



Queensland

# Electrical Safety Amendment Regulation (No. 1) 2006

## Regulatory Impact Statement for SL 2006 No. 14

made under the

*Electrical Safety Act 2002*

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### Title

Notification of the making of a *Code of Practice for Electrical Equipment* and associated regulatory amendments.

### Background

Recent inquests into a workplace electrical fatality and the electrocution of a child at a caravan park have resulted in coronial recommendations for wider use of safety switches and amended regulations for the use of electrical equipment used outside the home. Specifically, the Coroners recommended:

- amending the *Electrical Safety Regulation 2002* (the Regulation) to require regular inspection and maintenance of all electrical equipment used outside the home including the means of delivery of power to equipment;
- expanding the safety switch initiative to include public accommodation such as caravan parks, private rental housing and public housing;
- introducing compulsory electrical inspection of these types of accommodation when sold and mandating regular supervision of electrical installations and maintenance regimes in them;

- legislating for the mandatory installation of safety switches in workplaces; and
- that the Department of Industrial Relations promote electrical safety awareness to the public so that the dangers of substandard electrical work and the benefits of safety switches are understood.

The Electrical Safety Office has initiated the Coroner's Recommendations Project to explore these coronial recommendations.

The *Electrical Safety Act 2002* (the Act) in section 26 imposes an obligation for electrical safety on the following persons:

- electricity entities
- employers
- self-employed persons
- designers of electrical equipment and electrical installations
- manufacturers of electrical equipment
- importers of electrical equipment
- suppliers of electrical equipment
- installers of electrical equipment and electrical installations
- repairers of electrical equipment and electrical installations
- persons in control of electrical equipment
- workers at places where electrical equipment is located
- other persons at places where electrical equipment is located.

The Act in section 27 states that:

“a person on whom an electrical obligation is imposed must discharge the obligation”;

and provides guidance in ways in which the obligation for electrical safety may be discharged in the form of regulations, ministerial notices and codes of practice.

Further, section 28 provides that:

“a person may be the subject of electrical safety obligations in more than 1 capacity”.

Obligation holders with more than one obligation are required to discharge them all. Obligations may be discharged either in line with prescriptive

measures, or in some other way that ensures electrical safety in a range of situations.

### **Authorising law**

The purpose of the Act is to eliminate the human cost to individuals, families and the community of death, injury and destruction caused by electricity (section 4(1)).

One of the ways this purpose is achieved is through imposing obligations on persons who may affect the electrical safety of others by their acts or omissions (section 5(a)), and by establishing benchmarks for industry and the community generally through making regulations, ministerial notices and codes of practice about achieving electrical safety (section 5 (b)(i)).

The Act in section 44 specifically authorises the making of a Code of Practice that states a way of discharging a person's electrical safety obligation. There are presently three such codes:

- Code of Practice for Works (Protective earthing, underground cable systems and maintenance of supporting structures for powerlines). This Code gives practical advice on ways for an electricity entity to manage electrical safety risks associated with earthing systems, underground cable systems, and supporting structures for overhead lines forming parts of the works of an electricity entity;
- Code of Practice for Working Near Exposed Live Parts. This Code gives practical advice on ways to manage electrical risk when working near exposed live parts. This Code applies to people such as plant operators, painters, people erecting or working on scaffolds, sign makers and people working with irrigation pipes near exposed live parts. The practical guidance provided in this code may be relevant to electrical workers when they are performing electrical work near another exposed live part e.g. installing electrical equipment on a billboard next to electric lines; and
- Code of Practice for Electrical Work. The Code gives benchmarks for performing electrical work in ways that are electrically safe. The Code provides guidance on managing electrical risk only; no guidance on other risks is provided. The Code has been designed to reflect the two ways to perform electrical work – working de-energised and working live.

The purposes of the Regulation include:

- ensuring the electrical safety of licensed electrical workers, other workers, licensed electrical contractors, consumers and the general public;
- enhancing consumer protection in relation to electrical work;
- stopping cathodic protection systems from damaging or interfering with the property of others;
- ensuring a safe supply of electricity; and
- ensuring electrical equipment hired or sold is electrically safe (section 3 (a)–(e)).

Ways to achieve the purposes are set out in section 4(d) (i)–(iv) and include prescribing matters about electrical equipment, including—

- requirements for electrical equipment;
- requirements for particular electrical equipment to be approved by the chief executive;
- requirements about the hiring, selling, testing and using of electrical equipment;
- requiring particular electrical equipment to be approved and marked for compliance with prescribed standards; and
- requirements for the testing of electrical equipment.

### **Policy objectives and how these will be achieved**

The policy objectives of the proposed changes are to further the purpose of the legislative regime, which is to prevent persons from being killed or injured and prevent property from being destroyed or damaged by electricity.

Each year people are killed and injured while using electrical equipment that is either not safe or not being used safely and in many cases these incidents can be prevented or minimised by the use of a safety switch, which cuts the power off in less than a heartbeat when leakage to earth (which may be through a person) is detected. Used in combination with a visual inspection of equipment prior to use and regular maintenance of both electrical equipment and electrical installations, an effective and reliable safety regime can be achieved.

Safety switches (also known as Residual Current Devices (RCDs) or Ground Fault Circuit Interrupters (GFCIs)) are capable of detecting very small leakages of current to earth and function by disconnecting the supply of electricity.

It is estimated that since 2002 when the legislation was introduced 153, 000 Queenslanders have installed safety switches in domestic dwellings. The incidence of electrocutions in domestic dwellings in the period since the introduction of safety switch legislation in 2002 has decreased to two fatalities compared with five fatalities in the preceding two years. With the success of safety switches in preventing electrical fatalities, extending their mandatory installation would provide greater protection in the places that provide public accommodation.

The Coroners recommended that safety switch requirements be extended to ensure that places that provide accommodation to the public are covered by safety switch protection. The proposals in options three and four respond to the Coroners' recommendations. For the purposes of this RIS, places that provide accommodation to the public are defined as caravan parks (as one of the electrical fatalities occurred in a caravan park), and rental properties, consistent with the original policy intent of the electrical safety legislation.

The Coroners also recommended that there should be a high level of protection for both fixed wiring and against the potential of electric shock in workplaces where there is an increased risk of an electrical incident or dangerous electrical event.

In response to the recommendations, options are proposed including changes to the legislative environment to further improve electrical safety outcomes by:

- extending current safety switch requirements (options three and four);
- introducing a risk based approach to managing electrical risk in workplaces and places that provide accommodation to the public that includes maintenance regimes and the protection of fixed wiring (option five); and
- amending the present classification system in relation to workplaces to clarify obligations and appropriate responses (option five).

A further policy objective is to provide more certainty for obligation holders in ways that they can discharge their obligations for electrical safety in relation to the use of electrical equipment both in the workplace and in places that provide accommodation to the public.

Presently there is little guidance in the statutory framework for obligation holders in relation to non-prescribed and/or non-specified electrical equipment. The regulatory approvals scheme ensures that prescribed electrical equipment meets certain safety standards. Specified electrical equipment must be tested in accordance with the Regulation. Such testing is dependant on the current categorised “class of work” into which the workplace falls and provides a guarantee that at the time of testing the item of electrical equipment was electrically safe. It does not guarantee electrical safety in other than ‘snap shot’ circumstances.

The proposed amendment and Code of Practice (the Code) in option five will provide a greater level of electrical safety by ensuring a risk-based approach to enhancing safety that can be adapted to any workplace or situation. The proposed amendment to the Regulation will allow decisions about safety, including safety switch use, to be based on the assessed electrical risk of a particular work environment and not on the present “class of work” system. Presently, the requirements consist of four categories of workplace into which a variety of workplaces do not fit with any accuracy.

The Code of Practice proposed in option five will apply to all electrical equipment, including fixed wiring, not just to what section 83 of the Regulation currently defines as ‘specified electrical equipment’, which is:

- “(a) for the performance of class 2 work—
  - (i) a cord extension set with a current rating of not more than 20 amps; or
  - (ii) a portable outlet device with a current rating of not more than 20 amps; or
  - (iii) electrical equipment, other than a portable safety switch, that—
    - (A) has a current rating of not more than 20 amps; and
    - (B) is connected by a flexible cord and plug to low voltage supply; and
- (b) for the performance of class 3 work or class 4 work—
  - (i) a cord extension set with a current rating of not more than 20 amps; or
  - (ii) a portable outlet device with a current rating of not more than 20 amps; or

- (iii) electrical equipment, other than a portable safety switch, that—
  - (A) has a current rating of not more than 20 amps; and
  - (B) is connected by a flexible cord and plug to low voltage supply; and
  - (C) is moved during its normal use for the purpose of its use.”

The proposed Code will also include guidelines relating to the hire of electrical equipment. However, as the hire equipment industry already has maintenance regimes in place, there is expected to be no additional regulatory burden to that industry stemming from the introduction of the proposed Code.

It should be noted that there is no intention to amend the definition of Class 1 work, which is defined under section 83 of the Regulation as:

- “(a) construction work; or
- (b) work done in conjunction with construction work.

Example of paragraph (b) – Installation of plumbing in a house under construction”.

A number of industry representatives have indicated they are supportive of a change in the definition of “specified electrical equipment” that would address inherent risk rather than ‘class of work’.

A jurisdictional comparison of the requirements relating to safety switches and testing and tagging appears at Appendix 1.

## **Issues with the classification of workplaces**

The classification of work places as it occurs in section 83 of the Regulation<sup>1</sup> raises a number of problems in relation to risk. Issues with this definitional categorisation include the broad nature of the classifications mean they are not detailed or exhaustive. No matter how many categories are available there always will be a workplace environment, activity or situation that cannot be appropriately described by the class system.

In terms of electrical risks, many classes of work can potentially be performed within the one workplace regardless of the primary

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<sup>1</sup> Part 5, Division 5 *Electrical Safety Regulation 2002* (see Appendix B)

classification of work performed. For example, showground work is classified Class 3 (the “catch all” classification) even though the set up, operation and dismantling of amusement devices is similar in nature to a construction worksite and indeed requires a higher level of electrical safety intervention due to the reasons following:

- the presence of children and the general public;
- temporary electrical power supply arrangements that are often not controlled by a qualified electrical worker;
- exposures to the elements, virtually all amusement devices are operated in an open environment;
- assembly/operation/dismantling is mostly conducted in an environment where there is no appointed person responsible for health and safety; and
- frequent assembly/dismantling and transport of amusement devices from site to site invariably causes damage to exposed, fixed electrical wiring which is operated at voltages capable of producing a fatal shock.

Varying levels of risk exist in any one workplace, for example the wet areas of a manufacturing workplace create a higher electrical risk than an activity where water is not present, and no one prescriptive measure is appropriate for all eventualities.

Industry feedback has indicated opposition to the current “class of work system” on the grounds the current system doesn’t enable industry to select an appropriate ‘class of work’ that adequately reflects the activities performed in their workplaces, the current Regulation cannot determine the risk factors present at specific locations and does not provide sufficient alternatives to provide for electrical safety.

The proposed Code will provide a potential reduction in costs for those in industries where there is a low potential for increased electrical risk, depending on the risk management approach taken by organisations and individuals. It will also provide guidance for obligation holders in ways to more flexibly discharge their obligations for electrical safety and will be consistent with the three other codes of practice that sit under the Act.

Industry feedback has indicated support for the introduction of a Code of Practice.



## **Electrical risk in workplaces**

There is wide variation in the level of electrical risk in workplaces. Increased electrical risk exists in situations where normal operation of electrical equipment represents an increase in the likelihood of electric shock or an increase in the likelihood of fire or explosion. For example, there is an increased susceptibility of the human body to electric shock in situations where hands, feet or body are likely to be wet. In workplaces where water is present, for example, the electrical risk is higher than in a workplace that is an office environment.

For many areas, particularly of increased electrical risk, safety switches are an ideal engineering control. Safety switches can protect a person from electric shock resulting from various incidents including faults in electrical appliances, circuit wiring or misuse of electrical equipment. Option three proposes the extension of existing safety switches requirements in workplaces and places that provide accommodation to the public to ensure better electrical safety outcomes. Option four focuses on the extension of the installation of safety switches in rental properties.

Safety switches do not remove the need for safe practice in the use of electrical equipment but do provide continuing protection, unlike maintenance regimes which detect and repair fault only at particular times. There is a need, however to ensure the safety switch is functioning. This can be achieved by regular testing with the built-in push button test and periodical testing by a licensed electrical worker. Safety switches can mean the difference between life and death when a fault does occur.<sup>2</sup>

The Electrical Safety Board in its *Electrical Safety Plan for Queensland 2003 – 2008*<sup>3</sup> has identified safety switches in workplaces as an electrical safety priority, beginning with areas of high electrical risk. These are likely to include the rural and construction industries and workplaces where water is significantly involved.

Industry representatives have indicated their concern with the current testing and tagging system on the grounds that it is not an effective form of control, as it is not based on inherent risks present in a workplace situation.

Risk management is described as an *integral part of good management*<sup>4</sup> and can be applied to any situation as a means of avoiding or mitigating

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2 Adapted from *Residual current devices – what they do and how they do it*, Standards Australia SAA HB113 –1998.

3 <http://www.eso.qld.gov.au/publicat/stratplan/index.htm>

4 AS/NZS 4360:1999 Risk Management, p. iii

losses.<sup>5</sup> It provides a framework with which to facilitate the selection of appropriate control measures. These control measures fall into a hierarchy related to their effectiveness at minimising risk.<sup>6</sup>

According to the principles of risk management, higher order controls are to be used in preference to lower order controls due to their superior effectiveness at minimising risk. The lowest controls in the hierarchy are termed administrative controls and should only be used when risk cannot be minimised by other means.<sup>7</sup>

Safety switches are a proven higher order engineering control that would mitigate much of the electrical risk in relation to electrical equipment and fixed wiring, and reduce reliance on lower order controls such as preventative maintenance.<sup>8</sup>

Contemporary community attitudes place a high value on safety at work and in public places. Safety switches are one way to increase safety in the majority of situations in these areas. This must be considered in light of the cost of retro-fitting safety switches, which has the potential to be a financial burden on some sectors of industry and on investors in residential property.

### **Legislative intent**

The policy objectives aim to provide both an increase in electrical safety and a potential reduction in costs for industry by allowing flexibility in the discharge of the obligation for electrical safety in workplaces and places that provide accommodation to the public.

The objectives also have the potential to increase costs for the sector of the community that provides accommodation to the public in the form of private rental housing.

Providing industry with the option of installing a safety switch in areas of increased risk, in combination with visual examination of the equipment and a thorough maintenance regime based on a risk assessment, the one-off cost of safety switch installation will be off-set over time by the savings in test and tag costs.

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5 AS/NZS 4360:1999 Risk Management, p. 1

6 AS/NZS 4360:1999 Risk Management, p. 13

7 Ibid, p. 13

8 Inspection and maintenance tasks are components of a preventative maintenance program according to International Standard, 60300-3-11 IEC, 1999, Reliability Centred Maintenance, p. 29

With respect to maintenance regimes, many industries are already undertaking a regime of maintenance that is equal to or better than, but not inconsistent with what is being proposed in the Code. For example, many in the caravan park industry perform a visual check of equipment daily during the cleaning routine. In these instances, the impact of the proposed changes will be cost neutral.

The Coroners recommended that fixed wiring be included in the maintenance regime and for those industries already doing this there will be little cost impact with the introduction of the Code. For those currently doing little or nothing there is the potential for some cost impact.

It is considered appropriate in light of the Coroners' recommendations, and on examination of the statistics of workplace electrical fatalities, to extend the requirement for safety switch installation and introduce a requirement for maintenance regimes with respect to workplaces and places that provide accommodation to the public.

The introduction of a Code of Practice for Electrical Equipment would further enhance the electrical safety of Queenslanders in the workplace and in places that provide accommodation to the public. A copy of the draft code is provided at **Appendix 2**.

The Act makes provision for the making of a Code of Practice which does not state all that an obligation holder must do, or not do, to discharge their obligations. However, obligation holders not wanting to follow the Code must act consistently with and follow a way that is equal to, or better than the code, otherwise an offence provision will apply.

### **Consistency with the authorising law**

The proposed Code supports the requirements of the Act, one of the objectives of which is to establish a legislative framework for the prevention of injury and death of persons and damage and destruction of property caused by electricity (Section 4 (2) (a) and (b)).

The introduction of a Code of Practice is consistent with this objective.

### **Consistency with other legislation**

The Act is consistent with the objective of the *Workplace Health and Safety Act 1995* (the WHSA), which is to prevent a person's death, injury or illness being caused by a workplace, workplace activity or specified high-risk plant. The objective is achieved by preventing or minimising a

person's exposure to the risk of death, injury or illness caused by a workplace, workplace activity or specified high-risk plant.

These two legislative regimes differ because whereas the WHSA imposes an obligation on an employer to ensure the workplace health and safety of each of the employer's workers at work, the Act imposes an obligation on an employer to ensure the employer's business or undertaking is conducted in a way that is electrically safe.

Therefore, it is anticipated that the proposed Code will enhance the current regulatory environment by providing persons charged with obligations relating to electrical safety with practical advice on ways to:

- discharge those obligations; and
- manage the electrical safety risk associated with the use of electrical equipment in workplaces and places that provide accommodation to the public.

The relationship between the *Electrical Safety Act 2002* and the *Workplace Health and Safety Act 1995* is outlined in section 3A of the WHS Act, which states:

### **3A Relationship with *Electrical Safety Act 2002***

- (1) This section applies if—
  - (a) this Act, in the absence of this section, would have application in particular circumstances; and
  - (b) the *Electrical Safety Act 2002* also has application in the circumstances.
- (2) This Act does not have application in the circumstances to the extent that the *Electrical Safety Act 2002* has application.
- (3) Without limiting subsection (2), to the extent that this Act would impose on a person a workplace health and safety obligation that is concurrent with an electrical safety obligation imposed on the person under the *Electrical Safety Act 2002*, the workplace health and safety obligation does not apply to the person.

The Regulation also requires that electrical installations are consistent with the AS/NZS – AS3000 (the Wiring Rules).

## **Options and alternatives**

This Regulatory Impact Statement outlines five options for dealing with fatalities and injuries associated with the use of electrical equipment in work places and in places that provide accommodation to the public. These options are not mutually exclusive and Cabinet may decide, based on public comment, to implement one or more of the options.

## **Costs and benefits**

For reference, the cost of installing a safety switch on power circuits alone, and on power and lighting circuits is \$169 and \$270 respectively. The options have been designed based on statistics which have shown that electrical accidents occur at least four times more frequently on power circuits as on lighting circuits.

## **Option 1**

Maintain status quo - no further regulatory intervention.

### Advantages of option 1

The advantages are that there is no further increase in cost burdens on industry, business or the community. Businesses decide the best way to manage their electrical risk associated with electrical equipment, within the guidelines of both the Act and the Regulation.

### Disadvantages of option 1

The disadvantages are a potential continuing exposure to electrical risk for tenants of private rental dwellings and caravan parks, a continuation of a lack of clarity and lack of options in the discharge of the obligation for electrical safety in relation to electrical equipment used in the workplace.

Option 1 does not address the Coroners' concerns. As such Option 1 is not the preferred option.

## **Option 2**

Invoke an education and public awareness campaign coupled with an increased compliance campaign to ensure maximum impact of the present regulatory regime, and so that the benefits of safety switches are understood.

### Advantages of option 2

Greater public awareness of the dangers of electricity and the advantages of safety switches and the need to maintain electrical equipment could be achieved through a number of approaches including a combination of promotion and advertising.

Advertising and promotion could specifically highlight the dangers of electricity and the benefits of installing safety switches. A number of mediums could be utilised including television, radio, newspaper, the Internet and mail out brochures.

Additionally, the campaign could incorporate both general awareness in the community as well as a targeted campaign which would use methods including advertisements placed in relevant industry journals, direct mail outs and focused media placement.

The advantages are that such a campaign would potentially improve compliance, both mandatory and voluntary, with the installation of safety switches without increasing the regulatory burden for industry or for business.

### Disadvantages of option 2

Advertising and promotion could increase the installation of safety switches and result in safer electrical equipment, high impact advertising on television and radio is expensive. However, experience to date indicates that there are more successful ways to influence behaviour, such as the accessibility of user-friendly material on the department's internet site.

As a stand-alone option, the success of this option may be limited. However this option may be more successful if adopted in conjunction with another option because, as stated above, the options in this RIS are not mutually exclusive.

The cost to Government of the types of campaign outlined above are likely to be in the order of at least **\$0.8M**.<sup>9</sup>

Additionally, this option, as in option 1, carries potential continuing exposure to electrical risk for tenants of private rental dwellings and caravan parks.

This option will impose some costs on stakeholders to the extent to which they elect to respond to the campaign and install safety switches.

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<sup>9</sup> Department of Industrial Relations figures based on previous campaigns and budget availability.

### **Option 3**

Introduce the mandatory installation of safety switches (on power and lighting circuits) in workplaces, and in places that provide accommodation to the public phased-in over a four-year period.<sup>10</sup>

#### Advantages of option 3

The mandating of safety switches for workplaces would enhance the safety of workers, employers and self-employed persons.

In relation to places that provide accommodation to the public, mandating of safety switches would comply with the recommendations of the Coroners, as well as improving electrical safety for many Queenslanders and people visiting Queensland.

The phase-in period gives time for the market to catch up with the demand of installing safety switches and for the public to increase their knowledge of the benefits provided by the increased protection.

This option provides greater coverage than option four as this one covers both power and lighting circuits. Additionally, this option also has the potential to provide increased electrical safety through the installation of safety switches in both workplaces and places that provide accommodation to the public.

This option accords with the Queensland Government's key priorities, in particular the aim of minimising the risk and impact of accidents, emergencies and disasters.

#### Disadvantages of option 3

The mandatory costs associated with this option would be borne by workplaces and persons or businesses who own rental properties. Following is an outline of how these costs may affect those concerned by this option.

##### *Workplaces*

The cost of mandating safety switches in workplaces can best be evaluated by analysing how the proposal would impact on particular businesses.

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10 For the purposes of this document, places that provide accommodation to the public are defined as caravan parks as one of the electrical fatalities occurred in a caravan park, and rental properties consistent with the original intent of the electrical safety legislation.

*Case scenarios*

1. A Smallgoods manufacturer with 600 employees has 300 lighting circuits and 700 power circuits, with safety switches installed on all of the power circuits. If this proposal was mandated, it would cost this company \$169 per installation, with a total one-off cost of \$50,700 to install safety switches on the remaining 300 circuits. This cost would be reduced in cases where a safety switch has been fitted as part of current general obligations to ensure electrical safety.
2. A steel manufacturer with 2 employees has 4 lighting circuits and 3 power circuits, of which 1 power circuit and 2 lighting circuits have safety switches on them. Under the proposal, it would be mandatory for this company to install safety switches on the remaining power and lighting at a cost of \$270 per installation for 1 power and 1 lighting circuits, with a total one-off cost of \$540.

*Places that provide accommodation to the public*

With regard to the cost of mandating safety switches in places that provide accommodation to the public, as stated above, the cost impact can best be evaluated by analysing how the proposal would impact on case studies in the caravan park and rental property sectors.

*Case scenarios*

1. A caravan park has 176 caravan sites and six lighting circuits, of which 3 lighting circuits have safety switches installed on them, and none of the sites have safety switches. Mushroom head power installations are manufactured with safety switches that extend safety to four sites at a cost of \$750 each. Like other businesses, caravan parks have a basic electrical safety obligation under the electrical safety legislation. Industry feedback from this sector has indicated that the installation of safety switches is considered best practice for caravan parks.

The cost to this caravan site to install safety switches would be \$169 per safety switch on the lighting circuits, which is a one-off cost of \$507, and 44 mushroom head power installations at \$750 each, which is a one-off cost of \$33,000. Therefore the total cost this caravan park will incur to install safety switches would be \$33,507. This is a one-off cost and could be dispersed by the owners of the caravan park over the four-year phase-in period.

Industry consultation suggests that a majority of caravan parks already have safety switches on high risk circuits such as amenities blocks.



2. Under this proposal, a rental property that has 1 power circuit and 1 lighting circuit with no safety switches would be required to install 2 safety switches, which would be a one-off cost of \$270.

Given that the electrical fatalities which formed the basis for the Coroners' recommendations could have been prevented by this option, the benefits derived from increased safety outcomes through fewer electrical accidents and fatalities could overshadow the costs associated with this option.

#### **Option 4**

Mandate the installation of safety switches to protect power circuits only, at the point of signing a new tenancy agreement in rental domestic dwellings, effective 1 January 2005, with a review in 12 months. Cabinet may decide to mandate a final date for installation of safety switches dependent on the results of the review in relation to the uptake rate within the 12 month period.

#### Advantages of option 4

There are currently approximately 432,000 rental dwellings in Queensland, of which it is estimated that 37 per cent do not have safety switches. Therefore, there are potentially 160,000 rental properties without safety switch protection.

As approximately 50 per cent of all rental dwellings are relet each year, this option would see 80,000 rental dwellings install safety switches in the first year, with most of the remaining properties installing safety switches over the following six years. Option four has the capacity to extend safety switch protection to a large number of Queenslanders over a relatively short period of time.

As stated above, it has been demonstrated that power circuits are more dangerous than lighting circuits and this option is designed to provide protection at that level. Further extending the requirement for the installation of safety switches in domestic dwellings is consistent with the original policy intent and the objectives of the legislative regime and provides equity with respect to tenants of private residential dwellings.

Consultation with Government indicates that those departments that provide housing for their employees, and who also provide public housing, have in large part already voluntarily installed safety switches in their properties or incorporated safety switch installation as part of on-going maintenance programs. The cost of completing the installation of safety switches is covered by the departments' existing budget.

#### Disadvantages of option 4

As with option three, there will be some costs to stakeholders. However the cost to rental property investors presents a potential tax deduction, and is outweighed by the potential electrical safety outcomes in terms of reduced electrical fatalities and accidents presented in this option. Persons or businesses who own rental properties would bear the cost of this option.

While option four extends safety switch protection on power circuits to persons living in rental properties based on the demonstrated danger level of power circuits, it does not provide the same level of protection as option three.

#### *Case scenario*

A person owns a rental property that has 3 power circuits, none of which have safety switches installed, and 2 lighting circuits. Under this proposal, when a new tenant moves in the owner would be required to install a safety switch on power circuits in the dwelling at a cost of \$169 per installation. Therefore, this rental property investor would be required to spend \$507 under this proposal. The \$507 could then potentially be included in their expenses for that year's taxable income. As lighting circuits are not covered by this proposal, the rental property owner would not be required to install safety switches on the 2 lighting circuits.

### **Option 5**

Introduce a Code of Practice for Electrical Equipment used outside the domestic situation.

#### Advantages of option 5

The introduction of a Code would allow flexibility in relation to the discharge of the obligation for electrical safety by providing alternatives to the current regime, for example, in relation to testing and tagging. Ongoing maintenance systems, installation of safety switches and electrical safety examinations, would all be options for discharging the obligation for electrical safety, depending on which system is more effective and cost efficient for the situation. This option will extend the broad obligation that already exists for all businesses to ensure electrical safety, and as such will apply to rental property owners.

Industry feedback indicates that many businesses have maintenance regimes that are comprehensive and cover all aspects of safety, including the electrical safety of equipment. For those already doing so, the

introduction of a Code that requires industry to undertake regular maintenance would be cost neutral.

The disadvantages are that the Regulation in relation to electrical equipment used in the workplace is presently targeted to type of industry or workplace, not targeted to have the maximum impact on addressing the actual electrical risk inherent in any given situation based on an assessment of risk. However, the introduction of the Code would be supported by regulatory amendments which would remedy this situation.

The rural sector currently engage a licensed electrical contractor to perform the testing, or train a competent person and provide them with the relevant equipment to perform the required tests on site. Rural workplaces would benefit from option five as they presently have an exemption from testing and tagging which expires in March 2006. After this time rural workplaces will be required to comply with testing and tagging requirements under the Regulation.

It is clear there are substantial financial savings to be made. At the same time there are substantial enhancements to electrical safety that will come from this option in terms of managing actual electrical risk present in any work environment.

The Code will provide flexible alternatives that enhance safety and deliver cost savings to industry. Option five is the preferred option.

#### Disadvantages of option 5

Costs of introducing the Code potentially include the installation costs of safety switches and maintenance regimes; however these stand to be offset by the potential savings in test and tag regimes, costs of insurance in relation to workplace accidents and costs of litigation in relation to accident or fatality. In places where safety switches are already fitted, costs will be further reduced.

It is difficult to definitively estimate what the potential costs of this option could be because this option proposes a range of ways both private and public sector businesses may discharge their electrical safety obligation based on risk assessments in individual workplaces. The percentage of businesses that may move away from a testing and tagging regime and instead install safety switches is unknown. Any costs however would be borne by the business.

This option may apply to rental property owners to the extent that there is a general obligation to ensure safety of all electrical equipment, for example switchboard, power points, and light fittings.

High risk workplaces that may be experience cost savings through this option include fruit and vegetable processing, some sectors in the mining industry and workplaces where water is significantly involved, such as boat building. However, due to the focus on risk analysis at the workplace level, lower risk workplaces such as offices may not experience the same level of potential cost saving as high risk workplaces.

Based on previous similar education campaigns run by the Department of Industrial Relations, it has been estimated that a general education campaign would cost up to \$0.3M, and one education campaign targeted to a number of sectors in industry would cost up to \$37, 000. These costs would be covered by the Department of Industrial Relations' within existing budgets.

#### *Case Scenario*

The Electrical Safety Office has used Small Goods Manufacturers and Basic Iron and Steel Manufacturers as case studies due to their relevance as industries where the definition of an increased electrical risk can be specifically applied. The definition of 'areas of increased risk' appears in the Definitions section of the proposed Code (see attached). With regard to option five, based on industry analysis, an assumption has been made that 75 per cent of businesses will continue to undertake maintenance regimes, therefore not incurring further costs.

1. A smallgoods manufacturer with 12 employees has 5 power circuits and currently spends \$500 per annum on testing and tagging, and \$3500 per annum on maintenance costs. Under the proposal, this company may opt to continue paying this amount per annum, or may instead opt to install safety switches once off at a cost of \$270 per installation, which would be \$1350.00.
2. A steel manufacturer with 150 employees has 700 power circuits, of which 350 are covered by a safety switch. This company also spends \$10,000 per annum on testing and tagging and \$70,000 per annum on maintenance costs. Under this proposal this company could install 350 safety switches at \$169 per installation at a one-off cost of \$59, 150. While the company may still incur the annual maintenance costs, the installation of safety switches will negate the cost of testing and tagging, saving the company \$10,000 per annum. The cost of installing the safety switches will be recovered within five years.

This case scenario highlights that the introduction of the proposed Code will not impose further costs to businesses with regard to ongoing maintenance regimes.

The following case study gives an indication of how the proposed regime may impact on other types of workplaces.

A large educational institution with 3,000 employees has safety switches on 10,000 of their 13,000 power circuits, and currently spends \$120,000 per annum on testing and tagging. Under the proposal, this organisation may install safety switches on the remaining 3,000 power circuits at a cost of \$169 per installation, with a one-off cost of \$507,000. The installation of safety switches will save this organisation \$120,000 per year in testing and tagging costs, and the cost of installing the safety switches will be recovered in approximately four years.

## **Methodology**

The costings in this Regulatory Impact Statement (RIS) were developed using the following methodology:

- The RIS focuses on rental properties as a place that provides public accommodation as one of the options proposes to extend the installation of safety switches into rental dwellings. This proposal was initially noted in the development of the electrical safety legislation and as such does not represent a change in policy. The assumptions made when calculating this figure are that the reletting rate of properties would be constant and will apply equally to all rental properties, and also that the 37 per cent rate of all dwellings without a safety switch is consistent between rental properties and owner occupied dwellings.
- Estimated total costs for these options have been measured by using the industries used as case studies in the RIS rather than all industries and workplaces due to the limitation of available accurate data. These figures have been calculated as present value costs. As such, the total cost for each option is estimated at:
  - Option 1 – As this option is to maintain the status quo, it is a cost neutral option.
  - Option 2 – **\$0.8M**. This figure is based on previous similar public awareness campaigns undertaken by the Department of Industrial Relations on electrical safety matters.
  - Option 3 – The estimated typical cost impact on workplaces (as calculated through case studies in two manufacturing industries) and places that provide accommodation to the public (as

calculated through case studies in the caravan park industry and the number of rental properties in Queensland) is comprised of:

- **\$5.2M** in present value terms (6 per cent discount rate) for the Bacon, Ham and Smallgoods manufacturing industry. This estimation was based on figures obtained through case studies on one small, one medium and one large business in this industry and then extrapolated to the number of businesses in that industry as provided by the most recent data from the Australian Bureau of Statistics (ABS);
- **\$28.7M** in present value terms (6 per cent discount rate) for the Steel and Iron manufacturing industry. This estimation was based on figures obtained through case studies on one small, one medium and one large business in this industry and then extrapolated to the number of businesses in that industry as provided by the most recent data from the Australian Bureau of Statistics (ABS);
- **\$5.6M** in present value terms (6 per cent discount rate) for the caravan parks industry. This estimation was calculated with advice received from the Caravan Parks Association who advised that of the 60,000 caravan sites in Queensland, 30,000 caravan sites already have safety switches on power circuits. The estimation is the cost of installing safety switches on power circuits of the remaining 30,000 caravan sites using mushroom head power installations which cover four caravan sites each. The estimated cost of installing safety switches on lighting circuits was based on a case study and then extrapolated to the total number of caravan parks in Queensland; and
- **\$39.7M** in present value terms (6 per cent discount rate) for rental properties. This estimation was based on the number of rental dwellings in Queensland without a safety switch, and calculated over a four year phase-in period as provided in the option.

The total number of rental dwellings was calculated using the ABS 2001 Census with the assumption of 2 per cent growth in the years 2002 – 2004. The Residential Tenancies Authority provided that since October 2002 when the electrical safety legislation commenced the reletting rate of rental properties has been approximately 50 per cent. A further assumption has been made that the percentage of

rental dwellings without a safety switch is the same percent for owner occupiers, which is 37 per cent.

- Option 4 – **\$25.8M** in present value terms (6 per cent discount rate) spread over a 20 year period. This figure was based on the same assumptions used in option three as it applies to rental properties (as above), although spread over a 20 year period rather than over a phase-in period because it is estimated that all rental properties will be covered by this option within 20 years. It is estimated that most rental properties would be covered by this option within five years under this calculation.
- Option 5 – Under the proposed Code, businesses will have the opportunity to consider a range of options to discharge their electrical safety obligations, including testing and tagging or the installation of safety switches on power and lighting circuits.

It is difficult to estimate what the potential costs of this option could be because this option proposes a range of ways a business may discharge their electrical safety obligation based on risk assessments in individual workplaces. Therefore, there is no way of knowing what percentage of businesses may move away from a testing and tagging regime and instead install safety switches. Any costs however would be borne by businesses.

Factoring in the cost of installing safety switches rather than continuing with a testing and tagging regime, based on the completion of a risk analysis, businesses in the manufacturing industry could **save up to \$10.1M** (the current estimated cost of testing and tagging in that industry) per year. This estimation was calculated using data obtained through the case studies across six businesses in two manufacturing industries and extrapolated to the manufacturing industry as a whole as defined through data provided by the ABS.

As stated earlier, other high risk industries that could save if this option was implemented include the rural sector and workplaces in industries where water is significantly involved. However, low risk industries stand to make the least savings.

## **Stakeholder impact**

It is anticipated that the introduction of any of options two through five will impact on a number of stakeholders in different ways, including:

*Organisations currently undertaking their own testing and tagging*

Businesses who currently undertake their own testing and tagging of electrical equipment may benefit from the introduction of the proposed Code as outlined in option five, as the Code allows businesses greater flexibility in deciding which way to discharge their electrical safety obligation is more cost-effective.

The outcomes to businesses are dependent upon the size of the company in addition to their current costs of testing and tagging. Whereas a small retail firm may decide that it would be more cost-effective to continue testing and tagging equipment in addition to a comprehensive maintenance regime, a large manufacturing business may undertake a risk analysis and decide that it would be more cost-effective to install safety switches in addition to their maintenance regime.

*Persons engaged to undertake testing and tagging for businesses*

Licensed electrical workers and licensed electrical contractors who are engaged by businesses to undertake testing and tagging of electrical equipment for them may be affected by the introduction of the Code detailed in option five where businesses decide, following an analysis of the risks in the workplace, that it would be more cost-effective over time to install safety switches than to continue with a testing and tagging regime.

*Persons owning places that provide accommodation to the public*

If implemented, options three or four in this RIS will impose costs on persons who own places that provide accommodation to the public, namely with the mandatory installation of safety switches.

However, as stated above, the extension of this proposal is consistent with the initial policy intention of the electrical safety legislation with regard to rental properties. Additionally, given the tragic electrical fatality that occurred in a caravan park, the potential human costs of not considering the extension of safety switches in places that provide accommodation as outlined in the above options are unquantifiable.

*Persons using public accommodation*

The implementation of relevant proposals in this RIS will result in safer accommodation choices for Queenslanders and for people seeking accommodation in Queensland. As stated above, the extension of the installation of safety switches in rental properties outlined in options three and four provides electrical safety equity to people entering rental agreements and afford those people with the same level of electrical safety as those in other types of domestic dwellings. It is not anticipated that a



one-off capital cost of \$270 would be passed onto tenants in the form of a rental increase should either option three or four be adopted.

### *Queensland workplaces*

Based on the Coroners' recommendations relating to all Queensland workplaces, this RIS proposes changes to the ways in which obligation holders can discharge their electrical safety obligations by providing flexible alternatives as proposed by option five. While businesses not presently meeting industry best practice benchmarks may incur increased financial costs if the proposed Code is introduced, it is anticipated that the majority of businesses will benefit both in terms of efficiency and cost-effectiveness by the proposed changes.

Additionally, the extension of the installation of safety switches in workplaces will benefit employees, who will be able to undertake their work with the knowledge that their work environment has been risk assessed and consequent appropriate action has been taken to ensure their safety and wellbeing. Furthermore, as more workers are protected from the potential risk of electrical accidents, the level of injuries and fatalities will be reduced, which could have flow-on effects for the economy in terms of the costs of medical treatment, hospitalisation and lost production time.

### *Electrical industry associations*

Electrical trade unions and industry associations have indicated support for the extension of safety switch installations and strong maintenance routines as proposed in options three and four. However, there has been some opposition to changing the current specified electrical equipment regimes, as proposed in option five. There is also a potential reduction in work related to testing and tagging if option five is adopted.

## **Fundamental legislative principles**

The *Legislative Standards Act 1992* outlines fundamental legislative principles that require legislation to have sufficient regard to the rights and liberties of individuals and the institution of Parliament. It is considered that the proposed Code of Practice and associated regulatory amendment has sufficient regard for these principles. The Office of the Queensland Parliamentary Counsel has been consulted on this matter and have indicated that they do not consider any proposals outlined in this RIS as likely to encroach on any fundamental legislative principles, including the issue of retrospectivity.

The drafting of any legislation about extending the safety switch requirement and introducing a requirement for maintenance would include an assessment of whether the legislation has sufficient regard for fundamental legislative principles.

## **Consultation**

This regulatory impact statement has been informed by submissions to the issues paper *Safer Electrical Equipment*, and feedback from stakeholders, including the reference group that has been established for the purpose of providing information and advice. The Electrical Safety Board and the Commissioner for Electrical Safety have also been consulted in relation to the Coroners' Recommendations project.

## **Conclusion**

While this RIS canvasses a number of distinct options, these options are not mutually exclusive which means that the option/s selected by Cabinet based on the outcome of this RIS may operate in conjunction with one another.

The Coroners' recommendations highlighted a preference for the installation of safety switches as an effective way to address electrical safety, and this is reflected in the options developed for this RIS.

It is considered that the proposal to introduce a Code of Practice for Electrical Equipment will provide practical advice on ways for obligation holders to manage the electrical safety risk associated with the use of electrical equipment in workplaces and places that provide accommodation to the public. The Code will also provide businesses with the flexibility to evaluate and address their electrical safety obligations in practical ways that take into account the particular situations of the businesses.

It is also considered likely that the Code will encourage an increase in the installation of safety switches through the extension of their use in workplaces and places that provide accommodation to the public. As such, option five is the preferred option.

## Attachment 1

### Approach of other jurisdictions

Queensland has a rigorous electrical safety regime in place. As well as the legislation, AS/NZS3000:2000 sets out a comprehensive set of nationally applicable rules for electrical installation that have required the installation of safety switches in high risk areas and in dwellings since 1992.<sup>11</sup> It should be noted that AS/NZS 3000:2000 applies to new work and is not retrospective.

A number of Australian jurisdictions have occupational health and safety provisions in legislation for safety switch protection which exceed the requirements of AS/NZS 3000:2000.

**Table 1** summarises the various requirements relating to safety switches and testing and tagging. There are other provisions in relation to safety switch maintenance, which are not covered here.

	<b>Safety Switch Requirement</b>	<b>Test and Tag Requirement</b>
<b>Queensland</b>	Safety switch protection mandatory under the provisions of AS 3012 for construction workplaces. Safety switch protection required variously for specified electrical equipment in class 2 workplaces, while it is optional for such as office and other workplaces and may be used in lieu of testing and tagging requirement. <sup>a</sup>	<i>Electrical Safety Regulation 2002</i> Section 82 <i>division 5</i> - prescribes a way of discharging the electrical safety obligation of an employer or self-employed person to ensure that the person's business or undertaking is conducted in a way that is electronically safe.

<sup>11</sup> 2.5.3 AS/NZS 3000:2000 (see Appendix C)

		<p>Section 87 – <i>Subdivision 3</i> – “Class 1” work specifies that an employer or self-employed person must ensure that all electrical equipment for the performance of work is in accordance with the requirements of AS/NZS 3012 (Electrical installations-Construction and demolition sites.)</p> <p><i>Subdivision 4-Class 2 work</i> requires test and tag and a safety switch for specified electrical equipment.</p> <p>Subdivision 5-Class 3 or 4 work requires test and tag or connected to a safety switch for specified electrical equipment. Safety switches must be tested in accordance with AS/NZS 3760.</p>
<p><b>New South Wales</b></p>	<p>For construction workplaces, the Workcover Code of Practice requires safety switches for every single phase final subcircuit, and final subcircuits supplying hand held or portable equipment. For other workplaces, safety switch use is based on risk assessment under the <i>Occupational Health &amp; Safety Regulation 2001</i>.</p>	<p>The <i>Occupational Health and Safety Regulation 2001</i> requires the frequent inspection and testing of electrical equipment in workplaces.</p>

		<p>The frequency of inspections that are outlined in Section 2 of the <i>AS/NZS In-service safety inspection and testing of electrical equipment</i> are recommended but can be varied subject to a risk assessment that has been carried out in accordance with the risk management provisions of the Regulation.</p> <p>Hired electrical equipment must be inspected in accordance with <i>AS/NZS 3760/2001</i>. For construction work the inspection, testing and tagging requirements are described in a WorkCover NSW Code of Practice: <i>Electrical practices for construction work</i>.</p>
<b>Victoria</b>	<p>Mandatory in construction workplaces through call up of AS3012 and <i>Industry Standard for Electrical Installations on Construction Sites</i>.<sup>b</sup></p>	<p><i>AS/NZS In-service safety inspection and testing of electrical equipment AS/NZS 3760/2001</i> used as a method if discharging OHS obligations.</p> <p><i>Industry Standard for Electrical Installations on Construction Sites</i> specifically requires the testing of electrical equipment with reference to <i>AS/NZS 3760/2001</i>.</p>

<b>Tasmania</b>	No specific requirements for safety switch protection in workplaces. Risk based assessment would strongly indicate safety switch protection in some circumstances.	Electrical Standards and Safety Office recommend that there be testing and tagging however they cannot enforce it. It is not mandatory as it is not specified in any legislation or standard.
<b>South Australia</b>	<i>Occupational Health, Safety &amp; Welfare Regulation 1995, 2.5.3-2.5.4 (New Installations).</i> If a supply of electricity is provided through a power circuit, other than a lighting circuit, to a socket outlet at a workplace, any risk associated with the supply of the electricity must be controlled as far as is reasonably practicable by the installation of a non portable safety switch.	<i>Occupational Health, Safety and Welfare Regulations 1995 Section 2.5.7 inspection and testing electrical plant.</i>  Employers have flexibility in the interpretation of this clause. Should they choose to utilise this more specifically they also have the option of AS/NZS2760/2003. This is simply recommended as a guide, it is not mandatory and is not a code of practice. It is more performance based.  Australian standard 30/12 is at present with Parliament. Should this be approved then the testing and tagging at electrical installation of construction and demolition sites will become mandatory and industry best practice. CS Wong – 08 8303 0478, Chief Advisor Workplace Services.

<p><b>Western Australia</b></p>	<p>Regulation 3.60 of the <i>Occupational Safety and Health Regulations 1996</i> requires provision of safety switches for users of portable electrical equipment.</p> <p>Persons in control of workplaces are required to install non-portable type safety switches at the switchboard or in a fixed socket outlet.</p>	<p>Regulation 3.61 of the <i>Occupational Safety and Health Regulations 1996</i> specifies that electrical installations, appliances and equipment on construction sites must comply with AS/NZS 3012 “Electrical Installations – Construction and demolition sites.”</p> <p>Clause 3.6 of AS/NZS 3012:2003 specifies that electrical equipment shall be inspected and tested in accordance with AS/NZS3760 “In-service safety inspection and testing of electrical equipment.”</p> <p>Regulation 3.62 of the <i>Occupational Safety and Health Regulations 1996</i> requires that persons who test and place their licence number on the tag must be electrical workers as defined in the <i>Electrical (Licensing) Regulations 1991</i>.</p>
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		<p>Regulation 4.37 of the <i>Occupational Safety and Health Regulations 1996</i> specifies that plant at workplaces must be subjected to appropriate checks, tests and inspections to reduce the risk of injury or harm.</p> <p>Regulation 5.27 of the <i>Mines Safety and Inspection Regulations 1995</i> specifies that portable apparatus normally used in heavy operating environments must be examined, tested and tagged quarterly.</p>
<b>A.C.T</b>	Construction workplaces must comply with AS 3012. Otherwise AS3000 applies.	Does not appear in any legislation of Commonwealth and ACT Territory legislation. AS/NZS 3760 is used and listed as code of practice.
<b>Northern Territory</b>	<i>Work Health (Occupational Health &amp; Safety) Regulations 2003</i> require the use of safety switches in workplaces in particular circumstances.	To comply with the tests required in AS/NZS 3760:2000 does not constitute electrical work in regard to the Electrical Workers and Contractors Act provided that the testing does not include dismantling, assembling or repairs of the equipment being tested.



	<p>Where electricity is supplied through a socket outlet at a workplace to –</p> <ul style="list-style-type: none"> <li>• hand-held or portable electrical equipment; or</li> <li>• electrical equipment that is used in a manner or location that increases the risk of electrical shock, then the socket outlet must be protected by a safety switch installed on the switchboard or on the outlet itself. This requirement may also be satisfied by connecting a portable safety switch connected directly to the socket outlet.</li> </ul> <p>The regulation does not apply where the supply of electricity:</p> <ul style="list-style-type: none"> <li>• does not exceed 32 volts alternating current;</li> <li>• is direct current;</li> <li>• is provided through an isolating transformer complying with AS 3108; or</li> <li>• is provided from the unearthed outlet of a portable generator.</li> </ul>	<p>However, Occupational Work Health and Safety legislation requires a person to be a competent person to carry out “Testing and Tagging” of portable in service electrical equipment.</p>
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- a *Electrical Safety Act 2002 and Electrical Safety Regulation 2002* (see Appendix A and B)
- b March 2002

Many jurisdictions have requirements for safety switch protection in excess of AS/NZS3000:2000. When the standard is inconsistent with the legislation, the legislation prevails to the extent of the inconsistency. On an electrical safety matter, if the legislation contains more stringent requirements it is the legislation with which compliance must be ensured.

International regulation regarding safety switches and their use in domestic dwellings is covered by various codes, and in the UK, the Wiring Regulation BS7671 applies. Presently in the UK there is an investigation into including electrical safety requirements for dwellings in the Building Regulations.<sup>12</sup> However, the discussion of safety switches appears to be around encouraging, rather than legislating, their installation.

International regulation regarding electrical equipment is managed through the approach of Codes, including in Britain the Code of Practice for in-service testing, comparative to AS/NZS 3760, in use in Australia and New Zealand.

**Table 2** below gives a comparison of how the regulation of electrical equipment and safety switches is managed internationally.

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<sup>12</sup> *Electrical Safety in Dwellings*, Office of the Deputy Prime Minister.

**Table 2**

	<b>Safety Switch Requirements</b>	<b>Maintenance of Electrical Equipment</b>
<b>UK</b>	<p>No uniform legislation relating to widespread installation of safety switches is apparent.</p> <p>Electrical Safety information refers to the benefits of safety switches but not to any legislation requiring their installation. A reference to “encouraging” the installation of Safety switches suggests that widespread mandatory installation is not legislated.</p> <p>The Institute of Electrical Engineers <i>Wiring Regulations (BS 7671)</i> are the standard for the UK and some other countries. These regulations appear to require the use of safety switches in certain circumstances.</p>	<p>The Institution of Electrical Engineers produces a <i>Code of Practice for in-service inspection and testing of electrical equipment</i>. The code sets out recommendations for inspection and testing but is not legally enforceable (cf. <i>AS/NZS 3760:2001 In-service safety inspection and testing of electrical equipment</i>).</p> <p>The UK <i>Electrical Equipment (Safety) Regulations 1994</i> set out requirements and procedures relating to the approval of electrical equipment (cf. Part 6 Qld Regs). The Regulations require “conformity with the principal elements of the safety objectives for electrical equipment”, which include protection against hazards arising from the electrical equipment and protection against hazards which may be caused by external influences on the electrical equipment in foreseeable circumstances in the future.</p>

		<p>These requirements are aimed at reducing the possible danger to “persons, domestic animals and property” by requiring high initial standards for electrical equipment.</p>
<b>Canada</b>	<p>The <i>Canadian Electrical Code</i> requires the use of Ground Fault Circuit Interrupters (GFCIs – safety switches) in certain situations. Each province then utilises this code in the development of their own requirements.</p> <p>References to GFCIs are in relation to receptacles (power outlets) in designated situations, indicating that installation of GFCIs on switchboards is not mandatory.</p> <p>The promotional material for the Electrical Safety program in British Columbia does state that GFCIs are in “virtually all modern Canadian homes”.</p>	<p>The <i>Canadian Electrical Code</i> requires all electrical equipment to be kept in a safe and proper working condition. This provision allows an electrical inspector to take an unsafe piece of equipment out of service.</p>

<b>United States</b>	<p>The current US <i>National Electrical Code</i> (2002) requires the installation of GFCIs in certain commercial and domestic situations, such as in bathrooms and on temporary installations.</p> <p>Similar to Canada, references to GFCIs in designated situations indicate that installation of GFCIs on switchboards is not mandatory. Electrical safety promotions in the US do advertise the benefits of GFCIs on domestic switchboards.</p>	<p>The OHS standard <i>1910.334 Use of equipment</i> applies to portable electrical equipment and includes workplace electrical equipment maintenance requirements, such as visual inspections before use of equipment.</p> <p>The standards also state that “only qualified persons may perform testing work on electric circuits or equipment” and that a qualified person is “one familiar with the construction and operation of the equipment and the hazards involved”.</p> <p>This standard does not give any time frame in which certain equipment should be tested.</p>
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<b>New Zealand</b>	Empowered by the <i>Electricity Amendment Regulations 2002</i> , AS/NZS 3000 came into force on 1 January 2003 and requires that all new electrical installations have safety switches fitted on the main switchboard for all lighting and socket-outlets final subcircuits. The requirement also requires any new socket-outlet subcircuit installed in an existing electrical installation to be safety switch protected.	The 'New Zealand Electrical Code of Practice for Repair of Domestic Electrical Equipment' sets out basic requirements for safe work. The code is specific to domestic equipment and does not give specific instructions or time frames for maintenance of specific equipment. New Zealand is subject to the same standards that cover Australia, such as AS/NZS 3760 'In-service safety inspection and testing of electrical equipment'. Further requirements relating to the maintenance of electrical equipment are not apparent.
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## ENDNOTES

- 1 Laid before the Legislative Assembly on . . .
- 2 The administering agency is the Department of Industrial Relations.