

POLICY FOR HEALTH, SAFETY AND WELFARE

PART C - ARRANGEMENTS

Section 14

ELECTRICITY AT WORK

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REFERENCES

- A: Health and Safety at Work etc. Act 1974
- B: Electricity at Work Regulations 1989
- C: Memorandum of Guidance on the Electricity at Work Regulations 1989
- D: Provision and Use of Work Equipment Regulations 1998
- E: Institution of Electrical Engineers Regulations for Electrical Installations (the IEE Wiring Regulations)

1. INTRODUCTION

Electricity and electrically powered equipment and machinery is widely used in all council premises, and although serious injury can occur from burns, electric shock and fires if it is not used safely, for the vast majority of the time, electricity is used without any harmful results. This section of the council's health and safety policy explains some of the measures and precautions that need to be maintained to carry on using electricity safely.

Aim - This section contains the arrangements to be made to ensure that the Council in all areas of its undertaking involving electrical systems and electrical equipment complies with the specific duties placed on it by the Electricity at Work Regulations 1989 (the Regulations) and the general duty placed on it by the Health and Safety at Work etc. Act 1974.

Application - The Council will adhere to the principles of electrical safety as laid down by the Regulations in regard to the operation of its electrical systems, use of its equipment and any work activity having a bearing on electrical safety. In this regard:-

- All electrical equipment purchased will display a "CE Mark" and where appropriate British or the equivalent European Standard and will be operated and maintained in accordance with the manufacturer's recommendations and HSE guidance.
- All electrical systems will, so far as reasonably practicable, be installed, operated and maintained to the current standard of the Institute of Electrical Engineers or the Health and Safety Executive.
- All work on or in the vicinity of electrical installation and systems will be in accordance with HSE standards and guidance.

Standards - In addition to the standards set by legislation and the relevant British and European Standards, the Council will, so far as reasonably practicable, adhere to HSE Guidance Notes and other applicable publications.

Responsibility - Within their individual Delivery Unit, each Director is responsible for instituting measures to ensure that the requirements contained within this section are complied with in full in all aspects of their undertaking.

Local arrangements should state the measures taken to comply with this section and make reference to any detailed DU policies and procedures applicable to electrical safety.

2. DEFINITIONS

In this section unless the context otherwise requires -

“Electrical Equipment” includes anything used, intended to be used or installed for use, to generate, provide, transmit, transform, rectify, convert, conduct, distribute, control, store, measure or use electrical energy.

"System" means an electrical system in which all the electrical equipment is, or may be, electrically connected to a common source of electrical energy and includes such source and such equipment.

"Danger" means risk of injury;

"Injury" means death or personal injury from electric shock, electrical burn, electrical explosion or arcing, or from fire or explosion initiated by electrical energy.

"Conductor" means a conductor of electrical energy;

"Circuit Conductor" means any conductor in a system, which is intended to carry electrical current in normal conditions, or to be energised in normal conditions. This includes a combined neutral and earth conductor, but does not include a conductor provided solely to perform a protective function by connection to earth or other reference point;

"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.

"Duty Holder" means any employee or contractor who to any degree carries out the following activities for, or on behalf of, the council:

- designs, specifies, manages or maintains electrical systems and equipment,
- manages, supervises or controls work on or near electrical systems and equipment,
- undertakes work on or near electrical systems and equipment, or
- controls premises and/or uses equipment located therein;

3. PORTABLE ELECTRIC TOOLS AND EQUIPMENT

5.1 Suitability

All portable electric tools and equipment used as part of the Council's undertaking are to be:-

- (a) suitable for the purpose that were intended;
- (b) display a “CE” mark where appropriate;
- (c) to the applicable standard; BS, BASEEFA or equivalent European or other approved standard:
- (d) environmentally compatible, with regard to damp/dust or explosive/flammable atmospheres;
- (e) hand held tools are to be either, double insulated, 110v capacity or battery operated. Class 1 portable hand tools are not to be used unless it is not reasonably practicable to do otherwise.
- (f) correctly fused; and
- (g) extension cables are to be maximum 13-amp capacity, with three-core cable where three pin sockets are fitted.

5.2 Inspection and Test

The following arrangements are to be made for Council- owned portable apparatus including extension leads (see Appendix E): -

(a) Identification

All equipment is to be serial numbered and entered in a register/inventory in order that a record can be made of the items service history and to allow for recall for routine inspection, maintenance and test;

(b) Standard/Frequency

The standard of inspection and frequency of inspections will be determined by:-

- (i) the manufacturer’s recommendation;
- (ii) HSE Guidance Notes;
- (iii) the nature and frequency of use of the apparatus and the environment it is used in;
- (iv) the competent person as the duty holder responsible for the inspection and testing of electrical apparatus as identified by Service Area arrangements (see paragraph (c) below.

(c) Inspection

A suitably competent person is to be used to carry out all inspection and tests.

(d) User Visual Inspection

Users of electrical equipment are responsible for carrying out regular visual inspections as outlined in appendix D.

5.3 Potable Tools/Equipment

Any Council portable electric tool or equipment is to be serviceable when issued to staff. It is to be kept in serviceable condition by the user, who is responsible for the general condition of the apparatus/equipment whilst in use. Particular care is to be exercised in visually checking the condition of the cable and plug. In the event of the inability to service apparatus/equipment it is to be taken out of use and the fault reported. The user is not to undertake repairs unless competent to do so.

5.4 Electrical Apparatus not owned by the Council - Use on Council Premises

Portable electrical equipment and hand tools in this category owned by Contractors are the responsibility of the owner and they must have systems in place to comply with the requirements of the Regulations. With equipment owned by Council Employees (whether or not the equipment has been purchased using a Craft's Tool Allowance) the owner is responsible for ensuring compliance with paragraphs 3.1 to 3.3 above. In the event of failure to comply with these requirements the equipment will be banned from use and the owner required to remove it from the premises immediately.

4. COMPETENCE AND TRAINING

6.1 Competence

(a) Technical Posts (Electrical and Mechanical Engineers etc).

The competence required of a technical post, whether involving management, supervision or operation, must have included within the Job Description a clear definition of the level of competence required of the post. This should be expressed in terms of qualification, e.g. City and Guilds, or, membership of an appropriate professional body and experience e.g. Institution of Electrical Engineers and experience. This requirement is to form the basis of any advertising to fill such posts.

(b) Non-Technical Posts

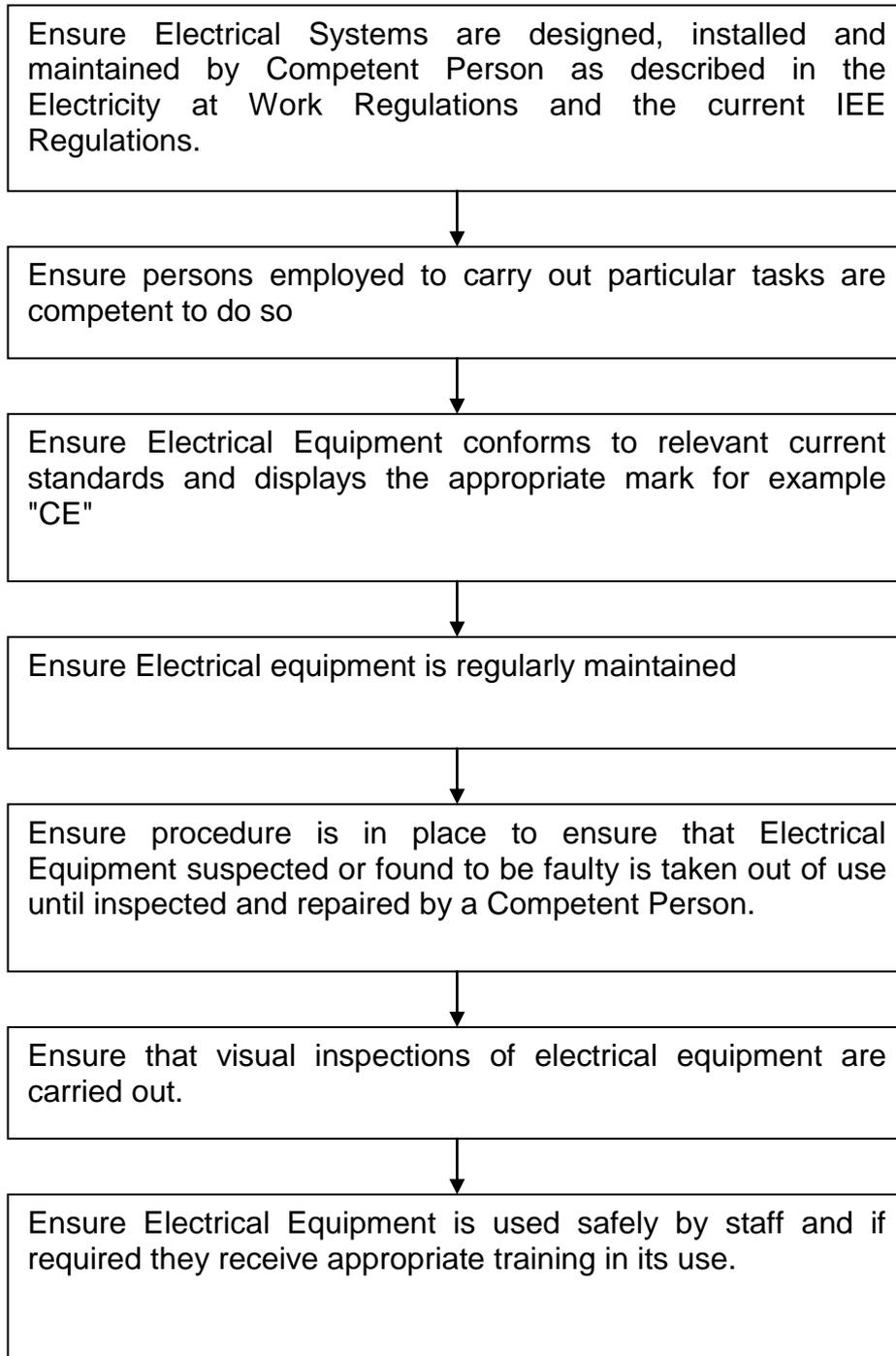
Within individual DU's, posts are to be identified where the post holder is the 'duty holder'; in this respect any Premises Manager is a duty holder.

(c) Caretakers, Handy Persons, Minor Maintenance Staff.

Where posts identified in DU's include a requirement to carry out minor electrical works e.g. changing light bulbs, fuses, plugs etc. employees shall be competent to carry out these works. Although the degree of competency is below that for technical staff they need to have appropriate knowledge so as to recognise and prevent danger. Local policies and arrangements will outline specific arrangements to ensure staff meet this requirement including training, supervision etc.

APPENDIX A

FLOW CHART TO ASSIST DELIVERY UNITS IN COMPLYING WITH THIS ARRANGEMENT



APPLICATION STANDARDS - HSE GUIDANCE

Guidance Notes:	Title:	Relevant Regulations:
PM 29	Electrical hazards from steam/ water pressure cleaners	4 to 8, and 10
PM33	The safe use of portable electrical apparatus	4, 6 to 12 and 16
PM37	Electrical Installations in motor vehicle repair premises	4 to 12 and 16
PM38	Selection and use of electric hand-lamps	4, 6, 7, 8, 10, and 12
PM 51	Safety in the use of radio- frequency dielectric heating equipment	4, 7, 8, 12, 13 and 16
PM 53	Emergency private generation; Electrical safety	4 to 12 inclusive
PM 64	Electrical safety in arc welding	4, 6, 7, 8, 10, 11, 12, 14 and 16
GS 6	Avoidance of danger from overhead electric lines	4, 14, 15 and 16
GS 23	Electricity safety in schools	4, 6, 7, 8, 10, 11, 12, 14 and 15
GS 24	Electricity on construction	4 - 16 inclusive
GS 27	Protection against electric shock	4, 6, 7 and 8
GS 33	Avoiding danger from buried electricity cables	4, 14, and 16
GS 34	Electricity safety in departments of electrical engineering	4, 6, 7, 8, 12, to 16
GS 37	Flexible leads, plugs, sockets etc.	4 to 8, 10 and 11

GS 38	Electrical test equipment for Use by electricians	4, 6, 7, 8, 12, 13, 14, 15 and 16
GS 44	Electrical working practices (in preparation)	4, 7, 12, 13, 14, 15 and 16
HS(G) 13	Electrical testing	4, 7, 12, 13, 14, 15 and 16
HS(G) 22	Electrical apparatus for use In potentially explosive atmospheres	4, 5 and 6
OP 10	Safety of electrical distribution Systems on factory premises (HSE Occasional Paper Series)	4, 5, 7, 8, 9, 11, 13 and 16
HS(G) 38	Lighting at work	4, 13, 15 and 16

VISUAL INSPECTION CHECKLIST

Listed below is guidance on setting up and carrying out this visual inspection:-

Visual Inspection – Sockets, Plugs and Cables

1. Check sockets for cracks and/or pieces missing. Ensure that shuttering, where fitted, operates efficiently. Check that the mounting is secure.
2. Check that plugs are in good condition without cracks and without pieces missing. If the plug is damaged it should be replaced or the appliance taken out of use.
3. The cable clamp should grip the outer cable insulation firmly.
4. Burn or heat marks could indicate a number of possible faults and the plug should be replaced or the appliance taken out of use.
5. Plugs should have the correct fuse for the appliance fitted.
6. The flexible cable of the appliance should be examined for cuts, cracks, damage, insulation fraying, ageing or damage by oils or acids.
7. Check that there are no obvious signs of wear and tear at the cable entry to the appliance.
8. There should be no joints in the lead.
9. Any cable that has been wrapped with insulation tape or any other tape should be regarded as suspicious and should be taken out of use.
10. Only flexible cable of the correct current carrying capacity should be used.
11. Check that the length of the cable is appropriate for the use which will be made of the equipment.
12. Ensure that cables are placed so that they do not constitute a physical or electrical hazard to persons and equipment.
13. Extension leads should only be used as a last resort and in no circumstances should they be run from one room or corridor to another or across the room causing a tripping hazard.
14. On no account should a cable be used in a coiled position as the heat which is generated on a coil constitutes a fire hazard.
15. Ensure that the current carrying capacity of the cable is sufficient for the use to which it is being put. If in doubt seek expert advice.
16. All defects should be reported for repair and defective equipment must be taken out of use` until repaired.

GUIDANCE ON TEST PERIODS FOR PORTABLE ELECTRICAL EQUIPMENT
(Minimum requirement - Risk Assessment may identify greater frequency)

Equipment	Regular User Checks	Combined Electrical Test and Inspection
Battery operated equipment	For Significant damage	None
Low Voltage <50 Volts AC	For Significant damage	None
IT Equipment	For Significant damage	3 Yearly
Photocopiers and Fax Machines which are not hand held and rarely moved	For Significant damage	3 Yearly
Double insulated equipment not hand held and moved occasionally for example fans or desk lamps.	For Significant damage	3 Yearly
All other electrical equipment	Visual check before use	Annual
Equipment at high risk of damage for example on construction site	Visual check before use	Risk assessment to determine frequency for example 3 monthly.

Appendix E – TECHNICAL SPECIFICATIONS AND INFORMATION

FIXED ELECTRICAL SYSTEMS

System Requirements - The fixed systems within the Council premises must be of the following standard:

(a) Strength and Capability

The strength and capability of any equipment forming part of a system must be enough to remain safe in normal use and under protective fault conditions.

(b) Environmental and in use conditions

The System must be suitable for the environmental conditions and nature of use of the premises or area where it is used. Consider whether it is foreseeable that the system or equipment will be exposed to:

- (i) Mechanical damage, including vandalism (particularly in residential, educational and care premises),
- (ii) Natural environmental hazards, such as the weather, humidity and temperature,
- (iii) Wet, damp, dirty and corrosive conditions,
- (iv) Flammable or explosive atmospheres.

(c) Insulation, Protection and location of Conductors

All conductors are to be insulated or located so that persons cannot receive an electric shock or burn from them. The following factors must be taken into account when carrying out risk assessments to comply with this requirement:

- (i) the nature and severity of the probable danger;
- (ii) the function to be performed by the system and equipment;
- (iii) the location of the system and equipment, its environment and the conditions to which it will be subjected;
- (iv) any work which is likely to be performed on or near the system/equipment in order that the necessary protection can be provided so that danger and risk of injury can be prevented.

(d) Precautions to Prevent Danger

Where a risk assessment identifies that a conductor (other than a circuit conductor) may become charged either by use of the system or a fault in the system one of the following techniques must be used to prevent danger:-

- (i) double insulation;
- (ii) earthing;
- (iii) connection to a common voltage reference point on the system;
- (iv) equi-potential bonding;
- (v) use of safe voltages;
- (vi) earth-free non-conducting environments:
- (vii) current/energy limitation;
- (viii) separated or isolated systems

(e) Connections

All connections in a system must be mechanically and electrically suitable for all conditions of use including fault conditions. Consider environmental factors (listed in (b) above) particularly for the installation of plugs and sockets in common use.

(f) Protection for Excess Current

Every part of the system must be protected against excess current by suitable means, depending on the following considerations:-

- (i) the nature of the circuits and type of equipment to be protected;
- (ii) the short-circuit energy available in the supply (fault level);
- (iii) the nature of the environment;
- (iv) whether the system is earthed or not.

(g) Cutting off the supply to Electrical Equipment

Where it is necessary to prevent danger there must be suitable means of cutting off the supply of electricity to any electrical equipment. The means used must be:

- (i) Capable of cutting off the supply under all likely conditions having regard to the equipment, its normal operating conditions, any abnormal operating or fault conditions and the characteristics of the source(s) of electricity,
- (ii) In a suitable location having regard to the nature of the risks, the availability of people to operate them and the speed at which operation may be necessary. Access to switches etc should be kept clear and unobstructed, free of slip and trip hazards etc;

- (iii) Clearly labelled to show which equipment it controls, unless there could be no doubt and this would be obvious to any person who may need to operate it; and
- (iv) only built to serve several pieces of electrical equipment where it is appropriate for these to be connected and disconnected as a group.

(h) Isolation of Circuits - Working on Electrical Systems

Suitable means of isolation must be provided to prevent danger to competent electricians working on electrical systems. Suitable isolation must:

- (i) Be capable of positively establishing an air gap or other effective insulation so there is no likely way in which the isolation gap can fail electrically;
- (ii) Include, where necessary, means of preventing unauthorised interference with or improper operation of the equipment, for example means of locking the power off;
- (iii) Be located so that it is easily accessible and easy to use. The time and effort necessary to isolate the power should be reasonable for the nature of the equipment and the circumstances under which isolation may be required (a very remote means of isolation may be acceptable if isolation is only need infrequently and any additional time taken to effect isolation does not result in danger);
- (iv) Be clearly labelled to show which equipment it relates to, unless there could be no doubt that this would be obvious to any person who may need to operate it:
- (v) only be common to several items of electrical equipment where it is appropriate for these to be isolated as a group.

Isolation switches are to indicate the position of the contacts or other means of isolation, either by being externally visible or by clear and reliable indication. Provision is to be made for locking facilities to prevent unauthorised, improper or unintentional energising.

4.2 Residual Current Devices (RCD)

Definition:

- (a) Policy

The Council will aim, where reasonably practicable, to provide RCD protection to all socket outlets in all its existing premises with priority being given to buildings used by the public, for example, schools and care homes. The Council will also ensure that all new electrical installations include RCD protection.

(b) Specification

One of the following protection measures shall be used for all new sockets outlets:

- (i) each socket-outlet circuit shall be protected by a residual current device having a rated residual operating current not exceeding 30 milliamps (mA) with an operating time not exceeding 30 milliseconds (ms),
- (ii) each individual socket-outlet shall be protected by an integral RCD having a rated residual operating current not exceeding 30 mA with an operating time not exceeding 30 milliseconds (ms).

- Note:**
- 1. These devices do not eliminate the risk of electric shock and are not to be used as the primary means of protection.
 - 2. The use of plug-in RCD adapters does not satisfy the above requirement.
 - 3. Any RCD fitted shall be checked quarterly by the Premises Controller by pressing the test button. Circuits failing are to be taken out of use until remedial action is taken. Portable RCDs must be tested by the operator before each time they are used.

4.3 System User Requirements

There must be a clear understanding between the system provider/maintainer and the system user as to the system's capabilities and limitations on the one hand and the required performance on the other. In particular, the Premises Controller must ensure that:

- (a) the system is used safely, within the parameters of the requirements contained in this section,
- (b) faults and malfunctions are promptly reported and where these may give rise to hazards, that parts of the system are isolated, physically or by switching;
- (c) any proposed alterations are vetted by an electrical engineer and executed by a competent electrician; and
- (d) in the event of a proposed change of use, the alterations that may be required and the likely effects on electrical safety are considered at the planning stage with a competent electrical engineer.

4.4 New System Design

All new systems are to include at the design stage the system requirements contained in paragraph 2.1 above and, in the case of new systems for existing premises, the current use of the premises and the client group. Similarly for new-build situations the proposed use/user group. In all instances the design engineer

responsible is to liaise with the responsible officer/Premises Controller and if applicable Planning Supervisor in the client service area.

4.5 Inspection and Testing

The standard of inspection and testing of systems in premises must follow Reference E and any other applicable guidance i.e.; GS23 Electrical Safety in Schools. In situations where it is not reasonably practicable to comply with the recommended intervals between inspections, alternative arrangements are to be made and are to form part of the Service Areas written procedures.

4.6 Maintenance and other Work on Systems

All maintenance of, and work on, a system is to follow the standards contained in References C and E. Adequate precautions are to be taken to prevent the system and/or equipment forming part of the system, that have been made dead in order to prevent danger, from becoming electrically charged if that will result in danger whilst work is being carried out (see paragraph 2.1(g) above).

4.7 Work on or near live Conductors

All work will be undertaken on systems that are not electrically charged and that have been effectively isolated unless this is not operationally reasonably practicable to achieve. These situations are to be identified and recorded by the responsible management and following a risk assessment only those employees/operatives who have the necessary technical competence (see paragraph 6 below) are to undertake this work and must follow the safe working methods identified as a result of the assessment.

4.8 Working Space, Access and Lighting

There is to be sufficient space, safe access and adequate lighting provided for persons working on or near Council systems and equipment forming part of the system in order that they may work safely. Electrical intake cupboards and other areas that contain electrical plant should not be used for storage of combustible materials.