

1991 No. 536

ELECTRICITY

The Electricity Supply Regulations  
(Northern Ireland) 1991

Made . . . . . 17th December 1991

Coming into operation . . . . . 3rd February 1992

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The Department of Economic Development in exercise of the powers conferred on it by Article 36(1) and (2) and 49(2) and (3) of the Electricity Supply (Northern Ireland) Order 1972(a) and now vested in it(b) and of every other power enabling it in that behalf, hereby makes the following Regulations:—

## PART I

### INTRODUCTORY

#### *Citation and commencement*

1. These Regulations may be cited as the Electricity Supply Regulations (Northern Ireland) 1991 and shall come into operation on 3rd February 1992.

#### *Application of Regulations*

2.—(1) These Regulations apply to any supplier, supplier's works or supply; regulation 27 also applies to any person who provides energy to or whose electric lines are used to provide energy to his own installation, and regulations 36 and 37 also apply to any consumer but subject to the following provisions of this regulation:—

(a) regulations 7(1)(a), 7(10)(b), 7(11), 9, 13, 15(2), 16, 21(2)(b)(i) and 27 do not apply in relation to supplier's works or supplies where those works were brought into use or supplies commenced prior to the date of the coming into operation of these Regulations, and

(b) the proviso to regulation 26(1)(c) does not apply to any supplier's works brought into use on or before 31st December 1944.

(2) Where the regulations specified in paragraph (1) do not apply in relation to any supplier's works or supplies, the provisions of any Regulations made under section 6 of the Electric Lighting Act 1882(c) and continued in force by virtue of Article 36(3) of the Electricity Supply (Northern Ireland) Order 1972 and any Regulations made under Article 36(1) of that Order, in force in respect of those supplier's works or supplies immediately prior to the coming into operation of these Regulations and which are equivalent to the regulations mentioned in paragraph (1), including any approvals or authorities granted or given under those provisions, shall apply until the date specified in paragraph (3).

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(a) S.I. 1972/1702 (N.I. 9) as amended by S.I. 1987/1275 (N.I. 12) Article 21 and the Schedule. Article 49(3) is to be read with S.I. 1984/703 (N.I. 3) and S.R. 1984 No. 253

(b) By S.I. 1982/846 (N.I. 11) Article 4

(c) 1882 c. 56

(3) The date referred to in paragraph (2) is the date on which any material alteration is made to the supplier's works or supplies in question.

(4) From the date specified in paragraph (3) the exception in paragraph (1) shall cease to apply to the extent of any material alteration referred to in paragraph (3).

### *Interpretation*

#### **3. In these Regulations—**

“apparatus” includes plant, equipment, meters, lines and appliances used or intended to be used for carrying electricity for the purposes of supplying or using energy;

“associated main” means the distributing main to which the consumer's installation which has or is intended to have protective multiple earthing is connected directly or by a service line;

“associated branch” means the branch to which the consumer's installation which has or is intended to have protective multiple earthing is connected either directly or by a service line;

“branch” means a secondary distributing main from its end furthest from the source of voltage to its junction with the principal part of the distributing main;

“bonding conductor” means a conductor providing equipotential bonding;

“circuit protective conductor” means a conductor on the consumer's side of the supply terminals used for protection against electric shock which connects the exposed conductive parts of apparatus with earth but does not include any conductor which is used as a neutral conductor;

“conductor” means an electrical conductor arranged to be electrically connected to a system but does not include conductors used or intended to be used solely for the purposes of control or regulation of supply or for communication;

“connected with earth” means connected with earth in such manner as will at all times provide a rapid and safe discharge of energy;

“consumer” means any person supplied or entitled to be supplied by a supplier but shall not include in regulations 26, 28, 29 and 30 any body authorised by any enactment to carry goods and passengers by railway in respect of any supply to meet its haulage or traction requirements;

“consumer's installation” means the electric lines situated upon the consumer's side of the supply terminals together with any apparatus permanently connected or intended to be permanently connected thereto;

“danger” includes danger to health or danger to life or limb from shock, burn, injury or mechanical movement to persons, livestock or domestic animals, or from fire attendant upon the generation, transformation, supply or use of energy;

“the Department” means the Department of Economic Development;

- “distributing main” means an electric line through which energy is supplied or is intended to be supplied by a supplier to service lines or directly to a single consumer;
- “earth” means the general mass of the earth;
- “earth electrode” means a conductor or group of conductors in intimate contact with and providing a connection with earth;
- “earthing terminal” means a terminal directly connected to the supply neutral conductor at the supplier’s fusible cut-out, or automatic switching device nearest to the supply terminals;
- “electric line” means any line which is used or intended to be used for carrying electricity for any purpose and includes, unless the context otherwise requires:—
- (a) any apparatus connected to any such line for the purpose of carrying electricity;
  - (b) any wire, cable, tube, pipe, insulator or other similar thing (including its casing or coating) which surrounds or supports, or is surrounded or supported by, or is installed in close proximity to, or is supported, carried or suspended in association with, any such line;
- “energy” means electrical energy;
- “generating station” means those parts of any premises which are principally used for the purposes of generating energy;
- “high voltage” means any voltage exceeding low voltage;
- “Institution of Electrical Engineers Regulations” means the 16th edition of the Regulations for Electrical Installations published by the Institution of Electrical Engineers;
- “insulation” means non-conducting material enclosing, surrounding or supporting a conductor or any part thereof and of such quality and thickness as to be suitable for the purposes of the regulation in which the term is used;
- “low voltage” means:—
- (a) in relation to alternating current, a voltage exceeding 50 volts but not exceeding 1000 volts, in each case measured between the phase conductors taking the square root of the mean of the squares of the instantaneous values of a voltage during a complete cycle; and
  - (b) in relation to direct current, a voltage exceeding 75 volts but not exceeding 1500 volts,
- with any variations of voltage allowed by these Regulations;
- “metalwork” does not include any electric line or conductor used for earthing purposes;
- “neutral conductor” means a conductor on the consumer’s side of the supply terminals which is, or is intended to be, connected to the neutral point of a system and intended to contribute to the carrying of energy;

- “overhead line” means any electric line which is placed above ground and in the open air;
- “phase conductor” means a conductor of a system for the carrying of energy other than a neutral conductor or conductor used for earthing purposes;
- “protective multiple earthing” means the use of a supply neutral conductor to connect a circuit protective conductor with earth;
- “resistance area” means the surface area of ground around an earth electrode on which a significant voltage gradient may exist;
- “safety sign” means a sign having the symbol and text and of the design, colours and proportions specified in Schedule 1;
- “service line” means an electric line through which energy may be supplied by a supplier from a distributing main to a single consumer but does not include a line directly from the premises of the supplier to a single consumer;
- “substation” means any premises or enclosed part thereof which contain apparatus for either transforming or converting energy to or from high voltage (other than transforming or converting solely for the operation of switching devices or instruments) or for switching, controlling or regulating the energy at high voltage and which are large enough to admit the entrance of a person after the apparatus is in position, and includes the apparatus therein;
- “supplier” means a person who supplies electricity, and, where electric lines and apparatus used for that purpose are owned otherwise than by that person, shall include the owner of those electric lines and apparatus;
- “supplier’s works” means electric lines, supports and apparatus of or under the control of a supplier used for the purposes of supply;
- “supply” means supply of energy to apparatus or to premises other than those on which it was generated;
- “supply neutral conductor” means the neutral conductor of a low voltage system which is or is intended to be connected with earth, but does not include any part of the neutral conductor on the consumer’s side of the supply terminals;
- “supply terminals” means the ends of the electric lines situated upon any consumer’s premises at which the supply is delivered and, unless otherwise agreed in writing, where a meter is employed to register the value of the supply and is directly connected to those lines, means the terminals of that meter furthest from the installation of the owner of that meter;
- “support” includes stays and struts, but does not include insulators, their fittings or any building or structure the principal purpose of which is not the support of electric lines or apparatus;
- “switching device” includes any device which can either make or break a current, or both;

“system” means an individual electrical system in which all the conductors and apparatus are electrically connected to one or more sources of voltage, and includes all those conductors and apparatus.

## PART II

### CONNECTION WITH EARTH

#### *Continuity of the supply neutral conductor and earthing connections*

4.—(1) The supplier shall, in the design, construction, maintenance and operation of his system, take all reasonable precautions to ensure continuity of the supply neutral conductor.

(2) Except pursuant to an arrangement made under Schedule 3, a supplier shall not introduce any fuse or automatic switching device into any supply neutral conductor or any earthing connection of a low voltage system.

#### *General requirements for connection with earth*

5.—(1) The supplier shall, in respect of his works, ensure that—

(a) every high voltage system shall be connected with earth at or as near as is reasonably practicable to the source of voltage in the system:

Provided that where there is more than one source of voltage in the system the connection with earth need only be made at one such point;

(b) every low voltage supply system shall be connected with earth in accordance with paragraphs (2), (3) and (4);

(c) so far as is reasonably practicable, no system shall become disconnected from earth in the event of a fault;

(d) no conductors which respectively connect a supply neutral conductor with earth, and any apparatus used in a high voltage system with earth—

(i) shall be interconnected unless the combined resistance to earth does not exceed 1 ohm; or,

(ii) shall be connected to separate earth electrodes unless any overlap between the resistance areas of those electrodes is not sufficient to cause danger; and

(e) where the high voltage system is connected with earth through a continuously rated arc suppression coil, an automatic warning shall be given to the supplier of any fault which causes the arc suppression coil to operate.

(2) The supply neutral conductor shall be connected with earth at or as near as is reasonably practicable to the source of voltage and, subject to regulations 6 and 7, no other such connection shall be made;

Provided that where only one consumer is connected to the source of voltage that connection may be at some other point.

(3) Except as required by any arrangements made pursuant to regulation 27, no impedance shall be inserted in any connection with earth of a low voltage system other than that required for the operation of switching devices, instruments, control or telemetering equipment.

(4) The external conductor of any electric line comprising concentric conductors shall be connected with earth.

#### *Multiple earthing*

6. The supplier may connect the supply neutral conductor of a distributing main with earth at places in addition to that required by regulation 5(2) if, and only if, the copper equivalent cross-sectional area of the supply neutral conductor—

- (a) when measured anywhere in a three-phase four wire, two-phase three wire or single-phase three wire distributing main is not less than one half of the copper equivalent cross-sectional area of the phase conductor at the same point; or
- (b) when measured anywhere in a single-phase two wire distributing main is not less than the copper equivalent cross-sectional area of the phase conductor at the same point,

and in either case is such that it is capable of carrying such loads as may reasonably be expected to occur.

#### *Protective multiple earthing*

7.—(1) Where a consumer's installation has or is intended to have protective multiple earthing, the supplier—

- (a) shall connect the supply neutral conductor of the associated main or the associated branch with earth only in accordance with the requirements either of paragraphs (2) and (3) or paragraphs (4) and (5), and with the requirements and provisions of paragraphs (6) to (8); and
- (b) shall not connect or permit the connection of or continue a supply to any part of the consumer's installation unless he is satisfied so far as is reasonably practicable that the installation complies with the requirements of paragraphs (9) to (12),

but nothing in sub-paragraph (a) shall be construed as requiring the supplier to remove any connection of the supply neutral conductor of the associated main or the associated branch with earth made prior to the connection referred to in that sub-paragraph.

(2) Where—

- (a) the associated branch is no more than 40 metres in length; and
- (b) no more than three other consumer's installations are connected to the associated branch, the supply neutral conductor of the associated main shall be connected with earth in accordance with the provisions of paragraph (3).

(3) The connection with earth referred to in paragraph (2) shall be no nearer to the source of voltage (measured along the associated main) than the junction of that main—



- (a) with the associated branch; or
- (b) with any branch which
  - (i) is no more than 40 metres in length; and
  - (ii) to which no more than four consumer's installations, at least one of which has or is intended to have protective multiple earthing, is or are connected by service lines to that branch,

and which is furthest from the source of voltage.

(4) Where—

- (a) the associated main or the associated branch is more than 40 metres in length; or
- (b) more than three other consumer's installations are connected by service lines to the associated main or the associated branch,

the supply neutral conductor of the associated main or the associated branch shall be connected with earth in accordance with the provisions of paragraph (5).

(5) The connection with earth referred to in paragraph (4) shall be no nearer to the source of voltage (measured along that associated main, or associated branch and associated main) than the junction between that main or branch and—

- (a) the service line of the consumer's installation; or
- (b) if more than one consumer's installation referred to in paragraph (4)(b) has or is intended to have protective multiple earthing, the service line of such consumer's installation which is furthest from the source of voltage.

(6) The supply neutral conductor shall be connected with earth at such points as may be necessary to ensure that the resistance to earth of the supply neutral conductor—

- (a) does not anywhere exceed 20 ohms; and
- (b) is such that the fuses or automatic switching devices protecting the high voltage side of any transformer will operate if any fault in it causes the low voltage side to become charged at a higher voltage unless the high voltage side of that transformer is connected with earth through a continuously rated arc suppression coil.

(7) The supply neutral conductor shall have a copper equivalent cross-sectional area which satisfies the requirements of regulation 6.

(8) Any connection with earth required by this regulation may be made by connecting the supply neutral conductor to the supply neutral conductor of another distributing main.

(9) Any metalwork on the consumer's premises which—

- (a) is in, or may reasonably be expected to come into electrical contact with earth; and
- (b) is so situated that any person, livestock or domestic animal could simultaneously touch—
  - (i) any such metalwork, or any metalwork in electrical contact therewith; and

- (ii) any exposed metalwork forming part of the consumer's installation but not normally carrying an electric current, or any metalwork in electrical contact therewith, shall be connected to the earthing terminal.
- (10) Where paragraph (9) applies—
- (a) any circuit protective conductor in a consumer's installation to which this regulation applies shall be connected to the earthing terminal of that installation by means other than the consumer's neutral conductor;
- (b) the connection required by paragraph (9) shall be made by means of a bonding conductor attached in such a way as to avoid, so far as is reasonably practicable, electrolytic action at the point of connection; and
- (c) where the bonding conductor is attached to a pipe or metalwork entering a building or structure that connection shall be made as near to the point of entry as is reasonably practicable for the purpose of avoiding the risk of electric shock.

(11) The minimum copper equivalent cross-sectional area of any bonding conductor shall not be less than the figure shown in column 2 of the Table set out below in respect of any supply neutral conductor the corresponding copper equivalent cross-sectional area of which is shown in column 1.

TABLE

Column 1	Column 2
<i>Copper equivalent cross-sectional area of supply neutral conductor</i>	<i>Minimum copper equivalent cross-sectional area of bonding conductor</i>
35 sq mm or less	10 sq mm
over 35 sq mm but not more than 50 sq mm	16 sq mm
over 50 sq mm but not more than 95 sq mm	25 sq mm
over 95 sq mm but not more than 150 sq mm	35 sq mm
over 150 sq mm	50 sq mm

(12) The supply neutral conductor shall not be connected electrically to any metalwork in any caravan or boat.

#### *Earthing of metalwork*

8.—(1) Subject to paragraph (2), and without prejudice to any other requirement as to earthing, any metalwork enclosing, supporting or otherwise associated with a supplier's works and which is not intended to serve as a phase conductor shall, where necessary to prevent danger, be connected with earth.

(2) Paragraph (1) shall not apply—

- (a) to any metalwork attached to, or forming part of, a wooden pole support the design and construction of which are such as to prevent, so

far as is reasonably practicable, danger within three metres of the ground from any failure of insulation; or

- (b) to any wall-mounted metal bracket carrying an overhead line not connected with earth where the line is both supported by an insulator and the part of the line in contact with the insulator is itself surrounded by insulation.

### PART III

#### ELECTRIC LINES BELOW GROUND

##### *General restriction*

**9.** A supplier shall not knowingly supply through electric lines placed below ground (except those in generating stations and substations under the control of the supplier or forming part of a consumer's installation) which do not comply with this Part of these Regulations.

##### *Protective screens*

**10.**—(1) Conductors which are placed below ground and are not connected with earth shall be insulated from earth otherwise than by a support and protected in accordance with paragraph (2).

(2) The protection referred to in paragraph (1) shall comprise—

(a) in respect of joints or terminations of a conductor in a low voltage system, some form of mechanical protection; and

(b) in respect of any other part of any conductor, an electrically continuous metallic screen connected with earth,

so placed as to ensure that, so far as is reasonably practicable, any tool or device likely to be used in the vicinity shall make contact with that protection or screen before it can make contact with that conductor.

(3) A supply neutral conductor may be combined in a single device or arrangement with either or both of—

(a) a metallic screen or armouring;

(b) other protective material.

##### *Excavations*

**11.**—(1) Every conductor below ground shall be placed at such depth as to avoid, so far as is reasonably practicable, any damage or danger by reason of such uses of the land which can reasonably be expected when the conductor is placed below ground.

(2) In addition to satisfying the requirements of paragraph (1), a conductor below ground used in a supplier's high voltage system but not connected with earth shall be laid in such manner (whether in pipes or ducts or so overlaid at such a distance above the conductor by protective tiles or warning tape or some other protective or warning device or otherwise) as to ensure, so far as is reasonably practicable, that any person excavating the ground above the conductor will receive a warning of its presence.

## ELECTRIC LINES PLACED ABOVE GROUND

*Restriction on placing electric lines above ground*

**12.** A supplier shall not knowingly use any electric lines, wires, cables or supports above ground (except those in a generating station or substation or forming part of a consumer's installation) which do not comply with this Part of these Regulations.

*Minimum height of overhead lines, wires and cables*

**13.**—(1) Subject to paragraph (3), the height above ground of any overhead line, or a wire or cable attached to a support carrying any overhead line, at the maximum likely temperature of that line, shall not be less than that specified in this regulation.

(2) In relation to an overhead line used, or intended to be used, at a voltage specified in column 1 of Schedule 2 the height referred to in paragraph (1) shall be—

(a) at any point where that line is over a road accessible to vehicular traffic, the height specified in column 2 of Schedule 2 as appropriate to that voltage; and

(b) at any other point, the height specified in column 3 of Schedule 2 as appropriate to that voltage.

(3) This regulation does not apply to any overhead line at a point where it is not over a road accessible to vehicular traffic and which—

(a) is surrounded by insulation; or

(b) is not surrounded by insulation and is at least 4.3 metres above ground and connects apparatus mounted on a support to any overhead line; or

(c) is connected with earth.

(4) The height above ground of any wire or cable which is attached to a support carrying any overhead line shall not, at its likely maximum temperature, be less than 5.8 metres at any point where it is over any road accessible to vehicular traffic.

(5) Every overhead line shall in future be so placed that it shall not, so far as is reasonably practicable, come so close to any building, tree or structure as to cause danger.

*Position, insulation and protection of electric lines*

**14.**—(1) For the purposes of this regulation an electric line placed above ground which is connected to any source of voltage shall be considered to be ordinarily accessible if and so long as it may be reached by hand from any scaffolding, ladder or other construction erected or placed on, in, against or near to a building or structure, but shall not be considered to be so accessible during such reasonable period during and after the erection or placing as may be necessary to arrange for the protection of that line if that was the purpose, or part of the purpose, of the erection or placing.

(2) Any part of an electric line placed above ground which is not connected with earth and which is not ordinarily accessible shall be insulated.

(3) Any part of an electric line placed above ground which is not connected with earth and which is ordinarily accessible shall be—

(a) made dead; or

(b) so insulated that it is protected, so far as is reasonably practicable, against mechanical damage or interference; or

(c) adequately protected to prevent danger.

(4) Any bare low voltage electric line placed above ground which is not connected with earth shall be situated, throughout its length, vertically above a bare electric line which is connected with earth.

(5) Nothing in this regulation shall require the supplier to insulate or protect any part of any electric line placed above ground which, but for the provisions of paragraph (1), would not be required to be insulated or protected unless—

(a) he has been given reasonable notice of the erection of the building or structure which would cause that line to become accessible; and

(b) unless otherwise agreed, the person responsible for the erection of that building or structure which would cause that line to become accessible shall have paid, or undertaken to pay, the reasonable cost of the insulation of the line.

(6) Nothing in this regulation shall be taken to allow the application of temporary insulation to any electric line other than a low voltage line.

#### *Precautions against access*

**15.**—(1) Every support carrying a high voltage overhead line shall, if the circumstances reasonably require, be fitted with devices to prevent, so far as is reasonably practicable, any unauthorised person from reaching a position at which any such line would be a source of danger.

(2) The supplier shall attach and keep attached safety signs to supports carrying a high voltage overhead line of such size and placed in such positions as are necessary to give due warning of danger in all the circumstances.

#### *Insulators in stay wires*

**16.** Except where the support is carrying conductors operating at a nominal voltage of 110,000 volts or above and where the stay wire is connected to the support below the conductors, every stay wire which forms part of or is attached to any support carrying a bare live electric line shall be fitted with an insulator no part of which shall be less than 3 metres above ground or above the normal height of any such line attached to that support.

#### *Exceptions*

**17.**—(1) A supplier may maintain and use an electric line and any wire, cable, stay wire or support associated with that electric line otherwise than in accordance with regulations 12 to 16 for any period during which repairs, alterations or maintenance works are being undertaken.

(2) The supplier shall complete any such works as are mentioned in paragraph (1) as quickly as is reasonably practicable and shall take all reasonable precautions to ensure safety while such works are being carried on.

(3) This exception does not waive or vary the obligation of suppliers under any other regulation or duty contained in these Regulations or otherwise.

## PART V

### SUPPLIER'S WORKS

#### *Sufficiency of supplier's works*

**18.** All supplier's works shall be sufficient for the purposes for, and the circumstances in, which they are used and so constructed, installed, protected (both electrically and mechanically), used, and maintained as to prevent danger or interruption of supply so far as is reasonably practicable.

#### *Maximum voltage*

**19.** No electric line shall be used for the purpose of supply at a voltage greater than 440,000 volts.

#### *Enclosed spaces*

**20.** The supplier shall take precautions to prevent, so far as is reasonably practicable, danger due to the influx of water or any noxious or explosive liquid or gas into any enclosed space containing his works.

#### *High voltage: additional provisions*

**21.—**(1) Paragraphs (2) and (3) shall apply only to supplier's works where energy at high voltage is generated, transformed, converted, regulated, switched or controlled.

(2) The supplier shall—

(a) enclose any part of a substation in the open air, containing live apparatus which is not encased, by a fence not less than 2.4 metres high to prevent, so far as is reasonably practicable, danger or unauthorised access;

(b) ensure that, so far as is reasonably practicable, there are at all times displayed in a conspicuous position—

(i) subject to paragraph (3), a safety sign and a separate notice giving the name of the supplier and an address or telephone number where a person appointed by the supplier will be in constant attendance; and

(ii) such other signs as may be necessary to give warning of danger having regard, inter alia, to the siting of, the nature of, and the measures taken to ensure the physical security of, the supplier's works; and

(c) take all reasonable precautions to minimise the risk of fire.

(3) The provisions of paragraph (2)(b)(i) shall not apply to any exposed live parts of the supplier's works which are held at least 4.3 metres above ground by a support, or to any insulated electric line attached to that support.

#### *Protective measures*

22. The supplier shall apply protective devices to every system which will, so far as is reasonably practicable, prevent any current, including leakage to earth, from flowing in any part of a system for such a period that that part of the system can no longer carry that current without danger.

#### *Precautions against excess voltage*

23. The supplier shall make arrangements which ensure, so far as is reasonably practicable, that—

- (a) every low voltage electric line shall be protected against danger arising from accidental contact with or leakage from any high voltage electric line; and
- (b) where energy at a higher voltage is transformed no danger shall be caused as a result of a system at a lower voltage becoming charged above its normal voltage by leakage from or contact with the supplier's system at the higher voltage.

#### *Precautions against supply failure*

24.—(1) The supplier's works shall be so arranged, and provided where necessary with fusible cut-outs or automatic switching devices so located as to restrict, so far as is reasonably practicable, the number of consumers affected by any fault in the supplier's works.

(2) Subject to regulation 33, the supplier shall at all times take all reasonably practicable steps to avoid interruptions of supply resulting from his own acts.

#### *Inspection of supplier's works*

25. The supplier shall take all reasonably practicable steps to inspect his installations and works to ensure compliance with these Regulations.

## PART VI

### SUPPLY TO CONSUMER'S INSTALLATIONS

#### *Supplier's works on consumer's premises*

26.—(1) The supplier shall ensure that all his works on a consumer's premises which are not under the control of the consumer (whether forming part of the consumer's installation or not) are—

- (a) suitable for their respective purposes;
- (b) installed and, so far as is reasonably practicable, maintained so as to prevent danger; and
- (c) protected, so far as is reasonably practicable, by a suitable fusible cut-out or automatic switching device as close as reasonably

practicable to the supply terminals, provided that no such fusible cut-out or automatic switching device shall be inserted in any conductor connected with earth.

(2) The standard of construction and installation to be adopted in complying with paragraph (1) shall not be lower than that imposed by regulation 28.

(3) Every cut-out or automatic switching device mentioned in paragraph (1)(c) on premises not under the supplier's control shall be enclosed in a locked or sealed container.

(4) Any electric line which forms part of the supplier's works and which is taken into a building at a point below the level of the ground shall be so installed as to prevent, so far as is reasonably practicable, the influx of any noxious or explosive liquid or gas at the point of entry.

(5) The supplier shall permanently mark the separate conductors of low voltage electric lines which are connected to supply terminals as close as practicable to those terminals so as clearly to identify each conductor.

#### *Interconnected supplies*

27. A person shall not knowingly provide energy to his own or any consumer's installation or allow any electric lines in his ownership or under his control to be used for that purpose if that installation may also be supplied from an alternative source of energy unless he satisfies the requirements of Part I or Part II of Schedule 3.

#### *General conditions as to consumers*

28.—(1) A supplier shall not be compelled to commence or, subject to regulation 29, to continue to give a supply to any consumer unless he is reasonably satisfied that each part of the consumer's installation is so constructed, installed, protected and used, so far as is reasonably practicable, as to prevent danger and not to cause undue interference with the supplier's system or with the supply to others.

(2) Any consumer's installation which complies with the provisions of the Institution of Electrical Engineers Regulations shall be deemed to comply with the requirements of this regulation as to safety.

#### *Discontinuance of supply in certain circumstances*

29.—(1) Where a supplier, after making such examination as the circumstances permit, has reasonable grounds for supposing that a consumer's installation or any part of it, including any supplier's works situated on the consumer's side of the supply terminals, fails to fulfil any relevant requirement of regulation 28, paragraphs (2) to (7) shall apply.

(2) Where, in an emergency, the supplier is satisfied that immediate action is justified in the interests of safety, he may without prior notice discontinue the supply to the consumer's installation and notice in writing of the disconnection and the reasons for it shall be given to the consumer as soon as is reasonably practicable.



(3) Subject to paragraph (2), the supplier may, by notice in writing specifying the grounds, require the consumer within such reasonable time as the notice shall specify to comply with one or both of the following—

- (a) to permit a person duly authorised by the supplier in writing to inspect and test the consumer's installation or any part of it at a reasonable time;
- (b) to take, or desist from, such action as may be necessary to correct or avoid undue interference with the supplier's supply or apparatus or with the supply to, or the apparatus of, other consumers.

(4) In any of the circumstances specified in paragraph (5) the supplier may, on the expiry of the period specified in the notice referred to in paragraph (3), discontinue the supply to the consumer's installation and shall give immediate notice in writing to the consumer of the discontinuance.

(5) The circumstances referred to in paragraph (4) are—

- (a) that, after service of a notice under paragraph (3)(a), the consumer does not give facilities for inspection or testing; or
- (b) in any other case—
  - (i) after any such test or inspection the person authorised makes a report confirming that the consumer's installation (or any part of it) fails to fulfil any relevant requirement of regulation 28; or
  - (ii) the consumer fails to show to the reasonable satisfaction of the supplier within the period so required that the matter complained of has been remedied or is the responsibility of the supplier.

(6) Any difference between the consumer and the supplier in relation to the grounds or the period specified in any notice of the kind mentioned in paragraph (3)(b) shall be determined in the manner provided by regulation 30.

(7) The supplier shall not discontinue the supply in pursuance of paragraph (4) pending the determination of any difference of the kind mentioned in paragraph (6), and shall not discontinue the supply to the whole of the consumer's installation where it is reasonable to disconnect only a portion of that installation in respect of which complaint is made.

(8) Where in pursuance of this regulation a supplier has disconnected the supply to a consumer's installation (or any part of it) the supplier shall not recommence the supply unless—

- (a) he is satisfied in respect of the consumer's installation that the relevant requirements of regulation 28 have been fulfilled; or
- (b) it has been determined that the supplier is not entitled to decline to recommence the supply,

and if he is so satisfied the supplier shall forthwith recommence the supply.

#### *Notices and determination of differences*

**30.**—(1) In any case where in pursuance of these Regulations a supplier refuses to commence or to continue a supply to a consumer's installation or to a part thereof or to connect or reconnect a consumer's installation with his electric lines—

- (a) the supplier shall as soon as practicable give to the consumer notice in writing of such refusal and the reasons therefor;
  - (b) any difference which may arise between the consumer and the supplier with regard to the consumer's installation, the refusal or the notice shall be determined by a person appointed by the Department on the application of the consumer or the supplier and such person may make a direction as to whether any or all of the costs of such determination (including any fees or expenses payable to him) shall be borne by the supplier or the consumer.
- (2) A person appointed under paragraph (1) shall not determine that the supplier was or is entitled under regulations 28 and 29 to refuse a supply to that installation if the appointed person is satisfied that—
- (a) the installation has continued to function satisfactorily and without risk of danger up to the material time; and
  - (b) the installation is to be, or is being, continued in use only within the limits of the maximum power for which it was intended; and
  - (c) there are no grounds for supposing that the installation will fail to function satisfactorily for a further reasonable period without risk of danger or of undue interference with the supplier's system or with the supply to others.
- (3) A copy of this regulation and regulation 29 shall be endorsed upon or accompany every notice given by the supplier to a consumer pursuant to this Part of these Regulations.

*Declaration of phases, frequency and voltage at supply terminals*

31.—(1) Before commencing to give a supply to a consumer, the supplier shall declare to the consumer—

- (a) the number of phases;
- (b) the frequency; and
- (c) the voltage,

at which it proposes to deliver the supply and the extent of the permitted variations of those values:

Provided that, unless otherwise agreed in writing between the supplier and the consumer, the frequency to be declared shall be 50 hertz and the voltage to be declared in respect of a low voltage supply shall be 230 volts between the phase and neutral conductors at the supply terminals.

(2) For the purposes of this regulation, and unless otherwise agreed in writing by the consumer, the permitted variations are—

- (a) a variation not exceeding two and one half per cent. above or below the declared frequency; and
- (b) a variation not exceeding six per cent. above or below the declared voltage at that frequency where that voltage is below 110 kV, and not exceeding ten per cent. above or below the declared voltage where that voltage is 110 kV or above.

(3) The supplier shall ensure that, save in exceptional circumstances, any supply he gives complies with the declaration under paragraph (1).

(4) The polarity of direct current and the number and rotation of phases in any supply shall not be varied without the written agreement of the consumer.

*Information to be provided on request*

**32.** The supplier shall provide in respect of the existing or proposed installation of a consumer at low voltage a written statement of—

- (a) the maximum prospective short circuit current at the supply terminals; and
- (b) the maximum earth loop impedance of the earth fault path outside the consumer's installation; and
- (c) the type and rating of the supplier's fusible cut-out or switching device nearest to the supply terminals,

which apply, or will apply, to that installation to any person who can show reasonable cause for requiring that information.

*Interruptions of supply*

**33.** Any public electricity supplier may discontinue a supply for the purposes of testing or for any other purpose connected with the carrying on of the activities which he is authorised by his licence to carry on:

Provided that the supply may be discontinued only for such period as may be necessary subject (except where the public electricity supplier is prevented from doing so by circumstances not within his control) to giving not less than two days' notice to all consumers likely to be affected by the discontinuance.

PART VII

MISCELLANEOUS

*Inspections, etc. for the Department of Economic Development*

**34.**—(1) For the purpose of ascertaining whether a breach of these Regulations may have occurred, a person duly authorised by the Department shall be entitled at all times to inspect and to make examinations and tests of a supplier's works and to examine and take records of the readings of any instruments used by the supplier.

(2) The supplier shall afford reasonable facilities for any such inspection, examination or test, but shall not be responsible for any interruption in the supply which may be occasioned thereby.

*Notification of supply failure*

**35.**—(1) Every supplier shall send to the Department notice in accordance with paragraph (2) of failures of supply of which two days prior notice has not been given where there has been—

- (a) any single interruption of supply to one or more consumers of 20 megawatts or more for a period of one minute or longer; or
- (b) any single interruption of supply to one or more consumers of 5 megawatts or more for a period of one hour or longer; or

(c) any single interruption of supply to 5,000 or more consumers for a period of one hour or longer.

(2) The notice shall—

(a) be sent by the earliest practicable means after the failure becomes known to the supplier;

(b) contain the particulars specified in Schedule 4.

(3) The notice shall be sent to the Department notwithstanding that the supplier is unable to give the full particulars required by Schedule 4 and any particulars omitted shall be sent by the supplier in a supplementary notice to the Department by the earliest practicable means after they became known to the supplier.

### *Works in breach of Regulations*

**36.**—(1) Paragraphs (2) to (10) shall apply in any case where the Department is satisfied that—

(a) any supplier's works or any part thereof which are constructed, placed, erected, maintained, or used otherwise than in accordance with these Regulations; or

(b) any part of a consumer's installation which is not enclosed in a building; or

(c) those works, that installation or the part thereof which are or is in breach of any relevant provision made under these Regulations in force at the time when the notice referred to in paragraph (2) is given,

are or is liable to—

(i) become a source of danger to others; or

(ii) interfere with a supply to others.

(2) The Department may serve notice in writing on the supplier or consumer specifying the matter of which it is satisfied and require that those works, that installation or the part specified in the notice—

(a) shall not be used, or shall be used only subject to compliance with such conditions as that notice may specify; or

(b) shall be made dead; or

(c) shall be removed,

within the time specified in that notice and the person on whom that notice is served shall comply with the provisions of that notice.

(3) Where such a notice has required that any works, installation or part shall not be used or shall be made dead that notice shall remain in effect until such time as the works, installation or part specified in the notice shall comply with these Regulations or until the Department shall withdraw the notice.

(4) If, within the period specified by that notice for compliance or such longer period as the Department may allow, the person on whom the notice is served disputes the basis for, or the requirements of, any such notice, he may give notice in writing to the Department of that dispute and shall state the grounds.

(5) Where a notice is given to the Department pursuant to paragraph (4), the Department shall refer the dispute to an independent person agreed between the Department and the person giving the notice, or in default of agreement, to a person nominated by the President for the time being of the Institution of Electrical Engineers.

(6) The person to whom a dispute is referred shall, on reaching a determination of the dispute, make a direction as to whether the person giving the notice under paragraph (4) shall bear the costs of the reference (including any fees or expenses payable to him) or whether those costs shall be borne by the Department.

(7) The person to whom a dispute is referred may decide—

(a) to uphold the notice; or

(b) to recommend to the Department that the notice be withdrawn or modified; and

shall notify his decision in writing to the Department and to the person giving notice under paragraph (4).

(8) The person to whom a dispute is referred may and, if so requested by any party to the dispute, shall—

(a) give the parties to the dispute an opportunity of appearing before and being heard by him; and

(b) make an inspection of the supplier's works, or consumer's installation the subject of the dispute.

(9) Where it appears to the person to whom a dispute is referred that any person, not being a party to the dispute, has an interest in the outcome of that dispute, he may at his discretion treat that person as if he were a party to the dispute.

(10) A copy of this regulation shall be endorsed upon or accompany every notice served by the Department pursuant to this regulation.

### *Offences*

**37.** Any supplier who fails to comply with any provision of these Regulations, any person who fails to comply with regulation 27 and any consumer who fails to comply with regulation 36 shall be guilty of an offence and shall be liable on summary conviction to a fine not exceeding £2,000.

Sealed with the Official Seal of the Department of Economic Development on 17th December 1991.

(L.S.)

*D. Thomson*

Assistant Secretary

**Design, colours and proportions of the safety sign**

1. A safety sign shall incorporate a design as shown and of the proportions as shown in the diagram below, except that the height of the text may be increased to a maximum of  $0.12 \times L$ .
2. The triangle, symbol and text shall be shown in black on a yellow background.
3. The symbol shall not occupy more than 50% of the area within the triangle.
4. A safety sign may include additional text but any such text—
  - (a) shall be in black; and
  - (b) shall be the same size as the text used on the safety sign,and no part of any additional text shall appear on the sign higher than the base of the triangle.



**Minimum height above ground of overhead lines**

Column 1 <i>Nominal Voltages</i>	Column 2	Column 3
Not exceeding 33,000 volts	5.8 metres	5.2 metres
Exceeding 33,000 volts but not exceeding 110,000 volts	6.4 metres	6.4 metres
Exceeding 110,000 volts but not exceeding 275,000 volts	7 metres	7 metres
Exceeding 275,000 volts	7.3 metres	7.3 metres

**Interconnected Supplies**

## PART I

The person concerned shall ensure that each conductor not connected with earth in the installation which is or may be connected to the alternative source of energy has been first disconnected from all other sources of energy and will remain disconnected while his source is connected to the installation.

## PART II

## 1. In this Part—

“the owner” means the person who owns or controls any electric line through which energy may be provided;

“interconnected owner” means another owner with whose electric lines the electric lines of an owner are, or may be, directly connected;

“point of interconnection” means the point at which the electric lines of two or more owners are connected.

2.—(1) The person concerned shall not provide energy to a point of interconnection without the agreement of the interconnected owner.

(2) Any agreement for the purposes of sub-paragraph (1) shall be in writing and shall include provision for—

- (a) the means of synchronisation between separate sources of energy;
- (b) the compatibility of the means of connecting those sources with earth;
- (c) the records of plant maintenance and failure which are to be made and kept and by whom;
- (d) the means of connection and disconnection which are to be employed; and
- (e) reasonably practicable precautions to be taken to ensure the continuance of safe conditions if any neutral point connected with earth in any apparatus operated at high voltage becomes disconnected from earth.

## 3. The person concerned shall—

- (a) ensure that all persons carrying out operations on any part of his electric lines are authorised persons and competent to carry out such operations;
- (b) ensure that there are adequate and reliable means of communication with any interconnected owner;
- (c) inform any interconnected owner of any condition, occurrence or incident which could affect the safety of that owner’s personnel or the maintenance of his lines or apparatus and shall make and keep records of such information, and when it was communicated and by, and to, whom;
- (d) designate persons with authority to act and communicate on his behalf and inform every interconnected owner of the names of the persons so designated and where they may be reached;
- (e) ensure that, in respect of every source of energy, there is a manually operated means of disconnection; and that the settings, if any, on any automatic means of disconnection at any point of interconnection shall not be altered without the express agreement of the owner of any lines interconnected at that point;



- (f) ensure that electric lines under his control are capable of withstanding the prospective fault current associated with all sources of energy;
- (g) take all reasonably practicable precautions to limit the occurrence and effects of circulating currents in respect of the neutral points connected with earth of any interconnected systems;
- (h) ensure that there are displayed at the points of interconnection or, if that is impracticable, at the nearest most appropriate place—
  - (i) a diagram showing all electrical infeeds and the limits of responsibility of, or control by, the respective owners;
  - (ii) a schedule showing by whom all apparatus connected to any of the lines so interconnected is controlled and maintained;
  - (iii) a schedule of agreed settings on any automatic means of disconnection; and
  - (iv) a description of the method of communication between persons designated for the purpose of sub-paragraph (d).

**Notice of supply failure**

*Particulars relating to the person submitting the notice*

1. Name, address and telephone number of the person submitting the notice and if different, corresponding particulars of the person to whom enquiries should be addressed.
2. Date on which the notice is submitted.

*Particulars relating to the failure of supply*

3. Date and time of the failure.
4. Duration of the interruption.
5. Approximate load affected (in megawatts).
6. Number of consumers affected approximated to the nearest 100.
7. Geographical area affected.
8. Nature and cause of the failure.
9. Nature of any deliberate damage involved.
10. Voltage of the apparatus involved.
11. Type of apparatus involved.

## EXPLANATORY NOTE

*(This note is not part of the Regulations.)*

These Regulations impose requirements regarding the installation and use of electric lines and apparatus of suppliers of electricity including provisions for connections with earth. They replace all previous Regulations.

Part I (regulations 1-3) contains introductory provisions. Regulation 2 contains exemptions for certain existing supplies and apparatus and the circumstances in which the exemption ceases to apply. Regulation 3 contains defined terms. The expression 'service line' has a different meaning from that used in the Electricity Supply (Northern Ireland) Order 1972.

Part II (regulations 4-8) contains provisions relating to earthing. Regulations 4 (low voltage) and 5 (high and low voltage) contain general requirements on suppliers and regulation 6 detailed requirements where multiple earthing is used. Regulation 7 specifies the matters relating to his own and consumer's installation on which a supplier must be satisfied before allowing protective multiple earthing. Regulation 8 contains requirements for earthing of metalwork.

Part III (regulations 9-11) contains provisions relating to electric lines below ground. Regulation 9 specifies the lines affected by this Part. Regulation 10 imposes requirements for protection of such lines and regulation 11 requirements regarding the depth and manner of their installation.

Part IV (regulations 12-17) contains provisions relating to electric lines above ground. Regulation 12 specifies the lines affected by this Part. Regulation 13 imposes minimum heights for overhead electric lines, wires and cables (with further requirements in Schedule 2). Regulation 14 contains requirements relating to insulation and protection of such lines including those which become temporarily accessible. Regulation 15 imposes a requirement to prevent access to high voltage overhead lines and to affix safety signs to supports for such lines, and regulation 16 relates to stays for such supports. Regulation 17 provides for live line working.

Part V (regulations 18-25) contains general provisions relating to the works of all suppliers of electricity. Regulation 18 imposes a general duty that works must be sufficient for their purposes. Regulation 19 stipulates the maximum allowable line voltage and regulation 20 requires precautions against influx of fluids into enclosed spaces containing supplier's works. Regulations 21 and 22 impose, in respect of high voltage works, requirements for the prevention of unauthorised access, erection of safety signs, and the installation of protective devices. Regulation 23 requires precautions against excess voltage on low voltage lines and transformers and regulation 24 requires precautions to limit the effect of supply failure. Regulation 25 imposes a requirement on a supplier to inspect all his works.

Part VI (regulations 26-33) contains provisions relating to supply to a consumer's installation. Regulation 26 imposes requirements regarding supplier's works on a consumer's premises. Regulation 27 and Schedule 3 impose requirements where an installation is supplied from more than one source of electricity. Regulation 28 permits a supplier not to supply to an installation which does not satisfy certain requirements. In this context, the Regulations of the Institution of Electrical Engineers may be obtained from that body at Savoy Place, London WC2R 0BL. Regulation 29 specifies the procedure if a supplier considers that an installation does not satisfy its requirements and regulation 30 the procedure to challenge a supplier's refusal to give or continue a supply. Regulation 31 imposes a requirement to give information regarding the type and quality of supply within specified limits and regulation 32 requires other information affecting a consumer to be provided on request. Regulation 33 permits a supplier to interrupt supply on specified grounds.

Part VII (regulations 34-37) contains miscellaneous provisions. Regulation 34 entitles the Department of Economic Development to inspect a supplier's works. Regulation 35 and Schedule 4 contain a requirement on a supplier to give notice of specified interruptions of supply to consumers. Regulation 36 enables the Department to prohibit the use of the works of a supplier or certain parts of a consumer's installation in specified circumstances, with provision for settling disputes. Regulation 37 provides that specified persons who fail to comply with specified provisions of the Regulations commit an offence and are liable on conviction to a fine not exceeding £2,000.