

Estates and Facilities

**OPERATION AND MAINTENANCE OF THE 11,000 VOLT ELECTRICAL
DISTRIBUTION SYSTEM**

POLICY

POLICY STATEMENT

1.0 HV Electrical Distribution Systems Maintenance Policy

The University aims to manage, operate and maintain the HV Electrical Distribution System in a manner, which as far as it is reasonably practicable, ensures that it is:

- Managed, operated and maintained in a safe manner.
- Complies with all relevant legislation.
- Minimises the risk of unforeseen major defects, which might adversely affect the core business of the University.
- Protects the asset value and optimises the life of components, consistent with their intended use.
- Establishes robust maintenance processes.

2.0 Scope of the Policy

This Policy applies to all University HV electrical Distribution Systems.

3.0 Delegated Responsibility

Estates and Facilities: The responsibility for maintenance of the University's HV Electrical Distribution System is delegated to Estates and Facilities.

The management, control, operation and maintenance of the High Voltage and Low Voltage distribution systems at the University of Reading is the responsibility of the appointed Duty Holder. The Duty Holder will be a Senior Authorised electrical engineer, appointed in writing by the Director of Estates and Facilities, Head of Function, with the technical knowledge and experience to ensure safe working practises, in respect of work activities on or near electrical equipment, being implemented.

- To meet this aim HV Electrical Distribution Rules will be issued to Authorised staff. (Appendix 6)
- All excavations and groundwork should follow Authorisation to Dig. (Appendix 7)

In the prolonged anticipated absence of the Duty Holder (e.g. holidays or sickness), a designated deputy will be appointed.

System Operations

All operations and actions concerning the HV system shall comply with the Health and Safety Electricity at Work Regulations 1989 and any subsequent amendments. Copy held by Duty Holder

4.0 Policy Review

This policy document will be reviewed on a two year cycle.

Estates and Facilities

OPERATION AND MAINTENANCE OF THE 11,000 VOLT ELECTRICAL DISTRIBUTION SYSTEM

PROCEDURES

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1.0 Procedure for Authorised Personnel

- The Director of Estates and Facilities, Head of Function, on behalf of the University of Reading, shall appoint a Duty Holder, in writing, which imposes duties on the Duty Holder for the management, control, operation and maintenance of the 11kV and LV Distribution Systems
- The Duty Holder will be responsible for authorising persons to various levels of responsibility, depending on their technical knowledge or experience.
- Model Authorisation for Personnel - Appendix 2.
- In the event of an expected absence (e.g. holidays) the Duty Holder will delegate his duties to a person already authorised to carry out a degree of operations on the network.
- The Director of Estates and Facilities, Head of Function, will be informed in writing of the period of take over.
- Authorised persons will undertake training on a regular basis (once every three years) which will include live operation of the HV network.
- It is the responsibility of the Duty Holder to control and maintain the network so that it is safe for operation and as far as practical causes no undue risk to persons working on that equipment.

2. Procedure for Authorisation Cards

- Prior to Authorisation for Entry to Substations, individuals shall complete a Safe Entry to Substations course
- A Model Authorisation for Personnel- appendix 2.
- All persons authorised to enter substations will carry their cards detailing their level of competency at all times whilst in the substation.
- A Model Authorisation Card - appendix 3.
- The current list of persons holding authorisation for entry only to substations is held in the Estates and Facilities Training Database.

3. Procedure for Permit To Work And Safety Documentation

- University of Reading operates a strict regime of Electrical Permits to Work and safe isolation procedures
- HV permits and safety documentation may only be issued by suitably authorised personnel with a written Authorisation Certificate issued either by the Duty Holder, Preferred H.V. Contractor or Regional Electricity Distribution Company.

3.1 Safety Locks (Personal)

- Personal locks shall be used for all switching operations that are required for isolation as per the University Distribution Safety Rules, with Warning Notices.
- Examples of Warning Notices - appendix 4.

3.2 PPE Clothing (ARC BAN)

- ARC resistant clothing shall be worn for all HV switching operations.
- Garments may be layered to provide the following levels of protection:
 - Substation Entry Inspection Works , HV – **4kA**
 - HV Switching – **7kA**
 - LV isolation – **4kA PLUS FACE SHIELD & GLOVES**

4. Procedures for Access to Substations

- Any person requiring access to Substations or HV Switch Rooms must hold an Authorisation Certificate or Limitation of Access issued by an Authorised Person or be accompanied by a certificate holder.
- Access to the Regional Electricity Distribution Company “Reading University” Primary 33/11kv Substation (W184) persons must hold authorisation from the Regional Electricity Distribution Company or be accompanied by an Authorised Person with suitable authorisation.

4.1 Limitation of Access

- In addition to persons authorised to carry out electrical work, additional persons may, if deemed suitably trained and assessed, be authorised by the Duty Holder to enter substations to carry out certain work without the requirement of a Limitation of Access.
- This work would be restricted to non intrusive maintenance by competent University personnel.
 - cleaning,
 - lamp replacement work etc
- Work carried out by persons not authorised for entry will require the issue of a Limitation of Access.

4.2 Substation Keys (ASSA ETN 396)

- The University of Reading operates a strict regime of recording substation keys issued to staff.
- Up to date log held by the Duty Holder
- All keys shall be returned to the Duty Holder on leaving the employment of the University

5 Procedures for Control of Network (Status)

- Located in the Regional Electricity Distribution Company “Reading University” 33/11kv Primary substation is a control board.
- Displayed on this board will be the current network schematic drawing (W998CE197RT) and cable route drawing (W099B329).
- There are two hooks provided for the location of Switching Programmes and Permits currently raised for work being undertaken on the network.
- A third hook is provided to indicate the normal / abnormal status of the network providing instant indication of the network condition, highlighting any changes to open points or work being carried out on the network.
- A small key box is located at the bottom left hand side of the board secured by the Regional Electricity Distribution Company “X” key.
- This box contains two keys ETN 396 and ETN 630.
- These keys give the Preferred H.V. Contractor or Regional Electricity Distribution Company suitably Authorised Persons access to the University of Reading substations and switchgear.

Use of these keys is conditional upon two factors.

- (i) Permission must be obtained from the University Duty Holder/Designated Deputy.
- (ii) The use shall be recorded in the key book provided within the box.

This book shall be regularly checked by the University’s Duty Holder to ensure that all use of the keys is correctly recorded.

5. Procedures for Control Of Network (Status)

- **JOA SO-043 – The University has a Joint Operating Agreement covering cross boundary working and network operation in place with the Regional Electricity Distribution Company. Switching on the network may only be carried out in compliance with this JOA and its Appendix A.**
- When operating under JOA SO-043 through SSEPD Network Management Centre (NMC), the SAP/AP will use the SMS “Messaging Updating Service” to identify himself to the NMC.
- A Switching Programme shall be prepared by an Authorised Person and checked by the Duty Holder prior to any operation of the H.V. network by University staff.
- The Duty Holder may if he considers the Preferred H.V. Contractor or Regional Electricity Distribution Company person is Senior Authorised sign part of a network over to that person so that work may be undertaken by the Preferred H.V. Contractor or Regional Electricity Distribution Company personnel.
- Prior to any work commencing, an Electrical Permit to Work or relevant Safety Documentation shall be issued.
- All switching carried out by the University AP will be controlled by the use of the Control Board or as detailed in JOA SO-043.
- Preferred H.V. Contractor and Regional Electricity Distribution Company will use their central control, but copies of Switching Programmes and Permits must be displayed on the control board to keep University personnel adequately informed of the network status at all times.
- After operation of the network the control board must reflect the true status and any changes returned to the normal state.
- **Only one person may have control of a section of the network at any one time.**

5. Procedures for HV Faults & Loss Of Supply

5.1 Loss of supply (During working hours 08.00 – 16.00)

- The call will come in via Security or the buildings concerned to the 'Help Desk'.
- The Help Desk will raise a 'Wren' and call the maintenance office (ext. 6278) who will contact an University Authorised Person.
- The Authorised Person will then take whatever action he deems necessary to reinstate the supply.

5.2 Loss of supply (Out of hours 16.00 – 08.00)

- Should there be a loss of supply out of hours; security will call the duty engineer.
- The duty engineer will immediately call the Duty Holder or an Authorised Person who will attend site to investigate the fault.
- The Authorised Person will then take whatever action he deems necessary to reinstate loss of the supply.

5. Procedures for HV Faults & Loss of Supply

5.3 **If an H.V. loss has occurred then the Authorised person will contact the Duty Holder prior to taking any actions**

- JOA SO-043 Appendix A must be complied with.
- All HV switching operations must be carried out with 2 Authorised Persons present.
- If only one University Authorised Person is available to attend, the University's Authorised Person will then contact the Preferred H.V. Contractor control and request the assistance of the Preferred H.V. Contractor Authorised Person.
- The University Authorised Person will then hand the network over to the Preferred H.V. Contractor Authorised Person in order for switching and isolation to take place to isolate any faulty section of the network and restore HV Supplies.
- All emergency HV switching and isolation shall be carried out to the University Distribution Safety Rules or Regional Electricity Distribution Company Distribution Safety Rules.
- Switching etc will be recorded on a blank Switching Programme as it progresses.
- Discipline in respect of the Control Board will be strictly adhered to in order for the Duty Holder to ascertain the exact situation, in respect of the network, the following morning.
- Security will if requested by the Authorised Person(s) remain on site until the supply is restored and may be requested to assist the Authorised Person in the safe control of persons and property.

6. Procedures for Asset Management

- The University has as part of its agreement with the Preferred H.V. Consultant produced an accurate asset list of all HV plant.
- The current list also details the condition of the plant at the time of the inspection.
- A copy of this report is held electronically by the Estates and Facilities Department.

6.1 Maintenance Of Switchgear

- Maintenance of the switchgear is subject to a contract with the Preferred H.V. Contractor.
- Contract of maintenance - Appendix 5
- The maintenance regime is based on a 4 yearly rolling programme, with additional 6 monthly visual non intrusive inspections.
 - Year 1 – Brush oil switchgear
 - Year 2 – Long & Crawford oil switchgear
 - Year 3 – Merlin (Schneider) SF6 switchgear
 - Year 4 – Lucy main intake switchgear & FOL switchgear
- Transformer oil condition monitoring takes place at 4 yearly intervals when they are maintained.
- Additional monitoring, IR (infra-red) and intrusive inspections are carried out upon recommendation of Regional Electricity Distribution Company, Preferred H.V. Contractor or Preferred H.V. Consultant Energy.

6.2 Filing

- All correspondence, design and maintenance records applicable to each substation are held electronically on the Estates & Facilities EDMS system.
- Records of inspections and maintenance are also held electronically.

6.3 Records of Modifications

- All modifications, inspections and maintenance records of the network and its associated switchgear, transformers and cabling are recorded in the individual substation files held electronically (EDMS).
- Photographic records of modifications where applicable are also placed in these electronic files.

6.4 Drawing Revisions

- University of Reading operates a strict regime of updating of the network drawings. The current drawing revision is held by the CAD Manager, in the Regional Electricity Distribution Company “Reading University” 33/11kv substation (W184) on the Control Board.

7. **Procedure for a Panel of Inquiry**

In the event of a serious incident involving the death or injury of a person or a potentially serious near miss involving the maintenance or management of the 11KV network, the following action must be followed:

- The University of Reading emergency procedure must be followed where there is an incident requiring the attendance of the emergency services. If the incident does not require attendance by outside emergency services but is a serious non-injury incident, the University of Reading Health and Safety Services should be notified for an assessment of the requirement to report to the HSE.

In the event of a serious incident involving injury or death, no member of the university is authorised to change any aspect of the scene, other than to render first aid or make the immediate scene safe, until the police or HSE have carried out an investigation.

Forming a panel of inquiry

The primary purpose of a panel of inquiry is to identify issues that lead to preventing the incident from happening again; it may also have a role in the gathering of evidence for the purpose of defence in the event of a possible criminal prosecution. In the latter case, this will be at the instruction of the University of Reading legal council.

Any investigation is more effective if it is begun as soon as possible after the incident, therefore the aim is to form the panel within 5 working days. The panel should consist of:

- Chair, a Director or a suitable member of the Senior Management.
- Head of Health and Safety Services.
- Technical expert
- Duty Holder or Appointed Person
- Secretariat

Terms of reference

1. To establish the circumstances leading up to the accident
2. To commission any required technical report to assist with the investigation.
3. To identify the immediate and root cause of the accident
4. To review the procedures and equipment involved in the incident and identify any contributory factors to the accident.
5. To make recommendations to prevent recurrence of the accident
6. To report on issues resulting from the investigation which while not contributing to the accident will enhance safety.

Reporting

1. Inquiring
2. Questioning
3. Investigating
4. Non confrontational
5. Not to attribute blame
6. Not a disciplinary hearing
7. Report on the facts
8. Learn & apply lessons
9. Report back to the Director

Follow – Up Recommendations

1. Operational restrictions
2. Safe systems of work
3. Health & Safety
4. Plant/equipment modifications or replacements
5. Staff information and advice bulletins
6. Further investigations or analysis

8. British Standard and Literature

- British Standards
- HSE Literature
- Manufacturers
- IET
- Professional Bodies
- JOA SO-043

These documents are held in the Maintenance Office by the Duty Holder

KEY CONTACT DETAILS
APPENDIX 1

Title	Key Contact	Contact Numbers
Duty Holder Senior Authorised Person Chief Engineer	University of Reading	Mr Chris Smith Mobile 0771 1475 663 Email c.a.smith@reading.ac.uk
Authorised Person Maintenance	University of Reading	Tel 0118 378 7799 (Security Control 24H) Mr Peter Knight Mobile 07545 422391 Email vn901262@reading.ac.uk Mr Colin Yoxall Mobile 07894 885779 Email vk06cy@reading.ac.uk
Regional Electricity Distribution Company	Scottish & Southern Energy Regional Office PO Box 5510 Newbury Berkshire RG14 5YH <u>EMERGENCY CALLOUT NOS FOR SEC AND SSE SUPPORT</u> First level call - SSEPD NMC Control Desk 0800 559 3101 SSEPD No Supply LV - 0800 072 7282 SSEPD No Supply HV 0800 072 7282 SSEPD SMS Text North West Faults 0239 262 4442* SSEPD SMS Text North West Planned 0239 262 4301* (Only to be used with phones set up on system) Second level call - Main Control 0845 771 8191 Extreme emergency only 0800 210 999 <hr/> SEC Managers (diverted OOH to own private) 01753 695688	Tel 01635 572393 Fax 01635 572351 Connections Manager Ben Parker 01189 126500 Email ben.parker@sse.com 11kV Distribution Network Control Engineer Ash Boyd 0239 262 4302 Email ash.boyd@sse.com General Enq. 0845 7444555 SSE Contracting Swindon Office: Dean Treeby 01793 516175 Office Tel Nos 01793 516177 01793 516172

Preferred H.V. Contractor	Southern Electric Contracting Regional Office Western Region 55 Vastern Road, Reading ,Berks RG1 8BU	<p>Tel 0118 958 0100 Fax 0118 953 4748</p> <p>Contractual Work Mr David Plucknett 07825 014603 Email david.plucknett@ssecontracting.com</p> <p>Protection Settings Mr Peter Fish 07767 851082 Email peter.fish@ssecontracting.com</p>
Technical Expert Witness Panel of Enquiry	E.A. Technology Limited Capenhurst Technology Park, Capenhurst, Chester,CH1 6ES	<p>Tel 0151 347 2323 Fax 0151 347 2410 Web www.eatechnology.com</p>

MODEL LETTER OF AUTHORISATION

Dear

H.V. and L.V. Distribution Network

This is to certify thatID Nois authorised by the University of Reading in accordance with their Electrical Distribution Safety Rules and subject to the restrictions below to:

Enter or work in a substation
Switching to a written switching plan
Sanction to test
Isolation of supply
Testing and Earthing
Issue safety documentation

Restricted to:

11KV
415V

Designation Authorised/Senior Authorised

Strike through lines not required

Signed SAP (Duty Holder) Date

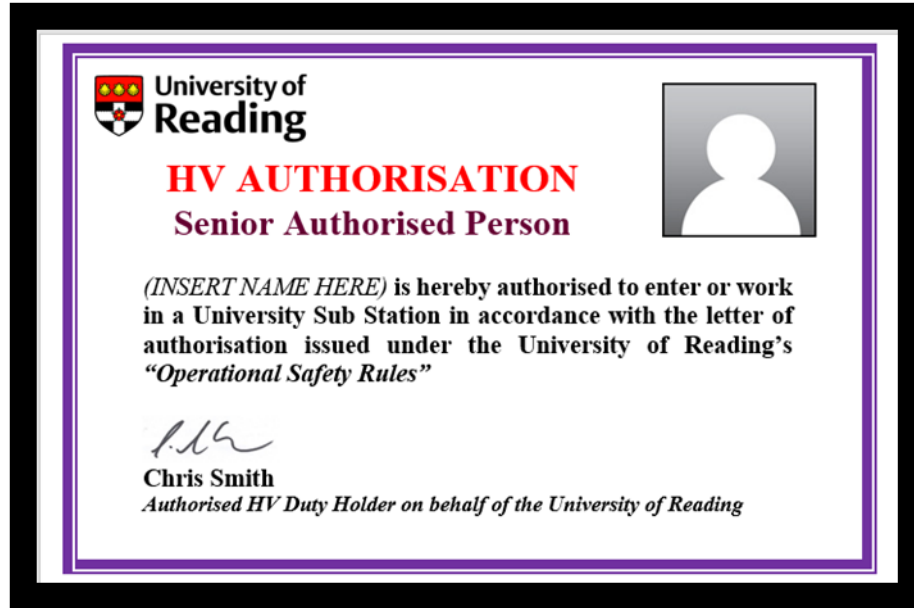
Key No..... Review date


I have received and understood the nature and scope of this letter. I have also received a copy of the Electrical Distribution Safety Rules in accordance with which this letter is issued.

Signed Date


Place the signed original letter at the front of the authorised person's Electrical Distribution Safety Rules book.

MODEL AUTHORISATION CARD




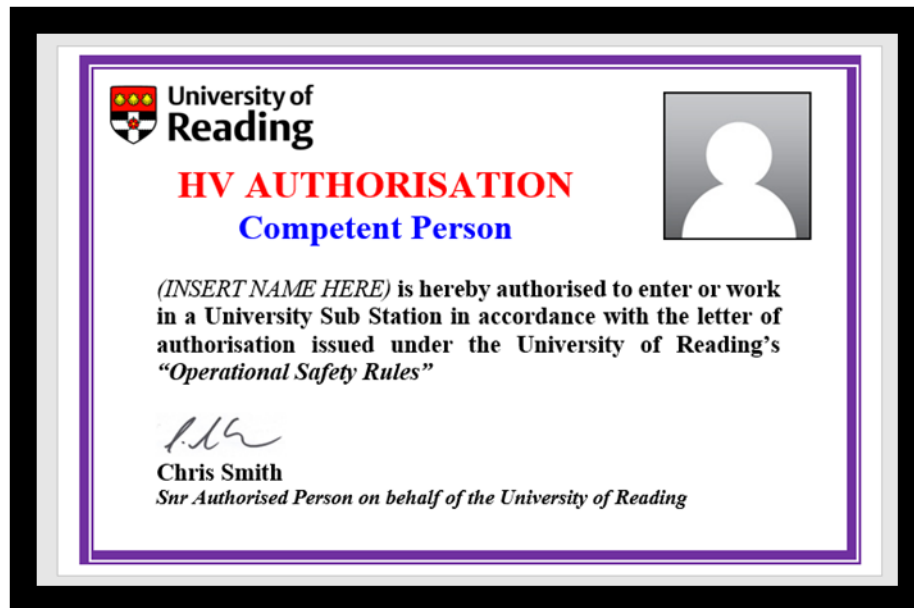
 University of
Reading


HV AUTHORISATION
Senior Authorised Person




(INSERT NAME HERE) is hereby authorised to enter or work
in a University Sub Station in accordance with the letter of
authorisation issued under the University of Reading's
"Operational Safety Rules"


Chris Smith
Authorised HV Duty Holder on behalf of the University of Reading




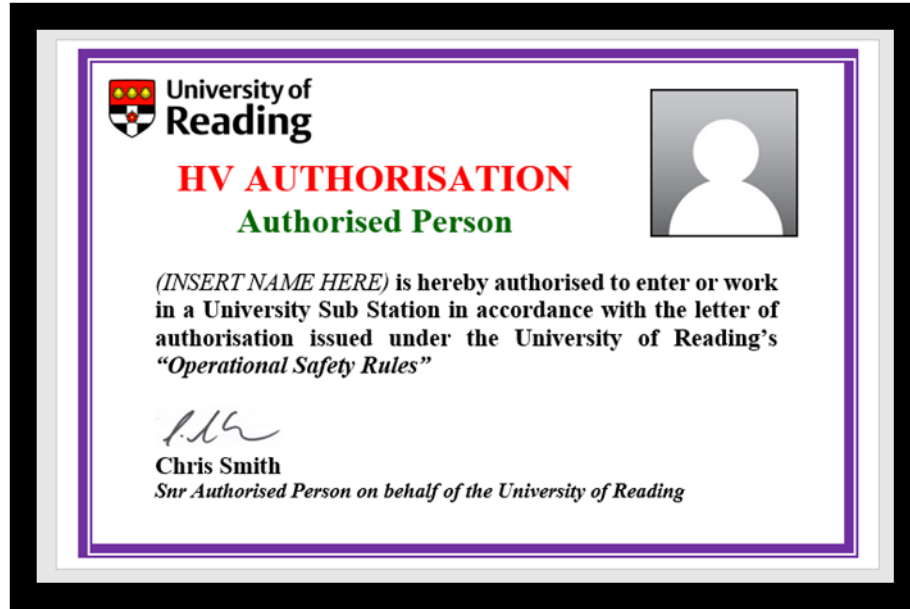
 University of
Reading

HV AUTHORISATION
Competent Person



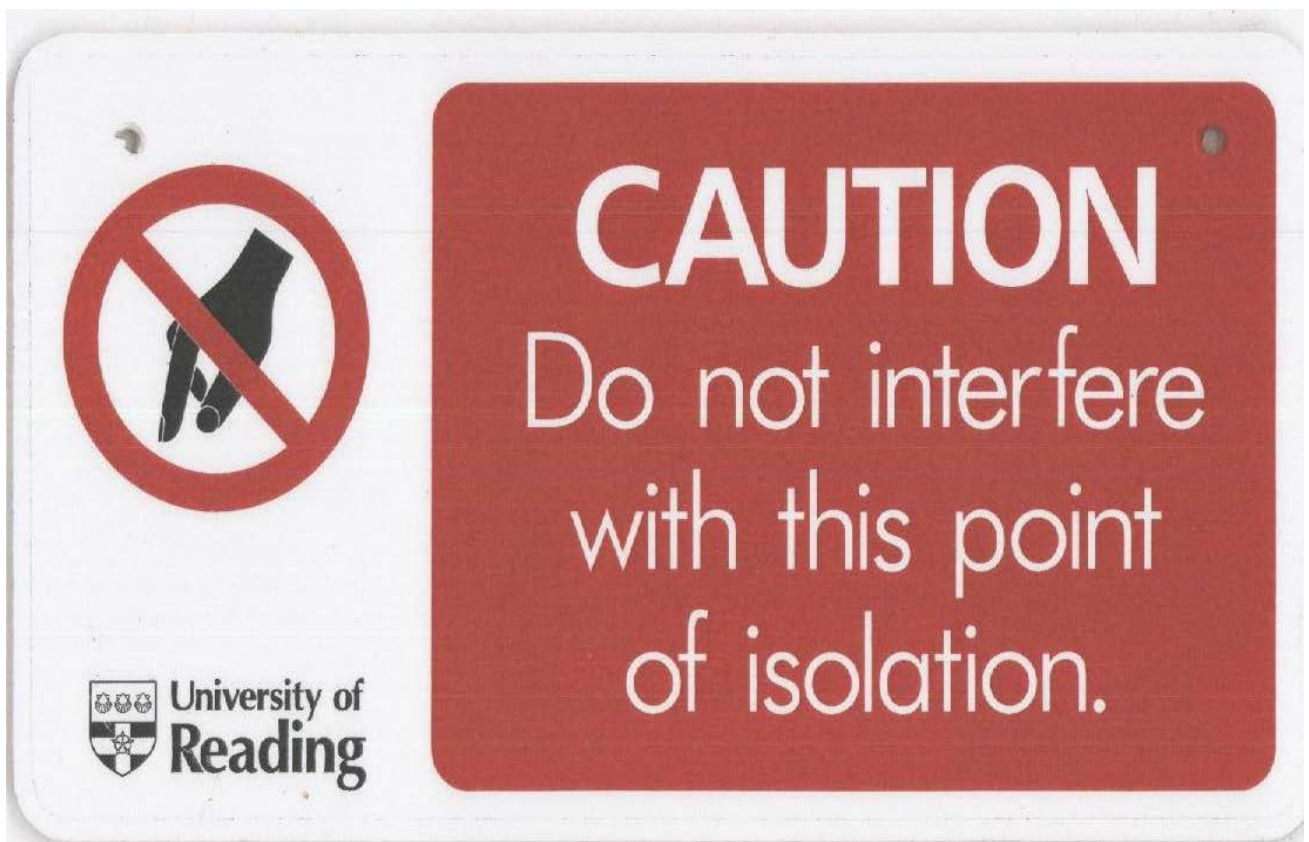
(INSERT NAME HERE) is hereby authorised to enter or work
in a University Sub Station in accordance with the letter of
authorisation issued under the University of Reading's
"Operational Safety Rules"


Chris Smith
Snr Authorised Person on behalf of the University of Reading



MODEL WARNING NOTICES

- Caution



MODEL WARNING NOTICES

- Danger



CONTRACT MAINTENANCE OF SWITCHGEAR

This contract was single tendered to the Preferred H.V. Contractor after consultation with the Preferred H.V. Consultant.

The Preferred H.V. Consultant produced the specification for the maintenance contract, based on the requirements of manufacturer's literature, British Standards, HSE documentation and the expert knowledge held within the Preferred H.V. Consultant's Company

The contract is renewable on the basis of an official University order each year.


The contract is awarded for a 4 year period and at this point it may be revised and tendered.

During maintenance activities carried out on behalf of the University by the preferred H.V. Contractor any work urgently required up to a value of £500 may be undertaken by the preferred H.V. Contractor, providing an official order is obtained prior to the issue of the invoice.




**University of
Reading**

**High Voltage
Electrical Distribution
Safety Rules**

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1. POLICY STATEMENT

- 1.1** These Distribution Safety Rules (DSR) shall be applied to the High Voltage (11,000v) and Low Voltage Distribution Systems and associated Plant and Apparatus under the ownership of University of Reading under whose authority they have been issued. They shall be the only Electrical Safety Rules applicable to such Systems, Plant and Apparatus and shall have application for University of Reading staff in accordance with management instructions, together with related documents and procedures for the whole course of the work for which they are intended.
- 1.2** The application of these Safety Rules and the CONTROL of the Distribution Systems will be the responsibility of a qualified Electrical Engineer appointed as the Duty Holder as defined in the Electricity at Work Regulations 1989. The Duty Holder will be appointed in writing by University of Reading Director of Estates and Facilities, Head of Function.
- 1.3** The Duty Holder, if appointing persons other than University of Reading staff to carry out work on the Distribution Systems, shall satisfy himself that they have comparable DSR with the University's DSR and appropriate authorised people.

2. PURPOSE

The purpose of the DSR is to define the requirements to be followed by University of Reading staff for the control and safety of operation of the electrical distribution system and compliment the University of Reading existing procedures, documents and other rules. Definite requirements are characterised by the word 'shall'. Dispensations are shown in brackets preceded by the word 'Exception(s)', or by the use of the words 'may' or 'should'.

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3. DUTIES

3.1. THE UNIVERSITY

University of Reading has a duty to comply with the provisions of the Health & Safety at Work etc Act 1974 (HSW Act) and the Electricity at Work Regulations 1989, and with the various Regulations affecting safety.

The Electricity at Work Regulations 1989 made under the HSW Act imposes duties principally on the employers, and on employees in respect of systems, electrical equipment and conductors, and in respect of activities on or near electrical equipment. The duties are in addition to those imposed by the HSW Act.


3.2. THE EMPLOYEE

Duties are placed on employees under the various Acts and Regulations as follows: - Health and Safety at Work etc Act, Section 7, requires an employee, whilst at work, to take reasonable care for the health and safety of himself and others who may be affected by his acts or omissions and to co-operate with his employer to fulfil his statutory obligations. Section 8 requires that no person shall intentionally or recklessly interfere with or misuse anything provided in the interests of health, welfare under the relevant statutory provisions.

The Electricity at Work Regulations 1989 made under the HSW Act imposes duties principally on employers, and on employees in respect of systems, electrical equipment and conductors, and in respect of activities on or near electrical equipment. The duties are in addition to those imposed by the HSW Act.

All persons who may have to work on or be concerned with the operation of the University of Reading electrical distribution system or apparatus shall make themselves thoroughly conversant with the relevant statutory requirements and with these Safety Rules, in so far as they apply to work.


These Rules are in addition to the Statutory Regulations and shall be strictly complied with. Ignorance of either Statutory or these Rules cannot be accepted as an excuse for neglect of duty. No person shall carry out or give instruction for the operation or work on High Voltage apparatus other than operation or work for which he has been expressly instructed by a person who is authorised in writing to do so.

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4. ISSUE OF RULES

A copy of these Rules shall be issued to all persons concerned with the operation or maintenance of the distribution system, and a receipt obtained from such a person. Revisions or the issue of a new Rule will be dealt with in the same manner.

These Rules will be returned to the Duty Holder on termination of employment with the University.

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5. DEFINITIONS

5.1. **APPARATUS**

Any item of electrical machinery or equipment in which conductors are used, or supported, or of which they form part.

5.2. **APPROVED**

Sanctioned by the appointed Duty Holder in order to satisfy in a specified manner the requirements of any or all of these Safety Rules

5.3. **DUTY HOLDER**

A technically qualified and experienced Senior Authorised Electrical Engineer, appointed in writing by the Director of Estates and Facilities, Head of Function, for the application of these Safety Rules, and responsible for the Management, Control, Operation, and Authorisation of Others concerning the University of Reading's Electrical Distribution Systems.

5.4. **CONDUCTOR**


An electrical conductor arranged to be electrically connected to a system

5.5. **DANGER**

Means a risk of injury. (injury means death or personal injury from electrical shock, electric burn, electrical explosion etc associated with electrical energy.)

5.6. **DEAD**

At or about zero voltage and disconnected from any live system.

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5. DEFINITIONS

5.7.

EARTHED

Means connected to the general of mass of earth through switchgear with an adequately rated earthing capacity or by Approved earthing leads.

5.7.1.

CIRCUIT MAIN EARTH (CME)

Earthing equipment of Approved type which is applied before the issue of, and at a position recorded in, an Electrical Permit to Work and where possible secured with a padlock.

5.7.2.

ADDITIONAL EARTH

Earthing equipment of Approved type which is applied after the issue of an Electrical Permit to Work

5.8

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. (i.e. fitted with a Caution Notice and secured with an Approved Safety (Personal) Lock where reasonably practicable.

5.9


KEY SAFE

A device of an Approved type for the secure retention of keys.

5.10

LIVE

Electrically charged

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5. DEFINITIONS

5.11.

NOTICES

5.11.1

CAUTION NOTICE.

A notice in Approved form conveying a warning against interference in white letters on a red background.

5.11.2

DANGER NOTICE.

A notice in Approved form inscribed 'DANGER LIVE APPARATUS' in black letters on a yellow background.

5.12.

OTL

The Utilities Outside Team Leader/Member normally Southern Electric Contracting (SEC) or Scottish & Southern Energy (SSE)

5.13

OPERATIONAL LOCK

An Approved lock used for locking HV equipment when in normal operational use.

5.14

PERSONS

being one of the following

5.14.1.

COMPETENT PERSON

A person recognised by the University of Reading as having sufficient technical knowledge or experience to enable him/her to avoid Danger.

5.14.2.


AUTHORISED PERSON

A competent person over 18 years of age, adequately trained, and possessing technical knowledge or experience of the whole part of the electrical distribution system and holding a written Certificate of Authorisation issued by the Duty Holder (SAP) to carry out specified duties associated with the operation and maintenance of the system. **See Rule 9**

5.14.3.

SENIOR AUTHORISED PERSON

A Senior Authorised Person who has been appointed in writing by the Director of Estates and Facilities, Head of Function to carry out specified duties, including the issue and cancellation of all electrical safety documents. **See Rule 9**

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5. DEFINITIONS

5.15

SAFETY DOCUMENTS

being one of the following

5.15.1

LIMITATION OF ACCESS (LOA)

A safety document of a format which defines the limits and nature of the work which may be carried out when verbal instructions are not considered sufficient for that purpose and where a Permit to Work or Sanction for Test is not applicable

5.15.2

PERMIT TO WORK (EPTW)

A safety document specifying the High Voltage Apparatus which has been made safe to work on and the work which is to be carried out.

5.15.3

SANCTION FOR TEST (SFT)

A safety document specifying the High Voltage Apparatus which has been made safe for the testing described to proceed and the conditions under which the testing is to be carried out.

5.15.4

CERTIFICATE OF ISOLATION AND EARTHING (C.O.I.& E)

A safety document detailing High Voltage apparatus and plant which has been Isolated and if necessary Earthed

5.15.5


SWITCHING PROGRAMME

A programme detailing items to be Switched/ Isolated/Earthed and the sequence such actions are to be carried out.

5.15.6

CLEARANCE CERTIFICATE

A form or sanction given by Heads of Departments giving permission for work to be carried out in a particular area.

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5. DEFINITIONS

5.16 SAFETY (PERSONAL) LOCK

A lock used exclusively for Approved purposes (such as locking off at the points of isolation of a circuit) that lock being different from all other standard locks used on the systems.

5.17 SUPERVISION

5.17.1 IMMEDIATE SUPERVISION

Supervision by a person (having technical knowledge or experience) who is continuously available at the location where work or testing is in progress and who attends the work area for the safe performance of the work or testing.

5.17.2 PERSONAL SUPERVISION


Supervision by a person (having technical knowledge or experience) such that he/she is at all time during the course of the work or testing in the presence of the person being supervised.

5.18 SWITCHING

The operation of circuit breakers, isolators, interruptors, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of Circuit Main Earths.


5.19. SYSTEM

Means an electrical system, in which all the electrical equipment is, or maybe, electrically connected to a common source of electrical energy, and which includes such source and such equipment.

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6. TREATMENT FOR ELECTRIC SHOCK

All Persons who may be concerned with the operation or work on any part of the Electrical Distribution System, shall be conversant with treatment for electric shock and shall receive training in resuscitation every three years. Information regarding treatment is given in Appendix A of these Rules. Industrial Notices shall be posted in each Switchroom and Substation

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7. OPERATION PROCEDURES

7.1 ENTRY TO SUBSTATIONS AND SWITCHROOMS CONTAINING APPARATUS SHALL BE KEPT LOCKED.


7.1.1 Entry to Substations or other enclosures containing distribution apparatus is forbidden except to:

- a) Senior Authorised/Authorised Persons
- b) Other Persons only when accompanied by an Authorised Person
- c) By issue of a Limitation of Access to a Competent Person
- d) An Authorised Utilities Outside Team Leader/Member

7.1.2 An Authorised Utilities Outside Team Leader/Member (OTL) shall inform the University Duty Holder of their requirement to enter any University Substation or H.V. enclosure or a Utilities Substation situated in the University grounds. This shall include details of all persons accompanying the OTL/Member. This information together with the time of entry and exit should be recorded by the Duty Holder (or Deputy)

7.1.3. Before access to, or work or other activities are carried out in any enclosure protected by automatic fire extinguishing equipment;

- a) The automatic control shall be rendered inoperative and the equipment left on hand control. A "Caution" notice shall be attached.
- b) Such precautions shall be noted on any Safety Documents issued for access, work or other activity in the protected enclosure.
- c) The automatic control shall be restored immediately after the persons engaged on the work or other activity have withdrawn from the protected enclosure.
- d) Instructions on the operation of the automatic control will be posted inside near to the main point of entry

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7. OPERATION PROCEDURES


7.1 ENTRY TO SUBSTATIONS AND SWITCHROOMS CONTAINING APPARATUS SHALL BE KEPT LOCKED.

7.1.4 If portable fire extinguishers are present in a substation then they shall be of Approved type. After the discharge of portable fire extinguishers in an enclosed space, personnel shall leave the space until the precautions set out in Rule 7.1.5. have been taken

7.1.5. After any explosion or fire, or after the discharge of fire extinguishers in an enclosed space, then the space shall be adequately ventilated before entry of personnel

7.2 ISOLATION AND RECONNECTION OF ELECTRICAL EQUIPMENT.

No High Voltage switching shall be carried out other than by an Authorised Person or by a Competent Person acting under the personal supervision of the Authorised Person and no such switching shall be carried out without the direct authority of the Duty Holder or in his absence his designated deputy.


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7. OPERATION PROCEDURES

7.3

OPERATION OF HIGH VOLTAGE SWITCHGEAR.

- 7.3.1** Prior to carrying out any non emergency switching the Authorised Person shall be in possession of a prepared and checked Switching Programme. Prior to switching the Authorised Person shall, after using the prepared and authorised Switching Programme to check substation and switchgear labelling, visually inspect the switch to be operated and surrounding area to check the condition of the switch and that it is in the expected operational position. (i.e. ON/OFF/EARTHED) After each operation the switch shall be checked to ensure that it has operated fully and correctly.
- 7.3.2.** If switchgear shows any signs of distress its condition shall be reported immediately to the Duty Holder and it shall be examined before a decision is made about further operation.
- 7.3.3.** Emergency High Voltage switching shall only be carried out under the direct authority of the Duty Holder or his Designated Deputy. Any such messages related to switching shall be recorded using a blank Switching Programme
- 7.3.4.** It is forbidden to undertake Switching by signal or pre-arranged understanding after an agreed interval of time.
- 7.3.5** A copy of any Switching Programme or Switching instructions with a copy of any Safety documents used will be kept in the Main Intake Substation. The High Voltage Control Board will show the present position of the network and any safety (personal) lock keys placed in the key box

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7. OPERATION PROCEDURES

7.3.6 FUSES

Fuse renewal on High Voltage fuse switches does not require the issue of an Electrical Permit to Work when fuses are capable of being racked out and shutters locked off before fuse removal is carried out. This operation can only be carried out by a Senior Authorised Person.

7.4 SWITCHGEAR LOCKING OFF


7.4.1. All spout shutters not required for immediate work or operation shall be locked shut.

7.4.2. Operational locks shall be used for all locking off procedures which do not require safety (personal) locks. Keys for operational locks, will be issued to those Authorised Persons who have duties which will require them to gain access to apparatus so locked off. The locks shall be of different type to those used for other purposes.

7.5 RECORDING OF SWITCHING

7.5.1. The time and date of all electrical operations, e.g. H.V. switching and racking in/out of switchgear shall be recorded on the Switching Programme by the Authorised Person carrying out the operation.

7.5.2. Proposals and any pre-arranged work on the Distribution System shall be with the Duty Holders agreement. Such proposals and details shall be recorded in writing by the Authorised Person with details of those informed regarding the work.


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7. OPERATION PROCEDURES

7.6

PROTECTIVE EQUIPMENT

- 7.6.1.** Protective equipment associated with High Voltage apparatus forming part of the distribution system shall not be adjusted nor put into or taken out of commission without the approval of the Duty Holder.
- 7.6.2.** The operation of all protective equipment which is either new or has undergone substantial repair, shall be proved to the satisfaction of the Duty Holder before the HV apparatus is put into commission.
- 7.6.3.** Before any apparatus is connected to the system for the first time, or reconnected after a fault, substantial maintenance or alteration, the setting of the associated protective equipment shall be set in accordance with the schedule approved by the Duty Holder, and shall have been tested at these settings. Protection settings shall then be set down to the minimum practical settings to afford the maximum protection to the system for the first energisation. Provided accurate reproduction of the above tested settings can be achieved, after the initial energisation the settings must be returned to the approved values.

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7. OPERATION PROCEDURES

7.7 COMMISSIONING & RECOMMISSIONING OF HIGH VOLTAGE APPARATUS


- 7.7.1.** All HV apparatus which is either new or has undergone fault, substantial maintenance or alteration, shall be subject to an approved High Voltage test (EXCEPTION: The Duty Holder may give exemption to this Rule where its application is considered impracticable)
- 7.7.2** High Voltage testing shall only be carried out under the direct control of a person Authorised for the purpose and under a Sanction for Test procedure.
- 7.7.3.** High Voltage testing shall only be carried out with Testing equipment of a type and design approved by the Duty Holder.

7.8 INTERRUPTION OF ELECTRICAL SUPPLY

A failure of supply to and from the High Voltage System shall be immediately reported to the Duty Holder. During failures of supply all apparatus and conductors shall be regarded as being Live unless isolated and proved Dead by approved means.

7.9 ENTRY TO ENCLOSURES CONTAINING HIGH VOLTAGE APPARATUS

- 7.9.1** Substations and other enclosures containing distribution apparatus shall be kept locked except when Authorised Persons are at work in the substation. Entry doors shall be locked when such enclosure is evacuated.
- 7.9.2** The key giving access to such enclosures shall be accessible to Authorised Persons only.


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8. ELECTRICAL WORKING PRACTICES

8.1

WORK ON LOW VOLTAGE APPARATUS

See the University of Reading Code of Practice for Safe Working on or near Low Voltage Electrical Systems.

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8. ELECTRICAL WORKING PRACTICES

8.2

WORK ON HIGH VOLTAGE. APPARATUS


8.2.1.

No person shall undertake any work on a High Voltage system unless such parts of the system are:

- a) Dead
- b) Isolated and all required steps taken to Safety (Personal) Lock off from all points of supply, including voltage and auxiliary transformers, common neutral earthing equipment and other sources from which the Apparatus and Conductors may become LIVE, and Caution Notices fixed at all points of Isolation.

When the circuit on which work is to be carried out is controlled only by fuses or links they shall be removed and a Caution Notice posted and the fuses/links kept at the Control Point situated in the Main Intake Substation

- c) Connected to earth by Approved means at all points of disconnection of High Voltage supply from the system or between such points and the point(s) of work. (CME's may be removed under the terms of a Sanction for Test)
- d) Screened where necessary to prevent Danger and Danger Notices attached to Apparatus containing Live Conductors and attached adjacent to Live Conductors.
- e) Identified at the point of work by Approved means.
- f) Released for work by the issue of an appropriate Safety Document which shall not be issued unless such person (Rule 8.9.2.) is fully conversant with the precise parts of the System, Apparatus and Conductors to be worked upon, the nature and the extent of the work to be done and the safety precautions to be taken.

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8. ELECTRICAL WORKING PRACTICES

8.2.

WORK ON HIGH VOLTAGE APPARATUS

8.2.2.

It is the duty of the person issuing the appropriate Safety Document to ensure compliance with the foregoing provisions in the correct sequence.

8.2.3.


ISOLATION

No Isolation or reconnection of High Voltage apparatus or conductors shall be initiated except with the sanction of the Duty Holder or Designated Deputy. Points of Isolation shall be recorded on any Safety Document issued.

8.3

EARTHING


When High Voltage Apparatus and Conductors are to be discharged and Earthed it shall be done by the use of a circuit breaker or earthing switch provided for the purpose to make the earthing, connection. When the circuit breaker is used, the trip feature shall normally be rendered inoperative before closing, unless this is not practicable when it shall be done afterwards. After closing the circuit breaker or earthing switch shall be locked in the Earthed position, with an Operational Lock, so that it remains inoperative while it is the Circuit Main Earth. No earthing switch shall be operated or Circuit Main Earth connected or disconnected except with the consent of the Duty Holder (or under the terms of a Sanction for Test) and then only by an Authorised Person. The location of each Circuit Main Earth shall be recorded on any Safety Document issued and the location of a Circuit Main Earth shall not be changed whilst the related safety document is in force.

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8. ELECTRICAL WORKING PRACTICES

8.4 WORK ON OR NEAR HIGH VOLTAGE CABLES

- 8.4.1.** No person shall touch insulation which covers or supports any conductor subject to High Voltage unless such conductor has been isolated, earthed, and identified by approved means. In addition any voltage transformer associated with the cable shall be isolated and locked off.
- 8.4.2.** Excavation near High Voltage Live Cables shall only be carried out with the approval of the Duty Holder and after the issue of an Authorisation to Dig. If a cable is either damaged, or has exposed conductors it shall be presumed Live until identified. (see Rule 8.4.4.)
- 8.4.3** Contractors excavating in the vicinity of High Voltage cables can only do so when in the possession of an Authorisation to Dig issued by an Authorised Person.
- 8.4.4.** Before issuing a Permit to Work on a High Voltage cable, the Senior Authorised Person, in addition to the procedure of Rule 8.2.1., shall at the point of work identify the cable to be worked on then prove it Dead by use of an Approved cable spiking procedure, using an approved spiking tool.

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8. ELECTRICAL WORKING PRACTICES

8.5


FIXING OF NOTICES, BARRIERS AND SCREENS

8.5.1

Work shall not be carried out on any High Voltage apparatus which has been made dead and earthed until Caution Notices have been attached to all switches which control supply to such apparatus. Danger Notices shall also be attached on or adjacent to live apparatus at the limits of the zone in which work may be carried out.

8.5.2.

Caution Notices, Danger Notices, Barriers and Screens shall only be fixed or removed under the supervision of a Senior or Authorised Person.

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8. ELECTRICAL WORKING PRACTICES


8.6

WORK ON TRANSFORMERS

8.6.1.

When work is to be carried out on connections to or the windings of a transformer, the switchgear or fusegear controlling all connections shall be opened, locked off with a Safety (Personal) Lock and Caution Notices posted. The transformer shall be earthed at the point of isolation from the High Voltage supply with operational locks applied. Where secondary windings of a transformer are controlled by a switch or isolator, this shall be safety (personal) locked open and Caution Notice posted. Where transformer low voltage windings are connected directly to the busbars of a low voltage switchboard, the possibility of a back-feed, e.g. from another switchboard, shall always be considered, and adequate precautions shall be taken to prevent the low voltage circuit from being energised during the course of work.

CAUTION NOTICES shall be fixed at ALL points of isolation including those of low voltage.


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8. ELECTRICAL WORKING PRACTICES

8.7

SAFETY (PERSONAL) LOCKS

- 8.7.1.** Safety (Personal) Locks shall be used to lock open all switchgear at points where the circuit on which work is to be carried out could be energised. Keys for such locks shall be kept in locked boxes in the Main Intake Substation. The serial numbers of the locks used shall be noted on the EPTW or ESFT Safety (Personal) Locks shall only be removed by an Authorised Person.
- 8.7.2.** Details of the isolation referred to in Rule 8.2.1.b) and the Safety (Personal) Locks associated with the isolation shall be shown at the Control Point situated in the Main Intake Substation

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8. ELECTRICAL WORKING PRACTICES


8.8 ELECTRICAL PERMIT TO WORK

8.8.1. An Electrical Permit to Work is defined in Section 5.15.2 together with those persons who are qualified to issue it. **See Rule 9**

8.8.2. The person receiving the Electrical Permit to Work shall sign it in the presence of the issuer and retain the orange copy for the duration of the work. The issuer shall read the EPTW over to the intended receiver and the person receiving the permit is responsible for reading it and ensuring that he is perfectly clear as to the scope and position of the work, and he is responsible for informing any one under his supervision the extent of the work and any sources of danger.

8.8.3 When the work for which the EPTW has been issued, is completed or suspended, the person who received it shall, after signing the top copy that all men under his charge have been warned that it is no longer safe to work on the apparatus, return it to the appropriate Authorised Person.

The Authorised Person shall then cancel the top copy in the appropriate space. The cancelled orange copy shall be returned to the agreed place for filing as soon as convenient.

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8. ELECTRICAL WORKING PRACTICES

8.8 ELECTRICAL PERMIT TO WORK


8.8.4. Electrical Permits to Work are valid only to the person to whom they were issued and shall not be transferred under any circumstances. In case of shift work, or in any other circumstances where the person in charge of the work changes, the EPTW which was issued to him shall be cancelled and a new EPTW issued to the person continuing the work.

Any EPTW outstanding at the end of the day shall be placed in the Main In-take Substation at the Control Board, The receiver shall be warned that he cannot restart work until the issuer gives him back the EPTW.

8.8.5. Where it is necessary to commission apparatus before the work is completed, the Authorised Person shall take the following precautions:-

- i Ensure the men concerned are warned that it is no longer safe to work on the apparatus.
- ii Ensure the EPTW is signed off by the receiver.
- iii Cancel all work and EPTW and other outstanding safety documents.
- iv Inform the Duty Holder and take any additional action the Duty Holder recommends

8.8.6. If there is a need to restore the apparatus in an emergency and the receiver of the EPTW is not available then the Duty Holder or the OTL Authorised Person will inform the receiver's line manager of the situation in order to ensure the receiver is warned immediately upon his return to work, that the EPTW has been cancelled. The issuer will then cancel the EPTW and apply Rule 8.8.5.Parts i,iii and iv.


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8. ELECTRICAL WORKING PRACTICES

8.9

ELECTRICAL SANCTION FOR TEST

- 8.9.1.** An ESFT will only be issued by a University of Reading Senior Authorised Person authorised to issue Sanction for Test, if a University Authorised Person is to carry out the H.V. Testing.
- 8.9.2.** Where voltage test equipment is used it shall be of an Approved type and such use will be in accordance with an Approved procedure.
- 8.9.3.** If the Utilities Outside Team Leader/Member performs the H.V. Testing then this will be carried out to meet the requirements of Scottish & Southern Energy plc Distribution Safety Rules in conjunction with SEC's Operational Procedures and Instructions.

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8. ELECTRICAL WORKING PRACTICES

8.10 CERTIFICATE OF ISOLATION AND EARTHING

- 8.10.1.** A Certificate of Isolation and Earthing specifies High Voltage apparatus or other plant which has been Isolated (and if necessary Earthed) from the High Voltage System or from any other functional Danger.
- 8.10.2.** If the Certificate is used to show Isolation only, then reference to Earthing shall be struck out on the certificate and initialled by the Issuer.

8.11 SWITCHING PROGRAMME

- 8.11.1.** A prepared and checked Switching Programme shall be used for a planned shutdown when there is one or more High Voltage switching operations required.
- 8.11.2.** The Switching Programme will be prepared by an Authorised Person and checked by a Senior Authorised Person having an intimate knowledge of the system.
- 8.11.3.** A separate Switching Programme shall be used for the restoration of the system following a planned shutdown.
- 8.11.4.** High Voltage switching shall only commence when the requirements of Rules 7.2; 7.3.1 and 7.3.3 have been met.


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8. ELECTRICAL WORKING PRACTICES

8.12

OPERATIONAL RISK ASSESSMENT

- 8.12.1.** The General Risk Assessment prepared to give Safe Entry to each University Substation will be read and understood prior to entry.
- 8.12.2.** The Operational Risk Assessment will be completed by an Authorised Person before he carries out any operational High Voltage duties in a substation. If any actions that are required and taken do not eliminate a considered risk then the Duty Holder will be contacted prior to work proceeding.

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9. TYPES OF AUTHORISATION

9. TYPES OF AUTHORISATION

Persons Authorised under the following grades are restricted to the work specified in the particular grade to which they have been authorised.

9.1. Senior Authorised for: Systems up to and including 11kV Distribution.

Switching as defined at Rule 5.18

Issue and cancellation of Electrical Permits to Work, Electrical Sanctions for Test, Certificate of Isolation (and Earthing) and Limitations of Access

Work of construction or maintenance on the system under the Rules relating to Electrical Permits to Work and Electrical Sanction for Test.

Entry to University substations and transformer compounds.

9.2 Authorised for: Systems up to and including 11kV. Distribution.

Switching as defined at Rule 5.18

Issue and cancellation of Electrical Permits to Work, Certificate of Isolation (and Earthing), Limitations of Access.


Work of construction or maintenance on the system under the Rules relating to Electrical Permits to Work

Entry to University substations and transformer compounds.

9.3. Authorised for: Systems up to and including 11kV. Distribution.

Entry to University substations.


9.4. In addition following agreement with SSE, staff holding 9.1. and 9.2. Authorisation will be expected to obtain 'Authorisation for Entry' to SSE substations situated on any land owned by the University.

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Limitation of Access – high voltage areas

No.

Section 1 Issue		
To	Of	
Contact telephone no.	Mobile	
Permission is given to carry out the work described below		
Location		
Access to		
Work to be done		
Safety Precautions applicable		
1.1 Plant and apparatus		
1.2 Environment		
1.3 Access/general		
1.4 Duration start	Finish	Key number
Signed (University of Reading authorised/competent person)	Time	Date
Section 2 Receipt		
I accept responsibility for carrying out the work in accordance with this Limitation of Access and no other work will be done by me or the persons under my charge at the above location.		
Signed	Time	Date
Section 3 Clearance		
All persons under my charge have been withdrawn and warned that it is no longer permitted to carry out the work specified on this Limitation of Access. The work site has been left free from hazards and in a clean and tidy state.		
Signed	Time	Date
Section 4 Cancellation		
This Limitation of Access is cancelled.		
Signed (University of Reading authorised/competent person)	Time	Date

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Certificate of isolation and earthing



1 ISSUE

To _____ in the employ of _____

This is to certify that the equipment below has been switched out, isolated and earthed *. No attempt will be made to remove the safety devices until the Certificate has been cancelled.

SITE

Equipment _____

Points of isolation _____

Points of Circuit Main Earth* _____

Remarks _____

Senior Authorised Person

Time _____

Date _____

2 RECEIPT

I acknowledge the receipt of this certificate

Name (Print) _____

Signature _____

Time _____

Date _____

3 CLEARANCE

I declare that all men under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus which is isolated and earthed* as detailed above, and that all equipment, tools and temporary earth connections are clear.

Name (Print) _____

Signature _____

Time _____

Date _____

4 CANCELLATION


I certify that this Certificate is hereby cancelled

Senior Authorised Person

Time _____

Date _____


* When used as a certificate of isolation only, reference to Earthing should be struck out and initialled.

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1. Contractor
2. Personal Representative
3. Period of Validity from _____ to _____
You are hereby authorised to enter into the undernoted high voltage area for the purpose herein specified and subject to the terms and conditions specified in Sections 4 to 10 hereof, and the terms of your contract with the University of Reading and/or its representatives.
4. Location of High Voltage Area
5. Work to be carried out
6. Location of Circuit Main Earth's Are applied @ _____
7. Safety Precautions already taken by the University of Reading
7.1 *
7.2
7.3
7.4
8. Safety Precautions to be taken by Contractor
8.1 Enclosure to be locked whenever operatives are not at work inside
8.2 Work to be carried out under continuous supervision of Personal Representative
8.3 At least one competent operative to be present at all times whilst work is in progress
8.4 No switching is to be carried out without authority (<i>other than isolation in case of accident involving danger to life</i>)
8.5
8.6 ALL EQUIPMENT OTHER THAN LISTED IN 5 TO BE REGARDED AS LIVE
9. Issued on behalf of the University of Reading by
_____ <i>Senior Authorised Person</i>
Time _____ Date _____
10. I Certify that I understand and will comply with all the requirements of this Permit to Work
_____ <i>Personal Representative</i>
Time _____ Date _____
11. I Certify that I have completed works detailed under 5, withdrawn all tools and equipment and have warned all operatives that no further work may be carried out until a further Permit is issued.
_____ <i>Personal Representative</i>
Time _____ Date _____
12. Cancelled on behalf of the University of Reading by
_____ <i>Senior Authorised Person</i>
Time _____ Date _____

***Where sub stations are protected by CO2 systems the gas must be isolated and locked off.**

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Electrical Sanction for Test

APPENDIX D

Distribution:	WHITE – Remains in book	CARD – Issued to contractor
---------------	-------------------------	-----------------------------

Section 1 Issue

To _____ In the employ of _____

The following high voltage electrical apparatus has been made safe in accordance with the University's Electrical Distribution Safety Rules for the testing described on this Sanction for Test to proceed.

Site _____

Equipment _____

The points of isolation are _____

Points of Circuit Main Earth*
(removal and re-application of CMEs is permissible under a SFT)

Brief description of testing to be carried out

Name (print) _____	Senior authorising person	Signature _____
Time _____		Date _____

Section 2 Receipt

I accept responsibility for the testing described on this Sanction for Test and for taking the precautions necessary to prevent danger.

Name (print) _____	Signature _____
Time _____	Date _____

Section 3 Clearance

I declare that all persons under my charge have been withdrawn and warned that it is no longer safe to carry out testing on the apparatus detailed on this Sanction for Test, and all additional earths have been removed.

The testing is *Complete *Incomplete

All testing apparatus and tools used during the testing have been accounted for and have been *Removed *Not been removed
from the immediate work site.

The operational state of the apparatus is the same as at the time of issue of this Sanction for Test apart from the following exceptions:


Exceptions (if none state none)

Name (print) _____	Signature _____
Time _____	Date _____

Section 4 Cancellation

I certify that this certificate is hereby cancelled.

Name (print) _____	Signature _____
Time _____	Date _____

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	Appendix E to DSR Model H.V Switching Programme
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High Voltage Switching Programme


*Programme Serial No:
MODEL

Section 1 Purpose of switching		
Section 2 Apparatus on which work is to be carried out		
Section 3 Buildings		
Building	Time Off	Time On
Building	Time Off	Time On
Building	Time Off	Time On
Section 4 Date of commencement of Switching		
Date		
Section 5 Preparation		
Prepared by	Date	
Checked by**	Date	

NOTES * A separate switching programme shall be used for restoration
 ** This must be an Authorised Person having an intimate knowledge of the system

continued overleaf

<i>Item No.</i>	<i>Location</i>	<i>Operation</i>	<i>Circuit id</i>	<i>Switched by</i>	<i>Operating times</i>			<i>Directed by</i>
					<i>Instruct</i>	<i>Carried out</i>	<i>Confirm</i>	


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	Appendix F to DSR Model Risk Assessment
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**OPERATIONAL RISK ASSESSMENT FOR WORK ON THE UNIVERSITY H.V.
NETWORK**

Before doing any work on the University Network the following points must be considered by University Personnel. For any item where the answer is NO then appropriate measures must be taken to minimise risk

NAME		DATE	
NO	QUESTION	YES	NO
1	I have a copy and have read the General Risk Assessment for the substation I am about to enter.		
2	I have an agreed Switching Programme		
3	Was it prepared and checked from an up to date line diagram		
4	Has the Duty Holder confirmed I am the only person working on the H.V. system		
5	Do S/S door labels and switchgear labels agree with Switching Programme		
6	Is switchgear in sound condition (visual check)		
7	Has the switchgear been maintained last four years		
8	I am familiar with operation of this H.V switchgear		
9	Are the switches in the position expected		
10	Is isolating of L.V. relevant		
11	Can transformer LV isolation be clearly identified		
12	Can LV isolation be locked		
13	I have enough locks and notices for this isolation		
14	ACTIONS TAKEN TO DEAL WITH ABOVE RISKS		

NOTE: Following Switching: on exit, substation doors to be locked.

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	Appendix G to DSR Electrical Treatment for Shock
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TREATMENT FOR ELECTRIC SHOCK

Immediate and Speedy Action is Necessary

FREE FROM CONTACT

Switch off current immediately or send someone to do so. Do not attempt to remove a person from contact with high voltage unless suitable articles insulated for the system voltage are used for this purpose. When attempting to free a person from contact with low voltage use rubber gloves, boots or mat or insulated stick, but if these are not available use a loop of rope, cap or coat to drag the person free.

Whatever is used should be dry and non-conducting.

AFTER RELEASE

DO NOT WASTE TIME. If possible, lay casualty on a firm, dry surface and gently open the casualty's airway and check for signs of breathing for up to 10 seconds by looking for chest movement, listening for sounds of breathing and feeling for breath on your cheek.

If there are no signs of breathing, give two rescue breaths. To do this, pinch the casualty's nose shut with your thumb and forefinger. Take a breath and seal your lips around the casualty's lips, blow into the casualty's mouth and watch the chest rise. Remove your mouth, allow the chest to fall. Repeat.

If the chest fails to rise during inflation, check that the jaw is lifted, the head tilted back and the mouth and throat are clear of obstructions.

Make up to five attempts to deliver two effective rescue breaths.

If you must leave the casualty to dial 999, give two breaths first, then return quickly and continue.

Check for signs of circulation such as breathing, coughing or movement, for no more than ten seconds. If you are sure circulation is present continue with rescue breaths until the casualty breathes spontaneously. Place the casualty in the recovery position.

If there are no signs of circulation **SEND FOR AN AMBULANCE** and commence Cardio Pulmonary resuscitation immediately.

CARDIO PULMONARY RESUSCITATION

1. Place the heel of one hand on the lower half of the casualty's breastbone and cover this hand with the heel of the other hand, interlocking the fingers.
2. From a kneeling position by the side of the casualty, rock forward with arms held straight (keeping the fingers off the chest) so that the breastbone is pushed down 4-5cms. Release pressure. Compressions should be regular and smooth not jabbing or jerking.
3. Thirty heart compressions should be given (at a rate of 100 per minute) followed by two effective lung inflations. Where there are two first aiders present they can take turns performing resuscitation but should not take part simultaneously. Continue with this ratio of compressions to inflations until signs of an improvement in the casualty's condition are noticed or until advanced help arrives.
4. If an improvement is noted re-assess for signs of breathing and circulation. If none are found continue to give cardio pulmonary resuscitation.
5. If the casualty starts to breathe unaided, place him/her into the recovery position. Constantly monitor airway, breathing and circulation.

NB IF SPINAL INJURY IS SUSPECTED DO NOT MOVE THE CASUALTY UNLESS ABSOLUTELY NECESSARY AND ENSURE THAT AT LEAST TWO PEOPLE ARE AVAILABLE IF CASUALTY NEEDS TO BE PLACED IN THE RECOVERY POSITION ENSURING THAT:

- i. One person steadies and supports the head and neck throughout by placing their hands over the casualty's ears. Be prepared to maintain this support until medical help arrives. Do not pull at the neck.
- ii. Casualty's legs are straightened, near arm out, elbow bent, palm uppermost at right angles to body.
- iii. While the helper positions the casualty ready for turning into the recovery position, the neutral position of the head and neck must be maintained.
- iv. When the casualty is being turned the head and neck must remain in the neutral position.
- v. Once the casualty is fully turned onto his/her side, maintain support until medical help arrives.
- vi. If one of you has to go to summon aid, send helper. Keep casualty steady with rolled blankets, coats, etc. placed alongside.

OTHER INJURIES

CONTROL OF BLEEDING

Apply firm pressure directly to the wound and, where possible, raise injured part. Cover with clean dressing and bandage firmly in place.

If bleeding persists remove the dressings and replace, accurately apply pressure to the bleeding point and bandage firmly.

TREATMENT OF BURNS

Burns should be cooled immediately with water, if available, for at least ten minutes or until the pain is relieved, whichever is longer.

Then cover with a non-adhesive covering, ideally plastic or cling film. If this is not available use a clean, preferably sterile, dressing and bandage lightly in position.

If transfer to hospital is desirable, dial 999 or 112 and request the local ambulance service.

FIRST AID APPLIANCES

The First Aid equipment provided shall be used only for the purposes intended.

The Health and Safety (First Aid) Regulations 1981 place a general duty on employers to make adequate first aid provision for their employees if they are injured or become ill at work. Employers must inform their employees of the provision made for them.

FURTHER INFORMATION

The Health and Safety Executive Publication L74 includes the Health and Safety (First Aid) Regulations 1981, together with the Approved Code of Practice and gives practical guidance on how to meet the requirements of the Regulations and Approved Code. The Health and Safety Executive also publish the following free booklets:

- INDG214 (Rev 2) First Aid at Work Your Questions Answered (Published May 2014)
- INDG215 (Rev 2) Basic First Aid at Work (Published July 2000)
- HSE Website www.hse.gov.uk (See First Aid)

Further details of First Aid practice can be found in the current (8th) edition of the joint voluntary aid societies First Aid Manual

Electric Shock Treatment

If you find someone collapsed and you suspect the cause to be electric shock take the following actions:



Step 1

- Turn the power off at the mains
- If this is not possible stand on dry insulated material such as newspapers, books or rubber matting
- Push the casualty away from the power source using non-conductive items such as the safety hook, broom or chair

Step 2

- Check the casualty response - if they respond by answering or moving, providing they are in no further danger, leave them in the position you found them
- Check for visible injuries and call for an ambulance

For more information contact

Name:

Phone No:

Email:

Dept:

Step 3

- Remove any obvious obstruction from their mouth
- Open the airway by tilting their head back and lifting their chin



Step 4

- Check for signs of breathing by looking for the chest movements, listen at the mouth for breath sounds and feel for air on your cheek - look, listen and feel for 5 seconds



Step 5

- Feel the pulse for 5 seconds -If the pulse and breathing are present, place in the recovery position
- If pulse is present but breathing is absent commence rescue breaths
- If pulse and breathing are absent commence CPR, whilst waiting for the ambulance. Alternate 30 chest compressions with 2 rescue breaths. Repeat this sequence if necessary



ESTATES AND FACILITIES
Authorisation to dig

ESTATES AND FACILITIES**Authorisation to dig – Policy and Procedures****EXCAVATIONS AND GROUNDWORKS**

Where works including excavation, ground-works, piling, structure erection and similar activities, in proximity, or possible proximity to underground services, surface, underground or overhead cables and conductors, the SENIOR AUTHORISING PERSON HV (SAP) shall countersign the Authorisation to dig, in accordance with the University of Reading Estates and Facilities Code of Practice.

Currently the HV (SAP) for the University is:

Chris Smith **07711 475663** c.a.smith@reading.ac.uk

or

Gary Haskell **07834 495820** g.j.haskell@reading.ac.uk

Mr Colin Yoxall **07894 885779** vks06cy@reading.ac.uk

Mr Peter Knight **07545 422391** p.c.knight@reading.ac.uk

In the event of the above persons not being available a countersignature may be obtained from Ian Jones (Contracts Manager) who also has detailed knowledge of the HV infrastructure.

Persons who raise and sign authorisations should satisfy themselves before requesting countersignature from the Senior Authorising Person that the following has been carried out.

1. Drawings have been searched for all underground services and any hazards within the area of the dig identified and recorded on the authorisation.
2. Copies of relevant drawing showing the services, method statements and risk assessments are attached to the authorisation along with any relevant emergency plan.
3. Ground has been CAT scanned for services by a competent person (Maintenance Services can carry out this work providing 5 working days notice is given, except in cases of emergency)
4. All HV cables within 3 metres of the proposed digging area must be identified. The Senior Authorised Person will advise you of the method of excavation required within this area. He will decide if the cable is to be switched out and earthed or if it will be remaining live. He will also decide if attendance is required by the Senior Authorised Person during the digging.
5. One copy of the authorisation to be given to the contractor and an electronic copy is to be placed on file with Maintenance during the period the authorisation is covering.
6. Test holes to locate cables must be hand dug and are also subject to an authorisation to dig.

7. It is not the responsibility of the Senior Authorising Person or the contractor to raise the initial authorisation for the works. This is down to the Estates & Facilities personnel, project manager or lead consultant to establish the extent of the work and prepare the documentation for countersignature.
8. Where digging is likely to cause damage to grounds, landscaping or is in close proximity to trees and shrubs, prior agreement shall be made with the Head of Grounds as to the level of protection required.
<http://www.reading.ac.uk/Grounds/grounds-Contacts.aspx>
9. When digging is programmed out of hours the risk assessment and method statement should contain reference to the emergency procedures and the (SAP) will advise if additional controls are required.
10. In the event of an authorisation being required to dig in an emergency near HV cables and the (SAP) not being available to advise/countersign, the services of SSE may be requested to assist during the emergency. Details of this company are held in the HV Procedures.
11. Digging within contractors building sites and compounds would normally be covered by the contractors own permit to work system and risk assessments, except where the site is traversed by HV cables or gas mains. Before any digging in close proximity to these services takes place the contractor must be agreed with the Senior Authorised person, the method statement and precautions to be taken and a permit must be raised.
12. Please note that BT ducts/cables are not recorded on university drawings, it is the contractors responsibility to contact BT if it is suspected that these are present in the area to be excavated.
13. When the authorisation has been completed and signed by the (SAP) and countersigned by the contractor upon receipt, the authorisation will be scanned at the Maintenance Office and the file saved in EDMS.

Addendum

Current versions of drawings may be obtained by contacting the university CAD and Project Documentation Officer p.tsounou@reading.ac.uk.

Whiteknights Campus	AutoCAD Drawing No	Wren Web Ref No
HV Cables.	W099B329	W998_HV
LV Cables.	W099B343	W998_LV
Street lighting cables.	W099B337	W998_LIGHT
Data cables.	W099E391	W998_DATA
Gas Mains.	W099B333	W998_GAS
Water Mains.	W099B344	W998_WATER
Underground drains.	W099B345	W998_DRAIN
Heating Mains.	W099B335	W998_HEAT

London Road Campus	AutoCAD Drawing No	Wren Web Ref No
SSE Cables.	Scottish and Southern Drawing	L998_SSE
LV Cables.	L099B046	L998_LV
Street lighting cables.	L099E081	L998_LIGHT
Data cables.	L998B023	LO998_DATA
Gas Mains.	L099M048	L998_GAS
Water Mains.	L099B047	L998_WATER
Underground drains.	L099M045	L998_DRAIN
Heating Mains.	L099M049	L998_HEAT

Bulmershe Campus	AutoCAD Drawing No	Wren Web Ref No
SSE Cables.	B099E780	B998_HV
LV Cables.	B099E788	B998_LV
Street lighting cables.	B099E778	B998_LIGHT
Data cables.	B099B787	B998_DATA
Gas Mains.	B099B783	B998_GAS
Water Mains.	B099B785	B998_WATER
Underground drains.	B099B789	B998_FOUL
Heating Mains.	B099B784	B998_HEAT



Permit to Dig Application

Applicant

Click here to enter text.

Email

Click here to enter text.

Site

Choose an item.

*Other

Click here to enter text.

Building

Click here to enter text.

Work Description

Click here to enter text.

Site Contact

Click here to enter text.

Contacts Tel No

Click here to enter text.

Wren No

Click here to enter text.

E & F Project Manager

Click here to enter text.

Preferred start date

Click here to enter a date.

Expected completion date

Click here to enter a date.

Site rules [Site Rules.pdf](#)

I have viewed and accept the Site Rules

Choose an item.

Other supporting information required

- Site plan Attached
- Risk Assessment Attached
- Method Statement Attached

Send a copy of this form and attachments to

fm-help@reading.ac.uk