

Relevant Legislation

The Electricity at Work Regulations 1989 (EWR)
Provision and Use of Work Equipment Regulations 1998
IEE Wiring Regulations 17th Edition (British Standard BS 7671)
Construction (Design and Management) Regulations 2015

General

EWR require that the regular inspection, testing and maintenance of electrical equipment be undertaken to prevent risk of death or injury to persons. The regulations apply to **all** electrical equipment used in a work situation. Every type of equipment is included from full electrical installations through fixed electrical equipment to portable electrical appliances. The regulations apply at all voltages from a 400kV overhead line to a battery powered hand lamp. This also includes computer/data networks.

The regulations require that each establishment appoint a 'duty holder' who is responsible for compiling and maintaining an inventory of equipment and test certificates.

EWR provide specific requirements in relation to both the hardware installed and the safe system of work associated with it. These requirements must be applied at each stage in the life of an electrical system as follows:

- planning and design.
- installation.
- commissioning.
- safe use.
- planned maintenance and fault repairs.
- dismantling at the end of required life.

The regulations require the County Council to ensure that:

- electrical systems are designed, constructed and installed, so as to prevent danger.

- electrical systems are adequately maintained and tested, so as to prevent danger.
- work activities carried out on or near electrical systems are carried out in such a way as to prevent danger.
- any equipment provided for the protection of persons is suitable for its intended use, adequately maintained and correctly used.
- all persons engaged in activities involving electrical systems possess a level of competence commensurate with the nature of the work being undertaken.

Commissioning Electrical Work

In the majority of cases, construction activities which require work on or near electrical systems will be organised via the Property Services Help Desk on 01670 622339.

On occasions where other arrangements exist for the commissioning of electrical work, similar standards should be applied in terms of appointing a qualified engineer to carry out the design and a competent contractor to carry out the installation. **Any Electrical Contractors working on County Council Premises must be registered with the National Inspection Council for Electrical Installation Contracting (NICEIC), the Electrical Contractors Association (ECA) or an equivalent body. In all cases the N1 Form must be submitted to Property Services to give notice of the proposed electrical work. Further information is given in Section J2 covering the Control of Contractors.**

Fixed Electrical Installations

The formal inspections and testing of fixed electrical systems are carried out in accordance with the frequencies recommended within the current edition of British Standard 7671: - Requirements for Electrical Installations. Certificates issued to confirm that the installation has been inspected and tested in accordance with the aforementioned British Standard.

Residual Current Devices

Residual current devices (RCD or RCBO) form an integral part of most modern installations. These are used to protect socket outlets by cutting off the electricity supply before shock can occur in the event of an electrical fault. It is important that any RCDs/RCBOs are tested in accordance with the manufacturer's recommendations (on a monthly basis if unsure) to ensure that they are working

correctly. This is achieved by pressing the test button provided. It is recommended that all establishments nominate a person to complete the test. Records should be kept of the date and time of the test. Additionally, should the RCD/RCBO trip out for any other reason then the date and time that this occurs should also be recorded. Should the RCD/RCBO fail to operate when tested the Property Services Help Desk should be contacted immediately.

Any concerns involving electricity should be raised with the Property Services Help Desk.

Portable Electrical Equipment

Generally, portable appliances are described as equipment that has a lead (cable) and plug and which can be moved from place to place. The definition is very wide-ranging and will include the following types of equipment:

- stationary equipment.
- information technology equipment.
- movable equipment.
- portable equipment.
- hand-held equipment.

Specific examples of such equipment are floor cleaners, kettles, heaters, fans, televisions, table lights and extension leads. Equipment that *could* be moved, for example photocopiers, fax machines and desktop computers should also be considered.

Since the consequences of equipment failure can be fatal, it is vital that procedures exist which afford the greatest opportunity to detect faults as they arise. A combination of the following types of inspection/testing will be necessary to reduce risks to acceptable levels and consequently achieve compliance with the regulations.

- Visual Inspection by the user.
- Formal visual inspection by an appointed person.
- Regular documented combined inspection and testing by a competent person.

The type and frequency of the inspections/tests required should be determined by risk assessment. General guidance regarding these issues can be requested, in the first instance, from the statutory maintenance team in Property Services.

Visual Inspection by the User

It is recognised that all users of portable electrical appliances require at least basic information to enable them to carry out simple visual checks on equipment. Users should carry out the inspection every time they use a piece of equipment. The following visual checks should be carried out to look for:

- damage, for example cuts, fraying, abrasion (apart from light scuffing) to the cable covering.
- damage to the plug, such as cracked casing or bent pins, signs of overheating.
- damage to the outer cover of the equipment, damage which could result in access to live parts, evidence of obvious loose parts or screws.
- non-standard joints, including taped joints in the cable.
- evidence that the outer covering (sheath) of the cable is not being gripped where it enters the plug or equipment (in such cases the coloured insulation of the internal insulation will be showing).
- equipment that has been used in conditions where it is not suitable, for example a wet or dusty workplace.
- overheating (burn marks or staining).
- the presence of a Portable Appliance Testing Sticker (confirming successful test).

Formal Visual Inspection by an Appointed Person

Regular formal visual inspection will take full account of the following:

- the suitability of the environment in which the equipment is used.
- evidence of good housekeeping and the avoidance of poor practices.

- the suitability of the equipment and the means of isolation from the electrical supply.

The inspection will include opening the plug and, in such circumstances, training of those charged with the task must reflect this. In addition to the above, the formal inspection will involve checking that:

- a correctly rated fuse is in place.
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- the cord grip is holding the **outer** part (sheath) of the cable tightly.
- the wires, including the earth where fitted, are attached to the correct terminals.
- no bare wire is visible except at the terminals.
- the terminal screws are tight.
- there is no sign of internal damage, overheating or entry of liquid, dust or dirt.

These checks are **not** applicable to moulded plugs where only the fuse can be checked. Most of these checks are equally effective for detecting faults in extension leads and their plugs and sockets.

It is widely recognised that the majority of failures of portable equipment are directly attributable to incorrectly graded fuses or incorrect terminations within the plug itself. Therefore, these checks represent a crucial aspect of protection for the user.

Documented Inspection and Testing by a Competent Person

This is a periodic inspection to be carried out by an electrically skilled, trained and competent person with knowledge of the function and safety requirements of the appliance being tested.

The County Council has adopted a general policy that Portable Appliance Testing will be undertaken at regular intervals as per the document 'Code of Practice for in-service inspection and testing electrical equipment', published by the Institution of Electrical Engineers.

The specification for portable appliance testing (PAT) incorporates and goes further than the checks required by the Formal Visual Inspection. As such it will, in most

cases, override the requirement for that type of inspection. Where appropriate, the inspection will include the following procedure:

- a visual inspection to identify damage or deterioration to casings, plugs, fuses and cable sheaths.
- a test for earth continuity.
- a test for insulation failure.
- a run test including earth leakage.
- the repair of minor defects and replacement of fuses (this will be undertaken at the time of the inspection, where possible).

Test results will be recorded on a certificate which will be forwarded to the service receiver. This should be retained.

Equipment found to be defective will be identified and, if unsafe, will be rendered inoperable.

The results of portable appliance testing should be assessed in detail. If the percentage of failure is low this suggests that equipment is being used properly and that, in general, there is good staff awareness about regular visual inspection of equipment. On the other hand, if there are a number of failures that are easily identifiable through visual inspection this may suggest that staff awareness of the need to conduct visual inspections needs to be raised.

The contractor will affix individual labels to each piece of portable electrical equipment stating the result of the test and the date when it was undertaken. **Any items failing the test must be suitably labelled and taken out of service immediately until such time as a competent person has undertaken suitable remedial maintenance.**

Directorates/establishments which outsource the testing and maintenance of their equipment to outside contractors must ensure such companies are registered with the National Inspection Council for Electrical Installation Contracting (NICEIC), and that they apply the same standards applied within other County Council Directorates.

Personal Electrical Equipment

Employees should not bring personal electrical tools and equipment into the workplace except in exceptional circumstances.

Should a situation arise where the employee feels they require the use of personal equipment they must inform their line Manager of their intention to do so. The line Manager should then decide whether the request is reasonable based on risk assessment. Should the use of the equipment be sanctioned normal standards must be applied in terms of inspection and testing of the equipment.

Arrangements within Each Division

The Safe Installation, Maintenance and use of Electrical Equipment

In accordance with current legislation and Northumberland County Council's Corporate Health and Safety Policy all Divisions must devise and implement procedures to ensure the following objectives are achieved:

- all electrical equipment provided for use is suitable for its intended purpose.
- all persons required to operate electrically powered equipment receive information, instruction and training commensurate with the risks associated with the use of that equipment.
- all work equipment is maintained and tested/inspected (as required) to prevent injury (records must be kept).

In order to achieve the above objectives the relevant senior manager is responsible for ensuring suitable and sufficient arrangements are made to fulfil the requirements detailed below:

1. Assign Responsibilities

- Identify Managers who will take ownership of purchasing and, where appropriate, arranging for the installation, maintenance and testing of new equipment (see section G1 Work Equipment).
- ensure that users of electrical equipment under their control receive information, instruction and training commensurate with the risks associated with the use of that equipment.
- ensure that "Duty Holders" are identified and appointed for each establishment or work area under their control.
- ensure that arrangements are in place to quarantine any unsafe equipment until such time as it is repaired by a competent person or permanently disposed of.

2. Ensure Statutory Tests, Inspections are undertaken

The appointed Duty Holder must:

- Ensure that suitable arrangements are in place with regard to any statutory testing applicable to the equipment. It is likely that these matters are being handled by the Statutory Testing Team within the Property Services Division. However, it is the responsibility of the Duty Holder to ensure such arrangements are made and implemented.
- Ensure that any newly acquired equipment is added to the schedule of testing.
- Ensure that all equipment is made available for inspection at the time requested by those undertaking the task.