



**BETTER REGULATION OFFICE
INDUSTRY & INVESTMENT NSW**

ISSUES PAPER

REVIEW OF NSW CORROSION PROTECTION REGULATION

July 2010

Written submissions due 13 August 2010

HOW TO MAKE A SUBMISSION

Interested persons are invited to provide written submissions on this issues paper.

Please send submissions by email to: cpsreview@dpc.nsw.gov.au

If you do not have access to email, please send submissions to:

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Submissions must be received by **13 August 2010**.

All submissions will be made publicly available. If you do not want your personal details or submission released, please indicate this clearly in your submission.

Additional copies of this issues paper are available on the Better Regulation Office website (www.betterregulation.nsw.gov.au).

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Summary

Metal structures, such as cables, pipes and buildings made from reinforced concrete, are at risk of corrosion where they are buried in soil or immersed in water. Corrosion causes a structure to degrade or fail, which leads to cost to the owner and risks the safety of users and the public. Corrosion Protection Systems (CPS) can be installed to send a low voltage direct current through ground or water to the structure that protects it from corrosion.

Direct electrical currents can also enter the environment from other sources, such as electrified railways. Rail system operators install drainage devices to provide safe return path for the stray electrical current. These drainage bonds are also considered to be corrosion protection systems.

A consequence of a CPS is that it can increase corrosion on nearby third party structures, particularly if it is not properly installed and maintained. In NSW, this risk is mitigated by government approval of CPS (with exceptions, such as systems on ships that do not pose any risk to other structures). A person who wants to install a CPS applies to Industry & Investment NSW (I&I NSW), showing that they have notified the owners of nearby assets and obtained their consent. I&I NSW then maintains a public register of all approved systems in NSW.

The current approach to mitigating the risk of CPS in NSW has been in place since 2003 following a review by the then Ministry of Energy and Utilities in 2001. While the 2001 review transferred responsibility for testing of CPS away from government, it continued the tradition of government approval of the systems that has been in place for over 35 years.

I&I NSW has identified that over time the framework may have become increasingly bureaucratic, leading to unnecessary cost to both industry and government without improvements in mitigating the risk of corrosion from CPS. Currently, there are a significant number of lapsed approvals for systems that may still be operating, which suggests that the CPS register is not up to date or that the operation of unapproved systems may be risking corrosion to third party assets.

As a result, I&I NSW approached the Better Regulation Office (BRO) about undertaking a joint review of the framework in response to these concerns. The review will evaluate the level of risk posed by CPS and identify the most appropriate government response to those risks, particularly focused on ensuring an efficient and effective approach that minimises regulatory burden for system operators, proposed system operators and owners of third party assets.

This issues paper will form the basis of consultation with stakeholders. Submissions will be used to assess the CPS regulatory framework and to develop recommendations to ensure an efficient and effective approach.

Submissions on the issues raised will be accepted until 13 August 2010. There are seven guidance questions set out in the issues paper that seek particular feedback from stakeholders.

1 Introduction

Underground and immersed structures include the pipelines and cables used to transport electricity, gas, telecommunications and water, while water-adjacent structures include steel piled wharves. The metallic surfaces of these structures can corrode under exposure to the environment or from the effects of stray electrical currents from electrified transportation systems such as the NSW electrified rail system.

To prevent corrosion these metal structures often use corrosion protection systems (CPS). Some CPS inject a low voltage direct electrical current to the environment and onto the metallic surface of the structure to protect it from corrosion where there is contact with soil or water. Others drain stray current from the structure in a manner that prevents corrosion of that structure.

There are four main types of CPS used in NSW:

- cathodic protection systems (electrical protection of metallic structures, water or fuel pipelines and storage tanks, as well as wharves)
- drainage bonds (capturing and diverting stray current from railway lines)
- Transformer Rectifier Assisted Drainage (TRAD – powered automatic drainage bond)
- cross bonds (draining stray current from one structure to another).

While the electrical current applied to a building or pipeline by a CPS protects the structure from corrosion, it may cause corrosion to a third party structure. This means that it can cause damage to other buildings or pipes that are nearby. This poses a significant risk to major assets. There are over \$18 billion worth of underground metallic structures in NSW, many that deliver water, gas, electricity and telecommunication services. Corrosion can cause significant maintenance or repair costs and where corrosion causes a structure to fail, jeopardise both public safety and the delivery of essential services.

2 Scope of review

This review will identify the risks in using CPS systems and the most appropriate government response to mitigate those risks, particularly focusing on ensuring an efficient and effective framework and minimising regulatory burden for system operators, proposed system operators and the owners of third party assets.

A range of options for reform, including maintaining the current approach, removing the regulatory framework and industry self-regulation are set out in this paper.

Stakeholders

Industry stakeholders include CPS installers, testers and contractors, as well as owners and operators of structures protected or adversely affected by CPS. CPS installers, testers and contractors tend to be highly specialised small or owner operated companies who provide their services to structure owners.

The majority of CPS owners and operators are large corporations or bodies who own or operate buried or immersed structures. For example, Telstra operates CPS to protect its telecommunications cables that are laid throughout NSW. Another example is Jemena, which operates a CPS to protect the Eastern Gas Pipeline, which transports natural gas at very high pressures from Victoria to Sydney. Jemena also owns the major gas distribution networks in NSW.

Significant CPS owners include:

- APA Group (Natural gas pipeline and network operator)
- Caltex Australia (High pressure petroleum pipeline operator)
- Country Energy (Electricity distribution and natural gas network operator)
- Energy Australia (Electricity distribution network operator)
- Hunter Water Corporation (Water and waste water system operator)
- Integral Energy (Electricity distribution network operator)
- Jemena (Natural gas pipeline and network operator)
- RailCorp (NSW electrified railway system operator)
- Sydney Water Corporation (Water and waste water system operator)
- Telstra Corporation Ltd (Telecommunications system operator)
- TransGrid (Electricity transmission network operator)

The owners of third party assets that may be impacted by a CPS are also generally large corporations. For example, buildings in the Sydney city that have metallic parts such as steel pile foundations in their structures may be adversely affected by adjacent CPS. The owners of these building may also operate a CPS which could affect other near by structures.

Other stakeholders include electricity companies such as EnergyAustralia and TransGrid, which own buried earthing systems that may be at risk from CPS.

3 Current regulatory framework

CPS are regulated to minimise the damage that the systems may pose to third party assets and public safety. The regulatory framework aims to achieve this by ensuring that CPS are properly installed and maintained (through an approval and ongoing testing regime) and by giving owners of assets information about proposed and existing systems (through the approval process and a register).

The framework is underpinned by the *Electricity Supply (Corrosion Protection) Regulation 2008* (the regulation) and the *Electricity Supply Act 1995*. Under the regulation, a person who wants to operate a CPS must apply to the Director-General of Industry & Investment NSW (I&I NSW) for approval (clause 4 of the regulation excludes very small, low voltage systems, systems attached to sealed water storage tanks that isolate the current from the outside of the tank and ships, while clause 5(3) excludes operation of a system to test it). It is an offence to operate a system that is not approved.

The application must set out the proposed conditions for the operation of the CPS, include the results of an interference test run to ensure the impact of the CPS on nearby structures is acceptable, and certify that there are no third party structures in the vicinity of the CPS or, if there are, that the owners of those assets were given an opportunity to object to the CPS. The application must be in the prescribed form and be accompanied by a \$90 application fee. The Director-General is able to approve or deny the application, and can also vary, suspend or cancel an approval after it has been given. While the Director-General can approve a system for up to seven years, approvals are usually granted for six years, which means that systems should be retested every six years.

The Director-General maintains a register of approvals that includes unsuccessful applications, variations, suspensions and cancellations. It also includes any conditions placed on an approval. If a CPS is sold or stops operating, the operator must inform the Director-General within 28 days. At end June 2009, there were 1,029 systems registered. Members of the public can locate systems by calling I&I NSW and asking for the location and owners of CPS in a specific area or post code. During 2008 and 2009, 105 telephone inquiries were received by I&I NSW relating to the location of CPS, mostly for property conveyancing reasons rather than from owners of underground metallic structures.

The Director-General can require a CPS be tested to make sure that it is compliant with the conditions on its approval or to make sure it is not impacting third party assets. Testing is generally carried out every six years and must be carried out by an authorised testing agent or CPS owner. The Director-General also has the power to publish guidelines about how to carry out a test to determine if a CPS is interfering with a third party asset (including prescribed forms and the qualifications, training and competency of testers).

There is an Australian Standard in place for managing stray current interference (Australian Standard AS/NZS 2832 Cathodic Protection of Metals).

NSW Electrolysis Committee

The NSW Electrolysis Committee coordinates and encourages cooperation between operators of buried infrastructure with the aim of mitigating the effects of stray currents from CPS. Primarily, the Committee coordinates interference testing through sub-committees that meet monthly. I&I NSW provides secretarial services to the main committee when it meets, however, no specific issues have arisen in recent times so the main committee has not met for some years.

Other jurisdictions

Victoria and Queensland have regulatory frameworks similar to NSW, although NSW' framework may be considered more onerous as it applies to some CPS that are excluded in Victoria. For example, in Victoria systems under two amperes do not have to reregister and larger systems only need to be reregistered every ten years. Victoria faces a greater risk of corrosion in its city area as a result of its electric tramways; the dense concentration of intersecting tracks adjacent to buried buildings and structures means there is a high risk of stray current from CPS causing damage. The absence of extensive electrified railway or tramway systems in other jurisdictions reduces the risk of stray current corrosion. Energy Safety Victoria operates the CPS registration system in Victoria.

In Queensland, only powered systems over 0.25 amperes need to register, although they need to be reregistered every five years. The Queensland *Electrical Safety Regulation 2002* also includes detailed requirements for notifying all relevant persons of a proposed system 60 days prior to commencing installation and allowing those persons to examine the proposal. The regulation also sets requirements for testing of systems prior to registration.

South Australia does not require registration or approval to operate a CPS. Under Clause 33 of the *Electricity (General) Regulations 1997 (SA)*, a CPS operator is obliged to ensure their system does not damage electricity infrastructure and to test immersed systems for swimmer or diver safety. No specific penalty is attached to non-compliance but under section 71 of the South Australian *Electricity Act 1996* an authorised officer can take reasonable action to disconnect a CPS if they find a CPS does not comply with the relevant regulations. Failure to follow an authorised officer's direction to disconnect a CPS carries a possible penalty of \$50,000.

In Tasmania, CPS is employed for a range of infrastructure assets, including a cross-border natural gas pipeline, and the Basslink electricity inter-connector project. The Tasmanian Electrolysis Committee provides a forum for industry to discuss existing and proposed CPS and identify any potential issues that result from system operation. Tasmania has similar provisions to South Australia in section 71 of the *Electricity Industry Safety and Administration Act 1997*. However, Tasmania does not appear to have established any specific regulations in relation to registration of CPS.

Western Australia does not regulate CPS use, although it has a voluntary code of practice for utility providers that asks utility providers to provide the public transport authority with information about CPS in rail land corridors. The ACT does not formally regulate the use of CPS.

4 Need for review

The approach to CPS regulation in NSW has not been comprehensively reviewed since 2001. A preliminary review was undertaken as part of the remake of the relevant regulation in 2008, including a stakeholder forum conducted by I&I NSW' predecessor (the Department of Water and Energy). Issues raised at the forum included inefficiencies in the retesting process, delays in re-approval and the lack of reliable information available about existing systems. Stakeholders expressed support for the current framework, but also expressed interest in further discussion of alternative industry led models of regulation.

This review is an opportunity to consider the need for CPS regulation, further analyse the effectiveness and efficiency of the current approach and investigate alternative models of regulation. A number of issues that relate to the current approach are set out below.

Delays in testing and re-approval of CPS

There is a concern that delays in testing existing CPS and applying for re-approval after a previous approval has lapsed may risk damage to third party assets or reduce the reliability of information on the CPS register. After a CPS has been approved, I&I NSW includes it on a database of approved systems. When the approval lapses (usually around six years later) I&I NSW sends out reminder notices explaining that the system will need to be retested and reapproved. At the end of March 2010, there were currently 320 systems which had not been re-approved to operate in NSW and 258 of these have been overdue for retesting and re-approval for more than 12 months.

This may mean that a large number of CPS are not retested in a timely manner and are operating without approval. Alternatively, it may mean that owners of decommissioned systems are not removing them from the CPS register. This could lead to third party asset owners or future CPS operators making erroneous decisions about the safety of surrounding assets.

Unnecessary administrative burden and cost

It is not clear that the current administrative burden and cost imposed by the regulatory framework are necessary to mitigate the risk of corrosion caused by CPS. Annual compliance burden for all operators is estimated to be \$150,000, consisting of \$80,000 annual registration fees payed to I&I NSW and an estimated \$70,000 in costs incurred by infrastructure owners when registering CPS or renewing CPS registration. This does not include the cost of installing, testing or maintaining CPS which are a normal part of the owners business and would be conducted irrespective of any registration requirement.

These registration related costs are significant and there may be alternative approaches that would reduce these costs for industry, particularly given that the level of risk posed by CPS is not clear – there have not been any reports of damage resulting from a system in the past ten years in energy or water supply infrastructure.

The review recognises that this could be because of the success of the regulatory framework, but that it also may reflect the low level of risk posed by CPS, particularly given an operator's interest in ensuring that the CPS is installed and maintained correctly and that it is not held liable for any damage that is caused to surrounding assets. The review also recognises the difficulty in quantifying the possible damage to third party structures from CPS due to the complexities involved in tracing the source of corrosion.

Government approval undermines operator responsibility

Currently, CPS operators rely on 'government approval' of systems to ensure safe operation. This could lead to over-reliance on that approval by industry, rather than actively monitoring maintenance and operation themselves. However, the approval process does not reduce an operator's responsibility to make sure a CPS is working properly. An operator who relies solely on the framework to ensure a system's safety and effectiveness may be risking damage to their own assets or adjoining assets, incurring a significant level of cost for their own rectification work. Stakeholders have said that removing the approvals process would result in safer operation of CPS as operators would take closer personal responsibility. Safer operation of a CPS may lower an operator's financial exposure that results from liability for damage done to third party assets.

Lack of reliable information about existing systems

The CPS register is meant to provide CPS operators, potential CPS operators and third party asset owners with information about current systems in place in a particular area. This information can then be used to inform decisions about installation of a new CPS or how to maintain integrity of a third party asset. However, the delays in retesting and approval outlined above may mean that the register may not be accurate or up to date. This could lead to corrosion where an asset owner is not aware of a CPS that is operating in an adjoining structure.

Distribution of costs and benefits

The current approach to CPS registration is paid for by CPS owners, but benefits third party asset owners. The costs of the registration process are borne by the CPS operators in the form of registration fees, while the majority of the benefits accrue to owners of third party assets by way of protection from stray current corrosion. There may be some benefit to the CPS owner in reduced liability for the cost of damage where a registered CPS has caused a problem, but this is not clear. This distribution may contribute to the low levels of compliance by CPS owners, who see only costs, and calls for more regulation by third party asset owners, who see only benefits.

5 Options for reform

5.1 Option 1 - Maintain current approach

The first option is to maintain the current approach of government approval and testing, as well as a government run register. This would aim to ensure the integrity of metallic structures and public safety, but may not be the most efficient or effective way to achieve these goals. The Better Regulation Office (BRO) and I&I NSW are interested in industry and stakeholder feedback about the operation of the current framework, particularly with regard to the administrative burden imposed on operators and the effectiveness of the approval and testing framework.

An advantage of the current approach is that the CPS register operates as a central database that can be accessed by a third party asset owner or proposed CPS operator to minimise the risks of installing a CPS. However, the issue of reliability of information, as well as the risk that approval and placement on the register leads to a CPS operator failing to undertake adequate ongoing maintenance and testing undermines the register's effectiveness. The lack of a regulated register in other jurisdictions may indicate that government regulation is not required as asset owners are able to manage this information issue effectively.

The concerns raised about the current approach would not be dealt with if the existing regulatory framework was maintained without change. This would include existing administrative burden and cost, as well as existing difficulties related to timely retesting and approvals.

It is possible that the current approach could be strengthened by adopting a more aggressive compliance and enforcement strategy by I&I NSW. However, this would require a significant increase in resources, particularly staff, within I&I NSW, and a potential increase in prosecutions of CPS owners who fail to comply maintain there registrations. This increased cost would need to be recovered from industry in the form of substantial fines or dramatic increases in the current application fee. It is not clear that the significant increase of cost for operators would lead to a safer or more effective CPS regulatory framework.

A possible change to improve the current framework would be for the government to clarify the liabilities and responsibilities of industry participants. For example, the regulatory framework could set out that a CPS operator was responsible for ensuring that any installation was safe and would not impact on surrounding third party assets. It could also create an offence of causing corrosion to a third party asset through CPS use. However, it is not clear that this would add anything to the regulatory framework as it would only reiterate the existing common law responsibilities of a CPS operator.

Alternative options that retain the benefits of a register, but may be more efficient than continued government control, are considered below.

1. Should CPS operators be required to put their systems on a register?
2. Does the current approach to CPS approval and testing encourage safe use of CPS or lead to an over-reliance on government approval to certify safety?
3. Would a stronger compliance and enforcement framework justify an increase in cost to industry?

5.2 Option 2 - Remove current regulatory framework (no government intervention)

An alternative approach is to remove the current regulatory framework, which would mean that CPS operators would not have to seek approval for a system or undertake formal notification of surrounding asset owners when a system was installed or decommissioned.

The benefit of this option would be lower costs and reduced administrative burden for operators. However, it could lead to increased corrosion of third party assets as a result of unidentified or faulty CPS and would mean that owners of metallic structures may not be able to access information about CPS in their vicinity. As noted above, some Australian jurisdictions do not currently regulate the use of CPS and these risks are managed by individual asset owners or CPS operators.

The removal of the current regulatory framework would mean that asset owners relied on common law principles of negligence to make sure that CPS were properly installed and maintained, protecting nearby third party assets. For example, the owner of a pipeline that was corroded could seek to prove that the corrosion was the result of a nearby CPS that was not operating correctly. The owner could seek damages for the cost of rectification and loss of their asset from the CPS operator. This would be difficult to prove, as the pipeline owner would need to establish a direct link between the operation of a CPS (that they may or may not know is in place) and the corrosion of its pipeline.

There have not been any recent legal claims or precedents developed to deal with the liability of a CPS operator for third party asset corrosion. However, the threat of litigation leading from corrosion caused by a CPS may be enough incentive for an operator to ensure that the system is properly installed and maintained, rather than relying on the current government approval process to prove the system's safety. Feedback is sought on whether the current approach to CPS approval and testing encourages the safe use of systems or whether it leads to an over-reliance on government approval, which may ultimately undermine the safe operation of systems.

A significant drawback of removing the regulatory framework would be removing the ability of an asset owner or builder to identify CPS already in place around their asset (or proposed asset). As stated above, I&I NSW currently fields an average of 8 to 9 calls each month regarding the location of systems. Without access to a register, each asset owner would be required to contact all other asset owners in their vicinity and establish if a CPS was in place. This could lead to delay and cost and, where a CPS was not correctly identified, future damage to the asset.

However, it should be noted that the removal of the regulatory framework may encourage industry stakeholders to arrange some level of self regulation, particularly to address the availability of information about the location of CPS. This is considered further in option 3.

4. Is government intervention to manage the use of corrosion protection systems necessary?

5. If so, what is the key reason or reasons that justify that intervention?

5.3 Option 3 – Remove current regulatory framework but retain register

The third possible approach set out in this issues paper is to remove the current regulatory framework, but to retain the register in some form. This recognises that industry benefits from its ability to access information about proposed or existing CPS and that this enables it to protect and maintain its assets more easily. This option also seeks to reduce the regulatory burden and cost imposed by the current approach to a register. One option for a register is industry self regulation. Another is government intervention to manage the register process.

Option 3a – Industry self regulation

Self regulation recognises the interest of stakeholders in protecting their assets and ensuring their safe operation. The industry's interest in ensuring minimal cost and maximum efficiency may lead to the most appropriate approach to managing a register. The benefit of industry self regulation is that it would give operators and asset owners the primary responsibility and ability to manage the protection of their own infrastructure.

In other areas of underground asset management self regulation has occurred through collective action by asset owners. For example a group of underground asset owners formed the Dial Before You Dig (DBYD) service to prevent damage to their buried assets by uninformed excavation activity. On behalf of its members, it coordinates information about the location of existing underground assets and makes that information available to potential excavators.

The service is designed to prevent damage and disruption to buried pipe and cable networks. It is funded by DBYD members and is free for excavators to use to check if there is a pipe or cable where they want to dig. Excavators contact DBYD with a dig location and DBYD refers the information to relevant asset owners. Asset owners then contact the excavator directly with details about the location of their asset (generally within 2 days). This protects underground assets, saving asset owners time and money in avoided rectification costs, and also means safer work environments for excavators.

The DYBD service was established without government involvement because the industry participants recognised the value of being able to protect their existing buried assets. Most excavation companies utilise the DBYD service because they recognise the need to excavate safely. However, the NSW Government has introduced the *Energy Legislation Amendment (Infrastructure Protection) Act 2009* to support the use of the DBYD service in relation to critical electrical and gas distribution network assets. The NSW Government is currently developing regulations to underpin the legal framework.

Corrosion caused by stray electrical currents from CPS can be viewed as another third party threat to the integrity of buried assets. The majority of DBYD members are the same companies that operate CPS on underground assets, or have underground assets that may be damaged to adjacent CPS. This means that the majority of stakeholders who have an interest in corrosion protection are already involved in the DBYD scheme. It would appear to be a low-cost option to establish an industry CPS register and information provision service similar to DBYD's existing excavation information service.

While such an approach would be dependant on industry agreement, co-ordination of such an industry run CPS registration service with the DBYD operation would minimise the cost to industry of setting up a new register and would take advantage of cost savings resulting from using existing resources (including staff and equipment). It would also consolidate the gathering and provision of information about underground structures and proposed infrastructure development or maintenance in one place.

Option 3b – Government oversight of independent register

An alternative approach to industry facilitating a registration system would be to put in place a system of formal government approval of a register (or more than one register if industry chose). A potential scheme operator would apply to I&I NSW to have a scheme approved, and would then operate the scheme according to that approval. Essentially, a register would operate as a service to operators and third party asset owners.

Approval of the registration scheme would require the proponent to satisfy detailed criteria, which could include an assessment of testing standards and procedures, information and database management systems and compliance management and enforcement frameworks. The scheme operator could be required to report to I&I NSW regularly on its performance, including information such as the number of systems registered, the number of registered systems found to be non-compliant, the number of lapsed systems and the time they lapsed. Data collected as part of the reporting could be made available by I&I NSW to help register managers assess their own performance and improve the efficiency and effectiveness of their registration scheme. The scheme operator would recoup the cost for running the scheme from CPS owners who would be obliged to register their systems.

The benefit of a government-supported registration scheme would be perceived reliability that resulted from government endorsement. It would also ensure that a scheme satisfied basic requirements and could act as an information gathering service. However, government intervention would significantly increase the cost of running a scheme for an operator, who would have to prepare an application in line with I&I NSW requirements and formally report to I&I NSW. This cost would be passed on to industry.

Additionally, it would also create cost for government, which would have to set up a process for scheme approval. This cost would be recovered from scheme operators, again

increasing the cost of running a scheme. Government involvement may also restrict a scheme operator's ability to respond flexibly to changes in industry or suggested improvements to the way it ran its scheme.

The perception of a more reliable scheme would be unlikely to be justified given that the industry has a strong interest in limiting its own liability from CPS and protecting CPS-adjacent assets from damage. It would appear that the additional cost and reduced flexibility involved in adding a layer of government control over industry self regulation would not result in a better administered scheme. The existence of an effective industry-run register through DBYD also suggests that a government supported register is not required.

6. Are there costs or benefits in consolidating all information about underground assets (for excavation or corrosion protection enquiries) in one place and, if so, what are they?

7. Should the government play any role in managing the operation of a CPS register and, if so, what role?