall enter a substation until instructed to do so by the HVAP or Network Administrator following a job specific Risk Assessment, after all necessary safety precautions have been taken & a PERMIT TO WORK issued for that work.
- e. Smoking is prohibited across all of Burton Hospitals Estate.
- h. The Person-in-Charge of the works will be a HV APPROVED PERSON, or a person having a higher level of authority and competence, as defined in these rules.

## 19.3. General Provisions

Scope and application of these Safety Rules.

These rules apply to the following electrical systems owned by Burton Hospitals.

- i. All HV substations, plant and apparatus.
- ii. All HV distribution cables.

#### 19.4. Information, Instruction and Training

Arrangements shall be made by the HVAP to ensure that all persons with access to the HV equipment are adequately informed of:-

- Risks to their health and safety.
- Preventive and protective measures to be taken.
- Procedure in the event of serious or imminent danger. Stop work, leave the area in a secure state (locked) & inform the HVAP immediately.
- The risks arising from other activities in the workplace.
- Those with access to operate equipment are aware of the consequences of operations carried out.
- Other people who may be exposed to danger by the operations or works receive adequate information and where necessary instruction.
- The capabilities of PERSONS are taken into account by the HVAP in allocating tasks.
- PERSONS are provided with adequate Health and Safety training and retraining, e.g. HV Safe Switching & refresher courses.

#### 19.5. Issue of Safety Rules

These rules shall be periodically be reviewed by the HVAE. The most up to date version to be available on Burton Hospitals' Intranet.. All newly appointed HAVE's , HVAP's and HVCP's will be issued with a copy & drawings showing the HV Ring, substations & their locations.

#### 19.6. Variation of Safety Rules

In exceptional or special circumstances these safety rules may be varied to such an extent as is necessary and APPROVED by the HVAP. Approval must be based on being satisfied that safety requirements are satisfied in another way. These variations must be documented and held as a permanent record.

#### 19.7. Objections on Safety Grounds

When any person has concerns regarding the operation or work on the system, they shall refer them to the person issuing instructions or to a higher authority, DH or ND. The matter shall be investigated, and reviewed before proceeding.

#### 19.8. Treatment for Electric Shock

All persons who may be in charge of or control of any operation or work on the system shall be trained and conversant with the treatment for electric shock. Emergency First Aid (HSE) course every 3 years, emphasising on electrical burns & injuries.

## 19.9. Definitions

Within these rules where reference is made to a definition below it will appear in CAPITALS within the text.

- APPARATUS – any equipment or switches on the HV system.
- AUTHORISED PERSON – a COMPETENT PERSON, over the age of 18 years, who has been appointed in writing by the DH on the recommendation of the AUTHORISING ENGINEER (HV) to carry out specified duties, which may include the issuing and cancelling of SAFETY DOCUMENTS – PERMITS – SANCTIONS FOR TEST.
- CAUTION NOTICE - a notice conveying a warning against interference.
- CIRCUIT MAIN EARTH – means the earthing equipment applied before the issue of, and at a position recorded in, a SAFETY DOCUMENT.
- COMPETENT PERSON – a person over the age of 18 years, who has the relevant technical knowledge & experience to prevent DANGER while carrying out specific duties on the HV system who may be nominated to receive and cancel SAFETY DOCUMENTS, with the permission of the CONTROL ENGINEER.
- CONTROL ENGINEER – the DH or ND who will exercise the function & control switching of the HV system. The CONTROL ENGINEER shall have sole authority for any switching changes on the University HV system at any one time.
- DANGER – a risk to health, bodily injury or equipment.
- DANGER NOTICE – a notice reading "DANGER", warning of electrical or physical danger.
- DEAD – means an electrical potential at or about zero voltage and disconnected from any LIVE SYSTEM.
- DOCUMENT OWNER – The document owner is the DH appointed to be responsible for the application of these safety rules.
- DUTY HOLDER (DH) – someone who has been appointed **in writing by the Director of Facilities Management** to carry out specified duties, including the issue and cancellation of SAFETY DOCUMENTS – HV PERMITS. The DH is also responsible for the day-to-day management of ND"s.
- EARTH – means the conductive mass of the earth.
- EARTHED – means that the system or apparatus being worked upon is connected to EARTH through switchgear or by adequately rated earth leads.
- HIGH VOLTAGE (HV) - a voltage exceeding 1000 volts.
- IMMEDIATE SUPERVISION – means supervision by a person, having adequate technical knowledge or experience, who is continuously available at the location where work or testing is in progress.
- ISOLATED – means disconnected from associated plant, apparatus and conductors by a switching device in the OPEN TO

- OFF position, or by adequate physical separation, or sufficient gap.
- LOW VOLTAGE (LV) - a voltage NOT exceeding 1000 volts.
- LIVE – means electrically charged.
- OPEN TO OFF – means electrically disconnected from the HV distribution system.
- SANCTION-FOR-TEST – specifies the high voltage apparatus which has been made safe for testing to proceed and the conditions under which the testing is to be carried out.
- PERMIT-TO-WORK - specifies the high voltage apparatus which has been made safe to work on, the safety precautions applied to ensure continued safety and the work which is to be carried out.
- PERSONAL SUPERVISION – means supervision by a person, having adequate technical knowledge or experience, who is at all times in the presence of the person being supervised.
- PLANT – any equipment or switches connected to the HV system.
- SAFETY DOCUMENT – a HV PERMIT TO WORK/TEST, identifying the person who the permit is issued to & defining the scope & limitations of the work.
- SAFETY LOCK – a lock that has a unique key, being different from all other standard locks used on the system.
- SCREENED - barriered off to prevent contact with LIVE conductors.
- SWITCHING – the operation of circuit breakers, isolators, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of CIRCUIT MAIN EARTHS.
- SWITCHING SCHEDULE – is a record of switching carried out on the HV system. It should record the location, circuit, operation, lock numbers used (if applicable) the time of switching, who is switching & the HV permit number it references to.

#### 19.10. General Precautions

##### a. General Safety

- In addition to the requirements specified in these Safety Rules the safety of all persons at work shall be achieved by maintaining General Safety in the vicinity of the work place.
- The COMPETENT PERSON must ensure that arrangements are maintained to ensure that other work areas are not adversely affected by the activities for which he is responsible.

##### b. Access to and Work in Substations

- Only COMPETENT PERSONS, will be permitted to access substations.

- Persons not classified as COMPETENT PERSONS may gain access or work on the system provided they are under the SUPERVISION of, at minimum, a COMPETENT PERSON & issued with a PERMIT-TO-WORK (access).
- Access doors and gates shall normally be kept lock. Keys are to be issued only by the DH or ND.

c. Access to High Voltage Apparatus and Conductors

- Barriers, doors, or gates preventing access to live equipment shall be normally kept locked.
- Keys shall be accessible only by the ND or DH.

d. Access and Work in Fire Protected Areas – CO2 suppression system.

Before access to or work in any enclosure protected by automatic fire extinguishing equipment:-

- The automatic control shall be rendered inoperative and left on hand control" or by use of the "locking pegs".
- The precautions taken shall be recorded on any SAFETY DOCUMENT or written instruction issued, including conditions when the automatic control may be temporarily restored.
- The automatic control shall be restored immediately after persons engaged on work activities have been withdrawn from the protected enclosure or at the end of the working day.

19.11. High Voltage Switching

- a. High voltage switching shall only be carried out by the HVAP
- b. Any concerns over switching, or where switchgear shows signs of distress must be communicated with the Head of Estates or his nominated deputy who will investigate before continuing.

19.12. Records

- a. The CONTROL ENGINEER carrying out the switching on the HV system shall ensure that a record is made of the particulars of on the SWITCHING SCHEDULE & the Mimic panel is updated.

19.13. Use of Voltage Testing Devices

Where approved voltage testing devices are used, they shall be tested immediately before and after use, on an approved tester, as a check on functionality.

19.14. Safety Precautions For Work On or Near High Voltage Systems

#### a. General Requirements

Safe access to conductors can only be achieved after the following steps have been completed. The section of the system to which access is required must be:-

- DEAD
- ISOLATED, and all practical steps taken to lock off from all points of supply, including voltage transformers, auxiliary transformers, common neutral earthing equipment and other sources of supply from which the section of the system can be made LIVE.
- CAUTION NOTICES must be fixed at all points of isolation.
- EARTHED at all points of disconnection of HIGH VOLTAGE supply.
- SCREENED where necessary to prevent DANGER from other LIVE parts of the system.
- DANGER NOTICES to be attached to adjacent live equipment.
- IDENTIFIED at the point of work.
- RELEASED for work by issue of appropriate SAFETY DOCUMENT, PERMIT-TO- WORK/TEST which shall not be issued unless the recipient is fully conversant with the part of the system to be worked on and the nature and extent of the work to be done.
- Where the design of apparatus inhibits compliance with the above steps, the work will be carried out under instruction & agreement of the CONTROL ENGINEER. The instructions shall be documented in writing and signed by the DH or ND.

#### b. Isolation of Apparatus and Conductors:-

- Isolation and re-connection can only be completed with the authority of the CONTROL ENGINEER, DH or ND.
- Dedicated SAFETY LOCKS shall be used to lock open all switchgear at points of isolation.
- Keys shall be kept in a key safe or in the possession of the CONTROL ENGINEER, DH or ND.
- FUSES, LINKS (and carriers) that control circuit to be worked on shall be removed and kept in the custody of the person issuing the SAFETY DOCUMENT, PERMIT-TO-WORK.
- CAUTION NOTICES shall be fixed at all points of isolation.

#### c. Earthing

- Where practical, earthing shall be provided by use of a circuit breaker or earthing switch.
- The trip feature shall normally be rendered inoperative before closing. This renders the switch inoperative whilst it remains a CIRCUIT MAIN EARTH.
- After closing the breaker or switch it shall be locked in the EARTH

- position.
- CIRCUIT MAIN EARTHS can only be applied or removed with the authority of the CONTROL ENGINEER, DH or ND who shall record the time of application and removal.
  - CIRCUIT MAIN EARTHS shall be recorded on the SAFETY DOCUMENT, PERMIT-TO-WORK.

d. Authority to issue a PERMIT-TO-WORK

- Before any work can commence on the High Voltage system a PERMIT-TO- WORK must be issued.
- A PERMIT-TO-WORK can only be issued by the DH or ND who will then act as the CONTROL ENGINEER.

Procedure for Issue and Receipt:-

- A PERMIT-TO-WORK can only be received by a COMPETENT PERSON in charge of the work who shall retain the white (top copy) of the permit in their possession.
- The PERMIT-TO-WORK will be explained by the issuer and the contents read back by the COMPETENT PERSON, who must confirm understanding of the permit, the nature and extent of the work to be done before signing its receipt.
- Where there is more than one working party, each working party must have a separate permit. The PERMITS TO WORK should be cross-referenced.

Procedure for Clearance and Cancellation:-

- The recipient shall sign the permit to **clear** it and hand it to the DH or ND whoever is the CONTROL ENGINEER. Indicating that the work is „complete“ or „incomplete“ and that all gear and tools „have“ or „have not“ been removed.
- The DH or ND whoever is the CONTROL ENGINEER shall **cancel** the permit.
- CIRCUIT MAIN EARTHS shall be removed **only** when **all** PERMITS-TO-WORK associated with the earths have been cancelled.

e. Authority to issue PERMIT-TO-TEST:-

- Before any testing can commence on the high voltage system, a PERMIT-TO- TEST must be issued.
- A PERMIT-TO-TEST can only be issued by the HVAP
- Procedure for Issue and Receipt:-
- A SANCTION FOR TEST can only be received by a COMPETENT PERSON who shall retain the white, (top copy) of the PERMIT-TO-TEST in their possession at all times during testing.

- It will be explained to the COMPETENT PERSON receiving the PERMIT-TO- TEST, who after reading the contents back to the issuer, must confirm understanding of the SANCTION FOR TEST, the nature and extent of the testing to be carried out before signing its receipt.

Procedure for Clearance and Cancellation:-

- The recipient shall sign the document to **clear** it and hand it to HVAP indicating that testing is "complete" or incomplete", all equipment "has" or "has not" been removed and the operational state of the apparatus.
- The HVAP, whoever it is, shall **cancel** it.

19.15. Procedures for Work on Particular Items of Plant, Apparatus and Conductors

a. General Requirements Zone of Work

- When, in order to work on a particular item of PLANT or APPARATUS, a section of the system larger than the "zone of work" is ISOLATED and EARTHED, (as in the case of a Ring Main Unit being maintained) the Safety Rule Requirements for PERSONAL SUPERVISION may be waived by the CONTROL ENGINEER, DH or ND provided that it is for the specified work:-
- Before the waiver the normal requirements should be applied in full.
- All HIGH VOLTAGE apparatus within the "zone of work" are connected to CIRCUIT MAIN EARTHS at the time when the specified APPARATUS is released for work or testing by the issue of a SAFETY DOCUMENT, PERMIT-TO-WORK.
- The DH, or ND whoever is the CONTROL ENGINEER shall, at the time of issue of the SAFETY DOCUMENT demonstrate to the recipient that the APPARATUS, CONDUCTOR(S) are DEAD.
- In these circumstances the COMPETENT PERSON receiving the SAFETY DOCUMENT may, in the course of work or testing, disconnect from the CIRCUIT MAIN EARTHS as required any APPARATUS within the "zone of work".
- The APPARATUS and CONDUCTORS shall be re-connected to the CIRCUIT MAIN EARTHS before the SAFETY DOCUMENT is cleared.
- Precautions shall be taken to prevent danger from potential differences arising from remote earth points by bonding and earthing at a point as near as possible to the point of work.

b. Work on Ring Main Equipment when an LV system backfeed is available.

- When work is to be carried out on HIGH VOLTAGE contacts or connections of Ring Main Equipment where there is a known or potential back feed to the substation, the LOW VOLTAGE switch or links shall be isolated, screened, locked where possible and a CAUTION NOTICE applied.
- Where facilities exist to lock open switches or secure LV control panels a safety lock & a CAUTION NOTICE shall be applied.
- The remote ends of all HIGH VOLTAGE infeeds must be ISOLATED, SAFETY LOCKED & CAUTION NOTICES applied and EARTHED.
- A PERMIT-TO-WORK must be issued for work on the Ring Main Equipment.

c. Withdrawable Apparatus

- All spout shutters not required to be opened for immediate work or operation shall be locked shut, if not otherwise made inaccessible.
- Withdrawn apparatus shall be discharged to earth, but need not remain connected to earth.
- Work on withdrawn apparatus that remains within the immediate area shall be completed under a PERMIT-TO-WORK.

d. Busbar Spouts, Busbars and Busbar connections of Multi-panel Switchboards

ISOLATION - When work is carried out on the above, isolation shall be carried out as follows:-

- The section on which work is to be carried out shall be ISOLATED from all points from which it can be made LIVE.
- Isolation arrangements shall be locked & CAUTION NOTICES applied.
- Where practicable, the shutters of LIVE spouts shall be locked shut.
- CAUTION NOTICES *shall be attached, at all points where the Busbar can be made LIVE.*
- DANGER NOTICES shall be attached on adjacent LIVE apparatus.
- EARTHING - Where practicable, the section of busbar will be verified as DEAD by use of a testing device, typically on the panel where the CIRCUIT MAIN EARTH is to be applied.
- The CIRCUIT MAIN EARTH is to be applied at a panel other than that at which work is to take place, on the ISOLATED section of busbars.

## WORK

- The Authorised Person (HV) shall satisfy themselves that the recipient of the PERMIT-TO-WORK is aware of the location of adjacent live circuits before issuing the permit.
  - Work on busbar spouts will be carried out under the PERSONAL SUPERVISION HVAP This will include:-
    - Identifying spout to be worked on.
    - Provide access by removing shutter locks and
  - Proving spout is **NOT LIVE** using a voltage testing device. Work on busbars or busbar connections shall be completed as follows:-
    - Access shall be identified by the HVAP.
    - Access shall be made by the removal of appropriate cover plates under the PERSONAL SUPERVISION of the HVAP where practicable each busbar or connection shall be proved DEAD by the use of a voltage testing device.
  - The HVAP shall remain on site until he is satisfied that no further access is required to complete the work.
- e. Feeder Spouts and Connections, Voltage Transformer Spouts and Connections and Single Panel Busbar Spouts and connections

ISOLATION - When work is carried out on the above, isolation shall be carried out as follows:-

- The spouts or connections on which work is to be carried out shall be ISOLATED from all points from which it can be made LIVE.
- Isolation arrangements shall be locked.
- The shutters of LIVE spouts shall be locked shut.
- CAUTION NOTICES shall be attached, at all points where the circuit can be made LIVE.
- DANGER NOTICES shall be attached where applicable on adjacent LIVE apparatus.
- EARTHING - Where practicable, the spout contacts or connections shall be verified as DEAD by use of a voltage testing device, typically on the panel where the CIRCUIT MAIN EARTH is to be applied.
- The circuit shall be EARTHED at the point of work and, where reasonably practicable, at all points of isolation.

## WORK

- The Authorised Person (HV) shall satisfy themselves that the recipient of the PERMIT-TO-WORK is aware of the location of adjacent LIVE circuits before issuing the permit. "Danger Electric Shock Risk" sign.
- Work on the feeder, voltage transformer or busbar spouts on a single panel unit will be carried out under the PERSONAL SUPERVISION of Authorised Person (HV) or whoever is the CONTROL ENGINEER.
- This will include:-
  - Identifying spout to be worked on.
  - Provide access by removing shutter locks.
  - Where necessary the CIRCUIT MAIN EARTH may be removed to provide access and prove each spout is DEAD using a voltage-testing device.
- No other work shall be carried out on the circuit whilst earths are disconnected.
- Work on feeder or voltage transformer connections and single panel busbar or connections shall be completed as follows:-
  - Access shall be identified by the Authorised Person (HV)
  - Access shall be made by the removal of appropriate cover plates under the SUPERVISION of the recipient of the PERMIT-TO-WORK with the permission of the Authorised Person (HV).

The Authorised Person (HV) shall remain on site until he is satisfied that no further access is required to complete the work. The Authorised Person (HV) shall take appropriate action to prove that each connection or busbar in the work area is DEAD by using a voltage testing device.

### f. Transformers ISOLATION

- When work is to be carried out on the connections to, or the windings of, a transformer, the switchgear or fuse gear controlling all windings shall be opened, or the windings or connections shall be ISOLATED by other means from LIVE CONDUCTORS.
- Additionally, to prevent the possibility of the transformer being made LIVE by back-feed, all LOW VOLTAGE fuses or links on associated voltage or auxiliary transformers shall be withdrawn and, where practicable, the voltage and auxiliary transformers shall be ISOLATED.
- When work is to be carried out on a HIGH VOLTAGE or LOW VOLTAGE transformer and the LOW VOLTAGE windings of the transformer are controlled by a switch or isolator, the switch or isolator shall be secured open & LOCKED OFF. In

other cases, arrangements shall be made to ensure that the LOW VOLTAGE windings are ISOLATED from all sources of LOW VOLTAGE supply.

- The transformer shall be ISOLATED from all common neutral earthing equipment from which it may become LIVE.
- Before any withdrawable voltage transformer is ISOLATED, or reconnected, the associated HIGH VOLTAGE connections shall, where reasonably practicable, be made DEAD.
- If it is suspected that the voltage transformer is faulty, the associated busbars or feeder connections shall be made DEAD before it is ISOLATED.
- CAUTION NOTICES shall be attached at all points of isolation, including those of LOW VOLTAGE.

#### EARTHING

- The transformer shall be EARTHED at all points of isolation from HIGH VOLTAGE supply.

#### WORK

- The DH, or a ND whoever is the CONTROL ENGINEER shall identify the transformer to be worked on at the point of work before issuing the SAFETY DOCUMENT.

#### g. High Voltage Cables

- Conductors must be DEAD, ISOLATED and EARTHED before the insulation can be interfered with.
- Where a PERMIT TO WORK has been issued to the COMPETENT PERSON the recipient shall spike the cable before starting work.
- Spiking may be omitted when the cable can visually be traced along its entire length from the point of work back to an earthed switch.
- The DH or a ND whoever is the CONTROL ENGINEER shall identify and spike other cables at LU when applicable.
- The DH will be informed before and after any cable is spiked.
- Precautions shall be taken to prevent DANGER from induced or sheath voltage.

#### 19.16. Safety Precautions For Testing Of High Voltage Apparatus

##### a. Testing under a PERMIT-TO-TEST

- Apparatus cannot be connected to the System until it

- has passed the appropriate test.
- Connection can only be made with the sanction of the CONTROL ENGINEER.

The recipient of the Sanction FOR TEST shall:-

- Be responsible for co-ordinating all testing.
- Ensure that the apparatus, test leads and test equipment are suitably protected to prevent DANGER.
- Ensure that "Danger High Voltage Testing" notices are suitably displayed and discharge all cables and capacitors before and after the application of test voltages.

The recipient has the authority to:-

- Remove and replace earths to complete testing without the further reference to the HVAP.
- Make LIVE from a testing supply.
- Where reasonably practicable, CIRCUIT MAIN EARTHS shall be replaced before cancellation of the PERMIT-TO-TEST.

#### 19.17. Responsibilities of Persons

##### a. General

- All persons concerned with work on or in the vicinity of HV apparatus or plant to which these safety rules apply have a duty to comply with these HV rules.
- Responsibilities may be tailored to the individual provided they are documented in the individuals" authorisation.

##### b. HVAPs may:-

- Be nominated to be responsible for a working party.
- Receive and retain a PERMIT-TO-WORK or LIMITATION OF ACCESS confirming they are fully conversant with the nature and extent of the work to be carried out.
- Provide IMMEDIATE or PERSONAL SUPERVISION as required.
- Implement all necessary measures to establish general safety.
- Give authority for work under the SAFETY DOCUMENT they hold.
- Clear SAFETY DOCUMENTS, ensuring that all persons are aware that the safety document has been withdrawn and all tools and equipment removed.

c. An Authorised Contractor may in assume the responsibilities of a

## HVAP

- Be authorised for SWITCHING on the SYSTEM.
- Be authorised to issue a SANCTION FOR TEST.
- Be authorised to issue and cancel a Safety Documents as the HVAP
- Be authorised to identify and spike cables with the permission of the HVAP

d. The DH may:-

In addition to the responsibilities of an ND:-

- Issue and cancel a PERMIT-TO-WORK or PERMIT-TO-TEST. Ensuring that the recipient fully understands the nature and extent of the work or testing to be done.
- Provide IMMEDIATE or PERSONAL SUPERVISION on work specified as requiring a DH or ND.
- Take on the responsibilities of a CONTROL ENGINEER for specified sections of a system.

e. The CONTROL ENGINEER has responsibility for and authority to:-

- Release apparatus or plant from service.
- Give authority for all HIGH VOLTAGE SWITCHING.
- Give authority for the issue of and acknowledge cancellation of SAFETY DOCUMENTS.
- Maintain a written record of all operations and the issue and cancellation of SAFETY DOCUMENTS on the system.

### 19.18. Access to Substations - General Safety Requirements.

**BEFORE YOU ENTER** - Unlock and open substation door

**STOP**

**SMELL** for BURNING, GAS, OZONE

**LISTEN** for a CRACKLING or HISSING sound (it is normal for transformers to hum or buzz)

Use your torch

Check the access i.e. is there a step down?

Find the light switch and switch on

**LOOK**

Is the access clear and unobstructed?

Any open trenches in floor?

Enter substation

**CHECK**

Is there an automatic fire protection system (CO<sub>2</sub>) installed.

If so refer to **section 10.d**

Access and work in Fire protected areas.

KEEP CLEAR OF HIGH VOLTAGE SWITCHGEAR, TRANSFORMERS AND LOW VOLTAGE SWITCHGEAR. DO NOT TOUCH ANY EQUIPMENT OTHER THAN YOU HAVE BEEN INSTRUCTED TO DO.

Carry out work

Leave substation, switch off light

**LOCK THE DOOR AND CHECK IT IS SECURE. IF YOU NOTICE ANY ABNORMALITIES, REPORT THEM TO THE DH or ND.**

## **20 FURTHER GUIDANCE**

Electricity at Work Regulations (1989)

NHS Health Technical Memorandum HTM 06-01

NHS Health Technical Memorandum HTM 06-02

NHS Health Technical Memorandum HTM 06-03

BS7671 IEE Wiring Regulations

## **21 REVIEW**

This document will be reviewed every three years to accommodate any alterations to the working procedures, or earlier should subsequent legislation dictate.

## Appendix A: Names, Roles, Contacts & Keyholders – as at January 2017

**N.B. This list may be updated without the need to update the Policy.**

### **A1: Designated Personnel & Policy Circulation List**

Title	Name	Role	Contact Details
Chief Executive	Helen Scott-South	Duty Holder	01283 566333 x5517
Associated Director of Estates and Facilities	Geoff Neild	Designated Person	01283 566333 x6503
Authorising Engineer. (Current AE contact details can be provided by Estates & Facilities upon request)	Externally sourced - Current Provider: Sterling Power	Authorising Engineer	0121 585 4526
Head of Facilities and Capital Planning	James Chadwick	* Authorised Person LV & HV	01283 566333
Senior Estates Manager	Phil Burrows	* Authorised Person HV & LV  ** Co-Ordinating AP	01283 566333
Competent Persons	Craig Hooton		
	Graham Fisher		
	Lee Marchant		
	John Fower		
	* = Persons nominated under the Permit to Work Scheme		

## Appendix B: Live Working Procedure – August 2017

### Contents

Paragraph	
1	<a href="#">Circulation</a>
2	<a href="#">Scope</a>
3	<a href="#">Definitions</a>
4	<a href="#">Reason for development</a>
5	<a href="#">Aims and objectives</a>
6	<a href="#">Standards</a>
7	<a href="#">Responsibilities and roles</a>
8	<a href="#">Training requirements</a>
9	<a href="#">Monitoring and Compliance</a>
10	<a href="#">Associated Documents/Other information</a>
Additional Information and Documentts	
	Defined Work Activities Flowchart
	Category A Flowchart
	Category A (Fixed Wire Test) Pre-Work Risk Assessment
	Category B Flowchart
	Category B Live Functional or Diagnostic Testing Consent Form
	Category C Flowchart
	Category C Live working Activity Assessment Form
	Certificate of Authorisation for Live Working

## 1 Circulation

All trust staff and Approved Contractors

## 2 Scope

- 2.1 This policy sets out the procedure for working on or testing low voltage electrical equipment on the Trust low voltage network. The policy enables live working or testing to be completed in compliance with the Electricity at Work Regulations 1989, Regulation 14 and Health Technical Memorandum 06-02.

## 3 Definitions

### 3.1 HTM: Health Technical Memorandum

**LV:** Low Voltage

**PPE:** Personal Protective Equipment

**Form 4:** Standards of physical separation of electrical conductors used during the construction of electrical equipment.

**IP2X/ IPXXB:** Standard of ingress protection for electrical equipment to prevent inadvertent contact with electrical conductors.

**Authorised Person:** Individual with technical competence and knowledge authorised to secure points of isolation on complex networks and issue safety documents.

**Competent Person:** Individual with technical knowledge and training to secure single points of isolation on non-complex systems and work in receipt of safety documents.

**Accompanying Safety Person:** Individual not directly involved with the works or test, however can respond as briefed in the event of an electrical accident.

## 4 Reason for development

To protect persons and property against dangers and damage which may arise in the reasonable use of electrical installations / equipment.

To ensure that all staff are aware of their responsibilities towards electrical safety.

Management policy towards electrical safety, control and safe use of electrical equipment and rules for those working on electrical installations and equipment.

This policy applies to all Trust staff and all persons working within Trust properties.

## 5 Aims and Objectives

- 5.1 The aim of this policy is to enable electrical works or testing categorised as live working under the Electricity at Work Regulations 1989 to be risk assessed and completed safely. The policy builds upon the guidance provided within HTM 06-02 and provides enhanced levels of working procedures, risk assessment and approval.

## 6 Standards

- 6.1** When it is not reasonably practicable to isolate the low voltage equipment on which work or testing is to be carried out, work or testing may be carried out with the low voltage equipment live under the following conditions:
- i. No work or testing shall be carried out except in accordance with an approved safe system of work.
  - ii. The feasibility of work being carried out on live low voltage equipment shall be assessed by an Authorised Person who shall specify the approved procedure to be followed. The assessment of the work activity shall include an evaluation of the risk from Arc Flash and the requirement to specify Personal Protective Equipment (PPE) requirements.
  - iii. Risk of injury shall be prevented by the combination of training, the use of an approved safe system of work and the use of approved tools and Personal Protective Equipment (PPE).
  - iv. The work or testing shall only be carried out by a Competent Person who has been adequately trained and is experienced in the type of work or testing to be undertaken.
  - v. When work is to be carried out on live low voltage equipment, the Competent Person carrying out the work shall be accompanied by another person who has been trained to recognise danger and can, if necessary, render assistance in the event of an emergency.
  - vi. When Live testing is to be carried out, consideration shall be given by an Authorised/Authorised Person to the Competent Person being accompanied by another Person who has been trained to recognise danger and can, if necessary, render assistance in the event of an emergency.
  - vii. For the avoidance of doubt, operational switching and linking on live low voltage systems can be carried out by an Authorised Person unaccompanied.
  - viii. The Competent Person shall understand the danger which may arise during the work or testing, and the precautions which need to be taken to prevent injury and can always recognise whether or not it is safe for the work or testing to be carried out.
  - ix. Persons who are required to carry out work or testing on live low voltage equipment should first remove any metallic objects such as wristwatches, rings, wristlets, cufflinks, pendants, pens etc., which could cause short circuit if they accidentally come into contact with live conductors.

- 6.2** Before work or testing is commenced on live low voltage equipment the following conditions shall be met:
- i. The defined work activity shall be identified as defined in Appendix 1. Once identified the appropriate process and form shall be completed:
    - a. Category A (Fixed Wiring Test) Pre-Work Risk Assessment (Appendix 2)
    - b. Category B Live Functional or Diagnostic Testing Consent Form (Appendix 4)
    - c. Category C Live Working Activity Assessment Form (Appendix 6)
  - ii. If work which is defined as Category C is to be completed, this must be approved by the Authorising Engineer in writing where specified in the flowchart (Appendix 5). An Certificate of Authorisation for Live Working (Appendix 7) must also be completed prior to works commencing.
  - iii. Low voltage equipment shall be visually inspected for soundness. Low voltage equipment that exhibits corrosion, damage or is faulty shall not be tested or worked on live.
  - iv. There shall be adequate working space and a safe means of access and egress provided. The working space and the low voltage equipment on which work or testing is to be carried out, shall have adequate lighting.
  - v. All adjacent metal that is electrically bonded to earth or conductors that are at a different potential to that on which work is to be carried out shall be screened or shrouded with approved insulating material to avoid danger. The material used for screening shall be of sufficient strength to withstand an accidental blow from a tool without tearing or otherwise ceasing to be effective.
- 6.3** When work is carried out on live conductors precautions shall be taken to ensure that only one conductor is exposed at any time.
- 6.4** Where necessary to prevent danger, approved safety equipment (insulated tools, insulating gloves, and insulating stands or mats, as appropriate), shall be used and work shall not proceed unless the necessary approved safety equipment and suitable PPE has been provided. Rubber boots shall not be used as an alternative to approved insulating stands or mats.
- 6.5** Where necessary to prevent danger, approved barriers, warning notices, etc., shall be used to prevent access to the work or test area by other persons.
- 6.6** Testing and running adjustments may be made with the low voltage equipment live provided approved safety equipment is used. If the testing or adjustment requires the removal of Live or metallic components, the requirements of paragraphs 6.1 – 6.5 above, should be met.

- 6.7** Where the testing or adjustment requires covers of live low voltage equipment to be removed so that terminals or connections that are live, or can be made live, are exposed, then precautions shall be taken to prevent unauthorised access to, or interference with, the live low voltage equipment. Such precautions shall include, where necessary, personal supervision and/or the erection of suitable barriers and the displaying of Danger Notices.

## **7 Responsibilities**

### **7.1 Director of Estates**

Has the responsibility for ensuring this policy is implemented within the organisation as the Duty Holder for the Trust. Operational management is delegated to the Estates Management Team.

### **7.2 Head of Estates**

Has responsibility for the operational management of this policy within the Trust. Will lead the review of this policy should additional requirements be identified.

They shall ensure that the Authorised Person takes technical responsibility for the implementation of the policy.

### **7.3 Estates Authorised Persons:**

The Estates Authorised Person shall take lead technical responsibility for the implementation of this policy and working procedures. They shall ensure that Competent Persons are able to comply with the policy with sufficient levels of training, awareness and equipment as specified within the working procedures.

### **7.4 Estates Competent Persons**

Shall abide by the requirements of this policy whilst working on Trust LV electrical networks. Shall follow the procedures when identifying the type of work and additional risk mitigation measures required to complete testing or works.

### **7.5 Appointed Contractors**

Must abide by this policy when working on all LV networks controlled by the Trust. Shall be responsible for the provision of all PPE, equipment and documentation required to comply. Must ensure any contracts sub-let are managed in line with the terms of this policy.

## **7.6 Authorising Engineer**

The Authorising Engineer shall provide independent advice and guidance. The Authorising Engineer shall include the auditing of the implementation of this policy as part of the AE duties.

## **8 Training Requirements**

- 8.1** Authorised Persons and Competent Persons shall be trained to a suitable standard in order to implement the requirements of this policy. Competence shall be demonstrated through assessment and interview by the appointing officer.

## **9 Review**

These procedures will be reviewed every three years to accommodate any alterations to the working procedures, or earlier should subsequent legislation dictate.

## **10 Associated Documents/Other information**

### **10.1 References:**

Electricity at Work Regulations 1989

Health and Safety at Work Act 1974

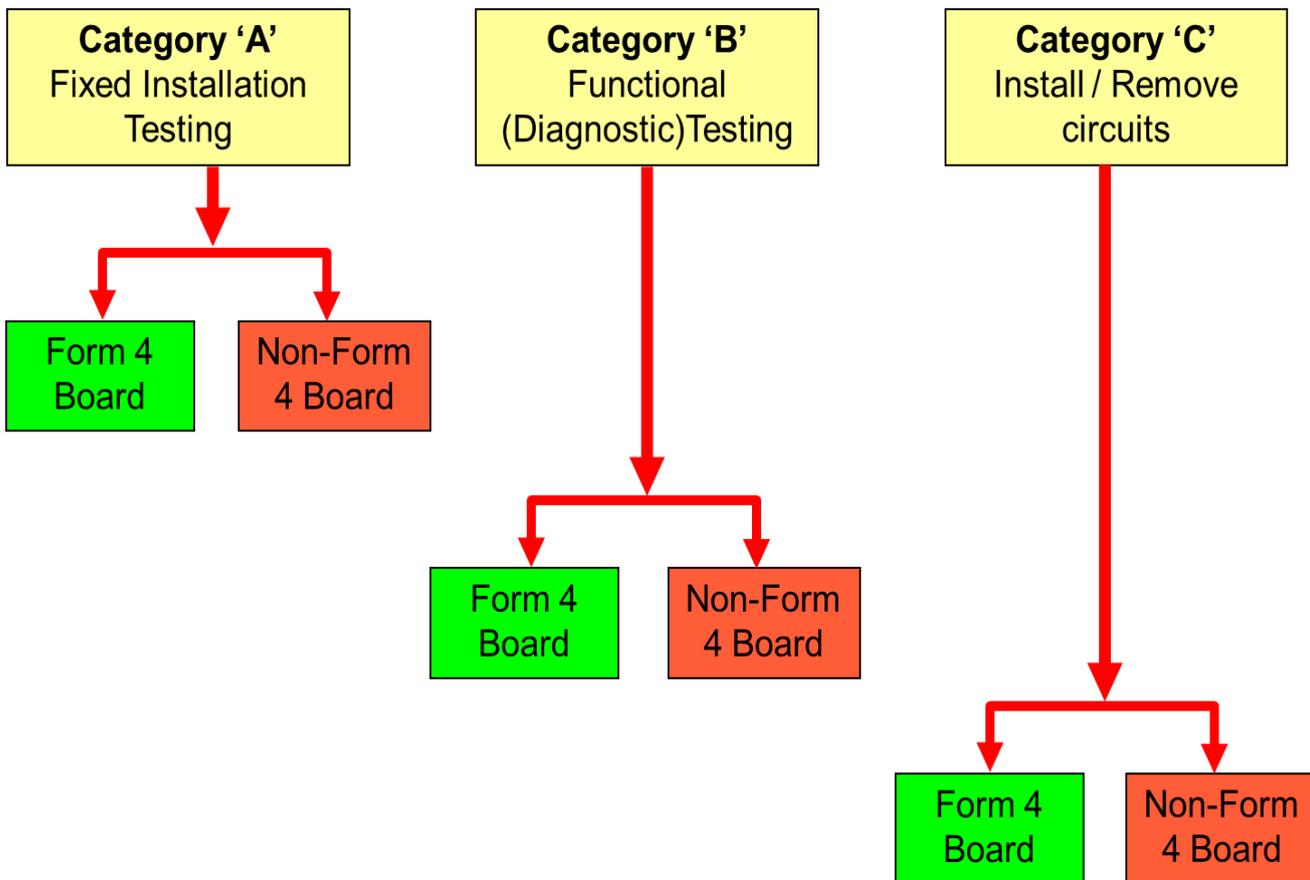
Health Technical Memorandum 06-02

Health and Safety Guidance Note 85 (HSG 85)

IEE BS7671 Requirements for Electrical Installations

Electrical test equipment for use on low voltage electrical systems Guidance Note GS38 (Fourth edition)

## Appendix C: Live Working Categories – August 2017

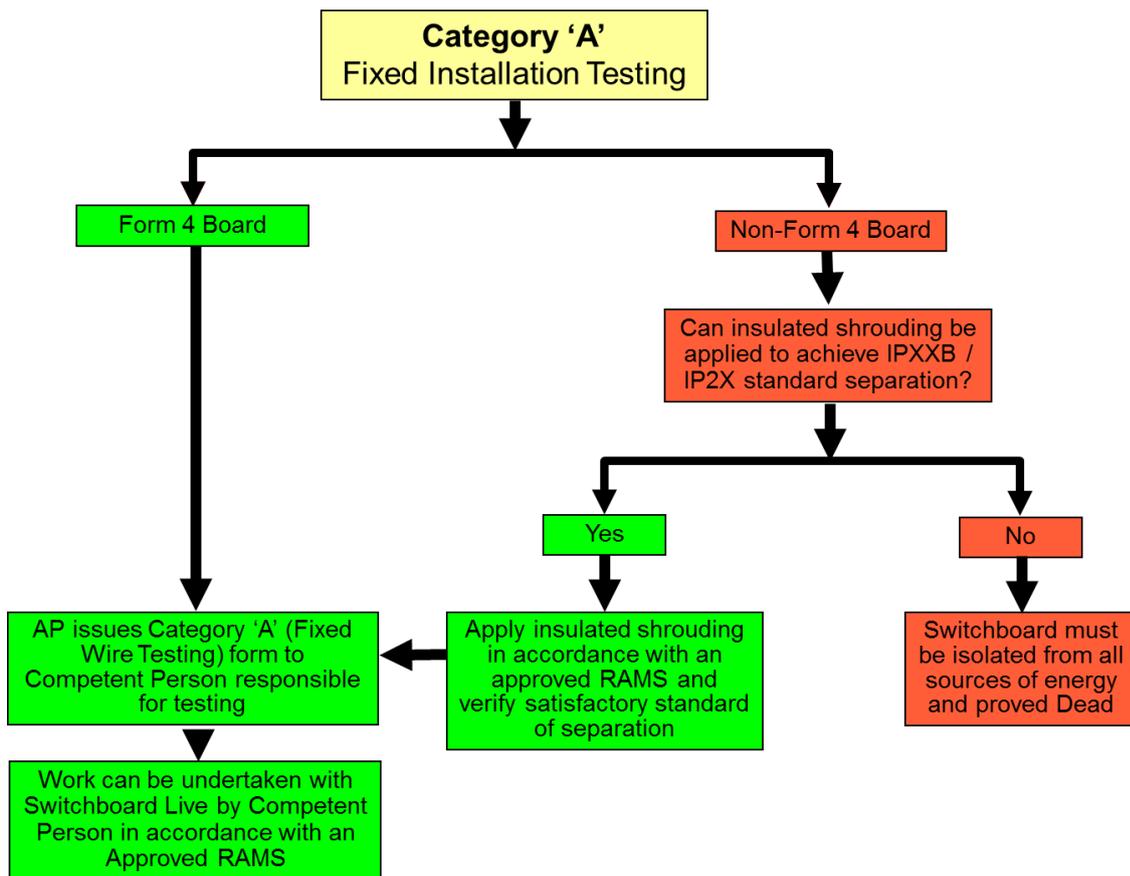


### Notes:

Three basic categories have been established and these split into Form 4 & Non-form 4

Cat 'A' Consent form to be completed and issued to person responsible for the testing – see next page.

## Appendix D: Live Working Flowcharts – August 2017



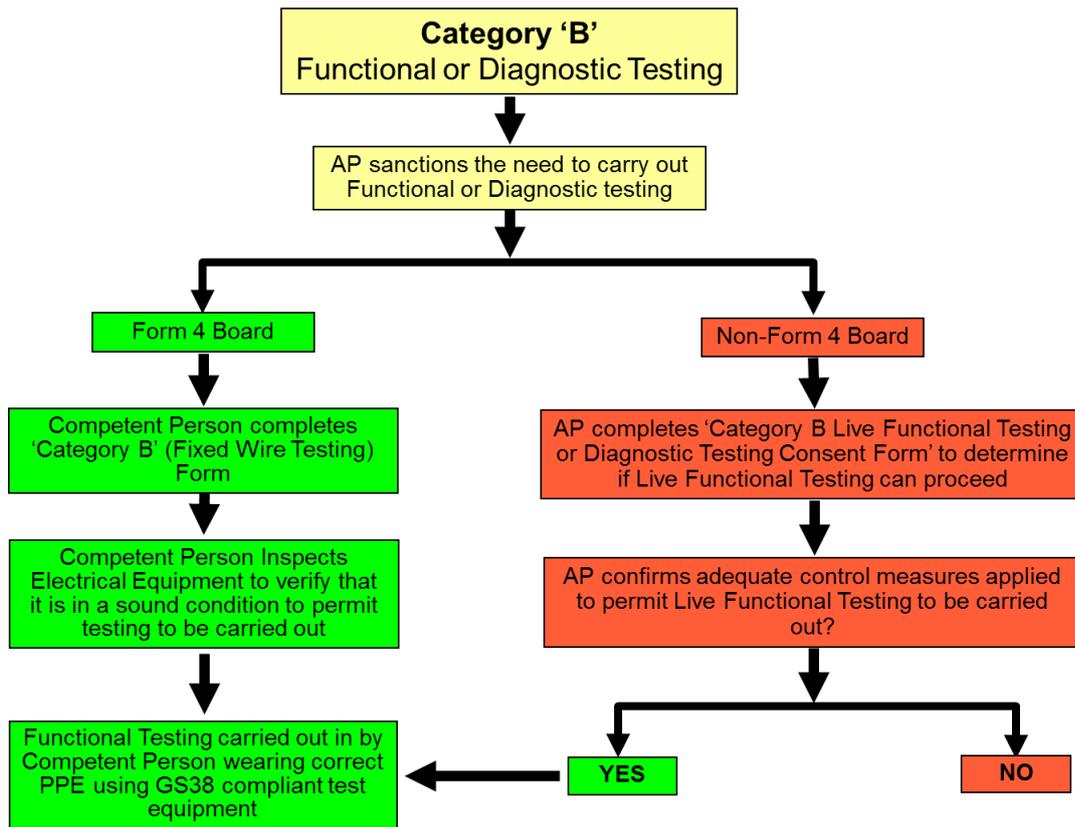
## Category A (Fixed Wiring Test) Pre-Work Risk Assessment Form

Form Number:

Works Number:

Section 1: Distribution Boards to be tested			
Location:		Distribution Board ID:	
Section 2: Persons responsible for the pre-work Risk Assessment and testing activities			
Person-in-Charge (block caps):		Employed by:	
Person assisting with testing activity (where required)		Employed by:	
2a.	Are the above named persons aware of the requirements and procedures set out by the Trust's Safety Rules?	Yes	No
2b.	<b>If the answer to the above question is NO, the testing cannot commence</b>		
Section 3: Confirmation of type of Distribution Board to be worked on			
3a.	Is the Distribution Board identified in Section 1 Form 4 or Non-Form 4 compliant (by visual inspection)?	Form 4	Non-Form 4
3b.	If the Distribution Board is Non-Form 4, but additional insulated shrouding has been added, is the separation standard is deemed to be to an equivalent IPXXB / IP2X standard?	Yes	No N/A
3c.	<b>If the answer to the above question is NO, the testing cannot commence</b>		
Section 4: Risk Assessment and Safety checks prior to testing			
4a.	Test equipment calibration date is OK for all devices?	Yes	No
4b.	Risk Assessment Method Statement (RAMS) for test activity confirmed as latest approved version?	Yes	No
4c.	Has the Competent Person an up-to-date copy of RAMS and is familiar with its requirements?	Yes	No
4e.	Person(s) named in Section 2 has appropriate Approved PPE for testing activities?	Yes	No
4f.	Emergency response procedures known and understood	Yes	No
<b>NOTE: if any of the above questions (4a – 4g) has been answered NO, the testing cannot commence</b>			
4g.	Is there a need for a Safety Accompanying Person for the testing?	Yes	No
4h.	Is there a need for additional supervision to be in attendance whilst testing is being carried out (clinical engagement)?	Yes	No
4i.	RAMS document No:		Date of issue:
Section 5: Confirmation that testing may proceed			
I confirm that the Distribution Board listed in Section 1 comply to Form 4 standards, or additional insulation has been applied to achieve an equivalent IPXXB / IP2X standard. I also confirm that I am satisfied that it is safe to proceed with the testing and I am competent to carry out this work in accordance with the RAMS document detailed above.			
Signed: ..... being the Person-in-Charge named in Section 2			
Section 5: Clearance (completed by the Person-in-Charge)			
I confirm that the testing has been completed and all doors/covers closed and all tested circuits are restored to normal operation.			
Signed: ..... Time: ..... Date: .....			

Issue 3: 21<sup>st</sup> March 2017



**Notes:**

Category B will include things like Thermal Imaging

**Definitions from HTM 06-02:**

**Live functional testing:** the testing of electrical equipment while live which does not involve live working.

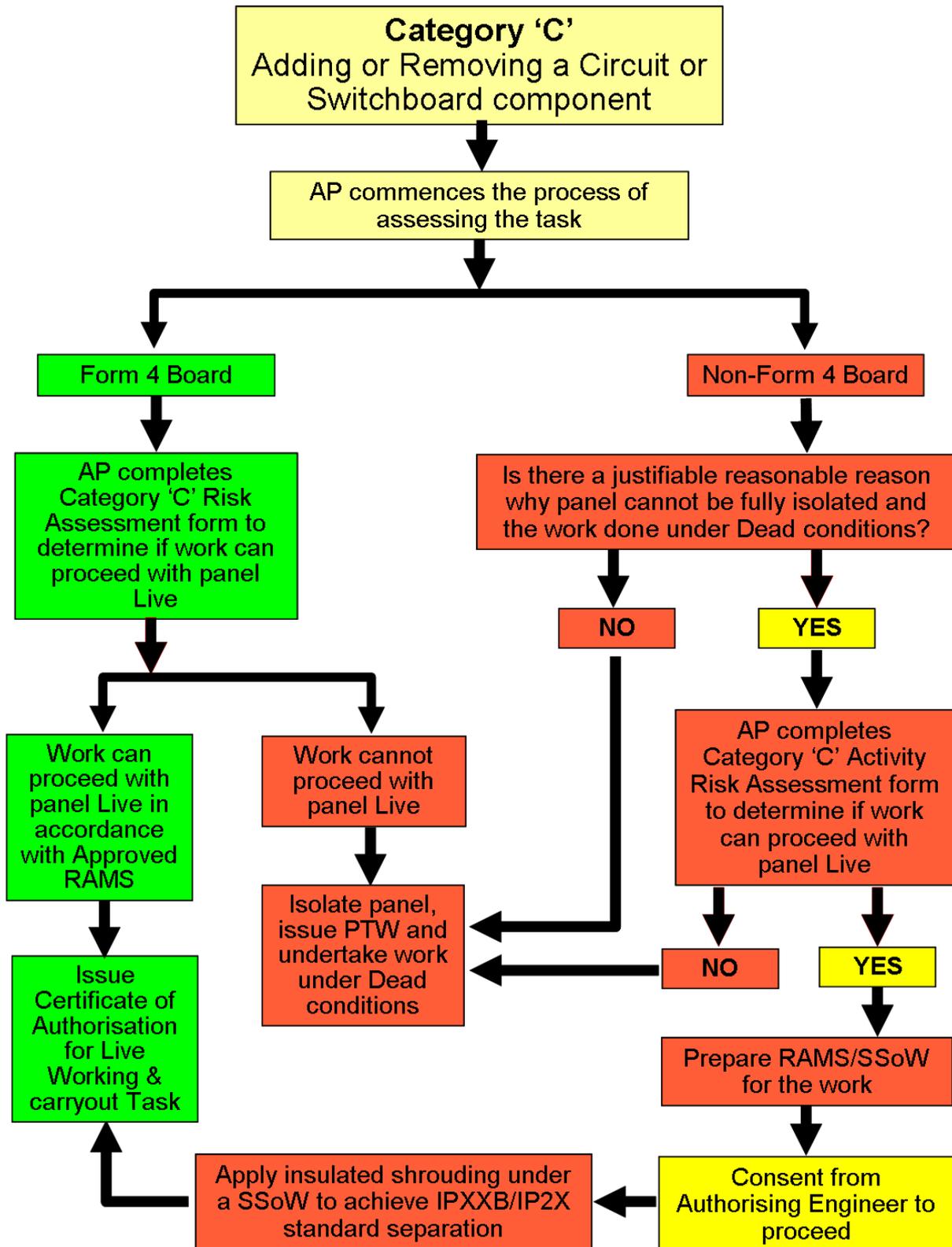
**Live working:** the connection/disconnection of electrical equipment while live.

## Category B Activity – Live Functional or Diagnostic Testing Consent Form

Form Number:

Works Number:

<b>Section 1: Equipment upon testing is to be carried out</b>			
Location:		Distribution Board ID:	
<b>Section 2: Persons responsible for the pre-work Risk Assessment and testing activities</b>			
Person-in-Charge (block caps):		Employed by:	
Person assisting with testing activity (where required)		Employed by:	
2a.	Are the above named persons aware of the requirements and procedures set out by the Trust's Safety Rules?	Yes	No
2b.	<b>If the answer to the above question is NO, the testing cannot commence</b>		
<b>Section 3: Authorised Person reason and consent to carry out Live testing</b>			
Is the Distribution Board identified in Section 1 Form 4 or Non-Form 4 compliant (by visual inspection)?		Form 4	Non-Form 4
If the Distribution Board is Non-Form 4, but additional insulated shrouding has been added, is the separation standard is deemed to be to an equivalent IPXXB / IP2X standard?		Yes	No
Type of Equipment upon which testing will be carried out:	<input type="checkbox"/> Main Distribution Board	<input type="checkbox"/> Sub-Distribution Board	<input type="checkbox"/> Other (Please Specify)
Other:			
3.1	Is Live Testing necessary?	Yes	No
3.2	Reason:	(Tick)	
	a. Disruption of services		
	b. Fault diagnosis not practical Dead		
Signed:		Print name:	
		Date:	Time:
<b>Section 4: Competent Person's risk assessment</b>			
4.1	Are you a Competent Person authorised for Live Testing?	Yes	N/A
4.3	Have unnecessary personnel been removed from the test area?	Yes	No
4.4	Can you control the work area to achieve safe working?	Yes	No
4.5	Do you have all the information required to do the work?	Yes	No
4.6	Rubber Gloves (Class '0' – 1000volt rating)	Yes	No
4.7	Approved Insulated tools suitable for the proposed testing	Yes	N/A
4.8	Approved GS38 compliant test instruments with fused leads	Yes	No
4.9	Approved Insulated shrouding available (where required)	Yes	N/A
4.10	Barriers (where required)	Yes	N/A
4.11	Approved PPE appropriate for the testing activity	Yes	No
<b>Note:</b> If you have answered NO to any of the above questions LIVE TESTING CANNOT TAKE PLACE			
<b>Section 6: Competent Person's confirmation safe to commence testing</b>			
I have carried out the above checks and I am satisfied that it is safe to proceed. I confirm that I will carry out the tests in accordance with the Trusts Approved procedure for Functional Testing.			
Signed:		Print name:	
		Date:	Time:
<b>Section 7: Confirmation of testing completed</b>			
I confirm that the testing is now complete and that doors and access covers removed for testing have been closed or refitted.			
Signed:		Print name:	
		Date:	Time:
<b>Notes:</b>			
1. If your tests indicate that a component needs to be removed or replaced, this exceeds the level of consent provided in this document as the activity will no longer be considered as testing. Please refer back to the electrical Safety Rules.			
2. If completed by a Competent Person, this document must be returned to your supervisor			



## Category C Live Working Activity Assessment Form

Form Number:

Works Number:

This form must be completed by an Authorised Person before any Category 'C' activities are carried out on Low Voltage Distribution Boards which will remain Live.

### Section 1: Equipment to be worked on

Location:		Verified Form 4	
Distribution Board ID:		Yes	No

### Section 2: Nature of work to be carried out

Connect additional circuit:		Disconnect/Remove existing circuit	
Add Switchboard component:		Remove switchboard component	
Other activity (describe):			

### Section 2: Form 4 Switchboard Assessment

2.1	Can the work be carried out with the Switchboard Dead and fully isolated?	Yes	No
2.2	If the answer to above question is NO, are there justifiable reasons why the switchboard should not be fully isolated and worked on under Dead conditions?	Yes	No
2.3	Is the switchboard in a sound condition with all parts fully IPXXB and IP2X compliant?	Yes	No
2.4	Is there a risk that the proposed work activity could affect the integrity of the panel's insulation/separation with the risk of contact with Live conductors or short circuit?	Yes	No

**NOTE: if any of the above questions has been answered NO, the work cannot commence until adequate safety measures have been applied**

### Section 3: Non-Form 4 Switchboard Assessment

3.1	Can the work be carried out with the Switchboard Dead and fully isolated?	Yes	No
3.2	If the answer to above question is NO, are there justifiable reasons why the switchboard should not be fully isolated and worked on under Dead conditions?	Yes	No
3.3	If the answer to above question is YES, is your initial assessment that the work could be undertaken with the panel Live subject to the following requirements:		
	a) Can a suitable bespoke Safe System of Work (SSoW) be devised following a detailed Risk Assessment, to permit the work to be carried out safely?	Yes	No
	b) Can suitable insulated shrouding be applied under an approved SSoW which will achieve an IPXXB/IP2X standard of insulation/separation in order to prevent accidental contact with Live conductors or Short Circuit?	Yes	No
	c) Have the persons who will undertake the work the necessary level competence?	Yes	No

**NOTE: If any of the above questions has been answered NO, the work cannot commence unless the Switchboard is Dead, fully isolated and a PTW issued**

### Section 4: Proposed actions arising from the above assessments

4.1	Assessment indicates that the work cannot be undertaken under Live Conditions – panel must be made Dead and fully isolated from all sources of energy and a PTW issued	Yes	N/A
4.2	Assessment indicates that the work could be undertaken under Live Conditions – subject to: a) The preparation of a fully Risk Assessed SSoW b) Consent for the work (in writing) to proceed granted by the Authoring Engineer c) The application of insulated shrouding to achieve an IPXXB/IP2X standard of insulation/separation d) A Certificate of Authorisation for Live Working issued and work carried out Personal Supervision of an Authorised Person	Yes	N/A

### Section 5: Authorised Person completing this assessment

Signed:		Print name:		Date:	Time:
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Category C Live Working Activity Assessment Form

Issue 3: 21<sup>st</sup> March 2017

Serial No

Location



**Front – original**

**Certificate of authorisation for live working**  
 (Complete precisely and legibly in BLOCK CAPITALS)

**Part 1: Issue**

Issued to .....

I hereby authorise the above named Authorised or Competent Person to work on the low voltage electrical equipment specified below whilst it is **live**, but only if accompanied by one or more members of the working party while the work is in progress. Form LW1 has been completed and is attached:

Working party members

Location of equipment

Details of equipment to be worked on

Precautions to be taken, for example rubber gloves, mats, **insulated** tools, screening etc

Details of work to be undertaken **live**

**No other work shall be carried out**

**Authorised Person**

Signed ..... Time ..... Date .....

Original (pink) copy to  
White copy to

HTM 06-02/03 CALW1 Ver 1.0