



Vodafone Policy Detailed Requirements

Electrical Competency Arrangements

Policy Owner:	Policy Champion:	Version:	Date:
David Fry	Eileen Roddis	1.1	April 2019

Objective/Risk:	Scope:
The purpose of this document is to provide guidance for the management of electrical safety by detailing the electrical competency arrangements in place to satisfy Vodafone's statutory responsibilities under the Electricity at Work Regulations 1989 and other regulations as they may apply	The arrangements described in this document must be adopted by all Vodafone employees and suppliers working for or on behalf of Vodafone in the UK, on electrical systems and equipment
Compliance levels are monitored and reviewed by appropriate governance bodies. Any breach will be treated as a serious offence and may be subject to disciplinary action and/or termination of contract.	

Contents

1. Policy principles	3
1.1 Definitions.....	3
1.2 Categories of Electrical Work.....	5
1.2.1 Category 1.....	5
1.2.2 Category 2.....	6
1.2.3 Category 3A.....	6
1.2.4 Category 3B.....	6
1.2.5 Category 4.....	7
1.2.6 Category 5.....	7
2. Policy controls and deliverables required for compliance	8
2.1 Assessment	8
2.1.1 Vodafone Employees Assessment.....	8
2.1.2 Suppliers Assessment.....	8
2.2 Training.....	8
2.2.1 Vodafone Employees Training.....	9
2.2.2 Suppliers Training and Certification	10
2.3 Safe Systems of Work.....	10
2.3.1 Live Conductors.....	10
2.3.2 Dead Working.....	11



2.3.3	Live Working.....	11
2.3.4	Safe systems of live working.....	11
2.3.5	Hazardous areas.....	12
2.3.6	High risk areas	12
2.3.7	Electrical connections at a third party location	12
3.	Roles and responsibilities	12
3.1	Principal Duty Holders.....	12
3.2	Line Managers	13
3.3	Subject Matter Experts.....	13
3.4	Suppliers	13
4.	Exceptions	14
5.	Supporting documents	14
6.	Document history	14




1. Policy principles


The main objectives of this document are to:

- prevent any electrical work being carried out by persons who lack the knowledge and experience necessary to avoid danger
- ensure through selection, training and instruction that employees and suppliers working for or on behalf Vodafone in the UK are competent to undertake the electrical work assigned to them
- satisfy Vodafone's statutory responsibilities under the Electricity at Work Regulations 1989
- ensure adherence with Vodafone Absolute Rule that employees and suppliers must NEVER carry out electrical work on electrical equipment, circuits and gear if they are not qualified to do so


1. Always wear seat belts when travelling in, or operating vehicles




2. Never exceed speed limits or travel at speeds which are dangerous for the type of road, vehicle or conditions




3. Never use a hand held phone whilst driving and only make calls by pulling over or using hands free devices, when it is safe to do so




4. Never work under the influence of substances (alcohol or drugs) which are illegal or in excess of legal levels or where this impairs the individuals' ability to perform tasks




5. Always use suitable Personal Protective Equipment, a safety harness and fall protection equipment when working at height (harnesses must be attached at all times when working at height)



6. Never carry out electrical work on electrical equipment, circuits and gear if you are not qualified



7. Never undertake any street or underground work activities unless competent to do so



1.1 Definitions

Key acronyms and terminology used in this document

Employees	Any person employed by any Vodafone entity (in which Vodafone Group hold an interest of more than 50%) on either a full time or part time basis
Suppliers	Any external person or company employed directly or indirectly by Vodafone. This includes vendors, agents, contractors and all their tiered sub-contractors, operating companies and outsourced partners
Subject Matter Expert (SME)	An electrically competent person recognised as an authority for the safety, technical standards and quality of electrical installation and maintenance work - typically qualified and experienced to support the highest category of work expected within their function
Qualified Persons List (QPL)	A record of Vodafone employees whom are authorised to perform electrical activities including information about which categories have been approved and relevant training. The QPL is reviewed and maintained by the Electrical Safety Forum
Electrical Safety Forum	A committee of Subject Matter Experts representing their function's Principle Duty Holder to monitor risks and controls relating to electrical works to minimise the risk of harm to people from electrical incidents



Ordinary Person *	Person who is neither a Skilled Person nor an Instructed Person
Instructed Person (electrically) *	Person adequately advised or supervised by a Skilled Person to enable that person to perceive risks and to avoid hazards which electricity can create
Skilled Person (electrically) *	Person who possess, 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 electrical can create
“competent” & “competency”	A person who possesses sufficient technical knowledge, relevant practical skills and experience for the nature of the electrical work undertaken and is able at all times to prevent danger and, where appropriate, injury to themselves and others
“prescribed electrical activities”	A specific detailed set of procedural documentation for electrical activities to be performed without deviation
Extra Low Voltage (ELV) *	Not exceeding 50 V AC or 120 V ripple-free DC, whether between conductors or to earth
Low Voltage (LV) *	Exceeding ELV but not exceeding 1000 V AC or 1500 V DC between conductors or 600 V AC or 900V DC between conductors and earth
High Voltage (HV) *	Normally exceeding LV

The term “(electrically)” is assumed to be present where the terms ‘Instructed Person’ or ‘Skilled Person’ are used within this document

** as defined in BS7671:2018 Requirements for Electrical Installations 18th Edition*



1.2 Categories of Electrical Work

A range of categories of electrical activities have been defined in this document, based on levels of risk, to prevent any electrical work being carried out by persons who lack the knowledge and experience necessary to avoid danger.

Within each category, it is expected that competent persons shall possess sufficient technical knowledge, relevant practical skills and experience for the nature of the electrical work undertaken and is able at all times to prevent danger and, where appropriate, injury to him/herself and others by identifying where electrical hazards exist and in what actions to take to avoid such hazards.

As applicable to the work being performed all competent persons shall also:

- have available suitable PPE
- have available suitable tools and the knowledge on how to use them
- be able to create and manage the necessary permits and other safe systems of work

Summary of Competency Categories

Category	Brief Description
1	An Instructed Person carrying out <u>prescribed</u> electrical activities on ELV DC and LV AC systems
2	A Skilled Person carrying out <u>prescribed</u> electrical activities on ELV DC and LV AC systems
3A	A Skilled Person carrying out electrical activities on ELV DC battery systems
3B	A Skilled Person carrying out electrical activities on LV DC battery systems
4	A Skilled Person carrying out electrical activities on ELV and LV systems including live testing
5	A Skilled Person carrying out electrical activities on HV systems

1.2.1 Category 1

Category 1 is for an Instructed Person carrying out prescribed electrical activities on ELV DC and LV AC systems.

Category 1 activities shall not include any exposure to live parts unless explicitly detailed for ELV DC below.

A category 1 Instructed Person shall possess sufficient technical knowledge and relevant practical skills, as applicable, to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- power up (or down) equipment at the supply breakers
- replace inverter or rectifier plug and play modules with like-for-like
- replace plug and play breakers and fuses with like-for-like where live parts are not exposed
- terminate and test local power cables (i.e. Anderson, IEC C13, BS 1363, IEC 60309)
- connect (or remove) an ELV DC circuit to an existing protective device in a DB or breaker rail within a cabinet if specifically documented and the Instructed Person is formally trained and competent to do so
- install and test power equipment and distribution within a dead equipment cabinet
- connect/disconnect and test plug/socket arrangements where live parts are not exposed
- visually check battery installations
- replace ELV DC battery blocks with like-for-like if specifically documented and the Instructed Person is formally trained and competent to do so



- measure circuit current at the equipment end using a clamp meter
- minor equipment repairs limited to replacement of plug-in components such as the lamps, PCBs or fuses in disconnected equipment. Other repairs involving unit or component dismantling may only be included if specifically documented and the Instructed Person is competent to do so. Testing and commissioning of repairs involving unit or component dismantling is included provided that the equipment is fully reassembled and no live parts are exposed
- perform Portable Appliance Testing (PAT) if specifically documented and the Instructed Person is competent to do so

1.2.2 Category 2

Category 2 is for a Skilled Person carrying out prescribed electrical activities on ELV DC and LV AC systems.

Category 2 activities shall not include any exposure to LV live parts.

A category 2 Skilled Person shall possess sufficient technical knowledge, qualifications and relevant practical skills, as applicable, to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- connect (or remove) an LV AC circuit to a PDU or DB where live parts are not exposed
- replace an LV AC or ELV DC protective device where live parts are not exposed
- check electrical designs and test certificates
- measure circuit current at the source end using a clamp meter

1.2.3 Category 3A

Category 3A is for a Skilled Person carrying out electrical activities on ELV DC battery systems.

Category 3A activities shall not include any exposure to LV live parts.

A category 3A Skilled Person shall possess sufficient technical knowledge, qualifications and relevant practical skills, as applicable, to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- install, remove and test ELV DC batteries
- replace a ELV DC power plant active component (such as Distribution, Battery Fuse or Low Voltage Disconnect Units)
- perform ELV DC power plant maintenance activities (such as torque settings and thermal imaging)
- install/extend/decommission LV DC power systems

1.2.4 Category 3B

Category 3B is for a Skilled Person carrying out electrical activities on LV DC battery systems.

Category 3B activities shall not include any exposure to LV AC live parts.

A category 3B Skilled Person shall possess sufficient technical knowledge, qualifications and relevant practical skills, as applicable, to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- install, remove and test LV DC batteries
- replace a LV DC power plant/UPS active component
- perform LV DC power plant/UPS maintenance activities
- install/extend/decommission LV DC or UPS power systems



1.2.5 Category 4

Category 4 is for a Skilled Person carrying out electrical activities on ELV and LV systems including live testing.

A category 4 Skilled Person shall possess sufficient technical knowledge, qualifications and relevant practical skills, as applicable, to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- design, select, erect and test a new circuit to a power system
- replace an ELV DC protective device where live parts maybe exposed
- power down ELV DC equipment by tripping remote breakers using specialist equipment
- design, select, erect and test a new LV AC power system and associated distribution
- perform intrusive fault investigation

1.2.6 Category 5

Category 5 is for a Skilled Person carrying out electrical activities on HV systems. A Category 5 Skilled Person shall be an HV certified/approved person or approved HV contractor by the Electricity Supply Authorities.

Category 5 activities shall not include any HV live working. Live working on HV systems is not permitted in any circumstance other than when the works are carried out by the specific Electricity Supply Authority (see note below).

A category 5 Skilled Person shall possess sufficient technical knowledge, qualifications and relevant practical skills to:

- prepare detailed method statements applicable to this category covering how the work will be carried out and what measures need to be put in place to reduce the risk
- operate high voltage installations and equipment

Note: opening the outer cabinets to submarine cables which may still carry residual high voltage, for the purpose of attaching an earth-discharge lead, is not within the definition of "live working" and is part and parcel of the safe system of work. Additionally, earth clamps are deployed after a submarine cable is isolated, to ensure that voltage induction from Electricity Interconnector cables, lying close-by on the seabed to submarine cables, is avoided. Also any maintenance works on submarine cables, when isolated from the power feed, are suspended during local thunderstorms. This is to avoid the risk of excessive voltages in the earth plain due to lightning strikes in the local area.



2. Policy controls and deliverables required for compliance

The controls and deliverables required for this local policy standard to accomplish compliance are defined in the following sections.

2.1 Assessment

2.1.1 Vodafone Employees Assessment

Vodafone employees shall be authorised by their Line Manager to perform electrical activities related to each category based on:

- their formal training and qualifications
- proven experience and overall competency
- technical knowledge of system(s) to be worked on
- ability to recognise and mitigate the risk of hazards of electrical systems

The Line Manager shall consult with the local Subject Matter Expert(s) to be satisfied about the competency of the employee before issuing authorisation.

For category 4, authorisation shall also be obtained in writing from the function's Principle Duty Holder – this shall be reviewed and updated every three years or within 3 months of a change of Principle Duty Holder.

The line manager shall ensure the employees' electrical competence and training records are accurately maintained (with support from the local Subject Matter Expert as required).

The Line Manager shall regularly review the employees level of competency, with support from the local Subject Matter Expert as required, considering:

- if the category of electrical work being requested has changed
- how up to date the employees formal training is
- if applicable, when was the last formal independent competency review held
- if there been any policy, procedure or system changes recently
- if there been any unexplained recent electrical incidents involving the employee
- if the employee has raised any concerns about their own electrical competency

2.1.2 Suppliers Assessment

Suppliers working for or on behalf of Vodafone in the UK shall be selected to perform electrical activities related to each category or sub-category based on their organisations competency as demonstrated by:

- formal qualifications
- memberships to relevant independent assessment bodies
- review internal process and procedures
- independent audit (if applicable)
- experience of the relevant working environments
- technical knowledge of system(s) to be worked on

2.2 Training

It is essential that all Vodafone employees and suppliers managing, supervising or working on electrical equipment have adequate and appropriate training for the category of work for which they are responsible.

In addition to formal electrical training and experience, other training should include the following as appropriate:

- relevant local safety regulations
- electrical safety awareness
- safe working practices
- emergency first aid



- specific local training in the operation, maintenance and testing of equipment to be worked on
- local site safety rules

2.2.1 Vodafone Employees Training

The table below indicates the minimum training expected for Vodafone employees. Training is accumulative (i.e. to move to the next category you must have satisfied, or exceeded, all the training and experience criteria of the previous category).

Line managers must monitor employees working on electrical systems, to ensure that any need to refresh or extend training is identified and arranged in good time and that the employees' electrical competence and training records are kept up-to-date (with support from the local Subject Matter Expert as required).

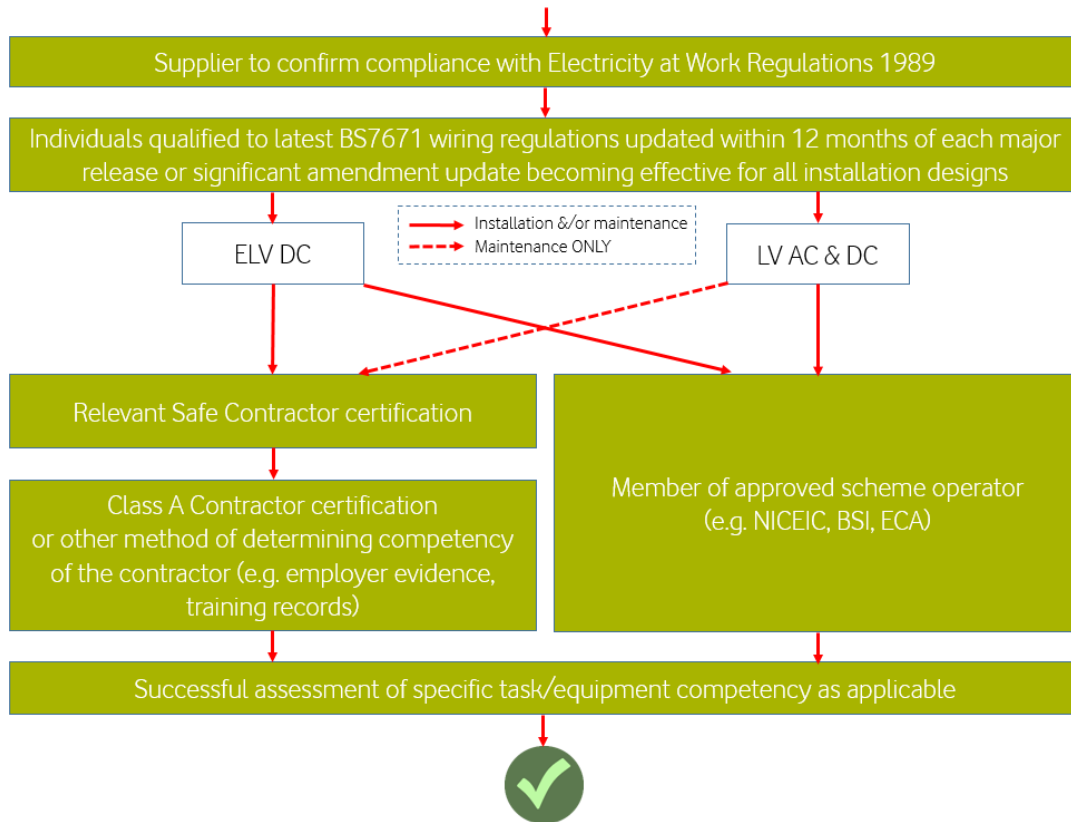
As indicated in the table below, training must be refreshed within the given time period or it shall be deemed invalid and the employee will not be authorised to perform that category of electrical work.

Category	Vodafone employee formal training
1	<ul style="list-style-type: none">• Electrical Safety Awareness online training module – refreshed every two years• “Category 1 Electrical training course” (formerly known as “Rack Maintenance” provided by Trans-Euro) – refreshed every three years• City & Guilds Portable Appliance Testing (as appropriate) – refresh not mandated
2	<ul style="list-style-type: none">• Latest BS7671 wiring regulations updated within 12 months of each major release or significant amendment update becoming effective for all installation designs• City & Guilds Fundamental Inspection, Testing and Initial Verification (level 2) – refresh not mandated
3A/3B	Work not allowed by Vodafone employees
4	<ul style="list-style-type: none">• City & Guilds Electrical Inspection and Testing (level 3) – refresh not mandated• Skilled Person confirmed in writing by the function's Principle Duty Holder – refreshed every three years
5	Work not allowed by Vodafone employees



2.2.2 Suppliers Training and Certification

The graphic below indicates the minimum training and certification expected for suppliers.



Member of an approved scheme operator is the preferred measure of certification, as it confirms the supplier:

- works to the British Standard for electrical installations (BS7671)
- meets the strict approved scheme operator entry requirements, which take account of qualifications, skills, knowledge, experience and insurance policies
- is regularly assessed to ensure their ongoing competence and that it meets the correct standards

2.3 Safe Systems of Work

The following sections deal with the principles that underpin the establishment of safe systems of electrical work. Any local work instructions or method statements produced by employees or suppliers shall incorporate the following principles.

2.3.1 Live Conductors

The following rules shall always be applied:

- treat all conductors as live, until they have been tested and proved dead using appropriate methods and tested tools
- never connect unterminated cables to a point of supply
- always disconnect cables to redundant loads at both the load and the point of supply, disconnect supply end first
- check power supplies for polarity and earth faults before connecting to them
- inspect existing installations adjacent to any new work for the purpose of identifying and isolating any redundant live cables



- use a tested cable locator before drilling or piercing a wall, floor or ceiling
- as applicable, check the test certificates related to fixed electrical systems and PAT records for portable and transportable equipment before work starts

2.3.2 Dead Working

Unless explicitly documented and approved, work on electrical systems or equipment where employees may come into contact with a conductor must be carried out with it powered down (“dead”).

If this cannot be achieved by any reasonable means, where for example, live functional testing has to be carried out as part of fault finding or a battery block has to be removed, then this should be documented with the appropriate justification and the category of work adjusted accordingly (along with processes and procedures to avoid danger).

Systems must always be proved dead using appropriate methods and tested tools before work commences. Where systems have been made dead by other persons, a formal handover and permit must be in place before any work starts and proved dead to the person accepting the handover.

Procedural steps must be taken to ensure that electrical systems and equipment remain dead and are not inadvertently activated during the works by employing a lockout-tagout system for example.

2.3.3 Live Working

The UK Electricity at Work Act 1989 states that: “No person shall be engaged in any work activity on or near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise unless; (a) it is unreasonable in all circumstances for it to be dead; and (b) it is reasonable in all circumstances for the person to be at work on or near it while it is live; and (c) suitable precautions (including where necessary the provision of suitable protective equipment) are taken to prevent injury”.

The general principles therefore followed by Vodafone UK are:

- a) For ELV, working on or near live conductors is allowable by suitably competent persons as they are not deemed to give rise to danger providing all suitable precautions have been taken – so changing a DC battery block is allowable for example, provided the person has the necessary training, experience, tools and protective equipment
- b) For voltages above ELV, in general no live working on or near exposed live conductors is allowable. To allow for simple tasks such as replacing a breaker or adding an end circuit, insulated enclosures should be used to ensure no exposure to the live conductors

Where live functional testing is required and the only method to achieve this is via access to live exposed parts, only specifically trained Category 4 persons with the correct PPE & tools, approved safe systems of live working and RAMS in place would be authorised to perform this task.

Only specifically trained Category 3B persons with the correct PPE & tools, approved safe systems of live working and RAMS in place would be authorised to work with LV DC batteries.

2.3.4 Safe systems of live working

In the event a decision to work live has been taken, a job specific risk assessment and a written method statement shall be prepared and approved by the Line Manager responsible for the system, to describe a system of work which will avoid injury. For voltages above ELV, written authorisation shall also be provided by the function’s Principle Duty Holder prior to the works taking place, having confirmed compliance with Vodafone Global Policy “S04 Health & Safety – Electrical Safety”.

The elements of the safe system of work shall include:

- an identification of hazards
- an assessment of the risk arising from each individual hazard
- a description of the measures required to minimise risk



- a statement of the sequence of actions to be taken if safety depends on it
- a statement of competence levels required of persons carrying out and in charge of the work, and of those providing safety cover
- details of personal protective equipment, such as gloves and boots, and insulating screens, barriers and mats to be used
- contingency plans to be adopted in the event of issue, overrun or changed circumstances

2.3.5 Hazardous areas

Electrically operated equipment may not be used in a hazardous area where one or more of the following may be found unless the particular equipment has been approved in writing by a Skilled Person for use in the specific situation:

- water or extreme humidity
- flammable or explosive atmospheres
- corrosive chemicals

Intrinsically safe equipment must be used where there is the risk of potentially explosive atmospheres through the presence of flammable liquids, vapours, gases or dust.

On customer premises, equipment may only be used in hazardous areas following approval by the customer's representative.

2.3.6 High risk areas

Visits to high risk sites (particularly HV equipment rooms) for any inspection, cleaning, installation or maintenance work which does not involve the high risk electrical equipment or systems, must be controlled by the person responsible for the site or his nominated deputy. All such visitors must, without exception, be accompanied by a suitably qualified Skilled Person, and the visits must be documented in a register which includes details of:

- Visitor's names and signatures
- Visit dates and times
- Reasons for visits
- Accompanying person's name

2.3.7 Electrical connections at a third party location

Prior to connecting equipment to an electrical system on a customer or third party site a check must be made that the point of connection is electrically safe using approved and calibrated testing equipment. Any electrical work at customer sites requiring a competence level greater than the employees (or suppliers) current electrical category, as outlined in this document, must be escalated to responsible Line Manager. Any electrical safety issues identified at customer/third party sites must be escalated to the customer and the responsible Line Manager.

Connection/disconnection of equipment racks or individual units into 230V AC fused spurs will normally only be undertaken by the customer or other persons controlling the site who are electrically competent to do so as the supply to the spur will need to be "locked off".

3. Roles and responsibilities

The parties who have a responsibility in the Policy and in which control and deliverable.

3.1 Principal Duty Holders

The Vodafone UK business has decided not to appoint a single Principal Duty Holder, but a number of Principal Duty Holders representing a number of functions in the business where electrical safety risk is more apparent.

The responsibility of a Principal Duty Holders is to:

- ensure that sufficient budget is available to discharge their duty holder responsibilities within their function



- ensure there are suitably competent Subject Matter Experts within their function
- ensure there are suitably competent employees and suppliers undertaking electrical work
- ensure there is suitable representation on any associated electrical safety forums
- ensure regular auditing takes place on electrical safety within their function
- authorise any live working above ELV (reference the “Safe systems of live working” section)

3.2 Line Managers

Line Managers within Vodafone UK, in addition to their standard Health and Safety responsibilities, also take on ‘Duty Holder’ responsibilities under the Electricity at Work Regulations where any employee or supplier that is directly or indirectly employed by them is requested to perform electrical work.

In these cases, the Line Manager shall:

- ensure that employees asked to design, plan, install, commission, operate, inspect and maintain any electrical systems or equipment are competent to do so
- ensure that suppliers engaged to undertake electrical duties are competent to do so and that their performance is monitored
- monitor employees working on electrical systems, to ensure that any need for additional, refreshment or extension of training is identified and arranged
- ensure the employees’ electrical competence and training records are accurately maintained (with support from the local Subject Matter Expert as required).
- develop and maintain a risk assessment of electrical activities as a part of their departmental risk assessment
- ensure that electrical safety equipment provided for use by their employees is maintained and that periodic checks of proper use are undertaken

3.3 Subject Matter Experts

Subject Matter Experts (SME) are electrically competent persons recognised as an authority for the safety, technical standards and quality of electrical installation and maintenance work. They are typically qualified and/or experienced to support the highest category of work expected within their function.

The SME represents the nominated Principal Duty Holder, supporting Line Managers to ensure suitably competent employees and suppliers are undertaking electrical work and that any shortfall of competency is being addressed by the Line Manager.

3.4 Suppliers

The following rules will apply whenever suppliers are required to carry out electrical work for, or on behalf of Vodafone in the UK:

- contract specifications must require suppliers to work in accordance with the standards detailed in this document. A copy shall be sent to the supplier with the official work order
- suppliers shall be responsible for ensuring that all their tiered sub-contractors also comply with the standards detailed in this document. They shall detail their procedures for ensuring compliance
- a site access control arrangement must be set up under which suppliers report their presence on a daily basis
- before a supplier commences work, the nominated person managing the contract (or his appointed agent) should liaise with the supplier and the local site maintainers (in the event they are different) to agree a method statement and all safety measures and practices to be adopted
- where any danger to be avoided is associated with a system under the control of Vodafone UK, a competent person must issue an appropriate permit to the contractor
- suppliers placed in control of systems having any danger to be avoided must ensure the competence of persons controlling the work
- when an electrical system is handed over to a supplier, the person controlling the work on behalf of the supplier must accept the system through an agreed permit to work process



- on completion or suspension of work, or at the request of the Vodafone, the supplier must formally return control of any electrical system under the permit to work process to Vodafone

4. Exceptions

Any exceptions to this policy must be approved in writing by the Electrical Safety Forum prior to any associated works taking place.

5. Supporting documents

Supporting documents referenced in this policy:

- Requirements for electrical Installations BS 7671:2018 – <https://electrical.theiet.org/>
- Electricity at Work Regulations 1989 and HSE HSR25 guidance note
- Vodafone Global Policy “S04 Health & Safety – Electrical Safety”
- Vodafone Policy Detailed Requirements - Training

6. Document history

Version	Date	Changes	Other standards affected	Approved by
1.1	April 2019	Minor adjustment to Category 1 and added clarity on training	None	David Fry
1.0	Feb 2019	New document – replaced HSE130		David Fry