

South Australia

Electricity (General) Regulations 2012

under the *Electricity Act 1996*

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Legislative history

Part 1—Preliminary

1—Short title

These regulations may be cited as the *Electricity (General) Regulations 2012*.

2—Commencement

These regulations will come into operation on 1 September 2012.

3—Interpretation

- (1) In these regulations, unless the contrary intention appears—

Act means the *Electricity Act 1996*;

active, in relation to a conductor, means—

- (a) any 1 of the conductors of a power system which is maintained at a difference of potential from—
 - (i) the neutral conductor; or
 - (ii) an earthed conductor; or
- (b) if a power system does not include a neutral or earthed conductor—all conductors;

aerial line means a powerline placed above the ground and in the open air;

AS or *Australian Standard*, followed by a number, or *AS/NZS* or *Australian/New Zealand Standard* followed by a number, is a reference to the standard published by Standards Australia as in force from time to time;

centre-line, in relation to an aerial line, means a notional vertical plane extending upwards from any point on the ground and running through, and connecting, the centre of each structure that supports the aerial line;

circuit means any number of conductors connected together for the purpose of carrying current;

conductor means a wire, or other form of conducting material suitable for carrying current, other than wires, cables or other metallic parts directly used in converting electrical energy into another form of energy;

connection point means a connection point to a transmission or distribution network;

facade mounted line means an aerial line attached to a building;

high voltage or **HV**, in relation to electricity, means electricity at a voltage exceeding 1 000 volts alternating current (**ac**) or 1 500 volts direct current (**dc**);

insulated means contained within a material or medium (including air) in order to limit the flow of current between conductors at different potentials;

insulated conductor means a conductor that—

- (a) is wholly covered with insulating material in accordance with the appropriate requirements of the relevant Approval and Test specification of an Australian Standard; or
- (b) is of a type approved by the Technical Regulator;

live—a term applied to an object when a difference of potential exists or would exist between it and earth under normal conditions of operation, including all metal connected to the neutral conductor of the supply system even if such neutral is earthed at the source of supply; but the following are not to be taken to be live:

- (a) earthing conductors;
- (b) copper sheaths of Mineral Insulated Metal Sheathed (**MIMS**) cables used in Earthed Sheathed Return (**ESR**) systems;
- (c) neutral busbars or links in installations where the multiple earthed neutral system is employed;

low voltage or **LV** has the same meaning as in AS/NZS 3000;

multiple earthed neutral system or **MEN system** means a system of earthing in which the parts of an electrical installation required by AS/NZS 3000 to be earthed—

- (a) are connected to the general mass of earth; and
- (b) are connected within the installation to the neutral conductor of the supply system;

nominal system voltage means the voltage by which a system of supply is designated and to which certain operating characteristics of that system of supply are referred in accordance with AS 2926 (as in force immediately before it was superseded);

operator, in relation to a transmission or distribution network, any electricity infrastructure or any electrical installation, means the person who operates, owns or controls the network, infrastructure or installation;

other cable system means—

- (a) telecommunication and control cables; or
- (b) aerial earthed cables; or
- (c) electrolysis drainage cables,

attached to, or in the vicinity of, structures supporting cables under the control of an electricity entity;

retail contract means a contract between an electricity entity and a customer for the sale and purchase of electricity;

service line means the terminating span of a powerline—

- (a) constructed or designed or ordinarily used for the supply of electricity at low voltage; and
- (b) through which electricity is or is intended to be supplied by an electricity entity to a customer from the transmission or distribution network of the entity;

substation means any premises or place (including a switchyard) in which high voltage supply is converted, controlled or transformed;

technical installation rules of the operator of a transmission or distribution network, means the safety and technical requirements of the operator relating to electrical installations that must be complied with if electricity supply from the network is to be connected to the installations;

U, in relation to voltage of electricity, means nominal system voltage;

underground line means a powerline which is placed under the ground, including those portions which are erected above the ground.

- (2) A provision contained in a standard, code, guide or other document that is required to be complied with under these regulations is not, despite that requirement, to be taken to be a mandatory provision for the purposes of these regulations unless it is expressed in mandatory terms.
- (3) In subregulation (2), a reference to a standard, code, guide or other document includes a reference to a part of a standard, code, guide or other document.

4—Interpretation—definition of annual electricity consumption level

- (1) For the purposes of the definition of **annual electricity consumption level** in section 4 of the Act, the following provisions apply to the determination of a customer's annual electricity consumption level:
 - (a) the customer's annual electricity consumption level is to be determined for each metered connection point through which the customer has or seeks electricity supply under a retail contract;
 - (b) if the customer has been entitled under a retail contract to electricity supply through the connection point for the 12 months immediately preceding the relevant day, the customer's annual electricity consumption level for the connection point is—
 - (i) the actual volume of the electricity supply, expressed in MW.h, through the connection point for that 12 month period as measured by the meter at the connection point; or
 - (ii) if the measurement of the volume of electricity by the meter has been significantly affected by inaccuracies during that 12 month period—the estimated volume of the electricity supply, expressed in MW.h, through the connection point for the 12 months immediately following the relevant day;

- (c) if the customer has not been entitled under a retail contract to electricity supply through the connection point for the 12 months immediately preceding the relevant day, the customer's annual electricity consumption level for the connection point is the estimated volume of the electricity supply, expressed in MW.h, through the connection point for the 12 months immediately following the relevant day;
 - (d) an estimate is to be made for the purposes of paragraph (b) or (c) taking into account relevant past electricity consumption levels, the electricity consumption level of plant and equipment to be powered through the connection point, the operations for which electricity is required to be supplied through the connection point and other relevant factors;
 - (e) the determination of the actual or estimated volume of electricity supply through the connection point may be by agreement between the customer and the electricity entity or, failing such agreement, will be a matter for the decision of the Commission on application to the Commission by the customer or the entity;
 - (f) a determination under this regulation of the customer's annual electricity consumption level for the connection point continues in operation from the relevant day until—
 - (i) the customer ceases to be entitled to electricity supply through the connection point under a retail contract with the electricity entity; or
 - (ii) a subsequent determination is made under this regulation of the customer's annual electricity consumption level for the connection point,whichever first occurs;
 - (g) at least 12 months must elapse from the relevant day before a subsequent determination is made under this regulation of the customer's annual electricity consumption level for the connection point.
- (2) In this regulation—
- the relevant day*, in relation to the determination of the customer's annual electricity consumption level for the connection point, means—
- (a) the day on which the determination is made; or
 - (b) if some earlier or later day is agreed to by the customer and the electricity entity, or is decided on by the Commission, as the relevant day for the purposes of the determination—that day.

5—Interpretation—definition of electrical installation

For the purposes of the definition of *electrical installation* in section 4 of the Act, a set of wires and associated fittings, equipment and accessories installed for the conveyance, control, measurement or use of electricity for general power and lighting in a place used for electricity generating operations, or incidental or related operations, is an electrical installation.

6—Interpretation—definition of electricity infrastructure

For the purposes of the definition of *electricity infrastructure* in section 4 of the Act, a set of wires and associated fittings, equipment and accessories installed for the conveyance, control, measurement or use of electricity for general power and lighting in a place used for electricity generating operations, or incidental or related operations, does not form part of electricity infrastructure.

7—Interpretation—definition of generation

For the purposes of the definition of *generation* in section 4 of the Act, the operation of a set of wires and associated fittings, equipment and accessories installed for the conveyance, control, measurement or use of electricity for general power and lighting in a place used for electricity generating operations, or incidental or related to an electrical installation is not the generation of electricity.

8—Interpretation—definition of small customer

For the purposes of the definition of *small customer* in section 4 of the Act, each customer whose annual electricity consumption level for a connection point is less than 160 MW.h is classified as a small customer in relation to electricity supply to the customer through the connection point.

9—Interpretation—definition of retailing

For the purposes of the definition of the term in section 4 of the Act, *retailing* of electricity does not include the following activities:

- (a) a customer charging for the supply of electricity if the charge forms an unspecified part of rent or charges for the occupation or use of premises;
- (b) a holder of a licence authorising the operation of an electricity generating plant charging a fee for supplying electricity to another person who is the holder of a licence authorising the operation of a transmission or distribution network.

10—Interpretation—definition of electricity supply industry

- (1) For the purposes of the definition of *electricity supply industry* in section 4 of the Act, the following are operations of a prescribed kind:
 - (a) the provision, operation or maintenance of poles, equipment, fittings or wiring associated with the provision of lighting in a street or other place;
 - (b) operations conducted in relation to the Leigh Creek township, railway or mine by—
 - (i) Flinders Power Pty Ltd (ACN 082 988 270); or
 - (ii) NRGenerating Holdings (No. 2) GmbH (ARBN 094 284 723), Flinders Labuan (No. 1) Ltd (ARBN 094 284 812) and Flinders Labuan (No. 2) Ltd (ARBN 094 284 769), or a body related to any of those bodies.
- (2) Bodies are related for the purposes of this regulation if—
 - (a) 1 takes over or otherwise acquires the business or part of the business of the other; or

- (b) they are related bodies corporate within the meaning of the *Corporations Law*; or
- (c) a series of relationships can be traced between them under paragraph (a) or (b).

11—Compliance with standards that are varied or substituted

- (1) Despite a requirement of these regulations for work to be carried out in accordance with a standard as in force from time to time, where the standard is varied or substituted, work for the installation, commissioning or modification of electricity infrastructure or an electrical installation may be carried out in accordance with the old standard—
 - (a) if—
 - (i) design work for that installation, commissioning or modification commenced before (but not more than 1 month before) the publication of the new standard and the work is to be completed within 1 year after that publication; or
 - (ii) the work (disregarding design or other preparatory work) had commenced before the publication of the new standard and is to be completed within 1 year after that publication; or
 - (iii) the work commenced after the publication of the new standard and is to be completed within 6 months after that publication; or
 - (iv) the work is to be undertaken under a contract based on the old standard and entered into before the publication of the new standard and is to be completed within 1 year after that publication; or
 - (v) the work is connected with the construction of premises and construction work had commenced before the publication of the new standard and is to be completed within 1 year after that publication; or
 - (b) in any other case—with the approval of the Technical Regulator, on terms and conditions the Technical Regulator considers appropriate.
- (2) If—
 - (a) pursuant to subregulation (1) work is purportedly carried out in accordance with an old standard; and
 - (b) the work complies with that old standard,an approval or certification that the work complies with the standard may be given for the purposes of these regulations.
- (3) In this regulation—
 - (a) a reference to a **standard** includes a reference to—
 - (i) a code, guide or other document; and
 - (ii) a part of a standard, code, guide or other document; and
 - (b) a standard as in force following the variation or substitution of the standard is referred to as the **new standard**; and

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- (c) a standard as in force immediately prior to the variation or substitution of the standard is referred to as the *old standard*; and
 - (d) a reference to *work* includes a reference to examinations and tests related to the work.
- (4) This regulation does not apply in relation to the National Electricity Rules or a code made by the Commission under the *Essential Services Commission Act 2002*.

Part 2—Administration

12—Functions and powers of Commission

Pursuant to section 6A of the Act, the Commission has (in addition to the Commission's functions and powers under the Act and the *Essential Services Commission Act 2002*) the following functions and powers:

- (a) if a sale/lease agreement (within the meaning of the *Electricity Corporations (Restructuring and Disposal) Act 1999*) contemplates that the Commission will determine certain matters—to determine those matters in accordance with the terms of the agreement;
- (b) functions and powers conferred on the Jurisdictional Regulator under the National Electricity Rules to the extent that those functions and powers are not authorised by the State, pursuant to the National Electricity Rules, to be exclusively performed or exercised by some other body or bodies.

13—Functions of Technical Regulator—major interruptions to electricity supply

- (1) Pursuant to section 8(ca) of the Act, the Technical Regulator must, in relation to major interruptions to the electricity supply in the State, after taking into account the operation of subregulation (2), comply with the requirements set out in subregulation (3).
- (2) The Technical Regulator will determine whether to act under this regulation after taking into account the significance of the interruption and, for that purpose, the Technical Regulator should have regard to—
 - (a) the actual or likely duration of any interruption; and
 - (b) the number of customers affected, or likely to be affected, by any interruption; and
 - (c) such other factors as the Technical Regulator determines to be relevant.
- (3) The Technical Regulator must, in acting under this regulation in relation to the monitoring and investigation of major interruptions to the electricity supply in the State, advise the Minister in respect of—
 - (a) the causes or likely causes of such interruptions;
 - (b) the nature and extent of such interruptions;
 - (c) the actual and likely effects and duration of such interruptions;
 - (d) the steps taken by electricity entities and others to manage such interruptions and to restore and maintain electricity supply;

- (e) the adequacy, appropriateness and timeliness of those steps;
- (f) the action that should be taken by electricity entities and others to minimise the likelihood of such interruptions in the future;
- (g) any other matter relating to such interruptions that the Technical Regulator considers appropriate.

14—Function associated with use of emergency powers

- (1) A responsible officer is to fulfil obligations under a protocol agreed by the jurisdictions participating in the National Electricity Market (ie the market regulated by the *National Electricity Law*) relating to the use of emergency powers that may affect the operation of that market.
- (2) Without limiting subregulation (1), a responsible officer may assume operational responsibility for managing power system emergencies under any relevant plan established or adopted by AEMO.
- (3) In this regulation—

the Department means the administrative unit of the Public Service that is, under the Minister, responsible for the administration of the Act;

responsible officer means an officer within the Department nominated by the Minister to be a responsible officer for the purposes of this regulation.

Part 3—Licensing of electricity entities

15—Exemptions from requirement to be licensed

- (1) A person who carries on operations in the electricity supply industry (the *operator*) is exempt from the requirement to hold a licence under the Act authorising the operations if the electricity in relation to which the operations are carried on is only for the consumption of 1 or more of the following:
 - (a) the operator;
 - (b) a designated body;
 - (c) a person at premises occupied or used by the person as a tenant or licensee (whether directly or indirectly) of the operator or a designated body where that person is not charged for the supply of electricity except by an electricity entity or as an unspecified part of rent or charges for the occupation or use of the premises.
- (2) A person who carries on the generation of electricity is exempt from the requirement to hold a licence under the Act authorising the operations if—
 - (a) the generating plant has a rated nameplate output of 100 kVA or less; or
 - (b) the person does not supply electricity for reward to or by means of a transmission or distribution network.
- (3) A person who carries on operations as an inset network operator or inset network retailer is exempt from the requirement to hold a licence under the Act authorising the operations subject to the following conditions:
 - (a) a transitional inset customer may only be charged for—

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- (i) electricity supplied through the inset network on or after 1 January 2003; or
 - (ii) services or things provided on or after that date in connection with that supply of electricity,

an amount not exceeding the applicable amount (if any) according to the scale of charges fixed by the Commission under subregulation (4);
 - (b) an inset customer must be kept informed of—
 - (i) the nature of any arrangements for the purchase of electricity for the inset network made between the inset network operator or retailer and a licensed retailer for any period for which the customer purchases electricity from the inset network retailer; and
 - (ii) if the customer is to make a payment for or contribution towards the cost of electricity consumed in common areas, or for shared facilities, at the premises served by the inset network—
 - (A) the total amount of electricity so consumed; and
 - (B) the amount paid by the inset network operator or retailer for that electricity;
 - (c) an inset customer (other than a transitional inset customer) must have an effective right of access to a licensed retailer of the customer's choice;
 - (d) the inset network operator or retailer must follow processes of a kind approved by the Commission to resolve disputes with inset customers about the sale or supply of electricity.
- (4) The Commission must fix a scale of charges for classes of inset customers for the purposes of subregulation (3)(a) that the Commission considers fair and reasonable having regard to the prices that such classes of customers could obtain from licensed retailers.
- (5) An exemption under this regulation is (in addition to any other condition to which it is expressed to be subject under this regulation) subject to the condition that the person comply with any requirement imposed by or under the Act, these regulations, the National Electricity Rules or a code made by the Commission under the *Essential Services Commission Act 2002* as if the person were an electricity entity authorised by a licence to carry on the operations to which the exemption relates.
- (6) An exemption from subregulation (5), or from specified requirements referred to in that subregulation, may be granted by—
- (a) in relation to Part 6 of the Act or Part 10, Part 11 and Part 12 of these regulations or any safety requirement—the Technical Regulator, on terms and conditions the Technical Regulator considers appropriate; or
 - (b) in any other case—the Commission, on terms and conditions the Commission considers appropriate.

- (7) For the purposes of this regulation, an inset customer has *an effective right of access to a licensed retailer of the customer's choice* only if the customer may—

- (a) have access to and use the inset network for the purpose of consuming electricity purchased by the customer from a licensed retailer of the customer's choice; and
- (b) install, maintain and use meters and other equipment necessary for that purpose,

without any charge being payable by the customer (other than to the licensed retailer) or by the licensed retailer.

- (8) In this regulation—

community or strata title premises means premises the subject of the same community plan under the *Community Titles Act 1996* or the same strata plan under the *Strata Titles Act 1988*;

designated body means a body or group of persons designated by the Minister by notice in the Gazette;

inset customer, in relation to an inset network, means a person (other than the inset network operator or the inset network retailer) who has or seeks a supply of electricity from the inset network;

inset network means a transmission or distribution network that serves only a group of premises in the same ownership or community or strata title premises;

inset network operator means a person who operates an inset network;

inset network retailer means a person (other than an electricity entity) who retails electricity supplied through an inset network;

licensed retailer means an electricity entity licensed to retail electricity;

premises includes part of premises;

transitional inset customer means—

- (a) an inset customer who occupies or uses part of a group of premises in the same ownership under a lease or licence granted before 1 January 2003,

but does not include an inset customer if—

- (b) the premises served by the inset network resulted from or were affected by building work commenced on or after the commencement of this regulation; and
- (c) there were no inset customers residing or carrying on business at the premises served by the network during all or part of the period over which the building work was carried out.

- (9) The Minister may—

- (a) by notice in the Gazette, designate a body or group of persons for the purposes of the definition of *designated body*; and
- (b) by subsequent notice in the Gazette, vary or revoke a notice under this subregulation.

16—Licence fees and returns

- (1) For the purposes of section 20(2) of the Act, the licence fee, or the first instalment of the licence fee, (as the case may require) must be paid before the anniversary in each year of the day on which the licence was issued.
- (2) For the purposes of section 20(2) of the Act, an annual return must be lodged before 31 August in each year.
- (3) For the purposes of section 20(5) of the Act, the penalty for default—
 - (a) for failing to pay a licence fee, or an instalment of a licence fee, is 10% per annum of the outstanding amount calculated daily on a cumulative basis;
 - (b) for failing to lodge an annual return is \$500.
- (4) The following costs are prescribed for the purposes of paragraph (d) of the definition of *administrative costs* in section 20(7) of the Act:
 - (a) the costs of any committee established for the purpose of advising the Minister in relation to the preparation of programs for the undergrounding of powerlines under section 58A of the Act;
 - (b) the costs of administration of the *Energy Products (Safety and Efficiency) Act 2000*;
 - (c) the costs of administration of the Australian Energy Market Commission in relation to the electricity supply industry in South Australia in the financial year to which the licence relates.

17—Consideration of application for licence

Pursuant to section 17(3)(d) of the Act, the following are prescribed as matters that the Commission may consider in deciding whether an applicant is a suitable person to hold a licence authorising the retailing of electricity:

- (a) whether the applicant holds or has held such a licence;
- (b) if the applicant holds such a licence—the duration of contracts for the retailing of electricity entered into by the applicant;
- (c) if the applicant holds or has held such a licence—whether the applicant has been guilty of a contravention of a condition of the licence or any other contravention of a requirement imposed by or under the Act in connection with the operations authorised by the licence.

18—Prescribed class of customers for purposes of section 24(2)(b) of Act

For the purposes of section 24(2)(b) of the Act, each small customer is a customer of a prescribed class.

19—Prescribed date for purposes of section 24(2)(d) of Act

For the purposes of section 24(2)(d) of the Act, 1 July 2004 is the prescribed date.

20—Prescribed information in small customer accounts for purposes of section 24(2)(da) of Act

For the purposes of section 24(2)(da) of the Act, the following provisions apply:

- (a) the electricity entity must include in each account for electricity charges sent to a small customer for electricity supply through a particular metered connection point the following information:
 - (i) the customer's average daily consumption level, expressed in kW.h, of electricity supplied through the connection point for the period to which the account relates;
 - (ii) the customer's average daily consumption level, expressed in kW.h, of electricity supplied through the connection point for each period during the preceding 12 months in respect of which the customer was sent by the entity an account for electricity supply through the connection point;
 - (iii) the average daily cost to the customer of electricity supplied to the customer through the connection point during the period to which the account relates;
 - (iv) the amount of greenhouse gas emissions associated with the customer's consumption of electricity supplied through the connection point for the period to which the account relates;
 - (v) the amount of greenhouse gas emissions associated with the customer's consumption of electricity supplied through the connection point for each period during the preceding 12 months in respect of which the customer was sent by the entity an account for electricity supply through the connection point;
- (b) the information referred to in paragraphs (a)(ii) and (a)(v) must be presented in graphical form;
- (c) the amounts of the greenhouse gas emissions referred to in paragraphs (a)(iv) and (a)(v) must be calculated, in a manner approved by the Commission, by reference to material about emissions coefficients published by the Clean Energy Regulator established under the *Clean Energy Regulator Act 2011* of the Commonwealth;
- (d) the information referred to in paragraph (a) must be accompanied by explanatory material of a kind approved by the Commission;
- (e) the information and explanatory material referred to in paragraphs (a) and (d) must be presented in a print size and format approved by the Commission;
- (f) the electricity entity must also include in each account for electricity charges sent to a small customer the following statement:

For more information about energy efficiency and to compare energy retail prices, visit www.escosa.sa.gov.au or call
[telephone number as specified by the Commission by written notice to the entity];
- (g) the statement referred to in paragraph (f) must be presented in the first page of each account in 9 point bold font.

21—Ombudsman scheme

For the purposes of sections 23(1)(k) and 24(2)(l) of the Act, the gas supply industry is prescribed.

Part 4—Residential energy efficiency scheme

22—Application

- (1) This Part applies to an electricity entity that holds a licence authorising the retailing of electricity within the State.
- (2) However, this Part will not apply in a particular calendar year to an electricity entity that sells electricity as a retailer to fewer than the threshold number of residential customers within South Australia as at 30 June in the preceding year.
- (3) For the purposes of subregulation (2), the Minister must, by notice in the Gazette, set the threshold number for a 3 year period at the time of setting the annual greenhouse gas reduction targets and the annual energy audit targets for the purposes of this Part.
- (4) This regulation applies subject to the operation of regulations 29(4), 30(5) and 31(4).

23—Interpretation

- (1) In this Part, unless the contrary intention appears—

energy audit means an audit of a priority group household undertaken by a retailer in accordance with the minimum specification published by the Minister by notice in the Gazette;

energy credit means the following (if the relevant differences are positive):

- (a) in relation to energy audits, the difference (expressed as an amount of energy audits) between the number of energy audits actually undertaken by a retailer in a year and the ELEAT that applies to the retailer for that year;
- (b) in relation to energy efficiency activities, the difference (expressed in tonnes of carbon dioxide equivalent) between the actual tonnes of carbon dioxide equivalent taken to have been saved by a retailer in a year through the conduct of energy efficiency activities and the EGRT that applies to the retailer for that year;
- (c) in relation to energy efficiency activities for priority group households, the difference (expressed in tonnes of carbon dioxide equivalent) between the actual tonnes of carbon dioxide equivalent taken to have been saved by a retailer in a year through the conduct of energy efficiency activities for priority group households and a PGGRT that applies to the retailer for that year;

energy efficiency activity means an activity relating to residential premises determined by the Minister or the Commission pursuant to regulation 32 to be an energy efficiency activity;

EGRT—means an electricity licence greenhouse gas reduction target calculated in accordance with subregulation (2);

ELEAT—means an electricity licence energy audit target calculated in accordance with subregulation (3);

PGGGRT—see regulation 25;

priority group household means residential premises in which a person resides who—

- (a) is the holder of a current pensioner concession card issued by the Commonwealth Government; or
- (b) is the holder of a current TPI Gold Repatriation Health Card issued by the Commonwealth Government; or
- (c) is the holder of a current War Widows Gold Repatriation Health Card issued by the Commonwealth Government; or
- (d) is the holder of a current Gold Repatriation Health Card (EDA) issued by the Commonwealth Government; or
- (e) is the holder of a current Health Care Card (including a Low Income Health Care Card) issued by the Commonwealth Government; or
- (f) is a recipient of the *South Australian Government Energy Concession*; or
- (g) falls within a class of persons who are experiencing hardship determined or approved by the Commission for the purposes of these regulations;

relevant electricity retailer means an electricity entity to which this Part applies;

relevant gas retailer means the holder of a licence under the *Gas Act 1997* authorising the retailing of gas to which Part 4 of the *Gas Regulations 2012* applies;

residential customer means a small customer—

- (a) who acquires electricity primarily for domestic use; and
- (b) who satisfies other criteria (if any) determined by the Commission for the purposes of this definition;

retailer means a relevant electricity retailer or a relevant gas retailer;

threshold number—see regulation 22(3).

- (2) The EGRT for a relevant electricity retailer in any calendar year is calculated in accordance with the following formula:

$$EGRT_t = \frac{(ES_{j,t-1} - GP_{j,t-1}) \times F_{e_t}}{\sum_{i=1}^M ((ES_{i,t-1} - GP_{i,t-1}) \times F_{e_t}) + \sum_{j=1}^N (GS_{j,t-1} \times F_{g_t})} \times GRT_t$$

where—

- $EGRT_t$ is the annual greenhouse gas reduction target for calendar year t that applies to this retailer expressed in tonnes of carbon dioxide equivalent (tCO₂e)
- $ES_{j,t-1}$ is total electricity sales for this retailer to residential customers within South Australia during the financial year preceding calendar year t expressed in gigajoules (GJ)
- $ES_{i,t-1}$ is total electricity sales to residential customers within South Australia during the financial year preceding calendar year t by relevant electricity retailer i, expressed in gigajoules (GJ)
- F_{e_t} is the current full fuel cycle emission factor for end users of purchased electricity in South Australia as specified in the *National Greenhouse Accounts (NGA) Factors*,

published by the Commonwealth, expressed in tonnes of carbon dioxide equivalent per gigajoule (tCO₂e/GJ)

F_{g_t} is the current full fuel cycle emission factor for small users of natural gas in South Australia as specified in the *National Greenhouse Accounts (NGA) Factors*, published by the Commonwealth, expressed in tonnes of carbon dioxide equivalent per gigajoule (tCO₂e/GJ)

$GP_{t_{\beta-1}}$ is total GreenPower electricity sales for this retailer to residential customers within South Australia, accredited under the National GreenPower Accreditation Program, during the financial year preceding calendar year t, expressed in gigajoules (GJ)

$GP_{i_{\beta-1}}$ is the total GreenPower electricity sales to residential customers within South Australia, accredited under the National GreenPower Accreditation Program, during the financial year preceding calendar year t by relevant electricity retailer i, expressed in gigajoules (GJ)

GRT_t is the annual greenhouse gas reduction target fixed by the Minister under regulation 24 for calendar year t, expressed in tonnes of carbon dioxide equivalent (tCO₂e)

$GS_{j_{\beta-1}}$ is the total gas sales to residential customers within South Australia during the financial year preceding calendar year t by relevant gas retailer j under the *Gas Act 1997*, expressed in gigajoules (GJ)

M is the total number of relevant electricity retailers for year t

N is the total number of relevant gas retailers for year t.

- (3) The ELEAT for a relevant electricity retailer in any calendar year is calculated in accordance with the following formula:

$$ELEAT_t = \frac{EC_{t_{\beta-1}}}{\sum_{i=1}^M EC_{i_{\beta-1}} + \sum_{j=1}^N GC_{j_{\beta-1}}} \times EAT_t$$

where—

$ELEAT_t$ is the annual energy audit target for calendar year t that applies to this retailer expressed as the number of energy audits to be delivered

EAT_t is the annual energy audit target fixed by the Minister under regulation 26 for calendar year t, expressed as the number of energy audits to be delivered

$EC_{t_{\beta-1}}$ is the total number of residential customers within South Australia to whom this retailer sold electricity as at the final day of the financial year preceding calendar year t

$EC_{i_{\beta-1}}$ is the total number of residential customers within South Australia to whom relevant electricity retailer i sold electricity as at the final day of the financial year preceding calendar year t

$GC_{j_{\beta-1}}$ is the total number of residential customers within South Australia to whom relevant gas retailer j sold gas under the *Gas Act 1997* as at the final day of the financial year preceding calendar year t

M is the total number of relevant electricity retailers for year t

N is the total number of relevant gas retailers for year t.

24—Minister to set greenhouse gas reduction targets

- (1) The Minister must, by notice in the Gazette, fix the annual greenhouse gas reduction targets for the purposes of this Part.
- (2) The targets are to be expressed as the annual amount of greenhouse gas savings (in terms of tonnes of carbon dioxide equivalent) that must be achieved by retailers through the carrying out of energy efficiency activities in accordance with this Part and Part 4 of the *Gas Regulations 2012*.
- (3) The Minister must, for the purposes of subregulation (1)—
 - (a) fix annual greenhouse gas reduction targets for 2009, 2010 and 2011 before 1 January 2009; and
 - (b) fix annual greenhouse gas reduction targets for 2012, 2013 and 2014 before 1 January 2012.

25—Minister to determine percentage of greenhouse gas reduction target to be delivered to priority group households

- (1) The Minister must, by notice in the Gazette, determine that a percentage of an annual greenhouse gas reduction target is to be achieved by the provision of energy efficiency activities to priority group households.
- (2) The priority group greenhouse gas reduction target (*PGGGRT*) for a retailer is determined by multiplying the EGRT for that retailer by the percentage fixed by the Minister under subregulation (1).
- (3) In addition, the Minister may, by notice in the Gazette, determine that certain percentages of the PGGGRT are to be achieved by the provision of energy efficiency activities to particular classes of priority group households and each determination will constitute a separate PGGGRT for the purposes of this Part.

26—Minister to set energy audit targets

- (1) The Minister must, by notice in the Gazette, fix the annual energy audit targets for the purposes of this Part.
- (2) The targets are to be expressed as the annual number of energy audits required to be undertaken by retailers in accordance with this Part and Part 4 of the *Gas Regulations 2012*.
- (3) Energy audits will relate to priority group households.
- (4) The Minister must, for the purposes of subregulation (1)—
 - (a) fix annual energy audit targets for 2009, 2010 and 2011 before 1 January 2009; and
 - (b) fix annual energy audit targets for 2012, 2013 and 2014 before 1 January 2012.

27—Administration

- (1) The Commission has such functions and powers as are necessary or expedient to give effect to the residential energy efficiency scheme including the following functions:
 - (a) to administer the scheme;

- (b) to ensure that retailers comply with the requirements of this Part;
 - (c) to report to the Minister—
 - (i) at the end of each year as to the administration of the scheme and the progress of retailers in achieving the targets set by this Part; and
 - (ii) from time to time on any other matter relating to this Part as required by the Minister.
- (2) The Commission—
- (a) is required to impose a condition on the licence of a retailer under the Act that the retailer comply with this Part, pursuant to section 21(2) of the Act (so that a failure to comply with this Part will constitute a contravention of a condition of the licence); and
 - (b) is to vary conditions of the licence of a retailer under the Act to ensure that the retailer complies with this Part as required from time to time, pursuant to section 27(1) of the Act (so that a failure to comply with this Part will constitute a contravention of a condition of the licence).

28—Notification and adjustment of targets

- (1) The Commission must, in relation to each calendar year in which the residential energy efficiency scheme is to apply, notify in writing each retailer to which this Part applies of any annual—
- (a) ELEAT; and
 - (b) EGRT; and
 - (c) PGGGRT,
- that applies to the retailer for that year.
- (2) The Commission may adjust a target that would otherwise apply to a retailer after taking into account any—
- (a) energy audit shortfall; and
 - (b) greenhouse gas reduction shortfall; and
 - (c) greenhouse gas reduction shortfall for priority group households,
- from a previous year that must be added to the target in accordance with regulation 29, 30 or 31, respectively.
- (3) If the customers of 1 retailer (in this regulation referred to as the *first retailer*) are transferred during a year to another retailer (in this regulation referred to as the *acquiring retailer*) by the sale, transmission or assignment of the whole or part of the business or undertaking of the first retailer, the Commission may adjust the targets of both the first retailer and the acquiring retailer for that year on a pro rata basis taking into account the date on which the customers were transferred.
- (4) If—
- (a) this Part or Part 4 of the *Gas Regulations 2012* did not apply to the acquiring retailer before the transfer of customers to the acquiring retailer because the acquiring retailer did not have the threshold number of customers for the purposes of regulation 22; and

- (b) as a result of the transfer of customers the acquiring retailer has at least the threshold number of customers,

this Part and Part 4 of the *Gas Regulations 2012* apply with immediate effect to the acquiring retailer and the Commission must—

- (c) in accordance with subregulation (1), notify the acquiring retailer of its targets under this Part; and
 - (d) adjust the targets that apply to both the first retailer and the acquiring retailer for that year on a pro rata basis taking into account the date on which the transfer of customers occurred.
- (5) If a retailer accrues an energy credit in a year and does not transfer the credit under regulation 33(1), the Commission must, on application by the relevant retailer, take the credit into account in determining whether the retailer has met a target that applies to the retailer in any subsequent year.

29—Energy audits

- (1) A retailer to which this Part applies must, subject to subregulation (2), undertake the annual number of energy audits in accordance with the ELEAT that applies to the retailer for that year (as adjusted to take into account any shortfall added under subregulation (3)).
- (2) It is not a breach of subregulation (1) if a retailer undertakes in a year at least 90% of the energy audits required to be undertaken in that year in accordance with the ELEAT that applies to the retailer for that year.
- (3) Despite subregulation (2), if a retailer fails to achieve its ELEAT in a year, the energy audit shortfall must be added to an ELEAT that applies to the retailer in a subsequent year.
- (4) If—
 - (a) a retailer undertakes energy audits in a year sufficient to achieve at least 90% of its ELEAT for that year but does not achieve its ELEAT; and
 - (b) in the subsequent calendar year this Part no longer applies to the retailer because the retailer retails electricity to fewer than the threshold number of residential customers set by the Minister under regulation 22(3),

the retailer must undertake energy audits in the subsequent year to account for its energy audit shortfall for priority group households from the previous year.

- (5) In this regulation—

energy audit shortfall means the difference (expressed as an amount of energy audits) between the ELEAT that applies to the retailer for a year and the number of energy audits actually provided by that retailer in that year.

30—Energy efficiency activities

- (1) A retailer to which this Part applies must, subject to subregulation (2), undertake energy efficiency activities sufficient to achieve the EGRT that applies to the retailer for that year (as adjusted to take into account any shortfall added under subregulation (3)).

- (2) It is not a breach of subregulation (1) if a retailer undertakes energy efficiency activities in a year sufficient to achieve at least 90% of the EGRT that applies to the retailer for that year.
- (3) Despite subregulation (2), where a retailer fails to achieve its EGRT in a year, the greenhouse gas reduction shortfall must be added to an EGRT that applies to the retailer in a subsequent year.
- (4) An energy efficiency activity undertaken by a retailer for the purposes of achieving a PGGRT under regulation 31 is taken to be included as an energy efficiency activity undertaken by a retailer for the purpose of achieving its EGRT under this regulation.
- (5) If—
 - (a) a retailer undertakes energy efficiency activities in a year sufficient to achieve at least 90% of its EGRT for that year but does not achieve its EGRT; and
 - (b) in the subsequent calendar year this Part no longer applies to the retailer because the retailer retails electricity to fewer than the threshold number of residential customers set by the Minister under regulation 22(3),

the retailer must undertake energy efficiency activities in the subsequent year to account for its greenhouse gas reduction shortfall from the previous year.

- (6) If—
 - (a) a retailer fails to achieve its EGRT with respect to any year; and
 - (b) the retailer—
 - (i) pays a shortfall penalty in accordance with the requirements of section 94B of the Act with respect to that failure; or
 - (ii) is subject to a penalty on account of a prosecution in respect of that failure,

the greenhouse gas reduction shortfall to which the shortfall penalty or prosecution relates will no longer apply to the retailer.

- (7) In this regulation—

greenhouse gas reduction shortfall means the difference (expressed in tonnes of carbon dioxide equivalent) between the EGRT that applies to the retailer for a year and the actual tonnes of carbon dioxide equivalent taken to have been saved by that retailer in that year through the conduct of energy efficiency activities.

31—Energy efficiency activities for priority group households

- (1) A retailer to which this Part applies must, subject to subregulation (2), undertake energy efficiency activities sufficient to achieve any PGGRT that applies to the retailer for a year (as adjusted to take into account any shortfall added under subregulation (3)).
- (2) It is not a breach of subregulation (1) if a retailer undertakes energy efficiency activities in a year sufficient to achieve at least 90% of a PGGRT that applies to the retailer for that year.
- (3) Despite subregulation (2), where a retailer fails to achieve a PGGRT in a year the greenhouse gas reduction shortfall for priority group households must be added to a PGGRT that applies to the retailer in a subsequent year.

- (4) If—
- (a) a retailer undertakes energy efficiency activities in a year sufficient to achieve at least 90% of a PGGGRT for that year but does not achieve the PGGGRT; and
 - (b) in the subsequent calendar year this Part no longer applies to the retailer because the retailer retails electricity to fewer than the threshold number of residential customers set by the Minister under regulation 22(3),

the retailer must undertake energy efficiency activities in the subsequent year to account for its greenhouse gas reduction shortfall for priority group households from the previous year.

- (5) If—
- (a) a retailer fails to achieve its PGGGRT with respect to any year; and
 - (b) the retailer—
 - (i) pays a shortfall penalty in accordance with the requirements of section 94B of the Act with respect to that failure; or
 - (ii) is subject to a penalty on account of a prosecution in respect of that failure,

the greenhouse gas reduction shortfall for priority group households to which the shortfall penalty or prosecution relates will no longer apply to the retailer.

- (6) In this regulation—

greenhouse gas reduction shortfall for priority group households means the difference (expressed in tonnes of carbon dioxide equivalent) between a PGGGRT that applies to the retailer for a year and the actual tonnes of carbon dioxide equivalent taken to have been saved by that retailer in that year through the conduct of energy efficiency activities for priority group households.

32—Determination of energy efficiency activities

- (1) Before 1 January 2009, the Minister must, by notice in the Gazette, determine 1 or more activities to be energy efficiency activities for the purposes of this Part.
- (2) On or after 1 January 2009, the Commission may, by notice in the Gazette, on its own initiative or by application, determine, in accordance with any requirements set by the Minister, that an activity is an energy efficiency activity.
- (3) An application under subregulation (2) must be made in a manner and form determined by the Commission.
- (4) A determination may be of general application or limited (according to criteria determined by the Commission) in its application to a particular retailer or particular retailers.
- (5) A notice published under this regulation must—
 - (a) describe the energy efficiency activity; and
 - (b) set out the minimum specification in accordance with which the activity must be performed; and

- (c) specify the amount of greenhouse gases (expressed in tonnes of carbon dioxide equivalent) taken to be saved if the activity is undertaken; and
 - (d) set out the fact that the amount of greenhouse gases deemed to be saved for the purpose of meeting a target under these regulations is the amount specified under paragraph (c) at the time at which the energy efficiency activity was undertaken; and
 - (e) specify such other matters (whether similar or dissimilar to those referred to above) as the Minister or the Commission considers relevant.
- (6) The Commission may, by notice in the Gazette, vary or revoke a determination made under this regulation after taking into account any requirements set by the Minister.

33—Retailers may enter into arrangements

- (1) If a retailer accrues an energy credit, the retailer may, at any time, transfer the credit to another retailer.
- (2) A retailer may enter into an arrangement with another person (including another retailer) for that person to undertake either or both of the following:
 - (a) energy audits;
 - (b) energy efficiency activities.
- (3) Despite any arrangement entered into under subregulation (2), a retailer remains liable for any offence or penalty arising from a failure to meet its ELEAT, EGRT or a PGGRT under this Part.

34—Compliance and reporting

- (1) A retailer must, as required from time to time by the Commission, submit to the Commission a compliance plan for the purposes of this Part in accordance with a code published by the Commission under Part 4 of the *Essential Services Commission Act 2002*.
- (2) A retailer must, as required from time to time by the Commission, report on compliance with this Part in accordance with a code published by the Commission under Part 4 of the *Essential Services Commission Act 2002*.
- (3) A code published under this regulation must comply with any requirements set by the Minister.

35—Energy efficiency shortfalls

- (1) For the purposes of section 94B of the Act, a **relevant electricity retailer** is a retailer who is subject to the application of this Part (including on account of regulation 29(4), 30(5) or 31(4)).
- (2) For the purposes of section 94B(13)(a) of the Act, the requirements imposed under this Part on a retailer—
 - (a) to undertake energy audits under regulation 29; and
 - (b) to undertake energy efficiency activities under regulation 30; and
 - (c) to undertake energy efficiency activities for priority group households under regulation 31,

constitute the activities relating to energy efficiency in which a relevant electricity retailer must engage, and for the purposes of that section the retailer must engage in those activities to the extent necessary to achieve compliance with regulation 29(2), 30(2) or 31(2) (as the case requires).

- (3) For the purposes of section 94B(13)(b) of the Act, the extent of an energy efficiency shortfall with respect to a particular year—
 - (a) will be determined in relation to each of the activities referred to in each of the paragraphs in subregulation (2); and
 - (b) will be as follows:
 - (i) in relation to energy audits under regulation 29—an amount equal to the energy audit shortfall that applies to the retailer for that year;
 - (ii) in relation to energy efficiency activities under regulation 30—an amount equal to the greenhouse gas reduction shortfall that applies to the retailer for that year;
 - (iii) in relation to energy efficiency activities for priority group households under regulation 31—an amount equal to the greenhouse gas reduction shortfall for priority group households that applies to the retailer for that year.
- (4) For the purposes of section 94B(2)(a) of the Act, the prescribed base penalty is \$10 000 for each category of shortfall identified under subregulation (3).
- (5) For the purposes of subsection (2)(b) of section 94B of the Act, the amount payable under that subsection will be—
 - (a) in the case of a REES shortfall under subregulation (3)(b)(i)—the number of energy audits constituting the energy audit shortfall multiplied by \$500;
 - (b) in the case of a REES shortfall under subregulation (3)(b)(ii)—the number of tonnes of carbon dioxide equivalent constituting the greenhouse gas reduction shortfall multiplied by \$70;
 - (c) in the case of a REES shortfall under subregulation (3)(b)(iii)—the number of tonnes of carbon dioxide equivalent constituting the greenhouse gas reduction shortfall for priority group households multiplied by \$70.

36—Review

- (1) The Minister must cause a review of the operation of this Part to be conducted and a report on the results of the review to be submitted to the Minister before 31 December 2013.
- (2) The review must consider whether the scheme should continue and any other matter the Minister considers should be considered in the review.
- (3) The Minister must, within 12 sitting days after receiving the report, cause copies of the report to be laid before both Houses of Parliament.

37—Expiry

This Part will expire on 31 December 2014.

Part 5—System controller

38—Functions and powers of system controller

- (1) Pursuant to section 31 of the Act, the functions of a system controller for a power system operated in the National Electricity Market are limited to the following:
 - (a) when required to do so under the *National Electricity (South Australia) Law* or any Act, giving appropriate directions to electricity entities that are engaged in the operation of the power system, or contribute electricity to, or take electricity from, the system, for the purposes of maintaining the system in, or restoring it to, a safe and reliable state of operation;
 - (b) functions or powers performed or exercised as an agent employed by, or pursuant to a contractual arrangement with, AEMO under the National Electricity Rules;
 - (c) when required to do so under the National Electricity Rules, under an agency or contractual arrangement of a kind referred to in paragraph (b) or under any other agreement—
 - (i) undertaking action to protect such parts of the transmission network as are necessary to maintain the security of the power system;
 - (ii) managing the interruption of, and coordinating the restoration of, loads placed on the power system;
 - (iii) taking specified steps to restore the power system to a safe and reliable state of operation;
 - (iv) monitoring the operation of the power system with a view to ensuring that the system operates safely and reliably;
 - (v) maintaining voltage control throughout the power system;
 - (vi) shedding loads placed on the power system to the extent necessary during emergency situations.
- (2) A system controller for a power system operated in the National Electricity Market has all powers necessary for, or incidental to, the proper performance of the functions set out in subregulation (1).
- (3) In this regulation—

National Electricity Market means the market regulated by the *National Electricity Law*.

Part 6—Standard terms and conditions for sale or supply

39—Prescribed classes of customers

For the purposes of sections 23(1)(n)(iv) and 36(1) of the Act—

- (a) each customer whose annual electricity consumption level for a metered connection point equals or exceeds 160 MW.h is a customer of a prescribed class in relation to electricity supply to the customer through the connection point;

- (b) each customer whose annual electricity consumption level for a metered connection point equals or exceeds 30 MW.h but is less than 160 MW.h is a customer of a prescribed class in relation to electricity supply to the customer through the connection point;
- (c) each customer whose annual electricity consumption level for a metered connection point is less than 30 MW.h is a customer of a prescribed class in relation to electricity supply to the customer through the connection point;
- (d) each customer to whom electricity must be supplied under a retailer of last resort requirement (see section 23(1)(n)(ix)) is a customer of a prescribed class in relation to electricity supply to the customer in accordance with the requirement.

Part 7—Special provisions relating to small customers

40—Interpretation

In this Part—

business day means a day other than a Saturday, Sunday or public holiday;

default contract means a retail contract under which an electricity entity to which section 36AB of the Act applies sells electricity at the entity's default contract price and subject to the entity's default contract terms and conditions;

default contract price and **default contract terms and conditions** have the same respective meanings as in section 36AB of the Act;

excluded area means an area—

- (a) that is not served by the same continuous network for the transmission and distribution of electricity that serves Adelaide; or
- (b) that is for the time being determined by the Minister to be an excluded area;

market contract means a retail contract other than a standing contract or default contract;

standing contract means a retail contract under which an electricity entity to which section 36AA of the Act applies sells electricity at the entity's standing contract price and subject to the entity's standing contract terms and conditions;

standing contract price and **standing contract terms and conditions** have the same respective meanings as in section 36AA of the Act.

41—Exemption from standing contract condition

An electricity entity to which section 36AA of the Act applies is exempt from the application of subsection (2) of that section in relation to the sale of electricity to be supplied through a particular connection point if—

- (a) the connection point is situated within an excluded area; or
- (b) the customer is bound to receive electricity supply through the connection point under a market contract.

42—Provisions relating to default contracts

- (1) If a person receives electricity supply through a connection point otherwise than under a retail contract—
 - (a) that person; and
 - (b) the electricity entity that was last a party to a retail contract in relation to that connection point,

become parties to a default contract in relation to that connection point for the purposes of section 36AB(2) of the Act.
- (2) Subregulation (1) does not apply in relation to a connection point situated within an excluded area.
- (3) The default contract continues until—
 - (a) the customer becomes a party to a market contract or standing contract (whether with the same entity or some other electricity entity) in relation to the connection point; or
 - (b) some other person becomes a party to a retail contract in relation to the connection point.
- (4) On the electricity entity becoming aware that it has become a party to the default contract, the entity must, within 5 business days, give the customer a written notice setting out the terms and conditions of the default contract and describing, in general terms, the other contractual options that may be available to the customer for the purchase of electricity.
- (5) The electricity entity must, in giving notice under subregulation (4), comply with any requirements imposed by a code made by the Commission under the *Essential Services Commission Act 2002*, relating to the contents of the notice or the manner in which the notice is to be given.
- (6) For the purposes of paragraph (b) of the definition of *default contract price* in section 36AB(3) of the Act, the prescribed period is—
 - (a) if the price fixed as the default contract price by the entity by the notice referred to in that paragraph is the same as the price that will be in force as the standing contract price (whether or not for the same entity) 14 days from the date of publication of that notice—14 days; or
 - (b) in any other case—28 days.

Part 8—Electricity entities' powers and duties

43—Carrying out certain work on public land

- (1) For the purposes of section 47(5) of the Act, prior notice and agreement are not required under section 47(3) of the Act for—
 - (a) work in an emergency; or
 - (b) maintenance or repairs of existing electricity infrastructure, including any necessary excavation or removal of obstructions; or

- (c) minor works to connect electricity supply from a transmission or distribution network to an electrical installation or proposed electrical installation.
- (2) For the purposes of section 47(6) of the Act, agreement is not required under section 47(3) of the Act for—
- (a) erection of padmount transformers and switching cubicles in connection with the installation of underground lines; or
 - (b) installation or relocation of electricity infrastructure as a part of road reconstruction; or
 - (c) alterations or additions to existing electricity infrastructure not involving any significant enlargement of the area of public land occupied by the infrastructure or any significant change in appearance; or
 - (d) relocation of a pole or supporting structure in an existing electricity cable system.

Part 9—Undergrounding of powerlines

44—Prescribed amount for undergrounding work

For the purposes of section 58A(3) of the Act, the amount is—

- (a) for the financial year 2011/2012—\$6.093 million;
- (b) for each subsequent financial year—the amount determined by the Minister in accordance with the following formula:

$$A = \left[\$6.093 \text{ million} \times \frac{CPI_x}{CPI_1} \right] + \left[\frac{A_x}{TC_x} \times GST_x \right]$$

where—

CPI_x is the Consumer Price Index, All Groups Index Number (All Cities) published by the Australian Bureau of Statistics, for the March quarter preceding the financial year concerned;

CPI₁ is the Consumer Price Index, All Groups Index Number (All Cities) published by the Australian Bureau of Statistics, for the March quarter 2011;

A_x is the amount (in dollars) determined by the Minister under this regulation for the purposes of section 58A(3) of the Act for the previous financial year;

TC_x is the total cost (in dollars) of the undergrounding work undertaken in the previous financial year in accordance with programs prepared under section 58A of the Act;

GST_x is the amount (in dollars) determined by the Minister as being the total GST (within the meaning of the *A New Tax System (Goods and Services Tax) Act 1999* of the Commonwealth, as amended from time to time) paid in respect of all undergrounding work undertaken in the previous financial year in accordance with programs prepared under section 58A of the Act.

Part 10—Safety and technical issues

Division 1—Safety and technical requirements

45—Purpose of Division

The requirements contained in this Division and related Schedules are safety or technical requirements for the purposes of sections 59 and 60 of the Act.

46—Quality of electricity supply

The operator of a distribution network must ensure that the network is designed, constructed, operated and maintained so that at a customer's point of supply—

- (a) the voltage is as set out in AS 60038; and
- (b) the voltage fluctuations that occur are contained within the limits set out in Parts 3.3 and 3.5 of AS/NZS 6100 or Part 4 of AS 2279 (as in force immediately before it was superseded); and
- (c) the harmonic voltage distortions do not exceed the values set out in Part 3.2 of AS/NZS 6100 or Part 2 of AS 2279 (as in force immediately before it was superseded).

47—General requirements for electricity infrastructure

- (1) No circuit in electricity infrastructure may be allowed to remain in service unless every part of the circuit functions in a safe manner.
- (2) Each active conductor of a high voltage powerline or other high voltage equipment must be protected by an automatic disconnecting device.
- (3) Metal components of electricity infrastructure not normally conducting electricity that may become energised must be connected to earth.
- (4) Electricity infrastructure must be adequately protected against earth faults.

48—Aerial lines

- (1) Aerial lines (including service lines) must be designed, installed, operated and maintained to be safe for the electrical service conditions and the physical environment in which they will operate.
- (2) Without limiting the effect of subregulation (1), line construction in a bushfire risk area must be suitable for the levels of hazard in the area.
- (3) Schedule 1 applies in relation to aerial lines (including service lines) installed after 1 July 1997.

49—Underground lines

- (1) Underground lines (including service lines) must be designed, installed, operated and maintained to be safe for the electrical service conditions and the physical environment in which they will operate.
- (2) Schedule 2 applies in relation to underground lines (including service lines) installed after 1 July 1997.

50—Powerlines other than aerial or underground lines

- (1) Powerlines, other than aerial lines or underground lines, must be designed, installed, operated and maintained to be safe for the electrical service conditions and the physical environment in which they will operate.
- (2) Schedule 2 (other than clauses 6, 7 and 9) applies in relation to such powerlines installed after 1 July 1997 in the same way as to underground lines.

51—Substations

- (1) Substations must be designed, installed, operated and maintained to be safe for the electrical service conditions and the physical environment in which they will operate.
- (2) Schedule 3 applies in relation to substations installed after 1 July 1997.

52—Earthing and electrical protection systems

- (1) Earthing and electrical protection systems must be designed, installed, operated and maintained to safely manage abnormal electricity network conditions likely to significantly increase the risk of personal injury or significant property damage.
- (2) Schedule 4 applies in relation to earthing and electrical protection systems installed after 1 July 1997.

53—Electrical installations

- (1) Electrical installations must comply with AS/NZS 3000 and any other Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000.
- (2) Despite any other regulation—
 - (a) aerial lines, underground lines or other powerlines; and
 - (b) earthing and electrical protection systems,

that form part of an electrical installation and that comply with AS/NZS 3000 and any other Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000, will be taken to comply with these regulations.

54—Connection testing and inspection procedures

- (1) For the purposes of section 59(1b)(b), (1d)(d) and (1g)(b) of the Act, electricity supply from a transmission or distribution network must not be connected to an electrical installation unless the connection testing and inspection procedures of the operator of the network have been complied with.
- (2) The connection testing and inspection procedures of a network operator relating to the connection of electricity supply from powerlines designed to operate at a voltage of less than 11 kV must be procedures that have been approved by the Technical Regulator.
- (3) For the purposes of section 59(1g)(a) of the Act, the work of installing or replacing a meter, or examinations and tests relating to such work, must be carried out in accordance with the technical installation rules of the operator of the transmission or distribution network to which the meter is connected.

- (4) A person who personally carries out the work of connecting electricity supply from a transmission or distribution network to an electrical installation must—
- (a) make and sign a written record that—
 - (i) specifies the place and date at which the work has been carried out and sets out the person's full name; and
 - (ii) states that the person has complied with the connection testing and inspection procedures of the network operator relating to the work; and
 - (b) provide the record—
 - (i) to the network operator; or
 - (ii) in the case of work carried out on behalf of a prescribed person (as defined in section 59 of the Act) other than the network operator, to that prescribed person.

Maximum penalty: \$2 500.

Expiation fee: \$210.

- (5) A network operator or other prescribed person who receives a record referred to in subregulation (4) must keep the record for at least 2 years.

Maximum penalty: \$2 500.

Expiation fee: \$210.

55—General requirements for electrical installation

- (1) For the purposes of section 60(1) of the Act, an electrical installation must be designed, installed, operated and maintained so as to comply with any applicable requirements of—
- (a) in all cases—AS/NZS 3000 and any Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000; and
 - (b) if the installation is, or is to be, connected to a distribution network—the technical installation rules of the operator of the network.
- (2) A certificate of compliance issued for the purposes of section 60(2) of the Act may only be relied upon if the certificate of compliance—
- (a) certifies that the electrical installation to which the certificate relates complies with any applicable requirements set out in AS/NZS 3000 and any Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000; and
 - (b) is issued by a registered electrical worker.
- (3) The following requirements apply to a certificate of compliance issued under this regulation:
- (a) a copy of the certificate of compliance must be provided within 30 days after the issue of the certificate to the person who requested the certificate;

- (b) if the worker signing the certificate was employed or engaged to carry out the work or examinations and tests related to the issue of the certificate (whether or not together with other work or examinations and tests on the installation) by a licensed electrical contractor or licensed building work contractor, that contractor, or a person who has or had a supervisory role in relation to the worker and who is acting as a duly authorised agent of the contractor, must, being satisfied that the electrical installation to which the certificate relates complies with any requirements referred to in subregulation (2), also complete and sign the certificate in accordance with the directions contained in it.

Division 2—Certain electrical installation work

56—Certain electrical installation work and certificates of compliance

- (1) The following provisions apply for the purposes of section 61(1) of the Act:
 - (a) work on an electrical installation or proposed electrical installation that is work of any kind referred to in AS/NZS 3000 or another Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000 must be carried out, and the installation must be examined and tested—
 - (i) in accordance with AS/NZS 3000 and any Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000 and so that the installation complies with any other technical and safety requirements under these regulations; and
 - (ii) in accordance with the technical installation rules of the operator of the distribution network to which the installation is or is to be connected;
 - (b) the registered electrical worker personally carrying out the work and any examinations and tests must, when satisfied that the work has, and any examinations and tests have, been carried out in accordance with the standards and requirements referred to in paragraph (a) and before the installation is made available for energisation, complete and sign a certificate of compliance to that effect;
 - (c) if the worker signing the certificate was employed or engaged to carry out the work or examinations and tests (whether or not together with other work or examinations and tests on the installation) by a licensed electrical contractor or licensed building work contractor, that contractor, or a person who has or had a supervisory role in relation to the worker and who is acting as a duly authorised agent of the contractor, must, being satisfied that the standards and requirements referred to in paragraph (a) have been complied with in relation to the work or examinations and tests, also complete and sign the certificate in accordance with the directions contained in it;
 - (d) if the work is associated with the making of a connection to a transmission or distribution network, a copy of the certificate (completed and signed in accordance with paragraphs (b) and (c)) must be furnished to the operator of the network before the energisation of the work or a part of the work;

- (e) if the work was, or examinations and tests were, carried out on behalf of the owner or occupier of the premises concerned (whether under a contract or arrangement made directly between the owner or occupier and the person to whom section 61(1) of the Act applies, under a subcontract or otherwise), a copy of the certificate (completed and signed in accordance with paragraphs (b) and (c)) must be furnished to the owner or occupier within 30 days after the installation was made available for energisation;
 - (f) a copy of the certificate (completed and signed in accordance with paragraphs (b) and (c)) must be kept at the business premises of the person to whom section 61(1) of the Act applies or, if that person does not have business premises, at that person's residence for at least 5 years after the installation was made available for energisation.
- (2) A certificate of compliance may not be relied on by an owner or operator of an electrical installation under section 60(2) of the Act if the certificate has been issued in relation to the installation by a registered electrical worker who is an employee of the owner or occupier.

57—Certificates of compliance—official forms

- (1) A certificate of compliance issued under this Part must be completed using only an official form published or produced under the authority of the Technical Regulator.
- (2) If a licensed electrical contractor, licensed building work contractor or registered electrical worker acquires a book of official forms that have been published or produced under the authority of the Technical Regulator for use by that person as certificates of compliance for the purposes of this Part, the contractor or worker must ensure that notice of the contractor's or worker's acquisition of the book of forms is given to the Technical Regulator in accordance with the directions of the Technical Regulator, as set out in the book of forms.

Maximum penalty: \$750.

Expiation fee: \$105.

58—Prescribed work (section 61(4))

- (1) For the purposes of section 61(4) of the Act, work of a kind referred to in AS/NZS 3000 or any other Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000 is prescribed.
- (2) For the purposes of section 61(4) of the Act, work on an electrical installation or proposed electrical installation that is work of a kind prescribed by subregulation (1) must be carried out—
 - (a) in accordance with AS/NZS 3000 and any other Australian Standard or Australian/New Zealand Standard called up by AS/NZS 3000; and
 - (b) in accordance with the technical installation rules of the operator of the distribution network to which the installation is or is to be connected.

Division 3—Safeguarding persons working with conductors or electrical equipment

Subdivision 1—General

59—Basic safety principle

Persons engaging or preparing to engage in work on or near electricity infrastructure or an electrical installation must treat exposed conductors as live until they are—

- (a) isolated from all sources of electricity supply and proved to be de-energised; and
- (b) if they are high voltage conductors—earthed.

60—Compliance with provisions of Division

- (1) Persons carrying out work on or near electricity infrastructure or an electrical installation must comply with the provisions of this Division.
- (2) Electricity infrastructure operators, electrical installation operators and employers must ensure compliance with the provisions of this Division with respect to their employees and contractors.

Subdivision 2—Work on or near live electric conductors or electrical equipment

61—Application of Subdivision

This Subdivision applies to work carried out—

- (a) in proximity to exposed live high or low voltage conductors, exposed live parts of high or low voltage electrical equipment or other conductors or electrical equipment; or
- (b) by direct contact with exposed live high or low voltage conductors or exposed live parts of high or low voltage electrical equipment; or
- (c) on de-energised exposed conductors or exposed parts of electrical equipment if there is a possibility of the conductors or parts becoming live,

unless the work is necessary to avoid a possible danger to life or serious personal injury.

62—Safe work practices

All reasonable steps must be taken to ensure safety in work to which this Subdivision applies through—

- (a) the provision of suitable protection from adjacent live electrical conductors or adjacent live parts of electrical equipment; and
- (b) the use of insulated tools and equipment; and
- (c) the use of equipment and plant designed and made in accordance with recognised electricity industry practice; and
- (d) the use of safe work practices.

63—Work involving danger of direct contact with live conductors etc

In the case of work involving a danger of accidental direct contact with exposed live conductors or exposed live parts of electrical equipment—

- (a) the work must only be carried out by a person who is competent and qualified to carry out the work; and
- (b) except where the contrary is shown by reference to generally accepted industry practices or the particular circumstances of the case, it will be presumed that safe work practices require the person to carry out the work with a competent assistant suitably trained in the work and—
 - (i) in resuscitation; and
 - (ii) in releasing persons from live electrical apparatus; and
 - (iii) if appropriate, in rescuing persons from poles, structures, elevated work platforms or confined spaces.

64—Work in proximity to conductors etc

- (1) Work must not be carried out in proximity to conductors or electrical equipment unless—
 - (a) it is carried out—
 - (i) by a person who is suitably trained and qualified for such work beyond the approach limits set out in this regulation for such persons; or
 - (ii) by a person who has been instructed in the identification of high and low voltage overhead conductors and the safety aspects of work near live powerlines beyond the approach limits set out in this regulation for such persons; and
 - (b) it is carried out beyond the approach limits set out in this regulation that are applicable in the circumstances.
- (2) However, a person may work within the approach limits if—
 - (a) the work can be carried out safely in any of the following circumstances:
 - (i) there are installed suitable barriers or earthed metal shields between the person carrying out the work and the conductors or electrical equipment;
 - (ii) the work to be carried out is testing of equipment and the equipment is designed such that the approach limits cannot be complied with;
 - (iii) the work to be carried out is earthing of the conductors or equipment and is carried out after the conductors have been isolated and proved to be de-energised; and
 - (b) written instructions have been given, either generally or in a particular case, about the work and the precautions to be taken.

- (3) For the purposes of this regulation, the approach limits for a person, including an article of clothing worn by a person, or a conductive object held or carried by the person, are set out below—

Voltage of conductor or equipment	Approach limit A	Approach limit B	Approach limit C	Approach limit D
	(Distance in metres)			
Insulated aerial line, not more than 1 000 V	0.6	0.1	0	0
Not more than 1 000 V	3.0	1.0	0.3	0
More than 1 000 V but not more than 11 kV	3.0	2.0	0.6	0.3
More than 11 kV but not more than 33 kV	3.0	3.0	0.9	0.45
66 kV	4.0	4.0	1.4	0.7
132 kV	5.0	5.0	2.4	1.2
275 kV	6.0	6.0	4.0	2.0

where—

- (a) approach limit A applies to a person to whom none of approach limits B, C or D applies;
 - (b) approach limit B applies to a person who has conducted a risk assessment before carrying out the work;
 - (c) approach limit C applies to a person who has been instructed in the identification of high and low voltage overhead conductors and the safety aspects of work near live powerlines and who has conducted a risk assessment before carrying out the work;
 - (d) approach limit D applies to a person suitably qualified and trained to work in proximity to exposed high and low voltage conductors or exposed parts of high and low voltage electrical equipment and who has conducted a risk assessment before carrying out the work.
- (4) In this regulation—

risk assessment, in relation to work to which this regulation applies, means an assessment of the risks involved in carrying out the work, taking into account the potential for movement of tools, materials and structures during the work.

Subdivision 3—Work on or near exposed high voltage conductors or electrical equipment

65—Work above exposed high voltage conductors etc

Work must not be carried out and equipment must not be positioned above exposed high voltage conductors or exposed parts of high voltage electrical equipment unless the work or positioning of the equipment is authorised in writing by the operator of the electricity infrastructure or electrical installation concerned.

66—Work by direct contact with exposed high voltage conductors etc

- (1) Work must not be carried out by direct contact with exposed high voltage conductors or exposed parts of high voltage electrical equipment unless the exposed high voltage conductors or exposed parts of high voltage electrical equipment are—
 - (a) isolated, and shown by testing to be isolated, from all sources of electricity supply; and
 - (b) earthed.
- (2) If any such conductor or equipment cannot be directly contacted to prove isolation from all sources of electricity supply, it is sufficient if—
 - (a) written instructions have been given for the isolation of the conductor or equipment from all sources of electricity supply; and
 - (b) the conductor or equipment is earthed by a lockable earthing switch designed to be safely operated if the high voltage conductor or equipment has not been isolated from all sources of supply.

67—Live high voltage line work

- (1) Electrical work on exposed live high voltage conductors or exposed live parts of high voltage electrical equipment (*live line work*) must not be carried out unless authorised in writing by the operator of the electricity infrastructure or electrical installation on which the work will be carried out.
- (2) An electricity infrastructure operator or electrical installation operator may authorise a person to carry out live line work if satisfied the person—
 - (a) has successfully finished a course of training approved by the Technical Regulator and provided by a training provider approved by the Technical Regulator; and
 - (b) has been assessed by the training provider as competent to carry out the work.
- (3) The voltage of the powerlines on which live line work is carried out must be as stated by the relevant operator in the authorisation.
- (4) The relevant operator must take reasonable steps to satisfy itself as to the continuing competency of a person authorised by the operator to carry out live line work.

Subdivision 4—Miscellaneous**68—Rescue and resuscitation training**

Persons required to carry out, or help in carrying out, electrical work must be suitably trained in rescue and resuscitation in accordance with the requirements of the Technical Regulator.

69—Suitability of testing instruments

If tests are required to be performed on electricity infrastructure, an electrical installation or safety equipment under the Act—

- (a) the testing instruments used must be designed for and capable of correctly performing the required tests; and

- (b) each testing instrument must be tested and calibrated to ensure it is in proper working order; and
- (c) the records of tests performed on testing instruments must be kept for at least 2 years.

Division 4—Reporting and investigation of accidents

70—Reporting of accidents

- (1) For the purposes of section 63 of the Act, a report must be made to the Technical Regulator of the details of the accident—
 - (a) in the case of a death resulting from the accident—immediately by telephone;
 - (b) in the case of a person requiring medical assistance resulting from the accident—within 1 working day of the accident;
 - (c) in any other case—within 10 working days of the accident.
- (2) An electricity entity or person who is required to report an accident in accordance with section 63 of the Act must provide the Technical Regulator with such further details of the accident as the Technical Regulator reasonably requires.
- (3) An electricity entity that operates a transmission or distribution network must—
 - (a) promptly investigate any accident that involves electric shock or electrical burns that may have been caused by the operation or condition of the transmission or distribution network or an electrical installation connected to the network and report the results of the investigation to the Technical Regulator in the form, and containing the details, required by the Technical Regulator; and
 - (b) comply with any direction given by the Technical Regulator relating to the investigation of an accident to which section 63 of the Act relates, including a direction to conduct such examinations and tests as are required by the Technical Regulator.
- (4) If in the course of an investigation under subregulation (3) it is determined that the electric shock or electrical burns were caused by an electrical installation connected to the network, the electricity entity must report that result to the Technical Regulator and need not proceed further with the investigation.

Division 5—Safety, reliability, maintenance and technical management plans and reports

71—Application of Division

- (1) This Division applies to a licensee holding a licence authorising the generation of electricity or the operation of a transmission or distribution network or a person exempted from the requirement to hold such a licence.
- (2) However, the Technical Regulator may grant an exemption from this Division, or specified provisions of this Division, on terms and conditions the Technical Regulator considers appropriate.

72—Safety, reliability, maintenance and technical management plans

- (1) A person to whom this Division applies who is exempted from the requirement to hold a licence must, if so required by the Technical Regulator by notice in writing—
 - (a) prepare, maintain and periodically revise a safety, reliability, maintenance and technical management plan dealing with matters prescribed by subregulation (2);
 - (b) obtain the approval of the Technical Regulator to the plan and any revision;
 - (c) comply with the plan as approved from time to time;
 - (d) audit from time to time the person's compliance with the plan and report the results of those audits to the Technical Regulator.
- (2) For the purposes of sections 22(1)(c) and 23(1)(c) of the Act, the following are matters that must be dealt with by a safety, reliability, maintenance and technical management plan:
 - (a) the safe design, installation, commissioning, operation, maintenance and decommissioning of electricity infrastructure owned or operated by the person;
 - (b) the maintenance of a supply of electricity of the quality required to be maintained by or under the Act, these regulations, the person's licence or the conditions of any exemption granted to the person;
 - (c) the implementation and conduct of safety measures and training programs for the purpose of—
 - (i) reducing the risk of death or injury, or damage to property, arising out of the operation of electricity infrastructure owned or operated by the person;
 - (ii) ensuring that employees performing work in respect of electricity infrastructure owned or operated by the person are competent and properly trained, perform their work safely and are provided with a safe system of work;
 - (d) ensuring that contractors performing work in respect of electricity infrastructure owned or operated by the person have processes and procedures for ensuring that the persons personally performing the work are competent and properly trained, perform their work safely and are provided with a safe system of work;
 - (e) the manner in which accidents and unsafe situations are to be dealt with, reported and investigated;
 - (f) monitoring compliance with safety and technical requirements imposed by or under the Act, these regulations, the person's licence or the conditions of any exemption granted to the person;
 - (g) monitoring electricity infrastructure owned or operated by the person for the purposes of identifying infrastructure that is unsafe or at risk of failing or malfunctioning;

- (h) monitoring and inspecting aerial lines owned or operated by the person in a bushfire risk area for the purpose of identifying risks posed by the aerial lines relating to bushfires;
 - (i) in the case of a person who operates a transmission or distribution network—
 - (i) monitoring compliance with requirements for vegetation clearance;
 - (ii) the communication of information to the public for the purpose of reducing the risk of death or injury, or damage to property, arising out of the operation of electricity infrastructure owned or operated by the person;
 - (iii) the communication of information to existing and potential customers about the facilities that customers must provide for connection to the network and procedures that customers must follow in order to prevent damage to or interference with the network.
- (3) A person to whom this Division applies must, at the request of the Technical Regulator, provide the Technical Regulator with such information and access to such officers, employees and contractors as the Technical Regulator reasonably requires for the purposes of determining whether a safety, reliability, maintenance and technical management plan prepared by the person is operating effectively and whether that person is complying with the plan.

73—Safety, reliability, maintenance and technical management reports

- (1) A person to whom this Division applies who operates a transmission or distribution network must, within 21 working days after the end of each month, lodge with the Technical Regulator a report—
- (a) stating in relation to each unplanned interruption to the supply of electricity during that month that—
 - (i) affected the supply of electricity to customers such that the aggregate of the periods for which the customers' supply was affected exceeded 120 000 minutes; or
 - (ii) affected for 30 minutes or more the supply of electricity to 1 or more customers with a demand of greater than 1 MVA,the following:
 - (iii) the date, time and cause of the interruption;
 - (iv) the number of customers affected by the interruption;
 - (v) the time taken to restore supply to all of the customers affected;
 - (vi) the time taken to restore supply to the majority of the customers affected;
 - (b) stating in relation to all unplanned interruptions to the supply of electricity during that month and in relation to each region as defined by the Technical Regulator—
 - (i) the aggregate of the periods for which customers' supply was affected by the interruptions; and

- (ii) the average time taken to restore supply to all of the customers affected.
- (2) Subregulation (1) does not apply in relation to—
 - (a) an interruption to the supply of electricity to a customer if the interruption was in accordance with an interruptible or curtailable supply contract with the customer; or
 - (b) an interruption to the supply of electricity to a customer that occurred at the request of the customer or that was caused by the customer; or
 - (c) an interruption that was rectified by an automatic supply restoration operation.
- (3) A person to whom this Division applies must, on or before 31 August in each year, lodge with the Technical Regulator a report relating to the previous financial year containing the following information:
 - (a) a general description of the circumstances in which electricity infrastructure owned or operated by the person has failed or malfunctioned or been found to be unsafe and of the action taken to rectify, or to prevent or minimise the risk or recurrence of, the failure, malfunction or unsafe situation;
 - (b) the total costs actually incurred to maintain, repair and replace electricity infrastructure owned or operated by the person, together with an estimate of the total costs likely to be incurred for those purposes in the financial year following that to which the report relates;
 - (c) whether the person has been able to comply with all aspects of the person's safety, reliability, maintenance and technical management plan and whether the person considers the plan to have been operating effectively.
- (4) However, this regulation only applies to a person who is exempted from the requirement to hold a licence to the extent specified by the Technical Regulator by notice in writing to the person.

Part 11—Cathodic protection systems

74—Application of Part

This Part does not apply to a cathodic protection system—

- (a) installed on any floating mobile structure, fishing equipment, fixed off shore structure (not connected with land above sea level) or internal surface of any apparatus, equipment or structure; or
- (b) using only galvanic anodes.

75—Tests before operating cathodic protection system

- (1) The person who owns or operates a cathodic protection system must ensure that it does not adversely affect the integrity or safety of any electricity infrastructure or supply system through corrosion.

- (2) The person who owns or operates a cathodic protection system that has an anode immersed in water or a marine environment must, within 90 days before starting to operate the system, perform tests to ensure that the potential difference between any 2 accessible points spaced 1 metre apart in the water or marine environment is not more than 3 V when the system is energised.

Part 12—Miscellaneous

76—Preparation, approval, publication and purchase of technical installation rules

The operator of a distribution network must—

- (a) prepare, maintain and periodically revise technical installation rules; and
- (b) obtain the approval of the Technical Regulator to the rules and any revision; and
- (c) publish the rules on an internet site to which the public has access free of charge; and
- (d) make copies of the rules available for purchase by the public for a reasonable fee (which must not exceed an amount fixed by the Commission).

77—Register of underground lines

- (1) An electricity entity authorised to operate a transmission or distribution network must keep and maintain a register describing the nature and location of each line installed underground that is under the control of the entity.
- (2) The transmission or distribution network operator in an area must be notified by any other electricity entity of the nature and location of any line installed underground in the area by that other entity and that information must be recorded in the register kept by the network operator under subregulation (1).
- (3) Information contained in the register must be made available on request by a member of the public during normal business hours.

78—Protection of underground lines

A person must not—

- (a) place or maintain, or cause to be placed or maintained, any corrosive, abrasive, heavy or deleterious material or substance above any underground line; or
- (b) carry out any operation on, or make any opening in, the ground surface that may endanger any underground line; or
- (c) remove, tamper with or cover any underground line marker,

without the written authority of the operator of the electricity infrastructure of which the line forms part.

79—Entangled objects

A person must not, without the authority of the operator of the electricity infrastructure or electrical installation, pull or interfere with any object resting on or entangled in electricity infrastructure or the electrical installation unless the action is reasonably necessary to prevent or reduce injury to a person or property.

80—Altering ground levels near infrastructure

- (1) A person must not, without the written authority of the electricity infrastructure operator—
 - (a) cut away, excavate or remove, or cause to be cut away, excavated or removed, earth or material supporting electricity infrastructure so as to endanger the stability of the infrastructure; or
 - (b) make an excavation deeper than 0.3 metre within 3 metres of—
 - (i) a pole structure or stand, not being a tower or tower structure supporting electricity infrastructure; or
 - (ii) any pole or bed log to which is affixed a staywire used to support electricity infrastructure; or
 - (c) make an excavation deeper than 0.5 metre within 10 metres of any tower or tower structure supporting electricity infrastructure; or
 - (d) make an excavation deeper than 0.3 metre within 0.6 metre of any wall, fence or foundation of a substation; or
 - (e) place any material, construct any artificial surface above ground level, smooth the ground or remove vegetation—
 - (i) below an electric line or within the vertical projection of any points to which a conductor of the electric line may sway; or
 - (ii) adjacent to electricity infrastructure,
in a manner that may—
 - (iii) in any case—alter the level of the ground at any place so as to infringe any permissible clearance distance under these regulations; or
 - (iv) in the case of smoothing of ground or removal of vegetation—allow the ground to be used in a manner that was not possible before the smoothing or removal.
- (2) The allowable depth of an excavation under subregulation (1) is, if the ground level unaffected by previous works is known, to be determined by reference to that level, but is otherwise to be determined by reference to the current ground level.

81—Erection of buildings in proximity to aerial lines

- (1) For the purposes of section 86 of the Act, a person must not, except as approved by the Technical Regulator, erect a building or structure in proximity to an aerial line as follows:
 - (a) in the case of an aerial line (other than a facade mounted line) constructed to operate at a voltage of more than 66 kV—

- (i) under the aerial line; or
 - (ii) so that the horizontal distance from any part of the building or structure to the centre-line of any such aerial line is less than the relevant distance as set out in Table 1 in Schedule 1;
- (b) in the case of an aerial line (other than a facade mounted line) or other cable system constructed to operate at a voltage of 66 kV or less—so that the vertical or horizontal distance from any part of the building or structure to any position to which a conductor in the aerial line or other cable system may sag at maximum design temperature, or move as a result of normal prevailing wind pressures, is less than the relevant distance as set out in Table 1 in Schedule 1.

Note—

The figures following Table 1 in Schedule 1 are to be used to assist in understanding the information contained in the Table.

- (2) Despite regulation 48(3), for the purposes of subregulation (1) the distances set out in Table 1 in Schedule 1 apply in relation to aerial lines whether installed before, on or after 1 July 1997.
- (3) The Technical Regulator may only approve the construction or reconstruction (including reconstruction in a different form) of a building or structure in proximity to an aerial line that is not situated on a public road and is constructed to operate at a voltage of more than 66 kV if—
- (a) the Technical Regulator has consulted with the entity responsible for the aerial line; and
 - (b) the Technical Regulator is satisfied that the entity will be able to access the aerial line if the building or structure is constructed or reconstructed.
- (4) The requirements of this regulation do not apply in relation to—
- (a) a fence, sign or notice that is less than 2.0 metres in height and is not designed for a person to stand on; or
 - (b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

82—Erection of buildings in proximity to underground lines

- (1) For the purposes of section 86 of the Act, a person must not, except as approved by the Technical Regulator, erect a building or structure—
- (a) above or below an underground powerline that forms part of a transmission or distribution network; or
 - (b) within the prescribed distance of an underground powerline that forms part of a transmission or distribution network measured from vertical planes extending above and below each outer edge of the conductor comprising the powerline or, in the case of a powerline that consists of more than 1 conductor, each outer edge of each outer conductor.
- (2) Before giving approval under subregulation (1), the Technical Regulator must consult with the electricity entity operating the underground powerline.

(3) In this regulation—

prescribed distance means—

- (a) in relation to an underground powerline designed to operate at a voltage of 33 kV or less—2 metres;
- (b) in any other case—3 metres.

83—Prohibition of certain activities in proximity to aerial lines and other cable systems

A person must not, without the written authority of the electricity infrastructure operator—

- (a) place or maintain any material closer than the relevant distance set out in Table 1 in Schedule 5 to any point to which an aerial line (including a service line) or other cable system may swing or sag; or
- (b) operate a machine, vehicle or vessel equipped with an elevating component or shear legs so that any part of the machine, vehicle, vessel or its load comes within the relevant distance set out in Table 2 in Schedule 5 to any point to which an aerial line (including a service line) or other cable system may swing or sag; or
- (c) attach or keep attached to electricity infrastructure any conductors of circuits or other cable system.

84—Erection of conductors or other cable systems so as to cross or be attached to existing aerial lines or their supports etc

(1) A person must not erect any conductors of circuits, or other cable system—

- (a) so as to cross the circuit of any existing aerial line, or other cable system (whether or not they are to be attached to the same support as the existing aerial line or other cable system); or
- (b) so as to be attached to the same support as, or share any portion of the same span as, any existing aerial line, or other cable system,

unless—

- (c) the clearances specified in the Energy Networks Association Limited *Guidelines for design and maintenance of overhead distribution and transmission lines* C(b)1, as published from time to time, will be achieved and maintained; and
 - (d) the reasonable operational requirements of the operator of the existing aerial line or other cable system will not be adversely affected; and
 - (e) the person has, before erecting the conductors of circuits, or other cable system, lodged detailed work proposals with the operator of the existing aerial line or other cable system and the operator has approved the proposals as indicating that the work would, if carried out in accordance with the proposals, meet the requirements of paragraphs (c) and (d).
- (2) The operator must, on receipt of detailed work proposals from the person (the *proponent*), consider the proposals and decide within a reasonable period whether or not to approve the proposals.

- (3) If the operator decides that the proposals should not be approved, the operator must, if requested to do so by the proponent—
 - (a) prepare written reasons for that decision; and
 - (b) provide the reasons to the proponent; and
 - (c) provide the reasons and the proponent's detailed work proposals to the Technical Regulator.
- (4) The Technical Regulator must, on receipt of the proponent's proposals and the operator's reasons, review the operator's decision.
- (5) If, on reviewing the operator's decision, the Technical Regulator decides that the proponent's proposals should be approved (with or without the imposition of conditions by the Technical Regulator), the proponent will be taken to have the approval required under subregulation (1)(e), subject to compliance with the conditions (if any) imposed by the Technical Regulator.
- (6) The Technical Regulator must allow the operator and the proponent a reasonable opportunity to make written or oral submissions before deciding on the review whether or not the proponent's proposals should be approved.

85—Placement of materials near supporting structures etc

A person must not, without the written authority of the electricity infrastructure operator, place or maintain any material closer than the relevant distance set out in Table 1 in Schedule 5 to electricity infrastructure consisting of supporting or protective structure or equipment for aerial lines.

86—Placement of materials, prohibition of burning, in proximity to substations

- (1) A person must not, without the written authority of the electricity infrastructure operator—
 - (a) place or maintain any timber or flammable material within 3 metres in any direction of a wall or fence surrounding a substation; or
 - (b) impede access to any door, gate or entrance of a substation or interfere in any way with the free flow of air through any openings or fittings used for ventilation in the walls of a substation; or
 - (c) —
 - (i) place or maintain any material adjacent to a wall or fence of a substation; or
 - (ii) plant or nurture vegetation near or adjacent to a wall or fence of a substation,so as to enable unauthorised access to the substation.
- (2) A person must not, without the written authority of the electricity infrastructure operator, burn any material in proximity to electricity infrastructure such that there is a risk of damage to the infrastructure or outages or flashovers.

87—Transportation

- (1) A person who drives a vehicle carrying a load or equipment on the vehicle or on any trailer attached to the vehicle that exceeds the height limit established under Part 4 of the *Road Traffic Act 1961* must ensure—
 - (a) that the distance between the load being transported and any aerial line along the route taken is greater than the relevant distance set out in Table 3 in Schedule 5; and
 - (b) that arrangements approved by the operator of the electricity infrastructure of which the aerial line is part have been made before, and are observed during, transportation.
- (2) The person must give written notice of the proposal to transport the load to the electricity infrastructure operator at least 3 clear business days before the commencement of the transportation with the notice clearly stating—
 - (a) the nature of the vehicle and the load; and
 - (b) the height and width of the load; and
 - (c) the date and the time of the proposed transportation; and
 - (d) the starting point and finishing point of the transportation; and
 - (e) the proposed route; and
 - (f) the name and contact address of the person; and
 - (g) that the person agrees to pay the reasonable costs that are incurred by the operator in considering the proposal, approving the transportation arrangements or facilitating the transportation; and
 - (h) any other particulars that the operator may in the circumstances require.
- (3) The electricity infrastructure operator may charge in advance or bring proceedings in a court of competent jurisdiction to recover as a debt the reasonable costs referred to in subregulation (2)(g).

88—Interference and obstruction

- (1) A person must not obstruct any road under the control of an electricity infrastructure operator or otherwise do anything to prevent or impede access to the electricity infrastructure.
- (2) A person must not interfere with or damage the surface of a road made by an electricity infrastructure operator that is used for the purposes of works.
- (3) An electricity infrastructure operator may, without notice to the owner, remove anything which causes or may cause a danger to people or property using or on the road.

89—Technical Regulator may grant exemption from Part 10, Part 11 or this Part

- (1) The Technical Regulator may grant an exemption from a specified provision or provisions of Part 10, Part 11 or this Part on terms and conditions the Technical Regulator considers appropriate.

- (2) An exemption under subregulation (1) may be varied or revoked by the Technical Regulator by notice in writing.

90—Exemption of operations associated with electrified railway and tramway

Electricity operations related to the construction, installation, alteration, maintenance or operation of—

- (a) aerial lines; and
- (b) underground lines; and
- (c) earthing and bonding; and
- (d) any other related electricity infrastructure, electrical installation or electrical equipment,

directly associated with an electrified railway and tramway are exempt from the application of Part 6 and section 86 of the Act.

91—Exemption of Techport Australia Common User Shipbuilding Facility operations

The Minister for State Development is exempt from the requirement to hold a licence under Part 3 of the Act in relation to the electricity operations carried out by or on behalf of the Minister at the Techport Australia Common User Shipbuilding Facility.

92—General penalty

A person who contravenes or fails to comply with a provision of these regulations for which a specific penalty is not provided is guilty of an offence.

Maximum penalty: \$5 000.

Expiation fee: \$315.

93—Fees for reinspection etc

- (1) A person to whom a direction has been given under section 62, 70 or 72 of the Act is liable to pay a fee of an amount equal to the reasonable costs of any reinspection or reattendance by an authorised officer for the purpose of ensuring compliance with the direction or approving reconnection of the electricity supply.
- (2) The Technical Regulator may recover a fee payable under subregulation (1) as a debt by action in a court of competent jurisdiction.

Schedule 1—Requirements for aerial lines

(regulation 48)

1—Interpretation

In this Schedule—

listed standards means the standards (both national and international), codes, guides and other documents, as published from time to time, listed in the Appendix at the end of this Schedule;

maximum design temperature means the maximum temperature that conductors may reach under the influence of load current (excluding fault current), ambient temperature of the air and solar radiation.

2—Design

Aerial lines must be designed so that the lines—

- (a) have safe levels of electrical insulation; and
- (b) will carry the electrical load currents for which they are designed without failure; and
- (c) will allow the passage of electrical short circuit currents which will enable the correct operation of protective devices; and
- (d) are structurally secure for the environmental and service conditions for which they are designed; and
- (e) maintain safe clearances,

so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

3—Materials

Aerial line structures, their components, conductors, cables and accessories must, so as to ensure safe operational performance, conform to the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

4—Thermal ratings

- (1) The thermal capacity of a conductor must be sufficient to pass the electrical load for which it is designed without losing any mechanical properties that would affect the safety of the line.
- (2) Thermal ratings of conductors must be determined in accordance with the guidelines set out in the listed standards.

5—Short circuit ratings

- (1) The conductors of aerial lines must be of sufficient size to pass short circuit currents so as to enable the correct operation of protective devices without losing any mechanical properties that would affect the safety of the line.
- (2) Short circuit capacity of conductors must be determined in accordance with the guidelines set out in the listed standards.

6—Mechanical loading conditions

- (1) The mechanical loads used for the design of aerial lines must be based on the local environment and electrical service conditions.
- (2) In determining electrical service conditions and the physical environment under which the line will operate, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.
- (3) Mechanical loading conditions must be determined in accordance with the guidelines set out in the listed standards.

7—Conductor tensions

- (1) The conductors for use with aerial lines must be designed to withstand the mechanical loads determined for their operation over the designed operational life of the line.
- (2) Conductors for lines must be designed so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

8—Structures and footings

- (1) The structures and footings for use with aerial lines must be designed to withstand the mechanical loads determined for their operation over the designed operational life of the line.
- (2) Structures and footings for lines must be designed so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

9—Facade mounted cables

- (1) Cables and accessories designed for facade mounting must be constructed with suitable insulated conductors and be manufactured to be durable for the environment and service conditions for which they are designed.
- (2) In determining electrical service conditions and the physical environment under which the line will operate, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.
- (3) Mechanical loading conditions must be determined in accordance with the guidelines set out in the listed standards.

10—Safety clearances

- (1) Aerial lines must be designed to maintain safety clearances to the ground and other buildings or structures under the environmental and electrical service conditions determined for the line.
- (2) In determining circuit arrangement, electrical service conditions and the physical environment under which the line will operate, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.
- (3) The environmental and electrical conditions for the determination of clearances to lines must be determined in accordance with the listed standards.
- (4) Aerial lines must be designed so that safety clearances are as follows:
 - (a) for an aerial line (other than a facade mounted line) constructed to operate at a voltage of 66 kV or less—so that the vertical or horizontal distance from any building or structure (other than a support to which the aerial line is attached or a support of another overhead line which crosses the aerial line) to any position to which a conductor in the aerial line may sag at maximum design temperature, or move as a result of normal prevailing wind pressures, is not less than the relevant distance as set out in Table 1;

Note—

The figures following Table 1 are to be used to assist in understanding the information contained in the Table.

- (b) for an aerial line (other than a facade mounted line) constructed to operate at a voltage of more than 66 kV—so that the horizontal distance from any building or structure (other than a support to which the aerial line is attached or a support of another overhead line which crosses the aerial line) to the centre-line of the aerial line is not less than the relevant distance as set out in Table 1;

Note—

The figures following Table 1 are to be used to assist in understanding the information contained in the Table.

- (c) for an aerial line (other than a service line, other cable system or aerial line within a substation)—so that the distance to the ground in any direction from a position to which any part of the aerial line may sag at maximum design temperature, or move as a result of normal prevailing wind pressures, is not less than the relevant distance as set out in Table 2;
 - (d) for a service line or other cable system—so that the distance to the ground in any direction from a position to which any part of the service line or cable system may sag at maximum design temperature, or move as a result of normal prevailing wind pressures, is not less than the relevant distance as set out in Table 3;
 - (e) for a facade mounted line—
 - (i) so that the distance from any part of the facade of the building which supports a line to any position to which the line may sag at maximum design temperature is not less than the relevant distance set out in Table 4;
 - (ii) where it is designed so the line is more than 0.3 m from the facade of the building supporting it—so that the requirements of paragraphs (a) and (d) are complied with.
- (5) The arrangement of and clearances between circuits, either attached to a common structure, unattached, in shared spans or crossing, must be designed to be safe for the environmental and electrical service conditions for which they are designed and so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.
- (6) Aerial lines operating at a voltage greater than 66 kV must not be installed above any building or structure.

11—Installation of aerial lines

Aerial lines must be installed in accordance with the guidelines set out in the listed standards.

12—Maintenance of aerial lines

- (1) Aerial lines, their structures and components must be maintained to be in a safe operating condition.

- (2) A system of maintenance must be instituted for aerial lines, their structures and their components, including—
 - (a) predetermined processes to confirm the safe state of components;
 - (b) managed replacement programs for components approaching the end of their serviceable life.
- (3) Maintenance programs must be carried out in accordance with the listed standards.

13—Tables

TABLE 1: Clearance distances between aerial lines (other than facade mounted lines) and buildings or structures

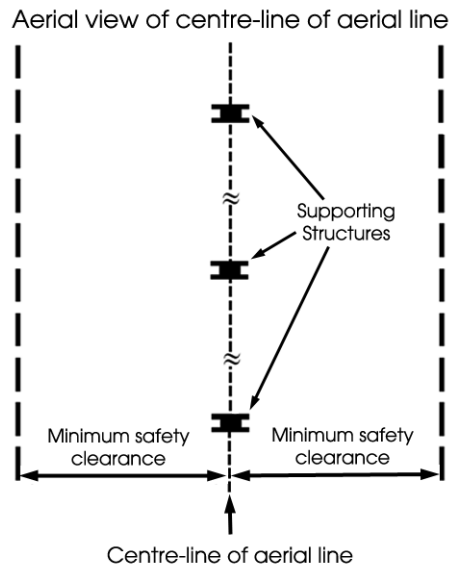
Direction	Distance measured from nearest conductor (in metres)							Distance measured from centre-line of aerial line (in metres)				
	U ≤ 1 000 V			U > 1 000 V		U > 1 000 V U ≤ 33 kV	U > 33 kV U ≤ 66 kV	U > 66 kV U ≤ 132 kV	U > 132 kV U ≤ 275 kV	U > 275 kV U ≤ 330 kV	U > 330 kV U ≤ 500 kV	
	Insulated	Bare		Insulated		Bare or covered	Bare	Bare		Bare	Bare	
	neutral	active	with earthed screen	without earthed screen			single pole	other				
Vertically above those parts of a building or structure normally accessible to persons (A)	2.7	2.7	3.7	2.7	3.7	5.5	6.7	N/A	N/A	N/A	N/A	N/A
Vertically above those parts of a building or structure not normally accessible to persons but on which a person can stand (B)	0.1	2.7	2.7	2.7	2.7	4.7	5.5	N/A	N/A	N/A	N/A	N/A
Horizontally from those parts of a building or structure normally accessible to persons or that is not normally accessible to persons but on which a person can stand (C)	0.1	0.9	1.5	1.5	1.5	3.1	5.5	15.0	20.0	25.0	30.0	38.0
In any direction from those parts of a building or structure not normally accessible to persons (D)	0.1*	0.3*	0.6*	0.1	0.6	2.5	4.5	15.0	20.0	25.0	30.0	38.0
In any direction from ground	Refer to Table 2 or 3					Refer to Table 2						

* This clearance can be further reduced to allow for termination at the point of attachment.

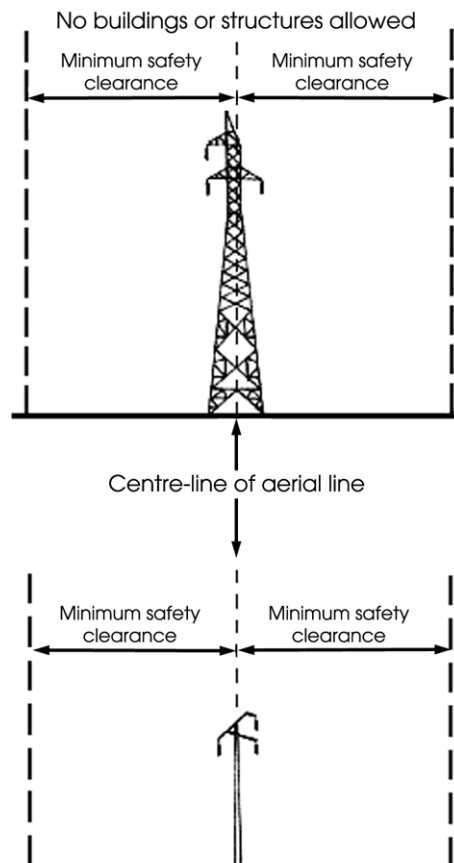
Table 1 figures—

- (1) Figures (a) and (b) will assist in understanding the required minimum safety clearance for aerial lines constructed to operate at a voltage of more than 66 kV.
- (2) Figure (c) will assist in understanding the required minimum safety clearance for aerial lines constructed to operate at a voltage of 66 kV or less (that is, minimum safety clearance from nearest conductor (maximum swing and sag)).

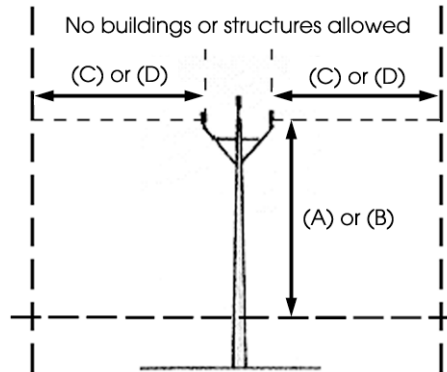
(a)



(b)



(c)



Vertical dimension (A) applies for example to:

- Balconies
- Terraces
- Walkways
- Bridges
- Scaffolds

Horizontal dimension (C) applies to the same as (A) and (B)

Vertical dimension (B) applies in relation to things such as:

- Roofs with a slope of less than 45°
- Parapets wider than 0.1 m
- Pergolas
- Carports

Horizontal dimension (D) applies in relation to things such as:

- Roofs with a slope of 45° or more
- Poles
- Light Poles

TABLE 2: Clearance distance for aerial lines (excluding service lines, other cable systems and aerial lines within substations)

Nominal system voltage (U)	Clearance distance (in metres)		
	Over carriageway of road	Over land other than carriageway of road	Over land not traversable by vehicles
Bare or insulated conductor $U \leq 1 \text{ kV}$	5.5	5.5	4.5
Insulated conductor with earthed screen $U > 1 \text{ kV}$	5.5	5.5	4.5
Insulated conductor without earthed screen $U > 1 \text{ kV}$	6.0	5.5	4.5
Bare or covered conductor $1 \text{ kV} < U \leq 33 \text{ kV}$	6.7	6.0	4.5
$33 \text{ kV} < U \leq 132 \text{ kV}$	6.7	6.7	5.5
$132 \text{ kV} < U \leq 275 \text{ kV}$	7.5	7.5	6.0
$275 \text{ kV} < U \leq 330 \text{ kV}$	8.0	8.0	6.7
$330 \text{ kV} < U \leq 500 \text{ kV}$	9.0	9.0	7.5

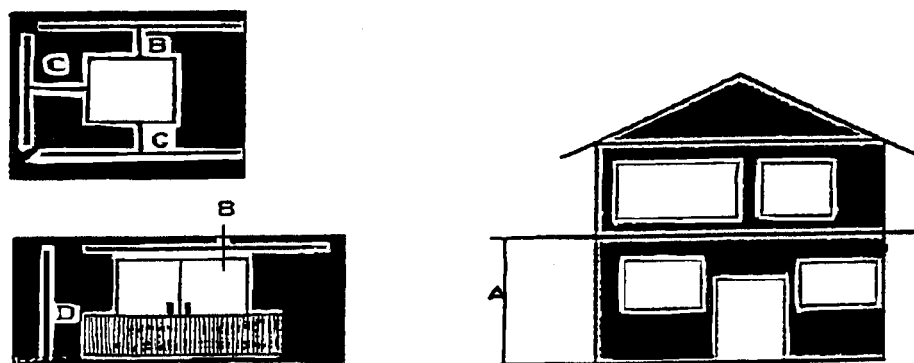
TABLE 3: Clearance distances for aerial service lines and other cable systems

Location of line	Clearance distance (in metres)
Over a road or part of a road specified by the Technical Regulator as being a preferred route for vehicles with loads exceeding the height restrictions under Part 4 of the <i>Road Traffic Act 1961</i>	6.5
Over any part of a main road within the meaning of the <i>Highways Act 1926</i>	5.5
Over the centre of each carriageway of a public road	5.5
Over any other part of a road	4.6
Over any part of a driveway	3.0
Elsewhere	2.7

TABLE 4: Facade mounted lines

	Facade situation	Clearance distances (in metres)
A	Clearance vertically from ground at footway level	2.5*
B	Above windows and doors	0.3*
C	Each side and below windows	0.5*
D	Each side of doors and balconies	1.0*
E	From metallic parts of buildings eg downpipes	0.05*
* This clearance may be reduced based on a proper risk assessment in any case where additional mechanical protection is provided to the cable.		

Table 4 figures—



The following figures will assist in understanding the information in Table 4.

Appendix—Standards, codes, guides and other documents relating to aerial lines

In this Appendix—

- (a) *ENA* means Energy Networks Association Limited.

Conductors

Conductor - Bare overhead - Hard - drawn copper	AS 1746
Conductor - Bare overhead - Aluminium and aluminium alloy	AS 1531
Conductor - Bare overhead, aluminium and aluminium alloy - Steel reinforced	AS 3607
Steel conductors and stays - Bare overhead - Galvanised (SC/GZ).....	AS 1222
Steel conductors and stays - Bare overhead - Aluminium clad (SC/AC)	AS 1222
Galvanised steel wire strand.....	AS 2841

Insulated cables

Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1(1.2) kV	AS/NZS 5000
Electric cables - Polymeric insulated - For distribution and service applications	AS/NZS 4961
Electric cables - Cross-linked polyethylene insulated - Aerial bundled - For working voltages up to and including 0.6/1(1.2) kV .	AS/NZS 3560
Mechanical fittings for low voltage aerial bundled cable.....	AS 3766
Electric cables - Aerial bundled - Polymeric insulated - Voltages 6.35/11(12) kV and 12.7/22(24) kV - Metallic screened.....	AS/NZS 3599
Electric cables - Aerial bundled - Polymeric insulated - Voltages 6.35/11(12) kV and 12.7/22(24) kV - Non-metallic screened.....	AS/NZS 3599
Conductors - Covered overhead - For working voltages 6.35/11(12) kV up to and including 19/33(36) kV.....	AS/NZS 3675

Insulators

Insulators - Ceramic or glass - Station post for indoor and outdoor use - Voltages greater than 1 000 V ac	AS 4398
Insulators - Porcelain and glass for overhead powerlines - Voltages greater than 1 000 V ac - Test methods - Insulator units...	AS/NZS 2947
Insulators - Porcelain and glass for overhead powerlines - Voltages greater than 1 000 V ac	AS/NZS 2947
Insulators - Porcelain and glass for overhead powerlines - Voltages greater than 1 000 V ac - Couplings.....	AS 2947
Insulators - Porcelain and glass for overhead powerlines - Voltages greater than 1 000 V ac - Test methods - Insulator strings and insulator sets	AS/NZS 2947
Insulators - Porcelain and glass, pin and shackle type - Voltages not exceeding 1 000 V ac	AS 3608
Insulators - Porcelain stay type - Voltages greater than 1 000 V ac	AS 3609
Guidelines for the design and maintenance of overhead distribution and transmission lines—	
(a) Selection	ENA C(b)1

Insulator and conductor fittings

Insulator and conductor fittings for overhead powerlines -
Performance, material, general requirements and dimensions..... AS 1154

Insulator and conductor fittings for overhead powerlines -
Performance and general requirements for helical fittings AS 1154

Thermal limits

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) Thermal limits ENA C(b)1

Current rating of bare overhead line conductors..... ENA D(b)5

Short circuit capacity

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) Fault ratings ENA C(b)1

Mechanical loading conditions

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) Mechanical loading conditions ENA C(b)1

Structural design actions - General principles AS/NZS 1170

Structural design actions - Permanent, imposed and other actions .. AS/NZS 1170

Structural design actions - Wind actions..... AS/NZS 1170

Minimum design loads on structures (known as the SAA
Loading Code) - Earthquake loads..... AS 1170

Conductor tensions

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) General..... ENA C(b)1

(b) Calculations..... ENA C(b)1

Structures and footings

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) General..... ENA C(b)1

Methods of testing soils for engineering purposes..... AS 1289

Piling - Design and installation..... AS 2159

Design of steel lattice towers and masts AS 3995

Steel structures..... AS 4100

Concrete structures AS 3600

Clearances from ground

Guidelines for the design and maintenance of overhead
distribution and transmission lines—

(a) Environmental and loading conditions..... ENA C(b)1

Clearances from structures

Guidelines for the design and maintenance of overhead distribution and transmission lines—

- (a) Environmental and loading conditions ENA C(b)1

Spacing of conductors

Guidelines for the design and maintenance of overhead distribution and transmission lines—

- (a) Clearances ENA C(b)1
- (b) Environmental and loading conditions ENA C(b)1

Maintenance

Guidelines for the design and maintenance of overhead distribution and transmission lines—

- (a) Maintenance and inspection procedures ENA C(b)1

Schedule 2—Requirements for underground lines and certain other powerlines

(regulations 49 and 50)

1—Interpretation

In this Schedule—

listed standards means the standards (both national and international), codes, guides and other documents listed in the Appendix at the end of this Schedule as published as referred to in the Appendix or, if no such reference is included in the Appendix, as published from time to time.

2—Design—general

- (1) Underground lines must be designed so that—
 - (a) cables have safe levels of electrical insulation; and
 - (b) cables will carry load currents for which they are designed without failure; and
 - (c) cables will pass short circuit current which will enable the correct operation of protective devices; and
 - (d) the required clearances between a building or structure and an underground powerline as prescribed by regulation 82 are maintained,and so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.
- (2) In determining electrical service conditions and the physical environment under which the line will operate, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.

3—Cables and accessories

Cables and their accessories must, so as to ensure safe operational performance, conform to the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

4—Cable ratings

- (1) The rating of a cable must be sufficient to pass the electrical load for which it is designed without failure or excessive heating.
- (2) Rating of cables must be determined in accordance with the listed standards.

5—Short circuit rating of conductors and cable screens

- (1) The cable conductors and cable screens must be of sufficient size to pass short circuit currents without overheating for the time taken for the operation of the protective device.
- (2) The short circuit capacity of cable must be determined in accordance with the listed standards.

6—Installation—general

Underground lines must be installed in a safe manner in accordance with this Schedule and the listed standards or so as to achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

7—Installation of underground lines

- (1) An underground line must be installed in accordance with Table 1 below and, subject to this clause, at the depth fixed for the designated voltage and cable type.
- (2) For the mechanical cover and enclosures referred to in Table 1 below, 1 of the following must be used:
 - (a) a layer of concrete at least 50 mm thick with a characteristic strength defined by AS 3600 and AS 1012 and determined to be not less than 15 MPa at 28 days placed not less than 50 mm and not more than 150 mm above the cable and overlapping the cable by at least 40 mm on each side; or
 - (b) concrete slabs of at least 40 mm thickness with a characteristic strength defined as AS 3600 and AS 1012 and determined to be not less than 15 MPa at 28 days with—
 - (i) each slab touching the next so that there are no spaces left between slabs; and
 - (ii) the slabs being placed not less than 50 mm and not more than 150 mm above the cable and overlapping the cable by at least 40 mm on each side of the cable; or
 - (c) a plastic or composite material that offers comparable protection (depending on depth of installation).
- (3) The enclosure referred to in the last column of Table 1 must be a medium or heavy galvanised steel tube conforming to AS 1074 or a non-metallic heavy duty conduit conforming to AS/NZS 2053 (depending on depth of installation).

- (4) If it is impractical to lay an underground line at a depth which complies with Table 1 then they may be laid at a lesser depth provided that additional covers or enclosures are installed to provide equivalent protection to that prescribed.
- (5) The underground line, from where it enters the ground to a position where it complies with the requirements of depth and protection in Table 1, must be protected by a cover or enclosure described above.

(6) **Table**

TABLE 1: Minimum depth of burial from surface of ground to top of cable or enclosure

Nominal system voltage (U)	Method of burial and burial depth (in metres)		
	Direct buried	Direct buried and covered by mechanical cover	Enclosed in conduit or pipe
U ≤ 1 kV Single core type	(a) For a single insulated single core type—1;	0.6	0.45
	(b) For a double insulated single core type—0.75;		
Multi core type	For a double insulated multi core type—0.75	0.45	0.45
1 kV < U ≤ 22 kV Both cable types	0.75	0.6	0.6
22 kV < U ≤ 66 kV Both cable types	1	0.75	0.75

8—Part of underground line installed on or above ground

- (1) If an underground line is located on the surface of the ground or attached above the surface of the ground, it must be mechanically protected to a height of 2.4 m from any surface on which a person can stand to the point where it enters the ground.
- (2) The mechanical protection must be provided—
 - (a) by a cable guard made of mild steel of 2.5 mm thickness for HV cables and 1.6 mm thickness for LV cables, galvanised to AS/NZS 4680, AS/NZS 4791 or AS/NZS 4792; or
 - (b) a galvanised steel tube conforming to AS 1074; or
 - (c) some other material giving equivalent mechanical protection.
- (3) If the attachment of the underground line is more than 2.4 m from a surface on which a person can stand, the cable need not be mechanically protected provided that—
 - (a) the cable is beyond reach (determined in accordance with AS 2067 Appendix G) from windows or other accessible parts of the building; or
 - (b) the cable is less than or equal to 1 000 volts; or

- (c) the cable is more than 1 000 volts but is metallic screened; or
 - (d) the cable is within a substation.
- (4) If the cable is high voltage, it must be enclosed in metallic piping or casing which is earthed in accordance with these regulations.

9—Shared trenches

Separation between cables and service lines of other utilities laid parallel must comply with the listed standards.

10—Maintenance

- (1) Underground lines must be maintained to be in a safe operating condition.
- (2) A system of maintenance must be instituted for underground lines and their components, including—
 - (a) predetermined processes to confirm the safe state of components;
 - (b) managed replacement programs for components approaching the end of their serviceable life.
- (3) Maintenance programs must be carried out in accordance with the listed standards.

Appendix—Standards, codes, guides and other documents relating to underground lines

In this Appendix—

- (a) *ANSI* means American National Standards Institute;
- (b) *IEC* means International Electrotechnical Commission;
- (c) *IEEE* means Institute of Electrical and Electronic Engineers.

High voltage cables

Electric cables - Polymeric insulated - For working voltages
1.9/3.3(3.6) kV up to and including 19/33(36) kV AS/NZS 1429

Electric cables - Impregnated paper insulated - For working
voltages up to and including 19/33(36) kV AS/NZS 1026

Electric cables - For underground residential distribution
systems AS/NZS 4026

Power cables with extruded insulation and their accessories
for rated voltages from 1 kV up to 30 kV IEC 60502

Power cables with extruded insulation and their accessories
for rated voltages above 30 kV up to 150 kV - Test methods
and requirements IEC 60840

Low voltage cables

Electric cables - Impregnated paper insulated - For working
voltages up to and including 19/33(36) kV AS/NZS 1026

Conductors in insulated electric cables and flexible cords AS/NZS 1125

Electric cables - Polymeric insulated - For distribution and
service applications AS/NZS 4961

Electric cables - Polymeric insulated - For working voltages up to and including 0.6/1(1.2) kV	AS/NZS 5000
Electric cables - For underground residential distribution systems	AS/NZS 4026
High voltage cable accessories	
High Voltage Cable Terminations.....	ANSI/IEEE 48
High Voltage Cable Joints.....	ANSI/IEEE 404
Separable insulated connectors for power distribution systems above 1 kV	AS 2629
Continuous cable ratings	
Electric cables - Calculation of the current rating	IEC 60287
Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV.....	AS/NZS 3008
Short circuit currents	
Calculation of short circuit currents	IEC 60949
Installation	
<i>Services in Streets—A Code for the Placement of Infrastructure Services in New and Existing Streets</i> (prepared for PUACC and published September 1997)	

Schedule 3—Requirements for substations

(regulation 51)

1—Interpretation

In this Schedule—

Building Code of Australia means the *Building Code of Australia* as published from time to time;

ground type substation means a substation that is a semi-enclosed, free-standing substation connected to a high voltage aerial line or underground line;

kiosk padmount type substation means a substation that is a totally enclosed, free-standing, self-contained substation not designed for bodily entry, generally operated from door openings;

listed standards means the standards (both national and international), codes, guides and other documents, as published from time to time, listed in the Appendix at the end of this Schedule.

2—Design

- (1) Substations must be designed so that—
 - (a) buildings and enclosures are secure; and
 - (b) plant, equipment and lines have safe levels of electrical insulation; and
 - (c) plant, equipment and lines will carry electrical load currents for which they are designed without failure; and

- (d) plant, equipment and lines will carry short circuit currents which will enable the correct operation of protective devices,
- so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.
- (2) In determining electrical service conditions and the physical environment under which the line will operate, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.

3—Plant and equipment

All substation plant and equipment must conform to the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

4—Clearances to live equipment and lines

- (1) Substations must be designed to provide safe operating and working clearances from live equipment and lines.
- (2) Clearances between live equipment to structures and buildings and the provision of safe operating and working clearances must be determined in accordance with the listed standards.

5—Containment of insulating liquids

Buildings must be designed in respect of the containment of insulating liquids in an enclosure or in an area in which the equipment is housed so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

6—Security of substation buildings and enclosures

- (1) Buildings and enclosures must be secured so as to prevent entry by unauthorised persons.
- (2) Buildings and enclosures must have signs on all entrances prohibiting unauthorised entry and warnings of the danger associated with unlawful entry.
- (3) The ventilation system of buildings and enclosures must be designed so to prevent the intrusion of foreign objects into the building or enclosure likely to interfere with the safe operation of the electrical equipment.

7—Kiosk padmount type substations

The installation design of a kiosk padmount type substation must ensure that no part of the kiosk enclosure is within 1.2 m of any part of a building or wall that has a fire rating less than 3 hours as determined by the *Building Code of Australia*.

8—Ground type substations

- (1) The calculations for the design of structures supporting aerial lines in ground type substations must, in addition to allowing for the maximum loading in accordance with Schedule 1, also allow for forces under short circuit conditions.

- (2) Walls and fences enclosing a ground type substation must be designed—
- (a) so that the minimum horizontal clearances from any building or structure (including fences or walls which are not solid) within the boundary, or forming the boundary of the ground type substation to any live and bare equipment is sufficient to ensure safe operating conditions;
 - (b) to be constructed of a substantive material (such as brick, masonry, wood, sheet metal or galvanised chain-wire mesh with an aperture dimension of not more than 0.05 m) and be a minimum height of 2.5 m.
- (3) The top 0.5 m of a wall or fence enclosing a ground type substation may consist of securely supporting barbed wire, or razor wire, with a maximum separation of the strands of 0.15 m or tiger tape flat loops.
- (4) Clearances between any building or structure within the boundary of the ground type substation and any live equipment must be determined so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.

9—Pole mounted substations

Pole mounted substations must be designed so that—

- (a) the calculations for the design of structures supporting aerial lines and busbars in substations, in addition to allowing for the maximum loading in accordance with Schedule 1, also allow for forces under short circuit conditions;
- (b) all parts of supporting platforms and equipment which are mounted on or attached to the pole or cross arms, except for conductors, are at height not less than that set out in Table 1;
- (c) any equipment mounted at a height less than that prescribed in paragraph (b), is less than 0.2 m from the surface of the pole and at least 0.5 m from the vertical projection of the kerb line of any road.

TABLE 1: Heights of supporting platforms and mounted equipment

	Outside 0.5 m of the vertical projection of the kerbline (on the non road side) of any road	Elsewhere
Height above ground surface	3.6 m	4.6 m

10—Installation

Substations must be installed to the requirements of a design that complies with the requirements of this Schedule.

11—Maintenance

- (1) Substations, substation enclosures, associated plant, components and lines must be maintained in a safe operating condition.
- (2) A system of maintenance must be instituted for substation buildings and enclosures and associated plant, equipment and lines, including—
 - (a) predetermined processes to confirm the safe state of components; and

- (b) managed replacement programs for components approaching the end of their serviceable life.
- (3) Maintenance programs must be carried out in accordance with the listed standards.

Appendix—Standards, codes, guides and other documents relating to substations

In this Appendix—

- (a) *IEC* means International Electrotechnical Commission;
- (b) *IP Code* means International Protection Code.

Electrical design

Switchgear assemblies & ancillary equipment for alternating voltages above 1 kV..... AS 2067

Circuit breakers and ancillary equipment

Degrees of protection provided by enclosures (IP Code) AS 60529

High voltage ac switchgear and controlgear - Circuit breakers for rated voltages above 1 000 V..... AS 2006

Switchgear assemblies and ancillary equipment

High voltage switches - Switches for rated voltages above 1 kV and less than 52 kV AS/NZS 60265

High voltage, ac switchgear and controlgear - Switches and switch-disconnectors - For rated voltages of 52 kV and above AS 1025

High voltage ac switchgear and controlgear - Disconnectors (isolators) and earthing switches..... AS 1306

High voltage ac switchgear and controlgear - Switch-fuse combinations..... AS 2024

Common specifications for high-voltage switchgear and controlgear standards AS/NZS 2650

AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 72.5 kV..... AS 2086

AC insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV AS 2264

Switchgear assemblies and ancillary equipment for alternating voltages above 1 kV..... AS 2067

Degrees of protection provided by enclosures (IP Code) AS 60529

Insulating liquids - Specifications for unused mineral insulating oils for transformers and switchgear..... AS 1767

Control equipment

Low voltage switchgear and controlgear - General rules..... AS 60947

Low voltage switchgear and controlgear - Switches, disconnectors, switch-disconnectors and fuse combination units AS/NZS 3947

Low voltage switchgear and controlgear - Contactors and motor starters: Electromechanical contactors and motor starters AS 60947

Low voltage switchgear and controlgear - Circuit control devices
and switching elements - Electromechanical control circuit
devices..... AS 60947

Low voltage switchgear and controlgear - Control circuit devices
and switching elements - Proximity switches AS 60947

Insulating panels

Sheets and boards for electrical purposes - Classification and
general requirements AS 1795

Sheets and boards for electrical purposes - Dimensions of
switchboard panels AS 1795

Power transformers

Power transformers - General AS 2374

Power transformers - Temperature rise AS 2374

Power transformers - Insulation levels and dielectric tests -
General requirements AS 2374

Power transformers - Insulation levels and dielectric tests -
External clearances in air AS 2374

Power transformers - Ability to withstand short circuit AS 2374

Power transformers - Determination of transformer and reactor
sound levels..... AS 2374

Insulating liquids - Specification for unused mineral insulating
oils for transformers and switchgear AS 1767

Bushings

Bushings for alternating voltages above 1 000 V..... AS 1265

Surge arresters

Surge arresters (diverters) - Silicon carbide type for ac systems..... AS 1307

Surge arresters - Metal-oxide surge arresters without gaps for ac
systems..... AS 1307

Batteries

Stationary batteries - Lead-acid - Vented type AS 4029

Stationary batteries - Lead-acid - Valve-regulated type..... AS/NZS 4029

Stationary batteries - Lead-acid - Pure lead positive pasted plate
type..... AS 4029

Insulation coordination

Insulation coordination - Definitions, principles and rules AS 1824

Insulation coordination (phase-to-earth and phase-to-phase,
above 1 kV) - Application Guide AS 1824

Insulation coordination for equipment within Low Voltage
systems: Principles, requirements and tests..... IEC 60664

Safety clearances

Degrees of protection provided by enclosures (IP Code)..... AS 60529

Switchgear assemblies and ancillary equipment for alternating
voltages above 1 kV AS 2067

Buildings and enclosures

Building Code of Australia

Fixed platforms, walkways, stairways and ladders: Design
construction and installation AS 1657

The use of ventilation and air conditioning in buildings -
Ventilation design for indoor air contaminant control AS 1668

The use of ventilation and air conditioning in buildings - Fire and
smoke control in multi-compartment buildings AS/NZS 1668

Degrees of protection provided by enclosures (IP Code) AS 60529

The storage and handling of flammable and combustible liquids.... AS 1940

Oil containment Environment Protection
Authority

Electrical installations - Secondary batteries installed in buildings
- Vented cells AS 3011

Electrical installations - Secondary batteries installed in buildings
- Sealed cells AS 3011

Switchyard structures, footings and foundations

Structural design actions - General principles AS/NZS 1170

Structural design actions - Permanent, imposed and other actions .. AS/NZS 1170

Structural design actions - Wind actions..... AS/NZS 1170

Minimum design loads on structures (known as the SAA
Loading Code) - Earthquake loads..... AS 1170

Design of steel lattice towers and masts AS 3995

Steel structures..... AS 4100

Concrete structures AS 3600

Maintenance

Guide to maintenance and supervision of insulating oils in
service AS 1883

Maintenance of electrical switchgear..... AS 2467

Guide to the installation, maintenance, testing and replacement of
secondary batteries in buildings - Vented cells..... AS 2676

Guide to the installation, maintenance, testing and replacement of
secondary batteries in buildings - Sealed cells..... AS 2676

Schedule 4—Requirements for earthing and electrical protection systems

(regulation 52)

1—Interpretation

In this Schedule—

ENA means Energy Networks Association Limited;

listed standards means the standards (both national and international), codes, guides and other documents, as published from time to time, listed in the Appendix at the end of this Schedule;

neutral conductor means a conductor or a group of conductors of a multi-wired system of supply which is maintained at an intermediate and approximate uniform electrical potential in respect of the other conductors of the same circuit, or the conductor of a two-wire system that is earthed at its origin;

protective devices or equipment means devices or equipment intended to isolate the active conductors of a circuit in the event of an electrical fault.

2—Design—general

- (1) Earthing and protection systems must be designed to ensure—
 - (a) reliable passage of fault and Single Wire Earth Return (*SWER*) load currents to earth; and
 - (b) reliable and speedy operation of circuit protection devices; and
 - (c) step, touch and transfer potentials with respect to assets associated with the circuit are safe; and
 - (d) detection and isolation of electrical conditions likely to significantly increase risk to people or cause significant damage to property,and so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better safety and technical outcomes.
- (2) In determining abnormal electrical service conditions, due care must be given to the consideration of extremes that may occur, the likelihood of their occurrence and the associated risks.

3—Protection equipment

All protection equipment must, to ensure safe operational performance, conform to the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better outcomes.

4—Earthing equipment and ancillaries

Earthing systems must be designed to be constructed of material that is—

- (a) copper, copper alloy, stainless steel or some other material having superior corrosion resistance; and
- (b) electrically conductive.

5—Earthing of low voltage electrical supply networks

- (1) The earthing of low voltage electrical networks of supply must be designed to be a MEN system, unless otherwise approved by the Technical Regulator.
- (2) A MEN system must be designed so that—
 - (a) a continuous neutral conductor connects all customers' premises in accordance with AS/NZS 3000; and
 - (b) the neutral conductor is connected to earth at each distribution substation or generator.

- (3) A direct earthing system must be approved by the Technical Regulator and must be designed so that—
- (a) a continuous earthed conductor connects—
 - (i) all customers' premises in accordance with AS/NZS 3000; and
 - (ii) the neutral conductor at the distribution substation or generator; and
 - (iii) every surge diverter,to earth at the generating station or distribution substation only; and
 - (b) the earthed conductor is formed from—
 - (i) the metallic sheath of an insulated cable providing the LV supply to the customers' premises; or
 - (ii) a separate conductor of an insulated cable providing the LV supply to the customers' premises; or
 - (iii) a separate earthing conductor affixed to structures supporting the LV supply circuit to the customers' premises; and
 - (c) the system is earthed at the substations or generating stations.

6—Earthing of substations

Substations must be designed to have an earthing system that complies with the listed standards or achieves, to the satisfaction of the Technical Regulator, the same or better outcomes.

7—Protection systems for low voltage aerial lines and underground lines

Each of the aerial and underground service lines of a transmission or distribution network must form part of a circuit that is protected by protective equipment that can isolate each of the active conductors of the lines.

8—Step and touch potentials and earth potential rise

Uninsulated metal or reinforced concrete that—

- (a) forms part of a circuit in a transmission or distribution network (excluding the current carrying conductors); and
- (b) is accessible to persons; and
- (c) may, in the event of a primary insulation failure of the circuit, experience a rise in voltage,

must be effectively earthed to comply with the requirements of the *ENA Guidelines for Design and Maintenance of Overhead Distribution and Transmission Lines* C(b)1, as published from time to time.

9—Installation of earthing and protection systems—general

Earthing and protection systems must be installed in accordance with design requirements set out in this Schedule and to conform with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better outcomes.

10—Connections and joints of earthing systems

Terminations to earthing conductors and joints in earthing conductors must be of a type that utilises materials and techniques specifically developed for earthing electrical installations so as to comply with the listed standards or achieve, to the satisfaction of the Technical Regulator, the same or better outcomes.

11—Mechanical strength and protection of earthing systems

Earthing conductors and other components of an earthing system must be installed in a manner that provides protection against likely mechanical damage, inadvertent interference and chemical deterioration.

12—Maintenance—general

- (1) Protection and earthing systems must be maintained to be in a safe operating condition.
- (2) A system of maintenance must be instituted for protection and earthing systems and their components, including—
 - (a) predetermined processes to confirm the safe state of components; and
 - (b) managed replacement programs for components approaching the end of their serviceable life.
- (3) Maintenance programs must be carried out in accordance with the listed standards.

13—Inspection and testing of earthing systems

- (1) Earthing systems must be inspected and tested from time to time to ensure that the design requirements of—
 - (a) resistance to the general mass of earth; and
 - (b) electrical capacity; and
 - (c) step, touch and transfer potentials; and
 - (d) corrosion resistance,are being maintained.
- (2) The condition of earthing systems must be verified by instruments designed for that purpose.

14—Inspection and test results of earthing systems

The results of visual inspections and resistance readings must be recorded and audited to identify changes that would influence the frequency of inspections, tests and maintenance.

15—Inspection and testing of protection systems

- (1) Protection systems must be inspected and tested from time to time as required according to the risk of damage to, or aging of, components or changes in the network electrical parameters, to ensure that—
 - (a) detection sensitivity; and
 - (b) speed of operation; and

- (c) discrimination of load currents; and
 - (d) co-ordination with other protection systems,
- of the systems are being maintained.
- (2) The performance of protection systems must be verified by instruments designed for that purpose.

16—Inspection and test results of protection systems

The results of visual inspections and performance tests must be recorded and audited to identify changes that would influence the frequency of inspections, tests, maintenance and replacements.

Appendix—Standards, codes, guides and other documents relating to earthing and electrical protection systems

In this Appendix—

- (a) *ENA* means Energy Networks Association Limited;
- (b) *IEEE* means Institute of Electrical and Electronic Engineers.

Protection

All or nothing relays	AS 2481
Voltage transformers for measurement and protection	AS 1243
Current transformers for measurement and protection	AS 1675
Low voltage switchgear and controlgear - General rules.....	AS 60947
Low voltage switchgear and controlgear - Switches, disconnectors, switch-disconnectors and fuse-combination units....	AS/NZS 3947
Low voltage switchgear and controlgear - Contactors and motor starters - Electromechanical contactors and motor starters	AS 60947
Low voltage switchgear and controlgear - Control circuit devices and switching elements - Electromechanical control circuit devices	AS 60947
Low voltage switchgear and controlgear - Control circuit devices and switching elements - Proximity switches	AS 60947

Earthing

Switchgear assemblies and ancillary equipment for alternating voltages above 1 kV	AS 2067
Guide for safety in AC substation grounding	IEEE 80
Electrical installations	AS/NZS 3000
Relocatable premises (including caravans and tents) and their site installations	AS/NZS 3001
Guidelines for the design and maintenance of overhead distribution and transmission lines—	
(a) Stay wires.....	ENA C(b)1
(b) Step and touch potentials	ENA C(b)1

Switchgear assemblies and ancillary equipment for alternating voltages above 1 kV AS 2067

AS/NZS 3835 *Earth potential rise - Protection of telecommunications network users, personnel and plant*

Maintenance

Switchgear assemblies and ancillary equipment for alternating voltages above 1 kV AS 2067

Electrical installations AS/NZS 3000

Guide to safety in AC substation grounding IEEE 80

ENA Guidelines for design and maintenance of overhead distribution and transmission lines ENA C(b)1

AS/NZS 3835 *Earth potential rise - Protection of telecommunications network users, personnel and plant*

Testing

Electrical installations - Earthing AS/NZS 3000

Guide for safety in AC substation grounding IEEE 80

ENA Guidelines for design and maintenance of overhead distribution and transmission lines ENA C(b)1

Schedule 5—Clearance from aerial lines

(regulations 83, 84 and 87)

TABLE 1: Clearance distance between materials and aerial lines or supporting structures

Direction of distance	Type and voltage of aerial line (clearance distance in metres)					
	Low voltage aerial lines, service lines & other cable systems U ≤ 1 kV	U > 1 kV U ≤ 33 kV	U > 33 kV U ≤ 132 kV	U > 132 kV U ≤ 275 kV	U > 275 kV U ≤ 330 kV	U > 330 kV U ≤ 500 kV
Distance between any material (other than flammable materials) and aerial lines—						
(a) horizontal distance	1.5	2.1	3.0	4.6	5.5	6.4
(b) vertical distance	3.7	4.6	4.6	6.8	8.0	9.8
Distance between flammable materials and aerial lines—						
(a) horizontal distances	3.0	3.0	3.0	4.6	5.5	6.4
(b) vertical distances	3.7	4.6	6.8	6.8	8.0	9.8
Distance between any material and supporting structure—						
(a) horizontal distances	5.0	10.0	15.0	15.0	15.0	15.0
(b) vertical distances	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 2: Clearance distance between operation of machine, vehicle or vessel with elevating component or shear legs and aerial lines

Type and voltage or aerial line	U ≤ 1 kV ABC	U ≤ 1 kV Bare and covered conductor	U > 1 kV U ≤ 33 kV	U > 33 kV U ≤ 132 kV	U > 132 kV U ≤ 275 kV	U > 275 kV U ≤ 330 kV	U > 330 kV U ≤ 500 kV
Clearance distance in all directions in metres	0.5	1.0	1.5	3.0	4.0	6.0	8.0

TABLE 3: Clearance distance between load being transported and aerial lines

Nominal system voltage (U)	Clearance distance in all directions (in metres)
Low voltage aerial lines, service lines or other cable systems $U \leq 1$ kV	0.33
$1 \text{ kV} < U \leq 11 \text{ kV}$	0.6
$11 \text{ kV} < U \leq 33 \text{ kV}$	0.9
$33 \text{ kV} < U \leq 66 \text{ kV}$	1.4
$66 \text{ kV} < U \leq 132 \text{ kV}$	2.4
$132 \text{ kV} < U \leq 275 \text{ kV}$	3.2
$275 \text{ kV} < U \leq 330 \text{ kV}$	4.6
$330 \text{ kV} < U \leq 500 \text{ kV}$	5.5

Schedule 6—Revocation and transitional provisions

1—Revocation of *Electricity (General) Regulations 1997*

The *Electricity (General) Regulations 1997* are revoked.

2—Transitional provisions

- (1) Despite regulation 11 of these regulations, regulation 5AC of the revoked regulations as in force immediately before the commencement of this clause will continue to apply to work to be undertaken or underway (being work within the ambit of regulation 5AC) until 1 March 2013.
- (2) Despite regulation 68 of these regulations, regulation 29 of the revoked regulations as in force immediately before the commencement of this clause will continue to apply to persons required to carry out, or help in carrying out, electrical work until 1 September 2014.
- (3) Despite regulation 76 of these regulations, the technical installation rules published by an operator of a distribution network for the purposes of regulation 34 of the revoked regulations and in force immediately before the commencement of this clause will continue to apply for the purposes of these regulations until 1 March 2013.
- (4) In this clause—

revoked regulations means the *Electricity (General) Regulations 1997*.

Legislative history

Notes

- Variations of this version that are uncommenced are not incorporated into the text.
- For further information relating to the Act and subordinate legislation made under the Act see the Index of South Australian Statutes or www.legislation.sa.gov.au.

Principal regulations and variations

New entries appear in bold.

Year	No	Reference	Commencement
2012	199	<i>Gazette 30.8.2012 p3982</i>	1.9.2012: r 2
2013	4	<i>Gazette 31.1.2013 p178</i>	1.2.2013: r 2

Provisions varied

New entries appear in bold.

Provision	How varied	Commencement
Pt 4	will expire: r 37	(31.12.2014)