APPENDIX 2b - EIS SPECIFICATION FOR WORKSTREAM 2 - ELECTRICAL EQUIPMENT

Workstream 2 – Electrical Equipment

1. Purpose

1.1 Periodic inspection and testing of electrical equipment as may be necessary to prevent, so far as is reasonably practicable, danger and to ensure that electrical equipment is compliant with:

1.1.1 IET Wiring Regulations BS 7671

1.1.2 Electricity at Work Regulations (1989)

2. Scope

2.1 This workstream covers inspection and testing, as may be necessary to prevent danger, in respect of but not limited to:

1.1.1 Fixed electrical installations

1.1.2 Portable electrical appliances

1.1.3 Emergency lighting

1.1.4 Lightning protection systems

1.1.5 Part 1 – Fire Alarm Testing

1.1.6 Automatic Opening Vent System (AOV)

1.1.7 Street lighting

1.1.8 Electric vehicle charging points.

3. Periodic inspection and testing of electrical equipment

3.1 Periodic inspection and testing of electrical installation shall be carried out in order to determine, so far as is reasonably practicable, whether the installation is in a satisfactory condition for continued service. Wherever possible, the documentation arising from the initial certification and any previous periodic inspection and testing shall be taken into account. Where no previous documentation is available, investigation of the electrical installation shall be undertaken prior to carrying out the periodic inspection and testing.

3.2 Periodic inspection shall be carried out without dismantling, or with partial dismantling, as required, supplemented by appropriate tests and measurements to provide for:

1.1.1 the safety of persons and livestock against the effects of electric shock and burns;

1.1.2 protection against damage to property by fire and heat arising from an electrical installation defect;

1.1.3 confirmation of correct rating and setting of protective devices;

1.1.4 confirmation of correct rating and setting of monitoring devices;

1.1.5 confirmation that the installation is not damaged or deteriorated so as to impair safety;

1.1.6 the identification of installation defects and non-compliances with the relevant parts of BS 7671, that may give rise to danger

3.3 Where a circuit is permanently monitored by an RCM or an IMD, it is not necessary to measure the insulation resistance if the functioning of the RCM or IMD is correct.

3.4 The functioning of the RCM or IMD shall be verified.

3.5 Periodic inspection and testing shall not cause danger to persons or livestock and shall not cause damage to property or equipment even if the circuit is defective.

3.6 Measuring instruments and monitoring equipment and methods shall be chosen in accordance with the relevant parts of BS EN 61557. If other measuring equipment is used, it shall provide no less a degree of performance and safety.

3.7 Details of any damage, deterioration, defects, or dangerous conditions shall be recorded in a report.

3.8 The periodic inspection and testing shall be carried out by one or more persons competent in such work.

4. Frequency of periodic inspection and testing

4.1 The frequency of inspection of electrical installations shall be in accordance with the recommendations set out in IEE Guidance Note 3.

4.2 The frequency of periodic inspection and testing of an installation shall be determined taking into account:

4.2.1 the type of installation and equipment;

4.2.2 its use and operation;

4.2.3 the frequency and quality of maintenance;

4.2.4 the external influences, to which it may be subjected.

4.3 The results and recommendations of previous certificates and condition reports shall also be taken into account.

4.4 The recommended initial frequencies of inspection of electrical installations, is a guide to the frequency of formal inspections of electrical installations. The 'initial frequencies' refers to the time interval between the issuing of the Electrical Installation Certificate on completion of the work and the first inspection. The recommended frequency of subsequent inspections may be increased or decreased at the discretion of the competent person carrying out the inspection and testing.

5. Requirements for inspection and testing

5.1 Any changes in environmental conditions, building structure, and alterations or additions which have affected the suitability of the wiring for its present load and method of installation, are to be noted.

5.2 During the inspection, the opportunity should be taken to identify dangers which might arise during the testing. Any location and equipment for which safety precautions may be necessary should be noted and the appropriate steps taken.

5.3 Periodic tests should be made in such a way as to minimise disturbance of the installation and inconvenience to the client. Where it is necessary to disconnect part of the whole of an installation in order to carry out a test, the disconnection should be made at a time agreed with the user and for the minimum period needed to carry out the test. Where more than one test necessitates a disconnection where possible they should be made during one disconnection period.

5.4 A careful check should be made of the type of equipment on site so that the necessary precautions can be taken, where conditions require to disconnect or short-out electronic and other equipment which may be damaged by testing. Special care must be taken where control and protective devices contain electronic components.

6. *Additional Service (Optional Pricing)* - Surveys, diagrams, and equivalent information

6.1 Where diagrams, charts or tables are not available a degree of exploratory work may be necessary so that inspection and testing can be carried out safety and effectively. A survey may be necessary to identify switchgear, controlgear, and the circuits they control.

6.2 If the inspection and testing cannot be carried out safely without diagrams or equivalent information, Section 6 of the Health and Safety at Work etc Act 1974 can be interpreted to require their preparation.

Diagrams and documentation

6.3 A legible diagram, chart or table or equivalent form of information shall be provided indicating in particular:

6.3.1 the type and composition of each circuit (points of utilisation served, number and size of conductors, type of wiring)

6.3.2 the method used for compliance with Regulation 410.3.2 of BS 7671

6.3.3 the information necessary for the identification of each device performing the functions of protection, isolation and switching, and its location, and

6.3.4 any circuit or equipment vulnerable to the electrical tests as required by Part 6 of BS 7671.

6.4 For simple installations the foregoing information may be given in a schedule. A durable copy of the schedule relating to a distribution board shall be provided within or adjacent to each distribution board.

6.5 Any symbol used shall comply with IEC 60617.

7. Scope

7.1 The requirement for periodic inspection and testing is for inspection comprising careful scrutiny of the installation without dismantling, or with partial dismantling as required, together with the tests considered appropriate by the competent person carrying out the inspection and testing. The competent person should take into account the availability of records and the use condition and nature of the installation in determining the scope of the periodic inspection and testing.

7.2 Consultation with the client or the client's representative prior to the periodic inspection and testing work being carried out is essential to determine the degree of disconnection which will be acceptable before planning the detailed inspection and testing.

7.3 For safety, it is necessary to carry out a visual inspection of the installation before testing or opening enclosures, removing covers, etc. So far as is reasonably practicable, the visual inspection must verify that the safety of persons, livestock and property is not endangered.

7.4 A thorough visual inspection should be made of all electrical equipment which is not concealed and should include the accessible internal condition of a sample of the equipment. The external condition should be noted and if damage is identified or if the degree of protection has been impaired, this should be recorded on the schedule to the reporting. The inspection should include a check on the condition of all electrical equipment and material, taking into account any available manufacturer's information, with regard to the following:

7.4.1 safety;

7.4.2 wear and tear;

7.4.3 corrosion;

7.4.4 damage;

7.4.5 excessive loading (overloading);

7.4.6 age;

7.4.7 external influences;

7.4.8 suitability.

7.5 The assessment of condition should take account of known changes in conditions influencing and affecting electrical safety, e.g. extraneous-conductive parts, plumbing, structural changes.

7.6 Where a section(s) of an electrical installation is excluded from the scope of a Period Inspection and Test, they should be identified in the "extent and limitations" of the reporting. However, such sections must not be permanently excluded from inspection and testing, and a suitable programme should be devised which includes the inspection and testing of such sections.

8. Isolation of supplies

8.1 The requirements of the Electricity at Work Regulations 1989 regarding working on or near live parts must be observed during inspection of an installation.

8.2 Where it is not practicable and too disruptive to isolate the whole installation for the amount of time that is required for a comprehensive inspection, much of the inspection will need to be carried out whilst the installation is in operation.

8.3 Distribution boards should be isolated separately for short periods for the internal inspection of live parts and examination of connections.

8.4 Where it is necessary to inspect live parts inside equipment the supply to the equipment must be disconnected.

8.5 In order to minimise disruption to the operation of premises the appropriate supplementary testing should be applied at the same time as the inspection.

9. Periodic inspection

Joints and connections

9.1 An inspection should be made of all accessible parts of the electrical installation e.g. switchgear, distribution boards, and a sample of luminaire points and socket-outlets, to ensure that all terminal connections (not just cpc's but all connections) of the conductors are properly installed and secured. Any signs of overheating of conductors, terminations or equipment should be thoroughly investigated and included in the reporting.

Conductors

9.2 The insulation and protective covering of each conductor at each distribution board of the electrical installation and at a sample of switchgear, luminaires, socket-outlets, and other points, should be inspected to determine their condition and correct installation. There should be no sign of overheating, overloading or damage to the insulation, armour, sheath, or conductors.

Flexible cables and cords

9.3 Where a flexible cable and cord forms part of the fixed wiring installation, the inspection should include:

9.3.1 examination of the cable or cord for damage or defects

9.3.2 examination of the cross-sectional area, terminations and anchorages for damage or defects

9.3.3 the correctness of its installation with regard to additional mechanical protection, heat resistant sleeving, fixed, or clipped to further enhance security of connection.

Accessories and switchgear

9.4 It is recommended that a random sample of a minimum of 10 per cent of all accessories and switchgear is given a thorough internal visual inspection of accessible parts to assess their electrical and mechanical condition. The percentage inspected shall be identified and recorded so that future inspections include a different selection of items.

9.5 Where the inspection reveals:

9.5.1 results significantly different from results recorded previously

9.5.2 results significantly different from results reasonably to be expected

9.5.3 adverse conditions, e.g. fluid ingress or worn or damaged mechanisms,

the inspection should be extended to include every switching device associated with the installation under inspection unless there is clear evidence of how the damage occurred.

Protection against thermal effects

9.6 The presence of fire barriers, seals and means of protection against thermal effects should be verified as installed or not, if reasonably practicable.

Protection against direct and indirect contact

9.7 SELV protection against direct and indirect contact needs to be checked, particularly with respect to the source e.g. a safety isolating transformer to BS 3535, the need to separate the circuits, and the segregation of exposed-conductive-parts of the SELV system from any connection with the earthing of the primary circuits, or from any other connection with earth.

Protection against direct contact

9.8 It should be established that the means of protection against direct contact with live conductors is provided by one or more of the following methods:

9.8.1 insulation of live parts

9.8.2 installation of barriers or enclosures

9.8.3 obstacles

9.8.4 placing out of reach

9.8.5 SELV or PELV

9.9 It should be established that the means of protection against direct contact with any live conductor meets the requirements for the safety of any person, livestock, and property from the effects of electric shock, fire, and burns.

9.10 For each method of protection against direct contact it should be established that there has been no deterioration or damage to insulation, no removal of barriers or obstacles and no alterations to enclosures or access to live conductors which would affect is effectiveness.

9.11 **It should be noted that an RCD must not be used as the sole means of protection against direct contact with live parts.**

Protection against indirect contact

9.12 The method of protection against indirect contact must be determined and recorded. For earthed equipotential bonding and automatic disconnection of supply the adequacy of main equipotential bonding and the connection of all protective conductors with the earth is essential.

Protective devices

9.13 The presence, accessibility, labelling and condition of devices for electrical protection, isolation and switching should be verified.

9.14 It should be established that each circuit is adequately protected with the correct type, size and rating of fuse or circuit-breaker. The suitability of each protective and monitoring device and its overload rating or setting should be checked.

9.15 It must be ascertained that each protective device is correctly located and appropriate to the type of earthing system and to the circuits protected.

9.16 Each device for protection, isolation and switching should be readily accessible for normal operation, maintenance, and inspection, and be suitably labelled where necessary.

9.17 It should be established that a means of emergency switching, or where appropriate emergency stopping, is provided in accordance with BS 7671.

9.18 When conditions permit and with prior written agreement from the Client, an internal inspection should be made of any emergency switching device and tests should be carried out in accordance with IEE Guidance Note 3.

Enclosures and mechanical protection

9.19 The enclosure and mechanical protection of all electrical equipment should be inspected to ensure that they remain adequate for the type of protection intended. All secondary barriers (to IP2X or IPXXB) should be in place.

Marking and labelling

9.20 The labelling of each circuit should be verified.

9.21 It should be established that adjacent to every fuse or circuit-breaker there is a label correctly indicating the size and type of the fuse, nominal current of the circuit-breaker and identification of the protected circuit.

9.22 For sub-main distribution circuits, the fuse base or carrier should be identified and not the fuse holder.

9.23 It should be ascertained that all switching devices are correctly labelled and identify the circuits controlled.

9.24 Notices or labels are required at the following points and equipment within the installation:

9.24.1 at the origin of every installation

9.24.2 where different voltages are present

9.24.3 earthing and bonding connections

9.24.4 residual current devices (RCDs)

External influences

9.25 Note should be made of any known changes in external influences, building structure, and alterations or additions which may have affected the suitability of the wiring for its present load and method of installation.

9.26 Note should be taken of any alterations or additions to an installation of an irregular nature, which amount to a degree of non-compliance, e.g. poor design, unsuitable materials, poor workmanship or disregard for the anticipated longevity of the installation has occurred the reporting should indicate this together with reference to any evident faulty workmanship or design.

10. Periodic testing

General

10.1 Periodic testing is supplementary to the periodic inspection of the installation described in para 9 above.

10.2 Persons carrying out periodic testing must be competent in the use of the instruments employed and have adequate knowledge and experience of the type of installation being tested in order to prevent, so far as is reasonably practicable, danger.

10.3 Sample testing may be carried out, with the percentage being at the discretion of the tester.

10.4 Wherever a sample test indicates results significantly different from those previously recorded investigation is necessary. Unless the reason for the difference can be clearly identified as relating only to the sample tested, the size of the sample should be increased. If in the increase sample, further failures to comply with the requirements of the Regulations are indicat3ed, a 100 per cent test should be made.

11. Tests

11.1 The person carrying out the testing is required to decide which of the tests below are appropriate by using their experience and knowledge of the installation being inspected and tested and by consulting any available records

11.2 Where sampling is applied, the percentage used is at the discretion of the tester. However, a percentage of less than 10% is inadvisable.

11.3 Electrical tests should be carried out in compliance with BS 7671 regulation 643 and as listed within the sequence of tests shown at item 10.2 of the IET On-site guide.

11.4 The earth fault loop impedance test may be used to confirm the continuity of protective conductors at socket-outlets and at accessible exposed-conductive-parts of current-using equipment and accessories.

11.5 Generally, accessibility may be considered to be within 3 metres from the floor or from where a person can stand.

11.6 Where the circuit includes SPDs or other electronic devices which require a connection to earth for functional purposes, these devices will require disconnecting to avoid influencing the test result and to avoid damaging them. All essential isolation of incoming electrical supplies shall be observed for this purpose to prevent danger.

11.7 Where there are suitable records of previous tests available issued within an acceptable time frame, this test may not be necessary.

11.8 Where EFLI tests are carried out the meter used must incorporate technology that allows for satisfactory measurement of the circuit connected to the circuit without operating or disrupting any residual current device connected to the circuit.

11.9 Testing to be carried out where practicable on existing installations (see paras 11.1 and 11.2 above):

11.10 Testing is to be carried out as prescribed IEE Guidance Note 3.

12. Periodic inspection report

12.1 The results and extent of the periodic inspection and testing shall be recorded on a Periodic Inspection Report and provided to the Client.

12.2 The report must include:

12.2.1 a description of the extent of the work, including the parts of the installation inspected and details of what the inspection and testing covered;

12.2.2 any limitations which may have been imposed during the inspection and testing of the installation;

12.2.3 details of any damage, deterioration, defects and dangerous conditions and any non-compliance with BS 7671 which may give rise to danger;

12.2.4 schedule of inspections;

12.2.5 schedule of test results;

12.3 Any immediate dangerous conditions should be made safe by isolation and immediately report to the competent person's supervisor and the Client for immediate attention. Where defects are found, consideration of severity needs to be recognised, noted, and rectified with the Client's permission. If not, the defect should be reported in writing without delay to the Client or their representative.

12.4 All installations are to be inspected and tested for compliance with the current edition of BS 7671 and departures recorded.

13. Test Instruments

Instrument standard

13.1 Safety requirements for electrical equipment for measurement control and laboratory use is the basic safety standard BS EN 61010 for electrical test instruments.

Instrument accuracy

13.2 BS EN 61557

14. Site Security

14.1 It is essential that site security is maintained throughout the duration of the inspection and/or time spent on site.

14.2 Electrical intakes, plant rooms, machine rooms and the like shall be kept locked, when not occupied by the competent person and at the end of each work period to prevent danger to third parties and prevent occupation by rough sleepers.

14.3 The competent person should confirm arrangements for access with the Client.

15. Additional Service (Optional Pricing) - Thermographic survey

15.1 Thermographic survey can assist electrical inspections, where it is not always practicable or possible to disconnect electrical installations (e.g. switch boards, controllers, switch gear, etc) to identify circuit hotspots before serious damage occurs. This form of survey can help clarify the suitability of such installations to be left in use and uncover other defects not discovered by visual inspections alone.

16. Certification and Reporting

16.1 The ***Electrical Installation Certificate*** required by Part 7 of BS 7671 shall be made out and signed or otherwise authenticated by the competent person or persons in respect of the design, construction, inspection and testing of the work.

16.2 The ***Minor Works Certificate*** required by Part 7 of BS 7671 shall be made out and signed or otherwise authenticated by a competent person in respect of the inspection and testing of an installation.

16.3 ***The Periodic Inspection Report*** required by Part 7 of BS 7671 shall be made out and signed or otherwise authenticated by the competent person in respect of the inspection and testing of an installation.

16.4 Competent persons will, as appropriate to their function under paragraphs 16.1, 16.2 and 16.3 above, have a sound knowledge and experience relevant to the nature of the work undertaken and to the technical standards set down in BS 7671, be fully versed in the inspection and testing procedures contained in BS 7671 and employ adequate testing equipment.

16.5 Electrical Installation Certificates will indicate the responsibility for design, construction, inspection, and testing, whether in relation to new work or further work on an existing installation.

16.6 Where design, construction and inspection and testing is the responsibility of one person a Certificate with a single signature declaration in the form shown below may replace the multiple signatures section of the model form.

FOR DESIGN, CONSTRUCTION, INSPECTION AND TESTING

I being the person responsible for the Design, Construction, Inspection & Testing of the electrical installation (as indicated by my signature below), particulars of which are described above, having exercised reasonable skill and care when carrying out the Design, Construction, Inspection & Testing, hereby CERTIFY that the said work for which I have been responsible is to the best of my knowledge and belief in accordance with BS 7671: ……, amended to ……. (date) except for the departures, if any, details as follows:

16.7 A ***Minor Works Certificate*** will indicate the responsible for design, construction, inspection and testing of the work described in Part 4 of the certificate.

16.8 A Periodic Inspection Report will indicate the responsibility for the inspection and testing of an installation within the extent and limitations specified on the report.

16.9 A schedule of inspections and a schedule of test results as required by Part 7 (of BS 7671) shall be issued with the associated Electrical Installation Certificate or Periodic Inspection Report.

16.10 When making out and signing a form on behalf of a company or other business entity, individuals shall state for whom they are acting.

16.11 Additional forms may be required as clarification, if needed by non-technical persons, or in expansion, for larger or more complex installations.

16.12 The IEE Guide Note 3 provides further information on inspection and testing and completion and for period inspections.

ANNEX A

Competence

Technical Knowledge and Experience

A competent person's scope of technical knowledge or experience should include:

- Adequate knowledge of electricity;
- Adequate experience of the electrical work being carried out;
- Adequate understanding of the system to be worked on and practical experience of that class of system;
- Understanding of the hazards which may arise during the work and the precautions which need to be taken;
- The ability to recognise at all times whether it is safe for work to continue

Required competence

The competent person carrying out the inspection and testing of any electrical installation must, as appropriate to their function, have a sound knowledge and experience relevant to the nature of the installation being inspected and tested, and to the technical standards set down in BS 7671. The competent person must also be fully versed in the inspection and testing procedures and employ suitable testing equipment during the inspection and testing process.

It is the responsibility of the competent person:

- to ensure no danger occurs to any person, livestock, or damage to property;
- to compare the inspection and testing results with the design criteria;
- to take a view on the condition of the installation and advise on remedial works
- in the event of a dangerous situation, to make an immediate recommendation to the Client to isolate the defective part.

Qualifications and Experience

A competent person should, as a minimum stipulation, be qualified in their practising profession.

Qualification Requirement	**Experience**
Level 3 Electrotechnical Qualification plus industry end point assessment (AM2S) **Plus:** *A Level 3 Award in the Initial Verification of Electrical Installations* and* *A Level 3 Award in the Periodic Inspection and Testing of Electrical Installations** **and** *A current Level 3 award in the Requirements for Electrical Installations* *these may be achieved within a combined qualification	Must provide evidence of work carried out to be able to demonstrate 2 years of competence for periodic inspection and testing.
Level 3 NVQ Diploma in Installing Electrotechnical systems and equipment (building structures and the environment) **Plus**: *A level 3 Award in the Initial Verification of Electrical Installations** **and**	Must provide evidence of work carried out to be able to demonstrate 2 years of competence for

*A level 3 Award in the Periodic Inspection, Testing of Electrical Installations** **and** *A current Level 3 Award in the Requirements for Electrical Installations* *these may be combined within another single qualification	periodic inspection and testing.
Scottish Vocational Qualification (SVQ) in Electrical Installation at SCQF level 7. **Plus**: *A level 3 Award in the Initial Verification of Electrical Installations** **and** *A level 3 Award in the Periodic Inspection, Testing of Electrical Installations** **and** *A current Level 3 Award in the Requirement for Electrical Installations* *these may be achieved within a combined qualification	Must provide evidence of work carried out to demonstrate 2 years of competence for the periodic inspection and testing, and evidence of ongoing Continuous Professional Development
Auditable evidence of relevant historical industry recognised electrical installation competency-based qualifications equivalent to requirements above, such as evidence of having completed an industry-approved apprenticeship Plus: A level 3 Award in the Initial Verification of Electrical Installations* and A level 3 Award in Periodic Inspection, Testing of Electrical Installations* and A current Level 3 Award in the Requirements for Electrical Installations *these may be achieved within a combined qualification	Must provide evidence of work carried out to be able to demonstrate 2 years of competence for the periodic inspection and testing, and evidence of ongoing Continuous Professional Development

Partner or Director (Chartered Engineer) should hold appropriate qualifications/accreditations and have at least 10 years relevant post-professional qualification experience.

Senior Professional (Chartered Engineer) should hold appropriate qualifications/accreditations and have at least 5 years relevant post-professional qualification experience

Professional (Incorporated Engineer) should be a professionally qualified/accredited consultant, hold one of the following qualifications and have at least 3 years relevant post-professional qualification experience

Senior Technician (Engineering Technician) should be a graduate on a recognised and accredited course for obtaining a professional qualification

Technician (Engineering Technician) should be a graduate on a recognised accredited course

Admin/Junior Technician/Apprentice

- Administration staff;
- Junior Technician (i.e. Trainee / Undergraduate)
- Apprentice with Apprenticeship entry qualifications.

Chartered Engineer

Must have experience in developing solutions to engineering problems using new or existing technologies, through innovation, creativity and change and/or they may have technical accountability for complex systems with significant levels of risk.

- Use a combination of general and specialist knowledge and understanding to optimise the application of existing and emerging technology
- Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems
- Provide technical and commercial leadership
- Demonstrate effective interpersonal skills
- Demonstrate a personal commitment to professional standards

Incorporated Engineers

Must have experience in maintaining and managing applications of current and developing technology, and can undertake engineering design, development, manufacture, construction, and operation and must be able to demonstrate:

- Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology
- Apply appropriate theoretical and practical methods to design, develop, manufacture, construct, commission, operate, maintain, decommission and re-cycle engineering processes, systems, services, and products
- Provide technical and commercial management
- Demonstrate a personal commitment to professional standards

Engineering Technicians

Must be able to apply safe systems of work and must be able to:

- Use engineering knowledge and understanding to apply technical and practical skills.
- Contribute to either the design, development, manufacture, commissioning, decommissioning, operation or maintenance of products, equipment, processes, or services.
- Accept and exercise personal responsibility.
- Use effective communication and interpersonal skills.
- Comply with the Code of Conduct of your institution
- Exercise responsibilities in an ethical manner.

Codes of Conduct

- Act with due skill, care, and diligence and with proper regard for professional standards
- Prevent avoidable danger to health or safety
- Act in accordance with the principles of sustainability, and prevent avoidable adverse impact on the environment and society
- Maintain and enhance their competence, undertake only professional tasks for which they are competent, and disclose relevant limitations of competence
- Accept appropriate responsibility for work carried out under their supervision
- Treat all persons fairly and with respect
- Encourage others to advance their learning and competence

- Avoid where possible real or perceived conflict of interest, and advice affected parties when such conflicts arise
- Observe proper duties of confidentiality owed to appropriate parties
- Reject bribery and all forms of corrupt behaviour and make positive efforts to ensure others do likewise.
- Raise a concern about a danger, risk, malpractice or wrongdoing which affects others ('blow the whistle'), and support a colleague or any other person to whom you have a duty of care who in good faith raises any such concern
- Assess and manage relevant risks and communicate these appropriately
- Assess relevant liability, and hold appropriate professional indemnity insurance
- Notify your institution (if a member) of any significant violation of the Institution's Code of Conduct by another member.

Risk

Identifying, assessing, managing, and communicating risk

- Apply professional and responsible judgement and take a leadership role
- Adopt a systematic and holistic approach to risk identification, assessment, and management
- Comply with legislation and codes, but be prepared to seek further improvements
- Ensure good communication with the others involved
- Ensure that lasting systems for oversight and scrutiny are in place
- Contribute to public awareness of risk

Sustainability

- Contribute to building a sustainable society, present and future
- Apply professional and responsible judgement and take a leadership role
- Do more than just comply with legislation and codes
- Use resources efficiently and effectively
- Seek multiple views to solve sustainability challenges
- Manage risk to minimise adverse impact to people or the environment

ANNEX B

Definitions:

"**competent person**" means person who possesses, as appropriate to the nature of the electrical work to be undertaken, adequate education, training, and practical skills, and who is able to perceive risks and avoid hazards which electricity can create.

"**controlgear**" (see "switchgear")

"**equipment**" means any item for such purposes as generation, conversion, transmission, distribution, or utilisation of electrical energy, such as machines, transformers, apparatus, measuring instruments, protective devices, wiring systems, accessories, appliances, and luminaires

"**external influence**" means any influence external to an electrical installation which affects the design and safe operation of that installation

"**extraneous-conductive parts**" means a conductive part liable to introduce a potential, generally Earth potential, and not forming part of the electrical installation

"**IMD**" means insulation monitoring device

"**inspection**" means examination of an electrical installation using all the senses as appropriate

"**PELV (protective extra-low voltage)**" means an extra-low voltage system which is not electrically separated from Earth, but which otherwise satisfies all the requirements for SELV

"**RCD**" means residual current device

"**reporting**" means communicating the results of periodic inspection and testing of an electrical installation to the client

"**SELV (separated extra-low voltage)**" means an extra-low voltage system which is electrically separated from Earth and from other systems in such a way that a single fault cannot give rise to the risk of electric shock

"**surge protective device (SPD)**" means a device that is intended to limit transient overvoltages and divert surge currents. It contains at least one non-linear component.

"**switchgear**" means

"**testing**" means implementation of measures to assess an electrical installation by means of which its effectiveness is proved. This includes ascertaining values by means of appropriate measuring instruments, where measured values are not detectable by inspection.

"**luminaire**" means equipment which distributes, filters or transforms the light transmitted from one or more lamps and which includes all the parts necessary for supporting, fixing and protecting the lamps, but not the lamps themselves, and where necessary, circuit auxiliaries together with the means for connecting them to the supply

"**socket-outlet**" means a device provided with female contacts, which is intended to be installed with the fixed wiring and intended to receive a plug. A luminaire track system is not regarded as a socket-outlet system.