energysafe VICTORIA

Creating a safer state with electricity and gas

Consultation Paper

Proposed Electricity Safety (Cathodic Protection) Regulations 2019

Comments invited by COB 26 September 2019

VICTORIA State Government

Issued: September 2019

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1. Summary

1.1 Legislation and current Regulations

The *Electricity Safety Act 1998* (the Act) provides for the safety of electricity generation, transmission and distribution, the safety standards of electrical work, the protection of underground and underwater structures from corrosion caused by stray electrical currents, and awareness of electrical safety requirements.

One of the Act's provisions is the protection of underground and underwater structures through the management of the impacts of stray current (SC) caused either naturally (such as telluric currents) or through imbalances and other imperfections in direct current electrical systems. Those impacts include corrosion of metallic structures and the effects of that corrosion.

The Act establishes the Victorian Electrolysis Committee (VEC) as an expert advisory group, creates general duties to minimise the risks associated with SC on some parties, confers regulatory powers on Energy Safe Victoria (ESV) to directly address SC issues, and provides for the registration of Cathodic Protection (CP) systems which protect structures from corrosion.

The Electricity Safety (Cathodic Protection) Regulations 2009 (the current Regulations) establish the processes and means for registering CP systems in accordance with the Act. The registration process provides a means for ESV to review the operating parameters of each CP system so that it does not adversely affect structures belonging to other parties. The specific requirements for the information to be included in applications to register CP systems (and in the case of those CP systems with higher outputs, re-registration every 10 years) are set out in the current Regulations.

There are currently over 17,000 CP systems registered with ESV. This does not include CP systems designed to protect the internal surfaces of a structure, such as water tanks, because they are exempted from the requirement to be registered.

The Electricity Safety (Cathodic Protection) Regulations 2019 (the proposed Regulations - see **Appendix 1**) discussed in this paper are proposed to replace the current Regulations that expire on 1 December 2019.

1.2 Nature of proposed Regulations

The proposed Regulations, with limited changes, maintain the requirements of the current Regulations. As such, they continue to strike an appropriate balance between the burden of registration and compliance, with the achievement of safety outcomes.

The proposed changes (detailed at **Appendix 2)** are limited and address minor issues with the application of the current Regulations.

The proposed changes were identified following stakeholder consultation during 2019, and a policy review of the current Regulations including an analysis of comparable regulatory requirements in other states. The proposed changes reflect ESV's intention to improve administrative efficiency while maintaining safety outcomes required of the Act by:

- Amending the definition of a prescribed CP system to exclude those systems that use galvanic anodes which have total outputs not exceeding 250 milliamperes, and therefore removing them from the requirement to register; and
- Making other minor administrative changes.

The proposed Regulations will not change the fees for the registration of the remaining prescribed CP systems or impose any new burden. The administrative changes are considered to impose negligible costs as they clarify compliance with the Act and the registration requirement imposed by the Act.

ESV's analysis is that the cost impact of these changes will have no material impact on CP system owners.

1.3 How to make a submission

ESV invites written submissions on the proposed Regulations no later than close of business on **Thursday, 26 September 2019**.

Submissions should be addressed to:

Neil Jenkins
Senior Policy Officer
Energy Safe Victoria
PO Box 262,
Collins St West, VIC 8007

Or send by email to: inforegulations@energysafe.vic.gov.au

For more information, contact Neil Jenkins on (03) 9674 6300.

1.4 Further information on submissions

Submissions will be considered in finalising the proposed Regulations, which will be remade in late 2019.

Please note that in ESV will make submissions to this Consultation Paper publicly available. Should you wish for any parts of your submission to remain confidential please clearly indicate the sections of the submission and reasoning for the request.

ESV will determine whether or not to withhold or publish the submission following consultation with you.

Definition of key terms

ABN	Australian Business Number
A / mA	Amperes / milliamperes
ACN	Australian Company Number
AS 2832	Australian Standard 2832 – Cathodic protection of metals
CP	Cathodic Protection
DC	Direct Current
DELWP	Department of Environment, Land, Water and Planning
Electrolysis	Corrosion due to stray currents
Electrolysis Mitigation	Equipment installed to combat stray currents from traction systems, which includes Thyristor Drainage Units, Drainage Bonds, and electrolysis feeders
ESV	Energy Safe Victoria
IC	Impressed current
GA	Galvanic anode
GA CP system	A CP system which uses a galvanic anode designed to passively corrode to protect a structure.
Prescribed CP system	A system described in clause 5 of the current Regulations to which the Act applies
SC	Stray current
Stray current	Electricity (typically DC) which flows through the ground to its source. This may occur naturally or be due to imperfections or imbalances in electrical supply systems.
Structure	Infrastructure or assets, such as a building's foundation, wharf pilings, pipe, cable, or other metallic object in contact with the ground that requires protection from the adverse impacts of SC.
The Act	*Electricity Safety Act 1998*
The current Regulations	Electricity Safety (Cathodic Protection) Regulations 2009
The proposed Regulations	Electricity Safety (Cathodic Protection) Regulations 2019 *(Appendix 1)*
TDUs	Thyristor Drainage Units
VEC	Victorian Electrolysis Committee

2. Background

This section explains what stray current is, the statutory context of the proposed Regulations and the role of the VEC in supporting ESV's regulatory functions.

2.1 Stray current

Stray Current (SC) refers to the flow of direct current (DC) electricity back to its source through an unintended path such as the ground. SC can either occur naturally (such as telluric currents) or be generated through imbalances and other imperfections in DC electrical systems. SC from electrical systems is generally greater and does more damage.

An example of a ***source*** of SC is DC generated by rail and tram systems, which have imperfect connections between the rail segments of railway tracks.

Examples of ***structures*** affected by SC include underground pipes, electricity cables, other utilities, water tanks, building foundations and wharves. ESV defines "structures" as being infrastructure or assets that require protection from the adverse impacts of SC.

Corrosion of the metallic components of structures due to SC can be accelerated if exposed to additional SC from electrical systems.

2.2 Common methods to manage SC

The minimisation of risk to persons and property from the leakage of SC and mitigation of the effects of stray current corrosion involves one of three approaches. They are:

- **The lifecycle management of rail traction power systems:** these are the train and tram systems which produce high levels of direct current, which leak into the soil and nearby metallic structures due to imperfections in the return path provided by the tracks.
- **Installation of Electrolysis Mitigation equipment:** these are systems (typically Thyristor Drainage Units – TDUs - and drainage bonds) which provide a controlled method of returning the SC to the source of the rail power system from a structure owned by another party.
- **CP systems:** there are two kinds of CP systems, passive and active. Passive systems use a sacrificial anode (galvanic anode – GA) that corrodes instead of the structure, while active systems use an 'impressed' current (IC) which applies DC to protect the metal surface. If IC CP and high output GA systems are designed to maximize protection to the intended structure, they can become a source of SC which can adversely affect structures. The higher the current, the greater the risk is that these systems might cause damage.

2.3 Statutory context

The context for the regulations is set out in the Act. The Act seeks to ensure the protection of underground and underwater structures from SC corrosion through:

- creating general duties on rail operators with respect to the safety of persons and property through leakage of SC from the railway power systems (section 94);
- conferring regulatory powers on ESV to address issues arising from SC (section 95 and section 96);
- establishing the expert advisory committee, the Victorian Electrolysis Committee (VEC), whose members are appointed by the Minister, and drawn from the rail sector and

other stakeholders with a direct interest in SC and its potential impacts on their structures[1] (section 91); and
- prohibiting the operation of prescribed CP systems unless registered with ESV (section 93).

The Act authorises the Governor in Council to make regulations under section 157 for a range of matters, and also under section 155 for matters relating to CP systems and for the mitigation of SC, and other matters relating to CP system registration, the keeping of a register by ESV, testing, fees and the workings of railways to mitigate danger and damage.

The regulations establish the processes and means for registering CP systems in accordance with section 93 of the Act. The registration process provides a means for ESV to specify the operating parameters of each CP system so that it does not adversely affect structures belonging to third parties.

The absence of regulations would leave the operation of CP systems unregulated. This is because the Act only applies to CP systems which are prescribed by regulations. If there were no prescribed CP systems, there would be no controls over CP systems and ESV would be unable to take regulatory actions that enable effective mitigation of SC and therefore support safe electrical outcomes. Regulations are therefore required to enable compliance with, and enforcement of, the Act.

Section 94 of the Act is the main control over the risks associated with the effects of SC from railway systems, as the most significant source. While that section does not explicitly refer to regulations, section 155 of the Act provides for the making of regulations in relation to the *"*(mitigation of) *danger and damage from fusion or electrolytic action"* in respect of return conductors, structure and construction of railways and associated testing.

No regulations pertaining to railway systems are currently made under section 155 because the production and management of SC from railways is complex, and a policy review has not identified gaps or any issues with the level of compliance with the Act. ESV is satisfied that section 95 provides it with the regulatory powers to directly address specific SC issues efficiently.

ESV also takes an active role in determining what it believes constitutes compliance with the Act and directs the relevant parties on a SC issue specific basis.

2.4 Management of the impacts of SC

The statutory framework is concerned with managing and minimising SC risks and impacts rather than prescribing the prevention of SC. The Act recognises that SC can occur naturally and through artificial means, and at levels sufficiently low so that mitigation action is not required.

[1] S91 states that the VEC is to be constituted by a person nominated by ESV, other persons representing the interests of train and tram operators, and technical experts from the electricity distribution, water, gas, telecommunications and petroleum sectors.

2.5 Regulatory framework

2.5.1 Statutory objectives

Section 6 of the Act sets an objective for ESV to protect underground and underwater structures from corrosion caused by SC. This means that ESV's jurisdictional interest is in corrosion, and the risks it creates, caused by stray electrical current.

The large number of structures implied by the Act means that ESV focuses on monitoring the sources of electrical SC to minimise the impact on structures, rather than seeking to ensure the protection of each individual structure. This is because owners of individual structures have strong commercial incentives to manage and monitor matters which impact on their structures.

Section 91 of the Act establishes the VEC. The VEC's functions are set out in section 92, which are that it:

- establishes and maintains standards for systems for CP and for the mitigation of SC corrosion; and
- provides advice to ESV on any matter related to electrolysis and the regulations relating to CP and to the mitigation of SC corrosion, when requested to do so by ESV; and
- encourages the development of new methods and technology to increase the efficiency of systems for the mitigation of SC corrosion.

The VEC's membership is defined in the Act and drawn from sectors that have systems that generate, or structures that are affected by, SC, including persons nominated from portfolios covering electricity distribution, water, gas, telecommunications and petroleum, and persons to represent the interests of rail power system operators. ESV is a member of, and chairs, the VEC.

In the context of SC mitigation, the value of the VEC is that it represents a source of multi-disciplinary technical expertise that spans the systems that produce, are affected by, and mitigate and protect against, SC; this technical advice and knowledge of sector specific issues and practices informs ESV's determination of regulatory compliance and the appropriate and proportionate resolution of complicated SC issues.

2.5.2 SC Risk

Scope of SC risk

There are two different SC risk environments:

1. geographical areas surrounding the rail (train and tram) power networks – or 'traction' environment - because they have the potential to cause SC that effect others' structures; and
2. geographical areas surrounding CP systems which also have potential to cause SC depending on the current output, proximity of 3rd party structures and soil conditions – these may be within, or outside, the traction environment.

ESV's regulatory efforts are focussed on areas of greatest risk, and ESV determines the extent of the regulatory monitoring activities it undertakes in these two environments. ESV may seek technical advice from the VEC to inform the planning and conduct of monitoring activities, so as to efficiently detect issues with SC issues before they arise.

The traction environment

The traction environment is a high risk environment because extensive railway power systems have the potential to produce higher levels of SC that creates a more corrosive environment for buried metallic structures, and are located in areas where there are large numbers of below ground structures, especially in metropolitan areas.

To address this, the two rail power system operators in Victoria and 24 structure owners whose structures are most affected by SC collaborate on arrangements which enable them to install electrolysis mitigation solutions such as TDUs and drainage bonds. These are the most effective means to mitigate the impacts of SC corrosion, and these arrangements allow the parties to obtain the greatest benefit at the lower cost, while negating the burden of needing to install a large number of CP systems to protect structures against SC.

The CP environment

Stray Current can also be generated by CP systems operating to protect structures. The level of SC that can impact the structures of other parties can be affected by the proximity of the structure to the CP system, the CP system's electrical current output, and local soil conditions.

The regulations establish the processes and means for registering CP systems in accordance with section 93 of the Act. This provides a mechanism for ESV to review the operating parameters of CP systems so they do not adversely affect structures belonging to third parties.

Testing of CP systems on nearby underground or underwater structures to assess whether interference is occurring is conducted prior to first registration (and prior to re-registration) by ESV, and informs the conditions of registration imposed when a CP system is registered. ESV seeks technical advice from the VEC on the appropriate operating parameters of a CP system before registration, and uses this to inform the conditions of registration.

ESV monitors compliance with registration conditions by conducting approximately 240 audits each year of CP systems that have electrical output of at least 2A. While breaching the conditions of registration constitutes an offence that can be prosecuted, ESV has not taken enforcement action to date because once CP system owners/operators have been informed of their non-compliance they have voluntarily changed the outputs of their systems to move back into compliance when audits identified system non-compliance. Repeat offenders or significant damage to other parties' structures has not resulted from this approach to date.

The cost of ESV's CP audit program is funded through registration fees prescribed in the current and proposed Regulations.

2.5.3 Stray current risk controls in the traction environment

ESV's Role

The Act recognises the heightened SC risks within the traction environment through section 94 of the Act; this imposes a duty on rail operators to minimise the risks to persons and property from the leakage of SC from their systems. The intention is to ensure that reasonable costs of minimisation are borne by those entities' whose operations and SC producing systems may impact others, rather than the costs being solely borne by structure owners who either incur a loss (due to SC caused corrosion) or bear the cost of installing mitigation or protection systems.

In establishing an outcome based duty for rail operators to achieve the minimisation of SC risk, the Act recognises that the impact of SC generated by railway power systems vary due to factors outside of the rail operators direct control, and that a more agile approach than prescriptive regulation is the only practical way to ensure that specified safety outcomes are achieved.

As the independent technical regulator, ESV undertakes activities to:

- independently assess how effectively SC risks have been minimised in the traction environment; and
- determine if rail operators are meeting their duties under section 94.

ESV assesses the impact of SC across the traction environment, and determines the likely sources, through conducting area tests and inspections of SC mitigation systems that establish their effectiveness. An Area Test involves ESV identifying imbalances between systems that produce SC, protect structures, or that mitigate SC.

Issues identified through areas tests are raised with relevant structure and system owners who may make adjustments to reach an optimal balance. The involvement of the structure and system owners in area testing facilitates an understanding of ESV's requirements to achieve the optimal balance. If agreement to resolve issues cannot be reached with owners, ESV can issue directions to seek resolution and take enforcement action if necessary. ESV's preparation for area tests and the actions it takes, may involve seeking advice from the VEC.

ESV conducts approximately 22 area tests each year. There are 87 TDUs in operation, and ESV audits each TDU ten times per year, for a total of 870 TDU audits per year. There are approximately 1,200 drainage bonds that ESV inspects ten times per year, totalling 12,000 inspections per annum. The frequency of testing is determined based on ESV's assessment and with consideration of advice from the VEC.

The impact of SC on structures is dependent on a number of interacting factors that include variations in local soil conditions and the electrical interactions between different parties' systems and structures. Compliance with statutory requirements must therefore be assessed on an ongoing basis, and may require a number of legally distinct entities to cooperate on frequent adjustment to SC mitigation and protection systems to achieve compliance. To date, ESV has been able to resolve SC with the voluntary cooperation of the relevant parties through its inspection and testing programs. Where disputes arise between parties on the timeliness of system adjustments ESV can use its statutory powers to direct timely rectification.

ESV's inspection and test activities in the traction environment are funded through contributions from the two rail power system operators and the 24 owners whose structures are most affected by SC. ESV does this in accordance with section 97 of the Act that allows ESV to undertake action of SC matters directly and recover the cost from relevant parties. This is done on a full cost recovery basis that is consistent with Government policy, and reflects the benefit obtained by the funding entities in having independent verification that duties under section 94 have been met and SC risks minimised.

This means the costs of ESV's activities are not cross-subsidised through funding from the levies charged to Major Electricity Companies and fees under the Act paid by other industry sectors.

3. Proposed changes

This section sets out the main change being proposed to the regulations, which is the removal of the registration requirements for certain types of low output CP systems. It also sets out other minor changes to improve the operation of the regulations, and the intention to retain registration fees at current fee levels.

3.1 Prior consultation

In March 2019, ESV released an 'issues paper' to approximately 200 stakeholders including VEC members, key structure owners, and other parties with an interest in SC mitigation such as corrosion specialists.

The paper sought stakeholders' view of the current Regulations and asked broad questions. The responses have helped inform this paper.

Table 1 summarises the feedback received from industry and ESV's preliminary responses to that feedback.

Table 1: Feedback received on issues paper relating to the remaking of the current Regulations

	Issue raised	General industry feedback	Response from ESV
Cathodic protection system attributes	Low current GA CP systems	These should be exempted but located at least 2m away from foreign metallic objects	AS 2832.1, which is called up in the regulations, states that buried anodes should be positioned at least 1m from any foreign structure. Changes to the current Regulations are not proposed.
	Location of CP systems	Information on location and operating current of other cathodic protection systems should be publicly available.	CPs are owned by individual companies and it is their discretion as to whether they make information on their systems available through DBYD. ESV has access to the information it needs when it conducts testing, or when responding to enquiries or complaints relating to individual CP systems. Changes to the current Regulations are not proposed.
Regulatory control	Nature of regulations	Regulations should be outcome based to allow network operators to demonstrate what systems and controls are in place to manage risks associated with SC. It would also give operators flexibility to prescribe compliance to suitable published technical standards.	The only outcome based duty relating to SC in the Act is on rail operators who are required to minimise risks to the safety of persons and damage to property arising from leakage of SC from their railway systems. The regulations are not outcome based, but deal with the requirements regarding registration of CP systems. These enable ESV to determine conditions of registration which are outcome based and not prescriptive. No changes to the regulations are proposed.
	References to standards	Regulations should include a reference to the VEC Code of Practice.	The VEC's 'Code of Practice' relies upon specific provisions in AS 2832, as do the current and proposed Regulations.

			Changes to the current Regulations are not proposed.
	Terminology	Clause 18 of the current Regulations should replace 'time switch' with 'main switch' and 'in accordance with Australian / New Zealand Wiring Rules'	Time switches differ from main switches which are called up in the Wiring Rules, which are electrical installations such as residential houses. They are therefore designed for different purposes and environments. Also, time switches operate automatically while main switches do not. Changes to the current Regulations are not needed.

3.2 Registration of low output GA CP systems

The problems the proposed Regulations address follow a policy review of the current Regulations in 2018.

The effects of corrosion can be controlled by the owners of structures through the installation of CP systems. Decisions to install CP systems are driven by commercial considerations to protect structures.

The Act requires that CP systems be registered with ESV prior to operation. The regulations establish the process and means for registration, which enables ESV to specify the operating parameters of CP systems so they do not adversely affected structures belonging to third parties.

The requirement of owners to audit and inspect their CP systems, along with ESV's program of auditing higher risk (e.g. those with output of 2A or greater) systems, are aimed at managing the risks that their systems might have on others' structures.

Under the current Regulations, the registration of these higher risk systems expires after 10 years, and provides for the ability of owners to 'renew' the registrations prior to expiration. This ensures that the details of CP systems remain current, which supports ESV's program of auditing those systems which provide the greatest risk.

The number of CP systems registered by ESV as at May 2019 is approximately 17,500. The number of CP systems by output is listed in table 2:

Table 2: Number of registered CP systems

Current output	Number registered (approx.)
≤250mA	14,600
251mA – 2A	2,000
>2A	800

Ninety-two per cent (16,100) of CP systems are GA systems while the remaining eight per cent (1,400) are IC systems.

Government guidelines require regulatory agencies such as ESV to identify opportunities to reduce regulatory burden where possible. ESV has identified such an opportunity by proposing to remove GA CP systems with total output of 250mA or less ("low output GA CP systems") from the requirement to be registered[2].

The registration of these systems does not involve any regulatory activities by ESV after registration. This is because those systems operate at such a low current that ESV is not aware of any instances where they have caused damage to underground or underwater structures. This is analogous to the exclusion of internal CP systems under clause 5 of the current Regulations which do not affect other structures.

This is also acknowledged in the current regulations, by the fact that an application for registration of low output CP systems does not have a requirement to notify nearby metallic structure owners or include any consultation with those owners. The owners of low output systems are also exempt from the requirements of conducting annual audits of their systems, and notifying ESV of any changes to their systems.

One implication of excluding these systems from the registration requirement is that neither sections 96 nor 97 of the Act (which allow ESV to make directions to owners of CP systems and recover certain costs), would apply to those systems.

ESV's position that it is not technically feasible for these systems to cause damage to underground or underwater structures. Therefore, the need to regulate these systems is redundant.

Note that this proposal does not extend to CP systems operating up to 250mA that use IC. It only applies to GA CP systems. **The proposed Regulations will continue to require all IC CP systems to be registered**. The rationale to maintain registration of IC systems operating up to 250mA is that they have the capacity to operate above this limit with a relatively simple adjustment, and hence an arbitrary cut off of 250mA for those systems is not appropriate. The proposed Regulation will remove the requirement to register approximately 160 GA CP systems each year. The benefit of the regulation will therefore accumulate over several years.

The proposed Regulation will not have retrospective application to those systems that are currently registered, which will remain registered until removed from the register.

A new regulation 14(1) will enable owners of CP systems to request a registration be removed from the register. An example of where this would happen is where a CP system has been decommissioned and confirmed by ESV during its CP auditing program.

3.3 Fees

The fees in the current Regulations reflect the cost of regulating the registration and other processes relating to CP systems with different levels of output. As a result the fees differ according to the regulatory effort involved. An example of the differing regulatory activities is that each CP system with total output of greater than 2A requires a field audit every five years to ensure it is operating within the registered output limit.

ESV is of the view that the fee levels applying to registration of CP systems remain appropriate because they reflect the cost of ESV's registration and compliance monitoring activities. ESV is proposing that the current fee levels (based on the number of fee units) be retained for the proposed Regulations.

[2] The mechanism by which ESV proposes to do this is to amend the definition of what a 'prescribed' CP system in the regulations.

CP systems currently fall into three categories. The following table lists those categories along with the number of fee units associated with registering each, and the equivalent cost during 2019/20 based on the 2019/20 fee unit cost of $14.81 per unit:

Table 3: Registration costs

Total output	Fee units	Cost
≤250mA	8.77 for registration	$129.88
251mA – 2A	21.95 for registration	$325.08
>2A	49.57 for registration and further registration	$734.13

An analysis of regulatory activities by ESV staff suggests that the costing approach used during the making of the current Regulations remains valid, and that any minor adjustment to the fee levels (up or down) would lack materiality and defensibility[3]. As the proposed Regulations will not change the fees for the registration of other CP systems, the impact on industry will be neutral.

3.4 Other changes

ESV is proposing no other changes other than those which it expects will improve the operation of the regulations. The table below lists those minor changes, with brief explanations. They are also included in the explanation of the proposed Regulations in **Appendix 2**.

Table 4: Other minor improvements

Proposed change	**Reason for change**
Inserting a new regulation requiring the owner of a CP system applying for registration to include an Australian Business Number or Australian Company Number during the registration process.	Enables identification of applicants during the initial registration and further registration processes.
Amending the current regulation to require specification of the *"approved **maximum** operating current"* of the CP system rather than the *"proposed operating current"* of the system during the registration process.	Currently there is a disconnect between regulation 7(2)(d) and 12(b)(iii) which provide for the application to register a CP system, and keeping of the register by ESV in that the latter refers to the approved "***maximum***" operation current while the former does not. This change removes the anomaly by amending the wording of the application to specify the approved maximum operating current as is required to be included in the register. The change recognises that

[3] Refer *Proposed Electricity Safety (Cathodic Protection) Regulations 2009 – Regulatory Impact Statement* – specifically Appendix C. This in turn is broadly consistent with the approach taken for the making of the Electricity Safety (Stray Current Corrosion) Regulations 1999.

	effective risk management requires knowing what output each CP system is capable of producing.
Amending the regulations to clarify they do not apply to marine vessels that are not permanently moored or fixed offshore structures not connected with land above sea level	Clarifies requirements relating to those structures, as it is neither practical nor necessary to oversee the operation of those CP systems because of the nature of their operations and isolation from nearby structures.
Inserting a new regulation providing ESV with the ability to withdraw a registration on the request of the CP owner (as opposed to actions where the CP system is changed or removed).	Currently there is no provision enabling owners to have a registration withdrawn. The change will enable ESV to consider removing a CP system from the register on the owner's request. An example of where this is when a CP system has been decommissioned and removed from service.
Amending clause 18 of the current Regulations to enable owners of CP systems to seek an exemption from the requirement to make provision for testing.	Regulation 18 currently imposes burdens to provide for testing of CP systems where it may sometimes be impractical or unnecessary to do so. The proposed change enables a CP owner to seek exemption from the testing requirement, which will be assessed by ESV. An example of this is the case where galvanic anodes are directly connected to underwater parts of wharf structures. In this situation any underwater connections that might otherwise be required for testing, are prone to salt water corrosion, however these systems cannot affect other structures.
Amending the references in regulation 15 of the current Regulations to enable owners of CP systems which have registration due to expire, to apply to have that registration extended.	Currently the registration of CP systems with total output exceeding 2A expires after 10 years because of their greater ability to cause damage to third party structures. The current Regulations enable owners to 'renew' their registration, which involves the same processes and fees as an initial registration. A review of this provision has concluded that it would be more consistent with the existing head of power in the Act to provide for a 'further registration' of the CP systems. The change therefore provides better alignment with the intent of the Act. While this amendment involves wording changes, it does not affect the process nor the fees payable.

All changes relate to improving the efficient administration of the Act. There are no new costs.

Appendix 1: Proposed Regulations

Electricity Safety (Cathodic Protection) Regulations

Exposure Draft

TABLE OF PROPOSALS

Victoria

Electricity Safety (Cathodic Protection) Regulations

Exposure Draft

Part 1—Preliminary

1 Objectives

The objectives of these Regulations are—

(a) to prescribe cathodic protection systems and mitigation systems for the purposes of the **Electricity Safety Act 1998**; and

(b) to prescribe standards for the operation of cathodic protection systems; and

(c) to provide procedures for the registration of cathodic protection systems; and

(d) to prevent damage caused by cathodic protection systems to other metallic structures in the vicinity due to stray electrical currents; and

(e) to prescribe certain provisions of these Regulations that create offences as provisions in respect of which infringement notices may be served.

2 Authorising provisions

These Regulations are made under sections 155 and 157 of the **Electricity Safety Act 1998**.

3 Commencement

These Regulations come into operation on 29 November 2019.

4 Revocation

The Electricity Safety (Cathodic Protection) Regulations 2009[1] are **revoked**.

5 Definitions

In these Regulations—

Cathodic Protection Standard 1 means AS 2832.1 Australian Standard Cathodic protection of metals—Part 1: Pipes and cables, as published or amended from time to time;

Cathodic Protection Standard 2 means AS 2832.2 Australian Standard Cathodic protection of metals—Part 2: Compact buried structures, as published or amended from time to time;

Cathodic Protection Standard 3 means AS 2832.3 Australian Standard Cathodic protection of metals—Part 3: Fixed immersed structures, as published or amended from time to time;

Cathodic Protection Standard 5 means AS 2832.5 Australian Standard Cathodic protection of metals—Part 5: Steel in concrete structures, as published or amended from time to time;

electrolysis drainage bond means the path by which stray current resulting from the operation of a railway returns from an

underground or underwater metallic structure to its originating source;

galvanic anode means an electrode used to protect a structure by galvanic action;

impressed current means direct current supplied by an external power source;

registered cathodic protection system means a cathodic protection system registered under Part 2;

stray current means current flowing through paths other than an intended circuit;

the Act means the **Electricity Safety Act 1998**.

6 Prescribed systems

(1) For the purposes of the definition of ***cathodic protection system*** in section 3 of the Act, a prescribed system is a system that—

(a) uses one or more galvanic anodes with a total output of more than 250 milliamperes connected at a single point to a structure to provide intentional cathodic protection; or

(b) uses impressed current connected at a single point to a structure to provide intentional cathodic protection.

(2) For the purposes of the definition of ***cathodic protection system*** in section 3 of the Act, a prescribed system does not include a system that—

(a) is designed to protect the internal surfaces of a structure if the current produced by the system is isolated from the external environment; or

(b) protects a marine vessel that is not permanently moored; or

(c) protects a fixed offshore structure not connected with land above sea level.

(3) For the purposes of the definition of ***mitigation system*** in section 3 of the Act, a system that uses electrolysis drainage bonds and associated apparatus, cable and drainage equipment is a prescribed system.

7 Existing cathodic protection systems

(1) If a cathodic protection system was registered under the old regulations before 29 November 2019, the cathodic protection system is taken to be registered under these Regulations—

(a) in the case of a cathodic protection system with a total output greater than 2 amperes, until whichever of the following occurs first—

(i) the date that is 10 years after the date the cathodic protection system was registered;

(ii) the registration is withdrawn under these Regulations; or

(b) in the case of any other cathodic protection system, until registration is withdrawn under these Regulations.

(2) In this regulation, ***old regulations*** means—

(a) the Electricity Safety (Cathodic Protection) Regulations 2009 as in force immediately before their revocation; and

(b) the Electricity Safety (Stray Current Corrosion) Regulations 2009[2] as in force immediately before their revocation.

Part 2—Registration of cathodic protection systems

8 Application for registration of cathodic protection systems

(1) The owner of a cathodic protection system who intends to operate that system, or intends to allow that system to be operated, must apply to Energy Safe Victoria to have the system registered.

(2) An application for registration of a cathodic protection system must—

(a) be in writing and in the form approved by Energy Safe Victoria; and

(b) include the name, address and ABN (and, if applicable, the ACN) of the owner of the cathodic protection system; and

(c) include the name, address and ABN (and, if applicable, the ACN) of the operator or proposed operator of the cathodic protection system (if the owner is not or will not be the operator); and

(d) indicate the proposed maximum operating current of the cathodic protection system; and

(e) be accompanied by—

(i) a map showing the proposed location of the cathodic protection system, the metallic structure it is intended to protect and all metallic structures likely to be affected by the proposed system; and

(ii) drawings detailing the proposed system; and

(iii) a report on all consultations carried out between the applicant and the owners of metallic structures likely to be affected by the cathodic protection system including—

(A) the names, addresses and telephone numbers of the owners of metallic structures consulted; and

(B) the dates each of the owners of metallic structures were consulted; and

(C) any known objections to the registration of the system; and

(iv) the relevant registration fee set out in Schedule 1.

9 Further information for purposes of consideration of application

Energy Safe Victoria may require the applicant for registration under regulation 8 to provide any other information relating to the application that it considers necessary to determine whether to register the cathodic protection system.

10 Registration

(1) If Energy Safe Victoria is satisfied with a cathodic protection system, Energy Safe Victoria may register the system and grant a certificate of registration for the system to the owner of the system.

(2) Registration of a cathodic protection system ceases—

(a) in the case of a cathodic protection system with a total output greater than 2 amperes, when whichever of the following occurs first—

(i) 10 years after the date on which registration is granted;

(ii) when the registration is withdrawn under these Regulations; and

(b) in the case of any other cathodic protection system, if withdrawn under these Regulations.

11 Refusal of registration

(1) Energy Safe Victoria may refuse to register a cathodic protection system—

(a) until any testing required by Energy Safe Victoria has been completed to the satisfaction of Energy Safe Victoria; or

(b) if it reasonably believes that any metallic structure, other than the one to which the system is or will be connected, may have its electrical potential with respect to earth changed due to the operation of the system.

(2) If subregulation (1)(b) applies, Energy Safe Victoria may require the cathodic protection system to be modified, to its satisfaction, before it registers the system.

12 Register of certificates

(1) Energy Safe Victoria must keep a register of cathodic protection systems registered under these Regulations.

(2) A register kept under subregulation (1) must contain—

(a) the names and addresses of the owners of registered cathodic protection systems; and

(b) particulars of each cathodic protection system, including—

(i) the location of the system; and

(ii) the type of system (being either a system that uses galvanic anodes or impressed current); and

(iii) the approved maximum operating current of the system; and

(iv) the terms of every modification contained in a determination made under regulation 16(4).

13 Details of change

(1) The owner of a registered cathodic protection system must give Energy Safe Victoria details of a change of name or address or of ownership within 20 business days after the change occurs.

Penalty: 10 penalty units.

(2) If Energy Safe Victoria is notified under subregulation (1) of a change in ownership of the cathodic protection system, Energy Safe Victoria may grant a new certificate of registration to the new owner of that system.

14 Withdrawal of registration

(1) Energy Safe Victoria may withdraw the registration of a cathodic protection system if the owner of the system requests Energy Safe Victoria, in writing, to do so.

(2) Energy Safe Victoria may withdraw the registration of a cathodic protection system if a person to whom a notice is given under section 96 of the Act fails to comply with the directions in that notice.

(3) Energy Safe Victoria must give written notice of its intention to withdraw registration under subregulation (2) to the owner of the cathodic protection system 10 business days before it withdraws the registration.

15 Application for further registration

(1) This regulation applies to a registered cathodic protection system with a total output over 2 amperes, registration of which is due to cease under regulation 10(2)(a).

(2) The owner of a cathodic protection system to which this regulation applies may apply to Energy Safe Victoria to register the system, for a further period of registration, at any time before the registration of that system ceases under these Regulations.

(3) The application must—

(a) be in writing and in the form approved by Energy Safe Victoria; and

(b) include the name, address and ABN (and, if applicable, the ACN) of the owner of the cathodic protection system; and

(c) include the name and ABN (and, if applicable, the ACN) of the operator or proposed operator of the cathodic protection system (if the owner is not or will not be the operator); and

(d) indicate the proposed maximum operating current of the cathodic protection system; and

(e) be accompanied by—

(i) a map showing the location of the system, the metallic structure it is intended to protect and all metallic structures likely to be affected by the proposed system; and

(ii) drawings detailing the proposed system; and

(iii) a report on all consultations carried out between the applicant and the owners of metallic structures likely to be affected by the cathodic protection system including—

(A) the names, addresses and telephone numbers of the owners of metallic structures consulted; and

(B) the dates each of the owners of metallic structures were consulted; and

(C) any known objections to the registration of the system; and

(iv) the relevant registration fee set out in the Schedule 1.

Part 3—Operation of cathodic protection systems

16 Operation of cathodic protection systems

(1) For the purposes of section 93(2) of the Act—

(a) a cathodic protection system for the protection of a buried or submerged metallic pipe or cable must be operated in accordance with—

(i) Cathodic Protection Standard 1; or

(ii) if Energy Safe Victoria determines, under this regulation, that Cathodic Protection Standard 1 should apply as modified by Energy Safe Victoria, that Standard as modified; and

(b) a cathodic protection system for the protection of the external surfaces of a compact buried structure must be operated in accordance with—

(i) Cathodic Protection Standard 2; or

(ii) if Energy Safe Victoria determines, under this regulation, that Cathodic Protection Standard 2 should apply as modified by Energy Safe Victoria, that Standard as modified; and

(c) a cathodic protection system for the protection of the external surfaces of a fixed immersed structure must be operated in accordance with—

(i) Cathodic Protection Standard 3; or

(ii) if Energy Safe Victoria determines, under this regulation, that Cathodic Protection Standard 3 should apply as modified by Energy Safe Victoria, that Standard as modified; and

(d) a cathodic protection system for the protection of steel in concrete that is exposed to air or buried or submerged must be operated in accordance with—

(i) Cathodic Protection Standard 5; or

(ii) if Energy Safe Victoria determines, under this regulation, that Cathodic Protection Standard 5 should apply as modified by Energy Safe Victoria, that Standard as modified.

(2) A person who owns a cathodic protection system to which a standard specified in subregulation (1) applies may apply, in writing, to Energy Safe Victoria for the relevant standard to apply to that system in a modified way.

(3) An application under subregulation (2) must set out the terms of the modification sought.

(4) On receiving an application under subregulation (2), Energy Safe Victoria may determine that a relevant standard specified in subregulation (1) applies to the system as modified by the determination.

(5) A determination under this regulation must—

(a) set out the terms of the modification; and

(b) be given to the applicant.

(6) The terms of a modification must be entered into the register kept under regulation 12.

17 Notice of operation

The owner of a registered cathodic protection system that uses impressed current must give Energy Safe Victoria at least 5 business days notice of intention to commence operation of the system.

Penalty: 20 penalty units.

18 Provision for testing

(1) The owner of a registered cathodic protection system that uses impressed current must ensure that a time switch is able to be inserted in the system to enable the power supply to be interrupted for test purposes.

Penalty: 20 penalty units.

(2) The owner of a registered cathodic protection system that uses galvanic anodes must ensure that the circuit between any anode of the system and the metallic structures to be protected is able to be readily disconnected for test purposes, unless exempted under subregulation (5).

Penalty: 20 penalty units.

(3) The owner of a registered cathodic protection system (***the applicant***) may apply to Energy Safe Victoria to be exempted from the requirement in subregulation (2).

(4) An application for exemption must—

(a) be in writing; and

(b) state the reasons for the exemption.

(5) Energy Safe Victoria may grant an exemption if satisfied that the applicant demonstrates that the cathodic protection system is not likely to interfere with other metallic structures.

(6) An exemption granted under subregulation (5) may specify conditions to which the exemption is subject.

(7) A person who is granted an exemption under this regulation must comply with the conditions (if any) of the exemption.

Penalty: 20 penalty units.

19 Audit by the owner

(1) The owner of a registered cathodic protection system must annually inspect and record the operating current of the system.

Penalty: 20 penalty units.

(2) The owner of a registered cathodic protection system must ensure that a record prepared under subregulation (1) is available for inspection at all reasonable times by—

(a) Energy Safe Victoria; and

(b) persons whose metallic structures are affected or likely to be affected by that cathodic protection system.

Penalty: 20 penalty units.

20 Notification of modification or removal of cathodic protection system

(1) The owner of a registered cathodic protection system who—

(a) changes the operation of that system; or

(b) becomes aware of a change in the operation of that system—

must notify Energy Safe Victoria within 4 business days and give written notice within 10 business days, after that change or becoming aware of that change.

Penalty: 20 penalty units.

(2) The owner of a registered cathodic protection system who—

(a) removes that system; or

(b) becomes aware of the removal of that system—

must notify Energy Safe Victoria within 4 business days and give written notice within 10 business days, after that change or becoming aware of that change.

Penalty: 20 penalty units.

Part 4—Infringement offences

21 Provisions for which infringement notices may be served

For the purposes of paragraph (b) of the definition of ***prescribed offence*** in section 140A of the Act, regulations 13(1), 17, 18(1), 18(2), 18(7), 19(1), 19(2), 20(1) and 20(2) are prescribed provisions.

Schedule 1—Fees for cathodic protection systems

Regulations 8(2) and 15(3)

Item	*Description*	*Registration fee*
1	Registration fee for an impressed current cathodic protection system with a total output up to and including 250 milliamperes	8·77 fee units
2	Registration fee for an impressed current or galvanic anode cathodic protection system with a total output over 250 milliamperes and up to and including 2 amperes	1·95 fee units
3	Registration fee for an impressed current or galvanic anode cathodic protection system with a total output over 2 amperes	49·57 fee units

Endnotes

[1] Reg. 4: S.R. No. 151/2009.

[2] Reg. 7: S.R. No. 32/2009 as revoked by S.R. No. 151/2009.

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Fee Units

These Regulations provide for fees by reference to fee units within the meaning of the **Monetary Units Act 2004**.

The amount of the fee is to be calculated, in accordance with section 7 of that Act, by multiplying the number of fee units applicable by the value of a fee unit.

The value of a fee unit for the financial year commencing 1 July 2019 is $14.81. The amount of the calculated fee may be rounded to the nearest 10 cents.

The value of a fee unit for future financial years is to be fixed by the Treasurer under section 5 of the **Monetary Units Act 2004**. The value of a fee unit for a financial year must be published in the Government Gazette and a Victorian newspaper before 1 June in the preceding financial year.

Penalty Units

These Regulations provide for penalties by reference to penalty units within the meaning of section 110 of the **Sentencing Act 1991**. The amount of the penalty is to be calculated, in accordance with section 7 of the **Monetary Units Act 2004**, by multiplying the number of penalty units applicable by the value of a penalty unit.

The value of a penalty unit for the financial year commencing 1 July 2019 is $165.22.

The amount of the calculated penalty may be rounded to the nearest dollar.

The value of a penalty unit for future financial years is to be fixed by the Treasurer under section 5 of the **Monetary Units Act 2004**. The value of a penalty unit for a financial year must be published in the Government Gazette and a Victorian newspaper before 1 June in the preceding financial year.

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Table of Applied, Adopted or Incorporated Matter

The following table of applied, adopted or incorporated matter is included in accordance with the requirements of regulation 5 of the Subordinate Legislation Regulations 2014.

Statutory Rule Provision	**Title of applied, adopted or incorporated document**	**Matter in applied, adopted or incorporated document**
Regulation 5 (definition of ***Cathodic Protection Standard 1***)	Australian Standard 2832.1 Cathodic protection of metals—Part 1: Pipes and cables, published on 27 January 2015 by Standards Australia	The whole
Regulation 5 (definition of ***Cathodic Protection Standard 2***)	Australian Standard 2832.2 Cathodic protection of metals—Part 2: Compact buried structures, published on 27 June 2003 by Standards Australia	The whole
Regulation 5 (definition of ***Cathodic Protection Standard 3***)	Australian Standard 2832.3 Cathodic protection of metals—Part 3: Fixed immersed structures, published on 22 November 2005 by Standards Australia	The whole
Regulation 5 (definition of ***Cathodic Protection Standard 5***)	Australian Standard 2832.5 Cathodic protection of metals—Part 5: Steel in concrete structures, published on 17 September 2008 by Standards Australia	The whole

Appendix 2: Statement explaining the proposed Regulations

This appendix describes the effect of each clause of the proposed Regulations.

Part 1 (Regulations 1 to 7) – Preliminary

This part contains provisions for the operation of the statutory rule. It sets out the objectives of the regulations (**Regulation 1**), which are to: to prescribe cathodic protection systems and mitigation systems; prescribe standards for the operation of cathodic protection systems;
provide procedures for the registration of cathodic protection systems; ensure that cathodic protection systems do not cause damage to other metallic structures in the vicinity due to stray electrical currents; and prescribe certain provisions of these Regulations that create offences as provisions in respect of which infringement notices may be served.

Regulation 2 provides the statutory authority under which the proposed regulations are made. The regulations are made under sections 155 and 157 of the *Electricity Safety Act 1998*. **Regulation 3** provides that the regulations come into operation on 29 November 2019, while **Regulation 4** revokes the current the Electricity Safety (Cathodic Protection) Regulations 2009.

Regulation 5 provides definitions that are used in the regulations to assist with their interpretation. There are definitions for Cathodic Protection Standard 1, Cathodic Protection Standard 2, Cathodic Protection Standard 3, Cathodic Protection Standard 5, electrolysis drainage bond, galvanic anode, impressed current, registered cathodic protection system, stray current, and the Act.

Regulation 6 defines what a prescribed cathodic protection system is for the purposes of the Act. The regulations apply to a cathodic protection system that uses one or move galvanic anodes with a total output of more than 250 milliamperes, or use an impressed current. The limit of 250 milliamperes is new. The effect of this is to remove certain low output galvanic anode cathodic protection systems from the operation of the Act, which means they will not need to be registered, and cannot be subject to directions by ESV under sections 95 or 96 of the Act.

The regulation specifically excludes from the definition, systems which protect the internal surfaces of a structure. This is the case with the current regulations. However proposed new additions to the exclusions include a marine vessel that is not permanently moored or a fixed offshore structure not connected with land above sea level.

Regulation 7 provides a 'grandfathering' clause for the registration of cathodic protection systems that were previously registered under previous regulations. For those systems which have an output of greater than 2 amperes, that registration will expire 10 years after being previously registered or until withdrawn.

Part 2 (Regulations 8 to 15) – Registration of cathodic protection systems

Regulation 8 continues the previous requirements for an application for registration of a cathodic protection to be in a written form approved by ESV, and to include the name and address of the owner, the name of the owner or operator.

The proposed Regulations require the ACN or ABN of the owner or operator to help provide certainty over the entity or entities concerned.

The proposed Regulation will require the application to indicate the 'maximum' operating current, even if the system will be operated at some lower current. This ensures that systems that are "turned up" are already registered in the category for which that output applies.

The regulation will continue to require the provision of a map showing the location of the cathodic protection system, drawings detailing the system and a report on consultations between the applicant and owners of metallic structures likely to be affected by the cathodic protection system.

Regulation 9 requires the applicant for registration under Regulation 8, to provide any other information that ESV may require to determine whether to register the cathodic protection system.

Regulation 10 enables ESV to issue the owner of a cathodic protection system who has applied for registration, with a certificate to that effect. In the case of a cathodic protection system with an output greater than 2 amperes, the registration ceases 10 years after the date on which the registration was granted, unless earlier withdrawn.

Regulation 11 provides that ESV may refuse to register a cathodic protection system until any testing to its satisfaction has been competed or if it reasonably believes that any other metallic structure may have its electrical potential changed to the operation of the system.

Regulation 12 requires ESV to keep a register of cathodic protection systems registered under the regulations, and that it must contain details of the owner, and of the location, type and maximum operating current of the system. It must also contain the terms of any modifications made under regulation 16(4).

Regulation 13 requires owners of registered cathodic protection systems to notify ESV of a change of name or address or of ownership within 20 business days after the change occurs. If ESV is satisfied with the change of ownership, it may grant a new certificate of registration to the new owner of that system.

Regulation 14 states that ESV may withdraw the registration of a cathodic protection system if a person to whom a notice is given under section 96 of the Act fails to comply with the directions in the notice. It also requires ESV to give written notice of the intention to withdraw registration 10 business days before it withdraws the registration.

The proposed Regulation enables ESV to withdraw the registration of a cathodic protection system if the owner of the system requests ESV in writing, to do so.

The intent of this amendment is to allow an owner who decommissions a cathodic protection system to ensure they do not remain accountable for that system on ESV's register once the request has been confirmed by ESV during its CP auditing program.

Regulation 15 enables the owner of a registered cathodic protection system with total output of more than 2 amperes to apply for a further period of registration prior to the expiration of the current registration.

This allows owners of those cathodic protection systems to apply to continue registration prior to the expiration of the current registration, which is limited to 10 years. This enables the system to be operated without interruption caused by the application for further registration process.

Part 3 (Regulations 16 to 20) – Operation of cathodic protection systems

Regulation 16 specifies which standards apply to the different types of structures which cathodic protection systems are to protect. It calls up different parts of Australian Standard 2832, each of which has been developed for the protection of different types of structures, such as buried structures, immersed structures, and steel in concrete structures.

The Regulation refers to the respective parts of the standard through the definitions in Regulation 5. It also enables ESV to determine how the standard may be modified as needed, to enable a cathodic protection system to be operated.

The regulation also allows a person to apply to ESV to have the relevant standard modified. It enables ESV to make a determination and set out terms of the modification, and for those terms to be entered into the register kept under regulation 12.

Regulation 17 requires the owner of a registered cathodic protection system which uses impressed current, to give ESV at least 5 business days' notice of its intention to commence operation of the system.

Regulation 18 provides that the owner of a registered cathodic protection system that use impressed current must ensure a time switch is able to be inserted to enable the power supply to be interrupted for test purposes. It provides that the owner of a registered cathodic protection system that used galvanic anodes must ensure that the circuit between the anode of the system and the metallic structure being protected is able to be readily disconnected for test purposes.

This regulation is being amended to provide ESV with the authority to provide relief from this requirement. This is consistent with the head of power under s157(2)(e) of the Act, which allows regulations which have that effect to be made.

Regulation 19 requires the owner of a registered cathodic protection system to annually inspect and record the operating current to the system. It also requires that the owner of the registered cathodic protection system ensure that a record of the inspection is available at all reasonable times to ESV and any person whose metallic structures are, or are likely to be, affected by the system.

This ensures that registered cathodic protection systems continue to operate within the terms of the registration, and for affected persons to seek rectification where required.

Regulation 20 requires that the owner of a registered cathodic protection system who changes the operation of the system or becomes aware of a change in the operation of the system notify ESV within 4 business days, and give written notice within 10 business days after that change, or becoming aware of that change. The regulation has the same requirements for owners who remove their registered cathodic protection system or become aware that it has been removed.

This helps ensure the register remains up to date.

Part 4 (Regulation 21) – Infringement offences

Regulation 21 sets out provisions which are 'prescribed' for the purposes of issuing infringement notices. This means that offences against regulations 13(1), 17, 18(1), 18(2), 18(7), 19(1), 19(2), 20(1) and 20(2) may be dealt with by way of an infringement notice rather than prosecution.

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