



# Facilities Management Service Repairs & Maintenance

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## Electrical Safety Policy & Procedures

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## 1.0 Introduction

These procedures incorporated into **'The Electrical Safety Policy'** provide guidance for Coventry City Council (CCC) and its employees so that accurate records are kept, to work safely on domestic, commercial and light industrial electrical systems owned operated or maintained by CCC, containing voltages not exceeding Low Voltage e.g. up to 1000 V AC or 1500 V DC.

Operating on frequencies of 50 Hz, 60 Hz, and 400 Hz although frequencies for special purposes are not excluded. Installations including those electrical systems found in small scale boiler/plant rooms which produce heating/hot water for communal occupants.

The council recognises the potential health and safety risks associated with electrical installations and the council is committed to maintaining and promoting the Health, Safety and wellbeing for all of its employees and customer's.

For assets/installations under the council's control/operation or management they will ensure, so far as is reasonably practicable all reasonable steps are taken on behalf of their employees, customers and members of the public so that they are **not** put at risk from the effects of unsafe electrical installations including any related equipment supplied by the council.

These procedures will ensure that the council maintains a consistent approach in the monitoring of employees involved with electricity at work, but also to review and update as necessary from time to time this Policy and procedures currently in place taking into consideration changes to legislation and codes of practice.

### This Policy and it's procedures apply to:

1. All council employees involved in working on or near electrical systems.
2. Anyone including council employees not involved in working on or near electrical systems but who could, (because of their work), be likely to come into contact with such systems.

This policy is designed to work alongside the council's **Technical Specification and Service Specification documents** taking account of their applicable parts. It should be recognised that the policy and procedures, from time to time may need to take into consideration (where applicable) other contracting or partnering organisations existing policy and procedures as appropriate, to jointly maintain the standard for health and safety and the well-being of all individuals working for or on behalf of CCC.

### For the purpose of the policy:

- **The term: "Electrical Operative"** can include agency staff and individuals either directly employed by the council or their Main-Contractor or Sub-Contractor, and who possess a level of skill knowledge & experience or be under "such degree of supervision" appropriate for the nature of the electrical work activities undertaken on behalf of the council.
- **The term: "Main-Contractor"** can include external organisations or sole traders engaged by the council to carry out electrical work activities on behalf of the council.
- **The term: "Sub-Contractor"** can include external organisations or sole traders engaged by the Main-Contractor to work on their behalf for the council.

- **The term: “Working Dead”** in the context of this policy relates to a circuit, installation or a piece of equipment that is de-energized and not able to transmit electrical energy.
- **The term: “Working Live”** in the context of this policy relates to a circuit, installation or a piece of equipment which is energized and capable of transmitting electrical energy.

This policy and supporting procedures should be used in conjunction with, all statutory and legal documents relating to electrical safety, it does not replace the statutory requirements. The titles of the main related documents are listed in section 1.3.

## 1.1 Purpose

The purpose of this policy is to protect and provide a safer place for employees to work when working with electricity and to ensure that precautions are taken against the risk of death or personal injury caused by:

- Electric shock.
- Electrical burns resulting from faulty equipment or wiring systems.
- Fires of an electrical nature.
- Explosions initiated or caused by electricity.

## 1.2 Scope

Electricity at Work Regulations: 1989, **Regulation 4 ‘Systems, work activities and protective equipment’ specifically states:**

*(1) “All **systems** shall at all times be of such construction as to prevent, so far as is reasonably practical, **danger**”.*

*(2) “As may be necessary to prevent **danger**, **all systems** shall be maintained so as to prevent, so far as is reasonably practicable, such **danger**”.*

*(3) “Every work activity, including operation, use and maintenance of a **system** and work near a **system**, shall be carried out in such a manner as not to give rise, so far as is reasonably practical, to **danger**”.*

*(4) “Any equipment provided under these Regulations for the purpose of protecting persons at work on or near **electrical equipment** shall be suitable for the use for which it is intended, and shall be maintained in a condition suitable for that use, and be properly used”.*

Electricity at Work Regulations: 1989, **Regulation 16 ‘Persons to be competent to prevent danger and injury’ specifically states:**

*“No person shall be engaged in any work activity where technical knowledge or experience is necessary to prevent **danger** or, is under such degree of supervision as may be appropriate having regard to the nature of the work”.*

This policy and procedures will apply to all employees who may be involved in the inspection, maintenance, installation or repair of electrical and data services and equipment, fixed wiring, accessories and associated controls including those for safety services and their associated sources for providing electricity, for assets owned, operated and maintained by the council, including but **not limited to:**

- Emergency Escape Lighting.

- Passenger lifts.
- Lightning Protection Systems (LPS).
- Smoke and heat extraction systems/equipment.
- Warden communication control systems.
- Overhead/underground power lines (LV).
- Assessment of electrical loads.
- Generator sets independent of the normal supply.
- Thermal Imaging and Maintenance of Switchgear
- Sprinkler systems (Residential, domestic and non-domestic premises).
- Door entry systems (communal & residential).
- Fire alarm and Fire detection systems.
- Temporary electrical systems for events and entertainment.
- Grid connected Solar Photovoltaic Systems.
- Energy storage systems.
- Inspection & maintenance of Uninterruptible Power Supply Systems.
- Data Network installations and associated works.
- Modification or upgrade works and associated testing.
- Workshop machinery inspections.
- Stage lighting.

### **1.3 Statutory Regulations and Non-statutory Regulations**

Statutory regulations relevant to electrical systems, applicable to electrical work Include:

- Health and Safety at Work Act: 1974.
- Management of Health and Safety at Work Regulations 1999.
- Electricity at Work Regulations 1989 (EAWR).
- Electricity Act 1989.
- Electrical Safety Standards in the Private Rented Sector (England) Regulations 2020.
- Supply of Goods and Services Act 1982.
- Housing Act 2004 (England and Wales).
- Electrical Equipment (Safety) Regulations 2016.
- Supply of Machinery (Safety) Regulations 2008.
- Plugs and Sockets etc. (Safety) Regulations 1994.
- Construction (Design and Management) Regulations 2015.
- Building regulations - all applicable parts incl. Regulation 7 - (materials and workmanship), A, B, M, P, L and F <https://planningportal.gov.uk>.
- Workplace (Health, Safety & Welfare) Regulations: 1992 & (Amendment 1996).
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations: 1995 (RIDDOR).
- Health and Safety (First Aid) Regulations: 1981.
- Smoke and Carbon Monoxide Alarm (England) Regulations 2015.
- Provision and Use of Work Equipment Regulations 1998 (PUWER).
- Dangerous substances & explosive atmospheres regulations (DSEAR) 2002.
- Control of Asbestos Regulations 2012.
- Regulatory Reform (Fire Safety) Order 2005.

#### **1.3(a) Non-statutory regulations/guidance documents relating to electrical systems, applicable to electrical work Include:**

- BS7671 Requirements for Electrical Installations 2018 (current edition incl. all amendments).
- BS7430:2011+A1:2015 Code of practice for protective earthing of electrical installations.
- COP In-Service Inspection of Electrical Equipment (current edition)

- HS (G) 85-Management of Health and Safety at Work Regulations: 1999  
<https://www.hse.gov.uk/pubns/books/hsg85.htm>
- HS(R) 25 - Memorandum of Guidance on the Electricity at Work Regulations: 1989  
<https://www.hse.gov.uk/pubns/books/hsr25.htm>
- HSE guidance note GS38 (current edition) Electrical test equipment for use on low voltage electrical Systems. <https://www.hse.gov.uk/pubns/priced/g38.pdf>
- HSE guidance document INDG354 (rev.1) 'Safety in electrical testing at work'.
- HSE HSG107 Maintaining portable equipment  
<https://www.hse.gov.uk/pubns/books/hsg107.htm>
- The EAS Qualifications Guide December 2020
- <https://electrical.theiet.org/media/2560/eas-20-440-eas-qualification-guide-2020-v11.pdf>

### 1.3(b) Other related Guidance Documents and Applicable Codes of Practice:

- IET Guidance note series 1-8.
- IET Electric vehicle Charging Equipment Installation (4th Edition).
- IET 'On-Site Guide'.
- NICEIC snags and solutions guides 1-5.
- NICEIC Guide to Domestic Periodic Inspection, Testing and Reporting.
- NICEIC Site Guide.
- NICEIC Best Practice Guide series 1-9  
<https://www.electricalsafetyfirst.org.uk/professional-resources/best-practice-guides>
- NICEIC Guide Inspection, Testing and Certification
- Asbestos Essentials Task Manual HSG210 (Fourth edition),
- Task sheets A1, A2, A5, A26, A27, A30, A31, A33.  
<https://www.hse.gov.uk/asbestos/essentials/index.htm>

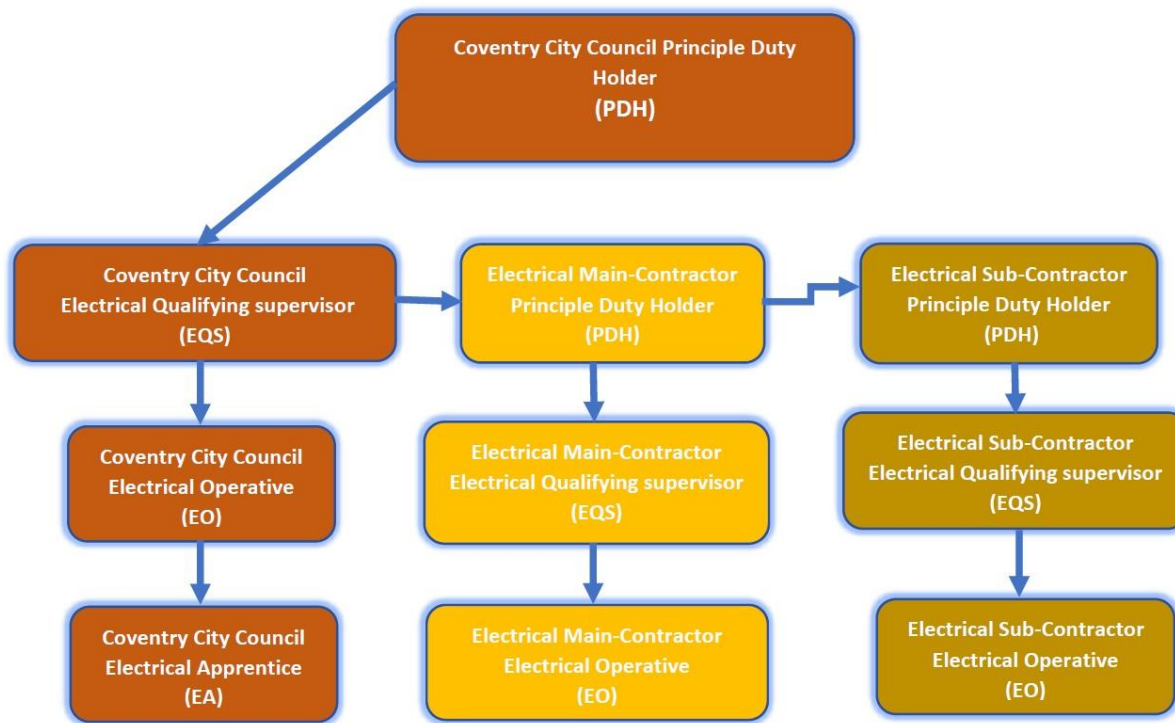
### 1.4 Abbreviations

Abbreviation	Description
<b>QC</b>	Quality Control
<b>M-CTR</b>	Main-Contractor (organisation or sole trader)
<b>S-CTR</b>	Sub-Contractor (organisation or sole trader employed by the main contractor)
<b>CCC</b>	Coventry City Council
<b>EQS</b>	Electrical Qualifying Supervisor
<b>EO</b>	Electrical Operative (including agency-staff and individuals)
<b>EA</b>	Electrical Apprentice
<b>EAS</b>	Electrotechnical Assessment Specification for use by certification and registration bodies (January 2020)
<b>PDH</b>	Principle Duty Holder
<b>PPE</b>	Personal Protective Equipment
<b>NICEIC</b>	National Inspection Council for Electrical Installation Contracting
<b>UKAS</b>	United Kingdom of Measurement & Sampling
<b>NAMAS</b>	National Accreditation Service
<b>EICR</b>	Electrical Installation Condition Report
<b>ACM's</b>	Asbestos Containing Materials
<b>MEIWC</b>	Minor Electrical Installation Works Certificate (current version)
<b>DEIC</b>	Domestic Electrical Installation Certificate (current version)
<b>DEICR</b>	Domestic Electrical Installation Condition Report (current version)
<b>CPS</b>	Competent Person Scheme (Electrical)
<b>SE</b>	Supervising Engineer (Electrical Bias)
<b>ELV</b>	Extra-low Voltage (not exceeding 50V AV or 120V ripple-free DC)
<b>LV</b>	Low Voltage (up to 1000V AC. & 1500V DC.)
<b>EP-T-W</b>	Electrical Permit to Work



## 1.5 Management of Electrical Activity

Electrical Management - Hierarchy Chart



The electrical team must have an effective management structure which is subject to regular review to take into account changes in legislation, the size and scope of work carried out, and the number of EO's at any one time.

To ensure procedures are implemented and maintained which satisfy the following criteria:

- The PDH shall ensure that controls are in place and monitored so that the overall quality and compliance of the electrical service is maintained.
- The PDH is responsible for overseeing the day to day running of the electrical service and ensuring procedures and policies are understood and implemented by the EQS.
- The EQS shall insure the provision of competent and adequate management/supervision of all direct labor EO's and depending on the contract particulars, may include agency staff and where applicable M-CTR or S-CTR EO's.
- The EQS shall ensure that all directly employed EO's including agency staff are fully competent or under such degree of supervision for any electrical tasks they are instructed to carry out.
- The EQS/SE shall ensure all EO's (including agency staff and M-CTR and S-CTR) hold relevant qualifications, are in date and renewed as necessary.
- The EQS/SE shall ensure technical updates and any internal/external training given is signed for acceptance by each EO.
- The EQS shall ensure reference material/books are signed for upon receipt by each EO.

- The EQS shall ensure each directly employed EO or new starter including agency staff working for CCC has undergone an electrical induction and possesses the correct level of PPE prior to starting work.
- The induction should include the 'stopping working' procedure is communicated and understood by all EO's.
- M-CTR and S-CTR SHALL receive a copy of the 'stopping working' procedure as appropriate taking into consideration any contract particulars.
- The EQS/SE shall provide 1st line technical support/supervision (either on site or remotely) to the EO when required.
- The EQS/SE shall ensure that any third party carrying out electrical work have the necessary competency and insurances in place for the type of work carried out.
- The EQS/SE shall ensure records are held for technical updates, changes in legislation/Codes of practice and company policy and these are communicated to EO's as necessary.
- The PDH has overall responsibility for reviewing qualifications, training and CPD received for CCC electrical staff. They shall put forward recommendations for update training as necessary for all electrical staff to keep up with changes in legislation and applicable codes of practice.
- All technical updates/books or reference manuals shall be the property of CCC except those that are freely downloadable and in the public domain. They shall be handed back on termination of employment.
- The EQS shall provide support to the EO's as appropriate when needed.
- The appointed PDH and EQS shall accommodate independent audit inspections from the NICEIC or an equivalent certification body or consultancy that has UKAS accreditation.
- The PDH/SE must be informed by the EQS of the appointment of any agency staff or sub-contractors before commencement of work.

## **2.0 National Inspection Council for Electrical Installation Contracting Registration body (NICEIC)**

Coventry City Council are registered with the "Approved Contractor" Competent Person Scheme (CPS) in accordance with Clause 3.1a. of the Approved Document 'P' Electrical Safety in Dwellings, 'the building regulations 2010 as amended to 2013' for England (Online version).

The Competent Person Scheme (CPS) is operated by the National Inspection Council for Electrical installation contracting (NICEIC). The requirement for the scheme means that Electrical Qualifying Supervisor's (EQS) undergo an annual assessment of "on-going" competency based on BS7671 as amended. The scope of the annual assessment is made relevant to the scope of electrical work undertaken by the council. Repairs & Maintenance Facilities Management Services represent the repairs and maintenance company for Coventry City Council.

The company details are listed on the "Registered Competent Person" website: <https://www.electricalcompetentperson.co.uk/> it is a single register for enterprises undertaking electrical work in domestic dwellings.

It is the Principal Duty Holder's responsibility to ensure that the annual renewal process is completed to ensure continuity of registration.

To also ensure the ratio of EQS to EO is maintained to a ratio of 1:8 which means one EQS is responsible for supervising a maximum of 8 EO or as required, which may be dependent on the geographical spread of the work area and/or subject to contract particular(s).

## 2.1 Directly Employed Staff

All Coventry City Council employees who carry out electrical work for the council shall do so, under CCC's registration as a NICEIC Approved Contractor. All branches or enterprises set up as subsidiary company's under CCC, and who employ a direct labour force to carry out electrical activities on behalf of CCC shall register as a NICEIC "Approved Contractor". Employees are Prohibited in all circumstances from carrying out electrical work using a third-party organization or under their own membership/registration (if applicable).

**Note: All applications for changes to PDH or EQS positions shall be requested via the PDH. Stopping working procedure: (courtesy of HSE)**

The stopping working procedure should be as straight forward as possible so that everyone can understand it however, from time to time it may need to be adjusted as necessary or as contract particulars dictate. **Any discussions between CCC and the S-CTR MUST be carried out in a professional and reasonable manner.**

### 2.1 a Qualifications (see also CCC - Technical Specification Guide for additional site-specific contract- particulars)

**It is the responsibility of the CCC organisation to ensure that directly employed or agency staff** engaged in carrying out electrical maintenance, repair, testing and inspections or installation work, for CCC possess sufficient technical knowledge or experience as necessary (relevant to the tasks undertaken), or be under such degree of supervision to prevent danger or injury to themselves and others working around them, in order for CCC to meet their obligations under various legislation including regulation 16 of the EAWR 1989.

#### Technical Knowledge or experience should include:

- a) Adequate knowledge of electricity.
- b) Adequate experience of the electrical work being conducted.
- c) Adequate understanding of the system to be worked on and a practical experience of that class of system.
- d) Understanding of the hazards which may arise during the work and the precautions which need to be taken.
- e) The ability to recognise at all times whether it is safe for work to continue.

#### EQS qualifications - (directly employed)

All EQS's should ideally be apprenticeship time-served with relevant experience and qualifications including manufacturers product training where applicable. They SHALL also hold a relevant "Site Supervision Safety Training Scheme certificate" (SSSTS) valid for a period of 5 years and refresh it as necessary thereafter.

For EQS's who's contract of employment with CCC has started after the 1st September 2021 for CCC, they will be required to hold certain qualifications dependent on the categories of work their organisation carry out. Given the wide scope of installations, coupled with the inspection and testing requirements for systems and equipment that is repaired, maintained and operated by CCC, all directly employed EQS's SHALL possess the following qualifications as a minimum standard, in accordance with the EAS (January 2020) and the associated Qualifications guide December 2020.

#### Minimum qualifications (City & Guilds or equivalent):

- Must be able to demonstrate a minimum of 2 years supervisory experience and hold a level 3 award in the requirements for electrical installations to the current edition of BS 7671

- Level 3 award in the Initial Verification of Electrical Installations
- Level 3 award in the Periodic Inspection and Testing of Electrical Installations or
- A combined qualification incorporating Initial Verification and Periodic Inspection and Testing plus.
- **Route 1** - a level 3 Electrotechnical Apprenticeship, incorporating end point assessment of competence  
**or**
- **Route 2** – Industry approved apprenticeship and recognised historical industry qualifications  
**or**
- **Route 3** – Electrotechnical Experienced Worker Assessment, previously known as mature candidate Assessment, via the Recognition of prior experience and learning (RPEL).

### **EO's Qualifications (directly employed) - Minimum qualifications (City & guilds or equivalent):**

- Should ideally be apprenticeship time-served to level 3 in electrotechnical installations – buildings and structures with relevant experience including manufacturers product training where applicable.
- AM2 industry endpoint assessment
- Hold a level 3 award in the requirements for electrical installations to the current edition of *BS 7671*
- \*Level 3 award in the Initial Verification of Electrical Installations
- \*Level 3 award in the Periodic Inspection and Testing of Electrical Installations  
**or**
- A combined qualification incorporating Initial Verification and Periodic Inspection
- \*Where EO's are carrying out Electrical Installation condition reporting (EICR), they must possess the required knowledge of the system/ installation being tested

### **Data – ICT installations:**

- EO's & EQS's carrying out data installations SHALL undergo Brand Rex manufacturers product training prior to installing, maintaining or repairing IT systems for CCC.

### **EA's (directly employed) - Minimum qualifications (City & guilds or equivalent)**

- Working towards a Level 3 electrotechnical installations – buildings and structures as part of a recognised electrotechnical NVQ apprenticeship with industry end point assessment AM2.
- **S-CTR qualifications** – see the Technical Specification Guide.

**Note:** For further guidance on alternative recognised routes to qualification to becoming an EQS, The guide is hosted on the IET website at:

<https://electrical.theiet.org/media/2560/eas-20-440-eas-qualification-guide-2020-v11.pdf>

### **2.1 b Stopping working Procedure (courtesy of the HSE)**

Where the PDH/EQS/SE deems it necessary, for reasons of safety either to an individual or group of people working together on site, they shall issue a 'Stop Working Order' (See appendix 8) to be effective immediately.

**Reasons for issuing a ‘stop working order’ to directly employed electrical staff could include:**

- Insufficient supervision that could lead to danger.
- Imminent danger to one or more EO's.
- Breaching regulations rules or CCC policy.

The following minimum procedure SHALL be followed in accordance with this electrical safety policy:

1. If any EO feels that they are in Imminent danger, they must stop work immediately and report to their EQS / SE.
2. If they see that any of their workmates are in imminent danger, then they should inform them and then report immediately to their EQS / SE.
3. The EQS / SE should assess the situation and produce risk assessments and method statements - where required to document and provide additional information about control measures.
4. The EO should be able to take a colleague, safety representative or union representative along to talk to the EQS / SE (where applicable).
5. If the EO feels his/her concerns have not been properly addressed then it should be report to the PDH or another senior manager.
6. If the EO feels his/her concerns have not been properly addressed, the Health and Safety Executive should be involved but only when all other avenues have been exhausted.
7. OE's have the right to be accompanied at all stages.
8. The Health and Safety Executive is the final arbiter and all EO's have the right to contact them under the Health and safety at Work Act 1974.

All new starters, including S-CTR, should get a copy of the procedures for stopping work due to imminent danger before working on site(s).

For Existing EO's it shall be the EQS/SE responsibility to discuss the procedure during technical update sessions/toolbox talks etc.

## **2.2 Sub-Contractors**

All S-CTR carrying out electrical work MUST be registered with the NICEIC ‘Approved Contractor’ scheme or equivalent certification body accredited with UKAS to ISO/IEC 17065 ‘Domestic Installer’ registration is permitted however, ‘Approved contractor’ status is preferred. If a sub-contractor is registered as a Domestic Installer and they wish to carry out periodic inspection and testing, they must have received a separate assessment by the NICEIC or equivalent Certification body for that type of work, and hold the appropriate insurance cover, copies of which should be obtained by the EQS / SE.

### **Sub-letting of electrical work**

The M-CTR or S-CTR may be permitted to sub-let electrical work providing prior authorization(s) from the PDH/EQS/SE have been obtained, and subject to any contract particulars. Where this is the case, that work shall be carried out in its entirety by a business which holds a current enrolment certificate issued by a certification body and covering the

range of work sub-contracted. The Certification Body must be accredited by UKAS to ISO/IEC 17065 or an equivalent European or international body.

### 2.3 Certificates/Reports

NICEIC certificates will be controlled and stored by the EQS and/or Electrical Planner as applicable, in accordance with the NICEIC rules of enrolment and carry the NICEIC logo and certification mark. Only electronic/digital format certificates will be accepted.

Hand-written paper-based certification and reporting templates may be used In the case of a software failure for digital electronic versions. Using paper based hard copy certificates and reports MUST be agreed with the EQS/SE prior to Implementation.

All certification and reports shall be uploaded to CCC 'Backtrack'? internal asset management system and applicable asset register as appropriate.

Historical hard-copy certificates and reports shall be scanned as appropriate and uploaded to the Backtrack asset management system with the physical copy(s) stored at the Whitley Depot?

Other electronic certification software packages may be used provided the certification is based on the model forms (appendix 6) in the current BS 7671. Authorisation MUST be obtained from the PDH/EQS/SE and recorded prior to its use, licenses for access to such software shall be made available for a minimum period of 10 years. Each certificate shall carry their own unique serial number.

Theft or misuse of certificates by an employee shall be considered a serious offence and will be investigated in accordance with the CCC disciplinary policy. In all cases of certificate theft, the local area police authority, and the NICEIC registration body shall be informed in writing as soon as possible upon discovery.

### 3.0 Employing Sub-Contractors (S-CTR) & Agency Staff

All S-CTR or agency staff working on electrical systems and equipment owned, operated or maintained by CCC does so only with the approval of the PDH/EQS/SE. Where approval has not been given, or the PDH/EQS/SE deems it necessary, for reasons of safety either to an individual or group of people working together on site, they shall issue a 'Stop Working Order' (See appendix 8) to be effective immediately.

To the M-CTR or S-CTR EQS as appropriate See item 2.1a above for the procedure to be adopted by M-CTR or S-CTR.

The contractor/agency worker will be issued with a 'Stop Working Order' effective immediately, and requested to safely leave the work area or site until written approval is given by the PDH/EQS/SE.

Reasons for issuing a 'stop working order' to S-CTR or M-CTR could include:

- Inadequate competency that could lead to danger to themselves and/or others.
- Insufficient supervision that could lead to danger.
- Imminent danger to one or more S-CTR EO's or EQS.
- Breaching regulations rules or CCC policy.

### Specification / design:

It Shall be the SE responsibility to Issue the full specification and any drawings as applicable to the M-CTR. In the absence of a formal specification or design being handed to the M-CTR by CCC, the design, technical and legislative aspects of the work proposed, SHALL be the responsibility of the approved M-CTR or their appointed employees / representative.



It is their duty to full fill these and any legal obligations in accordance with current industry standards/legislation and best practice.

### **3.1 Contractors Health & Safety Assessment Scheme**

All M-CTR and S-CTR must hold a valid registration certificate from a recognised Health and Safety assessment Scheme for example Contractors Health & Safety Scheme (Chas) appropriate for the scope of works they have been contracted to carry out.

Before employing a S-CTR the PDH/EQS/SE responsible for the issue, implementation or management of that contract shall ensure that a valid copy of the 'Chas' or equivalent registration certificate is held in electronic and/or hardcopy format along with other relevant documentation/certificates required under the scheme.

### **3.2 Insurances and Business Risk**

The PDH/EQS/SE must ensure that CCC plus any sub-contractor(s) employed have an in-date insurance certificate with an adequate level of insurance cover appropriate for the scope & size of work carried out.

### **3.3 Contractor Information**

In connection with item(s) 3.1 & 3.2 above, the documents listed below are to be requested by the PDH/EQS/SE from any sub-contractor carrying out electrical work on behalf of CCC, this list is not exhaustive but is considered key information required for pre-qualification before commencing work.

- Signed Health & Safety policy statement.
- Copy of Health & Safety/Environment Policy.
- Certificate of Enrolment for the NICEIC or equivalent certification body.
- Annual assessment report from the NICEIC or equivalent certification body.
- Employer's liability insurance.
- Public liability insurance (£5m cover min.).
- Professional indemnity insurance (for electrical installation condition reporting and where installation design is the responsibility of the M-CTR or S-CTR)
- Relevant Risk and Method Statements (RAMS).
- Pre-construction Health and safety plan (where contract work falls within the scope for- CDM 2015).

### **4.0 Internal Quality Control Procedures (QC)**

Post inspection of completed work and pre-Inspection of work in progress (WIP) will ensure the quality of electrical work carried out by all electrical employees, agency staff, M-CTR & S-CTR Is maintained. The system implemented shall ensure the following criteria are met:

- Monitor compliance with the CCC procedures, and as per BS7671 requirements for electrical Installations (current edition) and current legislative requirements.
- Carry out a minimum of 10% post inspections per calendar month for completed jobs across the reactive repairs and planned preventative maintenance departments to assess quality of workmanship and safe working practices demonstrated by all directly employed EO's and agency staff.
- Carry out a minimum of 5% combined pre-inspections and post-inspections per calendar month for the M-CTR, to ensure the work meets CCC requirements.

- Ensure records are kept of all directly employed EO qualification(s), training and CPD details.
- Ensure records are kept of main and sub-contractor and agency staff, as appropriate (subject to any contract particulars & GDPR).
- Ensure correct and in-date ID worn by all EO's whether directly employed, S-CTR or agency staff when on site or attending occupied premises.
- Keep traceable documented electronic records of all quality inspections carried out with the corrective actions implemented and recorded, (see appendices 1 & 2 for template forms)
- Ensure data relating to site visits, tenant complaints / notes are recorded through the CAFM system?
- Ensure EO's have the required level of PPE in relation to the type of work being carried out.
- Ensure any faulty PPE, electrical testing equipment and CCC supplied tools is identified and appropriate remedial action taken and documented.
- Monitor / record and archive for company records and audit purposes the EP-T-W? documentation.

The QC system will be implemented by the EQS/SE and monitored by the PDH however, the process shall be audited by an external assessment body, the frequency of which determined by the PDH.

The external assessment process shall be carried out by a representative holding an A1, D32, D33 or equivalent technical assessor's qualification and/or possesses relevant experience and competency to carry out the assessments. The assessment data collected shall be the responsibility of the external audit company until handed over to the PDH. The frequency of the assessment of the directly employed EO's shall be up to 3 in any 3 Month period and shall continue on a rolling calendar (all EO's assessed every 21- months). The frequency of the assessments could be increased if performance issues are highlighted from the assessment.

The EQS/SE will implement and monitor improvements following recommendations from the external assessments. Any corrective actions will be implemented and closed out no later than 28 days from the date the non-compliance is recorded.

The PDH will provide a report to the? Who does the PDH report to? no later than every 12 months or as deemed necessary, notifying of the status of any outstanding corrective actions/non-compliances.

## **5.0 Electrical Testing Instruments (Including Thermographic)**

### **5.1 Scope**

This Policy details the requirements for ensuring only proprietary branded testing instruments are used and written records of instrument calibration checks are maintained, along with written records of any equipment repairs.



## 5.2 Approved Test Instruments

The following minimum test instruments shall be accessible to all EO's employed by or working on behalf of CCC:

- I. Insulation resistance test instrument.
- II. Continuity test instrument.
- III. Voltage indicating instrument (together with a means of securing for safe isolation.
- IV. Earth fault loop impedance test instrument.
- V. Residual current device test instrument.
- VI. Suitable split test leads for both the phase/earth loop impedance test instrument and the residual current device test instrument.

**Note:** Two or more of the test instrument functions listed above can be combined into a multifunction instrument.

Test instruments used for initially verifying new installation work and for establishing the condition of an existing installation shall be provided to each directly employed electrical operative (EO) and where applicable, temporary agency staff.

Voltage indicators and voltage proving units shall be supplied to each directly employed EO and where applicable, agency staff to ensure the 'safe isolation' procedure can be followed and completed prior to any work on electrical installations, or equipment.

Use of EO's own test instrument is permitted provided copies of calibration checks are obtained by the EQS/SE and the equipment is suitable for use. Repair costs incurred for own equipment may be paid subject to authorization by the PDH.

**Note:** Under no circumstances shall a multi-meter or inductive voltage detection instrument ('volt-stick') be used to determine voltage for safe isolation. Multi-meters can be set to the wrong function and 'volt-sticks' are unreliable in determining the correct level of voltage. Both could lead to injury.

Thermographic measurement instruments - do not form part of the inspection and testing procedures and as such, is not recognised in BS 7671 however, where such an instrument is used as an additional tool to aid an inspection, the instrument should be capable of meeting the requirements of BS ISO 18251-1:2017.

## 5.3 Unique Identification Number

All Test equipment owned/supplied by CCC or owned by the individual but used on CCC assets shall be maintained in accordance with the manufacturer's instructions. Serial numbers will be used to identify the individual instruments and the Unique ID number will be recorded on the register with the EO's name and held on the asset register but marked as own equipment.

The test instrument serial number must be recorded on all electrical certificates and reports received by CCC.

## 5.4 Frequency of Calibration Checks

Test instruments used frequently on a daily basis for inspection and testing such as for void repairs or mutual exchanges, shall be checked for accuracy (in-house) using a proprietary 'check box' instrument and the results recorded every 1 calendar month.

The results shall be manually entered into a Logbook or equivalent? by the EQS / SE and reviewed periodically by the PDH in accordance with the NICEIC area engineer recommendation (See Appendix 9).

Test instruments used less frequently for example when carrying out day to day reactive repairs purposes shall be checked for accuracy and the results recorded every 2 calendar months by the EQS / SE and reviewed by the PDH. Each instrument shall have a self-adhesive label showing when the next accuracy check is due.

**Note:** The frequency of monthly and two monthly instrument accuracy checks may be subject to particular contract requirements however, as a minimum they shall be adhered to. See also CCC Service Specification document in the case of any contract particulars.

A visual inspection of the instrument and its test leads and other ancillary items for damage and safety shall be performed at the same frequency as the calibration checks.

**Note:** A manufacturers formal 'Certificate of Calibration' shall be obtained for each test instrument, including the proprietary 'check box' instrument used to check the instrument accuracy, and this should be renewed no later than every 2 years or as recommended by the instrument manufacturer.

**The records of in-house calibration checks shall include:**

- Model no. of the instrument
- Unique ID (Serial no.) of the instrument
- Electrician's (EO's) name that the instrument is issued to
- Name of the competent person who carried out the calibration check.
- Date the calibration check was performed.
- Company Name.
- Certificate no. and date of the formal calibration certificate for each instrument.
- Model and Serial no. of the proprietary 'check box' instrument.

A dedicated test socket SHALL be made available at CCC for carrying out accuracy measurement checks for External Earth loop impedance (Zs) and for testing the accuracy of the test instrument RCD function.

**The minimum required instrument checks shall include:**

1. Low ohms resistance test.
2. Insulation resistance test.
3. Earth fault loop impedance test.
4. RCD tests.

**Other important checks should include:**

1. Open circuit voltage -low ohms resistance test.
2. Short circuit current low ohms resistance test.
3. Output voltage – Insulation resistance test.
4. Prospective fault current (PFC) test.

**Note:** If check box cannot check the other important tests listed above, the checks should be made using an alternative test instrument.

**Note:** Instruments that do not need periodic checking for accuracy because they are for indication purposes only include:

- Voltage Indicators
- Neon testers.
- Test lamps
- Voltage Proving Units

**Note:** To aid the implementation of this policy, an example of a proprietary check box instrument that meets all of the requirements above is the instrument test box manufactured by Megger.

## 5.5 Equipment Repair

Any instrument found to be out of accuracy by more than (plus 5% or minus 5%) from the manufacturers stated tolerances shall be sent for repair and a replacement issued to the EO as soon as practicable.

Faulty instruments shall be sent back to the manufacturer for repair and re-calibration as necessary. In the case of the instruments needing just a formal calibration check, this can be carried out by either a calibration laboratory that is accredited by the United Kingdom Accreditation Service (UKAS) or manufacturers approved repair center. Broken test leads/fuses and other ancillary parts of the test instrument shall be reported to the EQS / SE straight away and replacement parts issued as soon as practical.

## 5.6 Test Instrument Certificate of Conformity

The certificate of conformity (issued with new instruments) shall be recognised as adequate to confirm the instruments accuracy was verified at the time of manufacture however, calibration results are often not supplied with a new or repaired test instrument therefore, before being put into service the instrument shall undergo an initial calibration check as the initial reference point, and the results recorded by the EQS as necessary.

**HSE Guidance Note GS38:** Electrical test equipment for use by electricians shall be adhered to, as part of this policy and specifically:

- Test instruments and their associated test leads must be suitably constructed and fit for purpose.
- The equipment should meet the standard of BS EN 61557 for use on low voltage electrical systems up to 1000 V ac. and 1500 V dc and it should meet basic safety and performance requirements of BS EN 61010.
- Except where manufacturers written user instructions apply, all test leads shall have shrouded terminals and finger guards.
- Test lead probes shall have no more than 4mm of exposed metal tip and preferably no more than 2mm.

## 5.7 Sub-Contractor Test Instrument Calibration Records

On employing a S-CTR who uses equipment which requires regular calibration checks for accuracy, the sub-contractor is responsible for checking the calibration of their employees equipment as per their own Policy and CPS scheme rules (where applicable) but must provide records to the SE/EQS including all relevant details and certificates upon request, or as required by any contract particulars.

## 6.0 Use and Provision of Electronic Work Records

Where electronic records are being used as the sole method for storing information after carrying out work on electrical systems, the record produced must be secure from loss or interference and must be able to be reproduced in a hard copy format.

**All original certificate / report records including:**

- Building regulation compliance - BRC (Part 'P' certificate)
- Electrical Installation Condition Reports (EICR)
- Electrical Installation Certificates (EIC)
- Minor Electrical Installation Works (MEIWC)

Must be made available for inspection and reproduction in hard copy format for a minimum period of 6 years.

Electrical sub-contractors have a duty under their own CPS registration to notify work carried out in domestic dwellings on behalf of CCC when required.

The following minimum- information shall be provided to CCC in electronic (C.S.V file format) within 5 working days to enable them to update their asset records.

**Electronic/digital records should typically include:**

1. Part 'P' registration number
2. Property address where the work was completed.
3. Details/description of the work carried out.
4. In the case of an EICR, the outcome of the EICR either "Satisfactory" or "Unsatisfactory"

## **7.0 Notification under Competent Person's Scheme (Part 'P')**

Details of all electrical work requiring notification under Part 'P' of the building regulations shall be entered onto the NICEIC online 'Building Regulations Work Notification' website by the EQS or a competent electrical administrator / planner within 30 days of the date the work was completed by the EO, as per the NICEIC scheme rule 6.1(e).

The Part 'P' certificate should usually arrive at CCC within 14 days of the notification process being completed. Notification of electrical work carried out shall be undertaken by the EQS or a competent electrical administrator/planner.

## **8.0 Complaints**

The EQS/SE shall be informed straight away of any formal complaints of poor workmanship / quality issues, or unsafe practices by any EO, whether directly employed or sub-contractor or agency staff, and if a satisfactory outcome for rectification cannot be obtained between the EQS/SE and EO the incident shall be escalated to the PDH. Refer to CCC complaints policy.

## **9.0 Operational Activities by Direct Employees**

### **9.1 Electrical Operatives (EO)**

All EO's including -CTR, S-CTR and agency electricians shall carry out electrical repairs, installations or maintenance in a safe manner adhering to all CCC policies and procedures. Paying particular attention to the requirements of the Electricity at Work Regulations: 1989, and the Health and Safety at Work Act: 1974.

The EO will provide the EQS with the appropriate NICEIC certification paperwork upon completion of each job carried out as necessary, in compliance with the NICEIC rules of enrolment, and as per CCC request.

It will be the responsibility of the EO to ensure the paperwork is handed in to the office within 5 working days of the installation being completed out on-site unless electronic certification is being used. Any variation to the handing in period shall take account of bank holidays. Reduced completion times shall be agreed with the EQS/SE as appropriate.

The type of certificate being issued will depend upon the scope of work being carried out but as general guidance the following will apply to all directly employed EO's and agency staff (see section 9.2).

## 9.1a Assessing Safe Working Practices (also note CCC Technical Specification Document)

The assessment methodology and processes detailed in the Electricity at work – “safe working practices” guidance document HSG85 (current addition) shall be implemented where applicable to this policy. This policy includes appendices to extracts taken from the guidance document see appendix 3 ‘assessing safe working practice’s’.

The complexity and size of a particular work activity may require an assessment to decide whether to work “live” or “dead” see appendix 4. CCC operates a policy of “No Live Working” and requires in the first instance that all work on electrical equipment shall be carried out with all or parts of an electrical system or equipment isolated (“made dead”) as appropriate before work can commence.

### Live working - where there is a risk of danger arising:

Three conditions must be met before any work on energised “live” electrical systems or equipment will be considered by the SE/EQS.

If one of these conditions cannot be met, live working must not be permitted under any circumstances and dead working will be a requirement in accordance with this policy.

### The three conditions are:

1. It is unreasonable in all the circumstances for the conductor to be dead; and
2. It is reasonable in all the circumstances for the person to be at work on or near that conductor while it is live and;
3. Suitable precautions (including, where necessary, the provision of personal protective equipment) have been taken to prevent injury.

**Note:** It shall be the responsibility of the SE/EQS to decide on any live working activity. Suitable and sufficient Risk assessments and Method statement detailing each activity step shall be supplied by the main contractor and sub-contractor to the SE/EQS for checking and formal sign-off prior to any live working.

**See CCC Tech specification document for contract specifics.**

## 9.1b Safe Isolation (See also CCC Technical Specification Document.)

All EO’s Including Main contractor and sub-contractor EO’s working for or on behalf of CCC shall adopt a ‘Safe Isolation Procedure’ to prove the installation or equipment is not energised (“made dead”) before conducting maintenance, repair or new installation work.

The method employed to prove safe isolation may vary depending on the size and complexity of the installation or equipment.

Appendix 5 provides a useful procedure for domestic and similar premises using a suitable voltage detection instrument against a known voltage source.

For larger installations including and large equipment, the procedure for ‘Working Dead’ in accordance with the Electricity at work ‘Safe working practices’ (HSG 85) current edition shall be followed, see appendix 6.

## 9.1c Electrical Permit-To-Work

Additionally, for larger LV installations owned, operate or maintained by CCC where there are high fault currents that could lead to serious injury, an electrical permit-to-work (EPTW) system shall be included with the appropriate safe isolation process.

Suitable risk assessment shall be conducted to determine the structure of the EPTW see appendix 7 typical example of an electrical permit- to-work. The EPTW shall only be issued by a designated competent person who is authorised in Writing by the PDH for CCC.

The competent designated person can be the SE/EQS as required providing they have sufficient skills, training/assessment and knowledge of the electrical system or equipment being worked on. The main contractor working on behalf of CCC shall take responsibility for checking and documenting the sub-contractors EPTW as necessary.

**Note:** Under no circumstances shall a multimeter or inductive volt detection instrument ('volt-stick') be used to determine voltage for safe isolation. Multimeters can be set to the wrong function and 'volt-sticks' are unreliable in determining the correct level of voltage. Both could lead to injury.

## 9.1 d Contractors and Directly Employed Code of Conduct

See - CCC Service Specification guide relevant clauses in section 3.2.

## 9.2 Common Electrical Installation Certificates & Reports produced by NICEIC

### a. Minor Electrical Installation Works Certificate (MEIWC) shall be supplied for:

- Extensions & modifications to existing circuits (1 Minor works Certificate for each- circuit) shall be issued or in the case of multiple alterations to multiple circuits, an electrical installation certificate may be preferable.
- Replacement of accessories and items of switchgear on a like for like basis.
- Repairs to a circuit cable or conductor provided the repaired section does not reduce the size and current carrying capacity of the original cable or conductor and they follow the same route.

### b. Domestic Electrical Installation Certificate (DEIC) shall be supplied for:

- New / additional circuits(s).
- New, replacement or additional consumer unit.
- Rewiring of existing domestic premises.
- New installations (domestic)
- Extensive Minor Works that do not extend to the provision of a new circuit or consumer unit can be entered onto a single DEIC.

### c. Electrical Installation Certificate (EIC) non-domestic premises - shall be supplied where appropriate for all non-domestic electrical installations that extend provision for:

- New / additional circuit(s).
- New, replacement or additional distribution board.
- New installations (non-domestic).
- Rewiring of existing non-domestic premises.
- Extensive Minor Works that do not extend to the provision of a new circuit or distribution board can be entered onto a single EIC.



**d. Domestic Electrical Installation Condition Report (DEICR) - shall be supplied for:**

- Electrical inspection and testing of installations for individual domestic premises.
- Electrical inspection and testing of installations in common area's (multi dwelling- premises).
- \*\*\*Electrical inspection and testing of domestic property's that are privately rented
- \*\*\*Houses of multiple occupancy that are privately rented

**\*\*\*See "The Electrical Safety Standards in the Private Rented Sector (England) Regulations 2020" regulation 3.- (1) (b)**

**e. Electrical Installation Condition Report (EICR) - shall be supplied for:**

- Electrical inspection and testing of installations for non-domestic premises.

**Note:** The extent of the installation that a report covers, can be limited to parts of an installation as required.

**f. Certificate of Design, Installation and Commissioning of a Fire Detection and Fire Alarm System for grade C, D, and Grade F systems (BS 5839-6) domestic premises. - shall be supplied for:**

- Installing or replacing 1 or more smoke alarms for a single-family dwelling.
- Compliance with the "The Smoke and Carbon Monoxide Alarm (England) Regulations 2015".

For other dwelling types, installers should refer to the recommendations for the "minimum grade and category of fire detection and fire alarm system in typical premises" in table 1 of the current BS 5839-6.

Additional certification will be required for the inspection and servicing of an existing domestic smoke alarm system of the above grades, see the model form in annex H figure H.1 of BS 5839-6.

**Note:** The certificate should accompany either a minor works certificate (MEIWC) if repairing an existing system, or an Installation certificate (EIC) if installing a new system.

**Note:** This certificate shall not to be used for centralized (grade 'A') fire detection and alarm systems.

**g. Certificates for Centralized Fire Detection and Fire Alarm System - Grade 'A' to (BS5839-1) non-domestic premises.**

Non-domestic premises which are owned, maintained or operated by CCC shall be the subject of a suitable risk assessment, as required by the Regulatory Reform (Fire Safety) Order 2005 and the Health and Safety at Work etc. Act 1974 where 5 or more people are employed on the premises. The risk assessment shall be kept updated to reflect any changes to the building layout which effect existing evacuation / escape routes or changes to the fire strategy for a particular building.

The risk assessment shall be performed by a competent person who possesses the necessary knowledge, skills and experience to determine whether a fire alarm detection and fire alarm system is required. The details of the risk assessments shall be held centrally within CCC where are the records kept?

A minimum of 4 certificates shall be supplied following the design and installation of a grade 'A' fire detection and alarm system, for non-domestic premises in addition to the design and product information. The certificates / forms shall be based on the model forms in the current BS 5839-1 as amended. Two or more of the items listed 1-4 below may be incorporated into one certificate:

1. Design certificate
2. Installation certificate
3. Commissioning certificate
4. Acceptance certificate

**Note:** An electrical installation certificate shall accompany a new fire alarm installation for the LV & ELV wiring and accessories installed to the current edition of BS 7671 in association with the equipment monitoring and detection devices covered in BS 5839-1.

Additional certification will be required for existing fire alarm Installations that are modified, inspected or verified (as being compliant). See model forms G5, G6 and G7 - Annex G. of BS 5839-1 as applicable.

The Local fire authority may impose additional requirements other than those specified in BS 5839 Parts 1 & 6 for testing and inspections with respect to licensed and similar premises.

#### **h. Design**

If CCC are responsible for any design aspect of fire detection and fire alarm systems, they shall hold in their possession or have access to the current editions of BS 5839 parts 1 & 6.

Contractors taking responsibility for the design, maintenance and repair of fire detection and fire alarm systems in Hospitals shall take into account the requirements in the NHS Estates publication HTM 05-03 Part B [N1] for England and Wales

#### **i. Domestic Visual Condition Report (DVN) - shall be supplied for:**

- Carrying out a visual inspection only of individual rooms / bedsits within HMO's that do not have a separate consumer unit.
- The report may also be used for private rented dwellings where the EICR is still valid (ie less than 5 years) however, there is a change to the tenancy.
- Mutual exchange property's providing they have a current EICR less than 5 years

### **10.0 In-service Inspection and Testing of Electrical Equipment (PAT) – See also CCC Technical Specification Document for contract particulars**

Shall be carried out in accordance with the current edition of the code of practice for In-service inspection and testing of electrical equipment (PAT), and HSE HSG107 guidance document for maintaining portable electrical equipment.

#### **10.1 Scope of the legislation**

The Electricity at Work Regulations require, in regulation 4(2), that:

'As may be necessary to prevent danger, all systems shall be maintained so as to prevent, as far as is reasonably practicable, such danger'.

The Health and Safety at Work Act 1974, the Provision and Use of Work Equipment Regulations 1998 and the Electricity at Work Regulations 1989 apply to all electrical equipment used in or associated with, places of work.



The scope extends from distribution systems, such as 400kV or those in buildings, down to the smallest piece of electrical equipment e.g. 110V drill, battery operated torch with a main's operated charger, and includes the categories:

- Portable, moveable and hand-held tools and equipment.
- Equipment connected by means of a cable or cord connected to an outlet plate.
- IT equipment; extension leads, multi-way adaptors and suppressor adapters.

**This procedure applies to:**

- Portable equipment used in the CCC office facility
- Portable equipment used on-site by EO's
- Household Appliances and equipment supplied to tenants as part of the tenancy agreement with CCC.

## **10.2 Who Has Responsibility?**

**The following people have responsibility for electrical equipment:**

- Users of electrical equipment
- Persons managing the maintenance program (Administrators)
- Persons undertaking the practical inspection and testing of electrical equipment
- Other duty holders such as Company Directors, managers and building services managers

## **10.3 Frequency of inspection and tests**

Office equipment including Flat screen monitors, extension leads, Mobile phone chargers, desktop computers, printers shall be inspected and tested annually in line with CCC procedures unless through a risk assessment it is determined the risk of electric shock or burns has increased in which case the period between inspection and test can be reduced.

Portable equipment used on-site by CCC employees shall have an inspection and test carried out every 3 - 4 months.

Household appliances and equipment supplied by CCC to tenants as part of their tenancy agreement shall be inspected and visually checked every 12 months:

- Upon a change of tenancy or mutual exchange
- Replacement of appliances / equipment before being put into service or
- Repair of appliances / equipment before being put back into service

## **10.4 Competent Person**

Office equipment shall have a combined inspection and test carried out by Who would carry this work out for CCC? which is coordinated through the CCC compliance Management Team.

Portable equipment used on-site by CCC shall have a combined inspection and test carried out by Who would carry this out on site for CCC? and coordinated by the EQS/SE.

Household appliances and equipment supplied by CCC that fall within the scope of the regulations and this policy shall be visually inspected and tested by Who would this be? a competent person who possess a City & Guilds 2377-22 or equivalent qualification

CCC shall permit one of their own competent electricians to carry out inspection and testing at short notice but the nominated electrician must hold the qualification for In-Service Inspection and Testing of Portable Appliances and poses suitable experience of conducting such inspections.

Further consideration shall be given to the impact on resources & the needs of the business at the time and can only be authorized by the EQS/SE.

## 10.5 Faulty Equipment

Damaged or faulty equipment found during inspections shall be taken out of service immediately and the plug removed. The equipment shall be suitably labeled with a 'FAIL' adhesive backed label and clearly identifiable to avoid the possibility of the equipment being put back into service inadvertently (before it is repaired/replaced). An assessment shall be carried out by the competent person to assess whether it is more economical to repair or replace the faulty item.

## 10.6 Serviceable Equipment

Equipment that has passed a successful inspection and test shall have a label marked with 'PASS' and showing the date for the 'next inspection and test' and as applicable, an asset code for CCC asset register.

## 10.7 Portable Appliance Test Record Keeping

Suitable records shall be produced by Who would this be? and be forwarded to the Electrical Planner. The records shall contain the following information:

- A register of all equipment (asset identification)
- A record of formal inspections
- A record of combined inspection and tests
- A Repair Register
- A record of faulty equipment
- Employee ID to whom the equipment belongs

## 10.8 Location of Records

Records of Inspection and tests for portable equipment used on-site which is either owned by the EO's or supplied directly by CCC, shall be stored electronically on the Where will the records be stored?

Records of Inspection and tests for the portable office equipment shall be stored Where will the records be stored?

All equipment records shall be held centrally by the Compliance team.

**Note:** For contract particular's and variations to the frequency of combined inspections and tests, refer to the CCC technical specification guide.

## 11.0 Working with electrical equipment mounted on or containing Asbestos (ACM)

### 11.1 Directly employed EO and Competent persons working

- All EO's, competent persons directly employed and engaged in carrying out electrical work for CCC shall have a recognized UKATA accredited qualification and

shall have received relevant practical training on working with materials containing ACM's.

- They shall be trained to a level of competence to enable them to carry out tasks related to Non-Licensed asbestos working with ACM's and in particular the specific tasks listed in the asbestos essentials task manual HSG210 (current edition).
- The work methods shall be carried out safely in accordance with CCC Asbestos Policy.

## 11.2 Sub-Contract EO's and competent person

All Sub-Contract EO's and competent persons working on electrical equipment shall be requested by the EQS/SE to supply training records, in connection with item 3.1 in relation to working with Non licensed ACM's for pre-qualification before commencing work on behalf of CCC.

## 12.0 Periodic Electrical Inspection and Testing (EICR)

Every installation owned, operated and maintained by CCC shall be periodically inspected and tested by a competent person as per regulation 135.1 and shall be carried out in accordance with the requirements of Chapter 65 in the current edition of BS 7671 – regulations 651.2 - 651.5 refer. Where applicable, the initial installation certificate details or details of any previous inspections and tests shall be taken into account.

### 12.1 Testing procedure

The types of test will be dependent on the extent of the installation covered by the report, taking into account any agreed limitations on the inspection and testing agreed by CCC.

The tests of regulations 643.2-643.11 where relevant, shall be carried out and the results compared with relevant criteria. CCC require 100% physical testing of each circuit including all distribution, sub-distribution and final circuits. For larger installations, A minimum of 20% of the whole installations circuits shall be tested and previous inspection / test results should be compared in order to determine the circuits to be targeted.

**Note:** Insulation resistance checks need not be carried out for parts of the installation that are monitored by residual current monitoring (RCM) or insulation monitoring (IMD) devices provided the correct operation of such devices can be confirmed and the results recorded.

**Note:** Further information on testing procedures shall be adopted from the IET Guidance note 3. For contract specific requirements regarding testing procedures, see also CCC Technical Specification Document.

### 12.2 Inspection Procedure

The inspection shall be carried out with little or partial dismantling as required and supplemented by the appropriate level of testing. A 20% Sample of items shall be visually inspected for each circuit including all distribution, sub-distribution and final circuits.

The generic list of Inspection items as per appendix 6 of the current BS 7671 shall be followed during the inspection procedure and the results recorded on the appropriate forms - see section 9.2 above.

**Note:** For contract particulars relating to the extent of the inspection, testing, identification of distribution boards and conductors, please refer to the CCC Technical Specification Document.

## 12.3 Thermal Imaging of Switchgear and distribution Boards up to 1000v AC

Thermography surveying isn't a substitute for periodic inspection and testing but can be regarded as an aid or tool to assist in the inspection of electrical installations.

The inspection process shall be carried out in accordance with the guidance published in:

1. The standard specification for thermal imaging of LV electrical installations (BSRIA FMS 5/99), and /or
2. The standard guide for examining Electrical and Mechanical equipment with Infrared thermography ASTM E1934-99a (2018).

### Only competent persons having:

- Sufficient experience and knowledge of the installation being inspected.
- Possess the ability to recognise hazards that may arise as a result of the work and be capable of taking suitable precautions to prevent danger shall be permitted to carry out this type of inspection. For contract particular(s), and relevant information to be recorded, refer to the CCC Technical Specification Document.

## 12.4 Data Logging / load measurements

Refer to CCC Technical Specification Document

## 12.5 Power quality monitoring

Refer to CCC Technical Specification Document

## 13.0 Initial Verification for New Installations

Every new installation including alterations that extend to the provision of a new circuit shall be verified (before being placed into service) for compliance with the current edition of BS 7671 as amended – regulation 641.1 refers.

The Inspection aspect of the installation must be carried out before the tests are attempted and the part of the installation being Inspected shall be suitably isolated from the supply – see 9.1b above.

Regulation 643.1 requires the tests of regulations 643.2 to 643.11 shall be carried out (where relevant). And regulation 641.3 requires, as part of the verification process, the test results obtained shall be compared against relevant criteria to ensure the requirements of the regulations have been met.

For project / contract specific requirements refer to the CCC Technical Specification document. The NICEIC pocket guide 11 provides useful guidance on the order of tests for the initial verification of new installations – See appendix.

**Note:** For additional guidance in the Safety in Electrical Testing at Work please refer to the current edition of INDG354.

## 14.0 Withdrawal of Electricity supplier or DNO Cut-out/Service Fuses

The electricity supplier or DNO security seals and service (Cut-out) fuse shall not be removed under any circumstances. Alternative arrangements shall be made by the EQS / SE or M-CTR as appropriate to ensure the electrical installation is safely de-energised at the origin prior to any works commencing.

### **Alternative arrangements Include:**

1. Arranging with the electricity supplier for a de-energisation and later re-energisation of the supply.
2. Engaging the services of an authorised contracting business or individual to carry out the safe temporary removal of the fuse for the duration of the works and re-instatement of the fuse when all works are completed.

Where the installation incorporates a readily accessible multi-pole isolator (common to BS EN -60947-3) it shall be used to isolate the installation from the electricity supply network prior to any works being carried out and providing a suitable locking-off device and notice is installed to reduce the risk of inadvertent re-energisation of the installation, see 9.1b and CCC Technical Specification document in the case of any contract particulars.

**Note:** For large installations, the EP-T-W procedure shall be put in place for installations where the safe isolation of the system cannot be controlled adequately by one person.

### **15.0 Emergency Escape, Safety, Standby lighting Certificates and logbook (BS 5266-1 and BS EN 50172 (BS 5266-8) as amended)**

All emergency Lighting systems whether new or existing, shall be installed operated Inspected and maintained in accordance with the six parts to BS 5266, and where applicable, building regulations 2010 approved document 'B' for England and the equivalent for Wales.

#### **15a Design**

If CCC are responsible for any design aspect of the emergency lighting systems, they shall hold in their possession or have access to all six parts of the current edition for BS 5266.

#### **The six parts to BS 5266 Include:**

1. BS 5266-1- general recommendations and guidance on the provision and operation of emergency lighting.
2. BS EN 1838 - specifies the illumination including the illuminance, duration and colour.
3. BS EN 50172 (BS 5266-8) - specifies the minimum provision and testing emergency lighting systems for different premises.
4. BS EN 60598-2-22 – specifies self-contained and centrally powered luminaires.
5. BS EN 62034 – specifies a test system for automatic testing of the battery powered emergency lighting.
6. BS EN 50171 – specifies central power supply system for emergency lighting

#### **BS 5266 (as amended) applies to systems used for:**

- Assisting occupants to leave a building during an emergency.
- Help protect occupants if they stay put in a building during an emergency.
- Help occupants to continue normal operations in the event of failure of the supply to the normal lighting.

#### **15b Scope**

The scope of BS 5266 covers all non-domestic buildings, plus common access routes to blocks of flats, Maisonettes and areas with fixed seating.

## 15c Risk Assessment

Each of the above types of premises and areas which are owned, maintained or operated by CCC shall be the subject of a suitable risk assessment as required by the Regulatory

Reform (Fire Safety) Order 2005 and the Health and Safety at Work etc. Act 1974 where 5 or more people are employed on the premises.

The assessment shall be regularly updated where conditions change that are likely to affect the overall fire strategy.

The risk assessment should identify the type of emergency lighting system or a combination of systems most suitable for the particular premises, taking into account factors such as, the use and occupancy of the building, the type of evacuation or stay put policy intended, changes to the internal layout which may affect existing evacuation / escape routes all of which will affect the overall fire strategy.

The risk assessment shall be performed by a competent person who poses the necessary knowledge, skills and experience for the task of determining (along with other suitable parties), whether emergency lighting is required, and provide recommendations for the type of system(s) to be implemented. The details of the risk assessments shall be held centrally within CCC where are the records kept?

## 15d Logbook

On the completion of installing an emergency lighting system or part thereof, including carrying out a major alteration to an existing installation, a commissioning test shall be performed to check that the system meets the design requirements, and a completion certificate shall be given to CCC.

A logbook in written or electronic format as appropriate (which format is required by CCC)? shall be supplied and kept at the site of the installation. For larger installations, the logbook can be part of and incorporated into the site operation & maintenance manual (O & M).

The logbook shall be made available to all suitably qualified person(s) carrying out maintenance / repair / testing of the emergency lighting system. The logbook shall be kept updated to reflect any changes to the equipment levels, repairs, modifications and servicing outcomes to existing and new systems.

**Note:** Where a logbook or similar document exists for an installation which is to be modified, the information it contains shall be integrated into the revised logbook/document.

**For typical information recorded in the logbook refer to Annex J of BS 5266 Part 1 & 6.3 of BS EN50172.**

## 15e Completion Certificate

The completion certificate shall be based on the model form(s) in Annex H & I in BS 5266 part 1 as amended.

- A completion certificate consisting of 4 pages shall be used for large installations or modifications to existing systems consisting of more than 25 Self-Contained luminaires, or where the aspects of design, construction and verification are undertaken by different contractors/parties.
- A completion certificate consisting of 2 pages shall be used for smaller installations or modifications to existing systems of 25 Self-Contained luminaires or less where

the design, construction and inspection and testing is the sole responsibility of the person / organisation issuing the certificate.

**The completion certificate is only valid when it is accompanied by the following:**

- Signed declarations of design, installation and verification (this can be a single-signature if 25 or less self-contained luminaires) and photometric design data and a test logbook.

**Note:** The electrical installation work associated with a new emergency lighting installation, or an alteration to an existing emergency lighting installation to which the emergency lighting completion relates, must be covered by a separate Electrical Installation Certificate (or Minor Electrical Installation Works certificate where appropriate) in accordance with BS 7671(Regulation 644.1 refers).

### **15f Verification of Existing Emergency Lighting Installations**

To verify whether an existing installation complies with the current edition of BS 5266, BS EN1838 and BS EN 50172 (BS5266-8), a certificate for verification based on the model form in Annex K shall be supplied.

The 'Responsible person' should complete the general declaration after the separate checklist and report is completed by the 'Competent person' who carried out the work.

**Note:** Annex L provides additional guidance on completing the checklist and report for an existing installation. The model form in Annex L shall only be used where existing valid documentation is not available. The verification certificate must not be used for the periodic inspection of an existing emergency lighting system.

### **15g Periodic Inspection and Testing**

An Emergency Lighting Periodic Inspection and Test Certificate shall be issued only for the periodic inspection and testing of an existing emergency lighting installation. It shall- not be issued for any of the following:

- a) A new emergency lighting installation
- b) New work associated with an alteration or addition to an existing emergency lighting installation
- c) Verification of an existing installation installed to a previous edition of the British standards.

Any person(s) undertaking the periodic inspection and testing of an emergency lighting system must have access to the principle reference documents in order that they can consistently apply the design principles laid out in those documents, see 15a above.

### **16.0 Uninterruptable Power Supplies**

For the testing & Inspection requirements see CCC Technical Specification Document.

### **17.0 Working in Hazardous Areas**

Only contractors or directly employed electrical staff (EO's) who possess the qualifications, skills, knowledge and experience, relevant to the tasks being performed shall be permitted to carry out maintenance, installation or repair work in Hazardous areas / environments.

#### **Selection and Erection of Equipment:**

Contractors or directly employed electrical staff who are responsible for design, selection and erection of equipment for hazardous areas SHALL have a working knowledge of BS 60079-14.



## Inspection, Testing and Maintenance:

Contractors or directly employed electrical staff who are responsible for the inspection and maintenance of hazardous areas SHALL have a working knowledge of BS EN 60079-17.

EO's and contractors SHALL possess Atex or IECEx accreditation and they MUST hold relevant qualifications such as CompEX <https://compex.org.uk/qualifications/> or equivalent.

### The following Minimum Qualifications are required (depending on the environment):

- I. **Gas and Vapours** - CompEx modules Ex01-Ex04 or equivalent, where EO's and contractors are working in locations that contain gases or vapours, that can present an explosive atmosphere.
- II. **Dust** - CompEx modules Ex05-Ex06 or equivalent where EO's and contractors are working in locations where combustible dust, fibres or flying's can form an explosive atmosphere.

## 18.0 Key Contacts

Name	Title	Telephone	Email
Daniel Peters	Head of Facilities Management	02476971954	Daniel.peters@coventry.gov.uk
Kirsty Cowie	Commercial Manager (Repairs & Maintenance)	02476977955	Kirtsy.Cowie@coventry.gov.uk
Rajendra Joshi	Health & Safety Team Leader	02476972449	Rajendra.Joshi@coventry.gov.uk

## 19.0 Document Control

Version	Governance/ Sign off route	Author	Notes





Appendix 2. Coventry City Council

**ELECTRICAL QUALITY CONTROL**

<b>CCC – Electrical Quality Control</b>		Contract No.	
Contractor / Direct Labour: - <b>Circle as appropriate</b>		NICEIC registration no.	
Property Address: -			
	Electrical Operatives Name:-	Details Of Work: (What Type Of Work Was Carried Out)	

If post complete insert certificate number		<input type="text"/>	
Checklist Item			
Time of quality check	WIP <input type="checkbox"/>	Post complete <input type="checkbox"/>	
Standard of work *	Good <input type="checkbox"/>	Fair <input type="checkbox"/>	Unsatisfactory <input type="checkbox"/>
Correct isolation procedures used	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Circuit worked on adequately protected and labelled	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Carry out at least one of the following tests			
External earth fault loop impedance (Ze)	<input type="text"/> Ω		
Total earth fault loop impedance (Zs)	<input type="text"/> Ω		
Earth electrode resistance	<input type="text"/> Ω		
Insulation resistance	<input type="text"/> MΩ		
Continuity of protective conductor	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Continuity of ring final circuit conductor	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Polarity	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Operation of RCD	Yes <input type="checkbox"/>	No <input type="checkbox"/>	
Other tests			
*Note – If unsatisfactory, remedial work is to be carried out and documented by means of defect inspection sheet (CCC-EL-37).			

Comments	

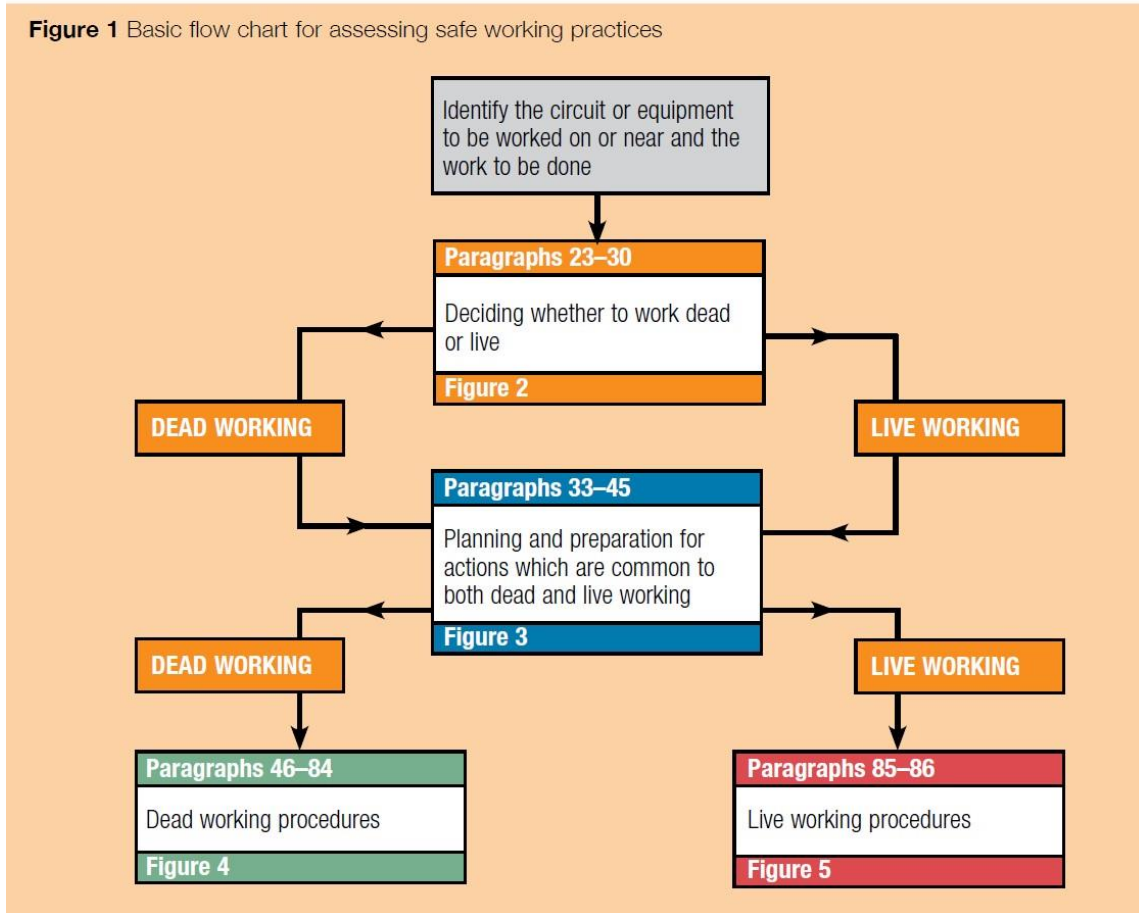
Name: -	<input type="text"/>	Position:-	<input type="text"/>
Signature: -	<input type="text"/>	Date:-	/ /

### Appendix 3. Extract from HSG 85 - Assessing Safe Working practices.

#### The extract illustrates the sequence of planning steps in four stages

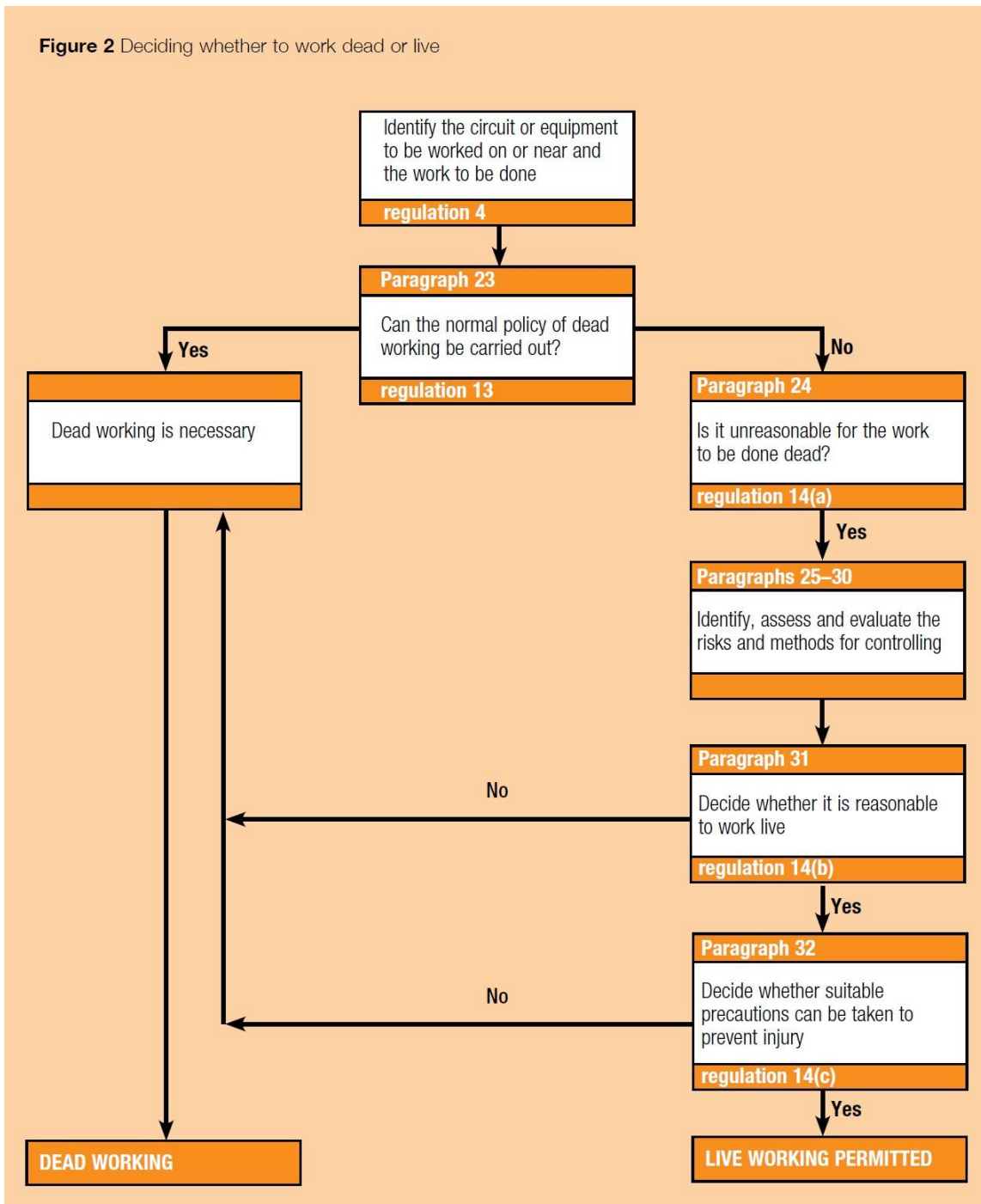
- deciding whether to work dead or work live (coloured orange), see Figure 2;
- planning and preparation for actions which are common to both dead and live working (coloured blue), see Figure 3;
- procedures for working dead (coloured green), see Figure 4;
- procedures for working live (coloured red), see Figure 5.

Figure 1 Basic flow chart for assessing safe working practices



## Appendix 4. Extract from HSG 85 Deciding whether to work “Working dead” or “live” guide

**Figure 2** Deciding whether to work dead or live



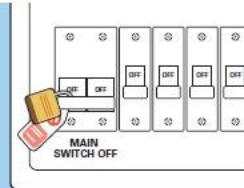
## POCKET GUIDE

5

### ISOLATION PROCEDURE

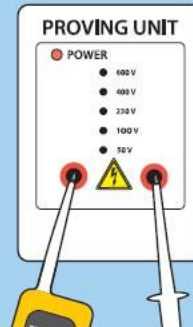
#### Step 1

Check it is safe and acceptable (with the occupier/user) to isolate. If the isolator is an off-load device, remove the load. Open the means of isolation for the circuit(s) to be isolated and secure the isolating device in the open position with a lock or other suitable means.



#### Step 2

Prove the correct operation of a suitable voltage detection instrument, see note (5), against a known voltage source, such as that illustrated.



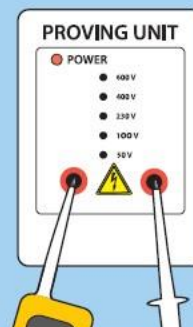
#### Step 3

Using a voltage detection instrument, check that there is no dangerous voltage present on any circuit conductor to be worked on. It is important to confirm that conductors are not energised, for example, due to a wiring fault. Check terminal voltages between: (1) earth and line, (2) neutral and line (as shown) and (3) earth and neutral



#### Step 4

Prove the voltage detection instrument again against the known source to check that it was functioning correctly when the circuit(s) were tested for the presence of voltage.



## PG 5

## ISOLATION PROCEDURE - Notes

In practice the equipment being worked on is likely to be remote from the consumer unit, for example, a socket-outlet located remotely from the means of isolation. In this case it is necessary to check that all the socket-outlet contact terminals are dead.

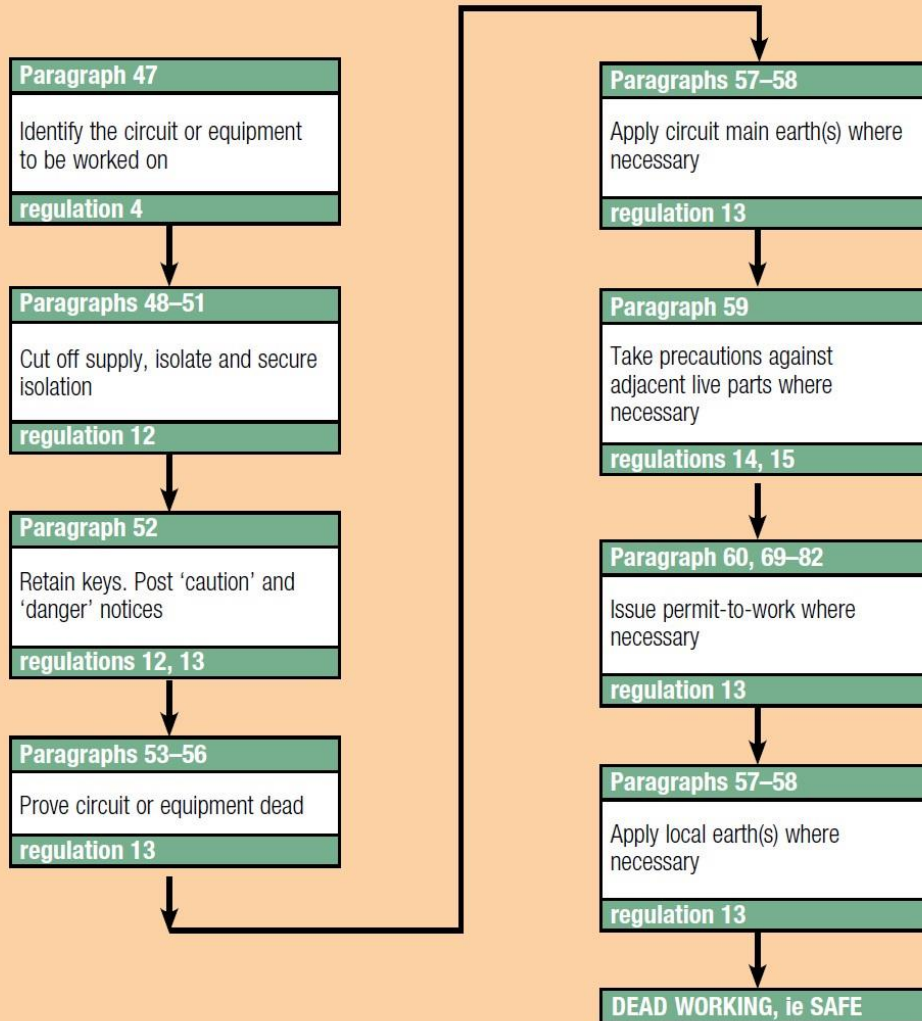
When checking for a voltage between an earth terminal and live (including neutral) terminals, the test probe should make contact with the earth terminal first, to reduce the risk of the remaining probe becoming live.

- (1) This Guide gives information on safe working procedures for the isolation of the supply of electrical energy to electrical equipment.
- (2) The example illustrated shows the minimum steps required to isolate the final circuits supplied by a single-phase consumer unit. The consumer unit includes an isolator and circuit-breakers.
- (3) When circuits are protected by fuses enclosed in a distribution board, remote isolation of the supply to the distribution board may be required.
- (4) *HSG85 Electricity at work safe working practices* gives detailed guidance on devising safe working practices for people who carry out work on or near electrical equipment.
- (5) Guidance on voltage detection instruments is given in *HSE Guidance Note GS 38 – Electrical test equipment for use on low-voltage electrical systems*.
- (6) The *Electricity at Work Regulations 1989* require precautions to be taken against the risk of death or personal injury from electricity in work activities. Regulation 12 requires that, where necessary to prevent danger, a suitable means is available for cutting off the supply of electrical energy to any electrical equipment, and isolation of any electrical equipment.
- (7) The Health and Safety Executive booklet *HSR25 Electricity at Work Regulations 1989 - Guidance on Regulations* is intended to help duty holders meet the requirements of the Regulations.

## Appendix 6. Extract from HSG 85 'Working dead' procedure for larger installations / equipment

46 While it is not always possible to follow a set procedure rigidly in every situation, the sequence illustrated in Figure 4 is recommended as a guide.

Figure 4 Dead working procedures



# Appendix: Typical example of an electrical permit-to-work

## 1 Issue

To \_\_\_\_\_ in charge of this work.

I hereby declare that the following high-voltage apparatus in the area specified is dead, isolated from all live conductors and is connected to earth:

---

---

---

### ***Treat all other apparatus and areas as dangerous***

The apparatus is efficiently connected to EARTH at the following points:

---

---

---

The points of isolation are:

---

---

---

CAUTION NOTICES have been posted at the following points:

---

---

---

SAFETY LOCKS have been fitted at the following points:

---

---

---

The following work is to be carried out:

---

---

---

## ***Diagram***

Signed \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

*Permit-to-work (front)*



**2 Receipt**

I accept responsibility for carrying out the work on the apparatus detailed on this permit-to-work and no attempt will be made by me or by people under my charge to work on any other apparatus or in any other area.

Signed \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

Note: After signing the receipt, this permit-to-work should be retained by the person in charge at the place where the work is being carried out until work is complete and the clearance section is signed.

**3 Clearance**

The work for which this permit-to-work was issued is now suspended\*/completed\* and all people under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus detailed on this permit-to-work.

All work equipment, tools, test instruments etc have been removed.

Additional earths have been removed.

\*Delete words not applicable and where appropriate state:

The work is complete\*/incomplete\* as follows:

Signed \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

**4 Cancellation**

This permit-to-work is cancelled.

Signed \_\_\_\_\_ Time \_\_\_\_\_ Date \_\_\_\_\_

## Appendix 8. Stop Working Order template

### Coventry City Council - ELECTRICAL STOP WORK ORDER

**FOR THE ATTENTION OF:**



NAME	
ADDRESS	

**REGARDING**

PROJECT NAME (where applicable)			
LOCATION OF WORK			
EQS / SE / PDH - (circle as appropriate)		PROJECT NUMBER (where applicable)	
REQUESTING DEPT.		DATE OF REQUEST	

**Coventry City Council SERVE NOTICE THAT**

Pursuant to the Contract dated \_\_\_\_\_, 20\_\_\_\_, you are hereby directed to suspend work as indicated below:

<input type="checkbox"/>	ALL OPERATIONS ON THE PROJECT ABOVE ARE TO BE SUSPENDED EFFECTIVE _____, 20____, AND SHALL REMAIN UNDER SUSPENSION UNTIL FURTHER DIRECTED.
————— OR —————	
<input type="checkbox"/>	THE FOLLOWING PORTIONS OF THE PROJECT ABOVE ARE TO BE SUSPENDED EFFECTIVE ON THE DATES LISTED BELOW AND SHALL REMAIN UNDER SUSPENSION UNTIL FURTHER DIRECTED.
WORK AFFECTED	DATE OF SUSPENSION

STOP WORK ORDER ISSUED FOR THE FOLLOWING REASON(S)	
--	--

**STOP WORK ORDER ISSUED BY**

NAME		TITLE	
SIGNATURE		DATE	

**STOP WORK ORDER ACKNOWLEDGED BY**

NAME		TITLE	
SIGNATURE		DATE	

## Appendix 9. Example – instrument calibration test record sheet

<b>Monthly instrument accuracy log for test equipment</b>													
Checkbox		Multifunction			Continuity / Insulation			Earth Fault Loop impedance			RCD		
Serial No.	<input type="text"/>	Serial No.	<input type="text"/>	Serial No.	<input type="text"/>	Serial No.	<input type="text"/>	Serial No.	<input type="text"/>	Serial No.	<input type="text"/>	Serial No.	<input type="text"/>
Make	<input type="text"/>	Make	<input type="text"/>	Make	<input type="text"/>	Make	<input type="text"/>	Make	<input type="text"/>	Make	<input type="text"/>	Make	<input type="text"/>
Model	<input type="text"/>	Model	<input type="text"/>	Model	<input type="text"/>	Model	<input type="text"/>	Model	<input type="text"/>	Model	<input type="text"/>	Model	<input type="text"/>
Test	Instrument setting:	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
1	Continuity resistance (___)*	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω
	<b>Measured value (Ω)</b>												
2	Continuity resistance (___)*	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω	Ω
	<b>Measured value (Ω)</b>												
1	Insulation resistance (___)*	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
	<b>Measured value (MΩ)</b>												
2	Insulation resistance (___)*	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ	MΩ
	<b>Measured value (MΩ)</b>												
<b>Earth fault loop impedance (Ω)</b>		<b>Test conducted at designated socket-outlet:</b> <input style="width: 100%;" type="text"/>											
	<b>Measured value (Ω)</b>												
<b>RCD</b>													
Disconnection time (ms) at 1/2 times the 30 mA rated residual operating current of the designated RCD													
	<b>Measured value</b>												
Disconnection time (ms) at 1 times the 30 mA rated residual operating current of the designated RCD													
	<b>Measured value</b>												
Disconnection time (ms) at 5 times the 30 mA rated residual operating current of the designated RCD													
	<b>Measured value</b>												
(___)* Insert test value in Ω / MΩ where a constant value is used (for example, one incorporated into a test box).													
Notes:													
Full details of the results of the accuracy tests, including any calibration certificates, are to be retained for record purposes in support of this summary.													

# POCKET GUIDE

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## INITIAL VERIFICATION, ORDER OF TESTS

### Notes

- (1) This Guide gives information on the order of tests for the initial verification of an installation as required by Regulation 643.1 of *BS 7671*, which also requires that
  - a. the test results are compared with relevant criteria, and
  - b. any test that indicates a failure to comply with the criteria is repeated after the fault is rectified, together with any preceding test which may have been influenced by the fault.
- (2) Tests must NOT be carried out until inspection has been completed (642.1).
- (3) Precautions shall be taken to avoid danger to persons and to avoid damage to property and installed equipment during testing (641.4).
- (4) Reference should be made to the NICEIC and ELECSA Pocket Guides: *5 Isolation Procedure* and *12 Test instrument leads* before carrying out any tests.
- (5) Further information on testing is given in the NICEIC and ELECSA books *Inspection, Testing and Certification* and *Site Guide for Electrical Installations*.
- (6) Table 1 lists the order of tests (where relevant) to be carried out before the supply is connected or with the supply isolated (Main switch OFF) as appropriate.
- (7) Table 2 lists a recommended order of tests (where relevant) to be carried out AFTER the tests in Table 1 have been completed satisfactorily and the supply has been connected (Main Switch ON). [See tables overleaf >>](#)

## INITIAL VERIFICATION, ORDER OF TESTS

Table 1. Order of tests to be carried out with the supply **ISOLATED** (AFTER the completion of inspection)

Order	Test	Regulation
1	Continuity of protective conductors including main protective bonding conductors or continuity of ring final circuit conductors	643.2.1
2	Insulation resistance	643.3
3	Protection by SELV, PELV or by electrical separation	643.4
4	Insulation resistance/impedance of floors and walls	643.5
5	Polarity (for example, at lighting switches)	643.6
6	Earth electrode resistance* (where the electrode is part of the installation)	643.7.2

\* Alternatively for a TT system the installation earth electrode resistance may be measured with the incoming supply energised and the main switch OFF, using an earth fault loop impedance test instrument.

Table 2. Recommended order of tests to be carried out, where appropriate, with the supply **CONNECTED** and Main switch ON (AFTER satisfactory completion of the tests in Table 1)

7	Polarity (for example, at socket-outlets)	643.6
8	Protection by automatic disconnection of supply	643.7.1
9	Earth fault loop impedance	643.7.3
10	Prospective fault current	643.7.3.201
11	Additional protection provided by: <ul style="list-style-type: none"> <li>• RCD, or</li> <li>• Supplementary protective equipotential bonding</li> </ul>	643.9
12	Phase sequence maintained for polyphase circuits	643.8
13	Functional testing , including: <ul style="list-style-type: none"> <li>• function of any integral test facility of installed RCDs and/or AFDDs</li> <li>• switchgear and controlgear assemblies, drives, controls and interlocks</li> </ul>	643.10
14	Verification of voltage drop (Note: this is not normally required during initial verification)	643.11