
The potential and reality of the environment protection licensing system in New South Wales: The case of water pollution

Kristy Graham and Ian A Wright*

The legislative basis and intent for pollution licensing in New South Wales is comprehensive and provides the Environment Protection Authority (EPA), as the regulatory authority for most pollution, with the ability to consider and protect a range of environmental values through the environment protection licensing system. Despite this ability, this is not occurring in New South Wales. The current regulation of pollution is far from achieving its aims to protect and enhance the quality of the environment, to maintain ecologically sustainable development and to prevent degradation of the environment. These aims are enshrined in the objects of the Protection of the Environment Operations Act 1997 (NSW) (POEO Act) and were widely proclaimed with the introduction of the Protection of the Environment Operations Bill in 1997. This article focuses on the current failures in the implementation of the pollution regulation framework, which have resulted in the degradation of many waterways as a direct result of industrial waste discharges, licensed under the POEO Act. It makes a number of key recommendations for reform of the pollution licensing system, including greater consideration of cumulative impacts of key pollutants, broader coverage of licences, expanded use of market-based approaches, independent monitoring and enforcement, continuous improvement and enhanced public participation. Although this article focuses on case studies involving water pollution, many points are applicable to the licensing and regulation of other types of pollution.

INTRODUCTION: LEGISLATIVE BASIS OF POLLUTION LICENSING IN NEW SOUTH WALES

The New South Wales environment protection licensing system, or pollution licensing as it would be more appropriately called, is established under the *Protection of the Environment Operations Act 1997* (NSW) (POEO Act).¹ The objects of this Act provide a background as to what the environment protection licensing system is aiming to achieve, including: to protect, restore and enhance the quality of the environment in New South Wales; the need to maintain ecologically sustainable development; to provide increased opportunities for public involvement and participation in environment protection; to ensure the community has access to relevant and meaningful information about pollution; and to reduce the risks to human health and prevent the degradation of the environment through the use of mechanisms that promote, inter alia, pollution prevention and cleaner production.

The POEO Act establishes types of premises or activities required to hold an Environment Protection Licence (EPL)² and provides for a range of conditions that may be attached, such as those: requiring monitoring; requiring pollution studies and reduction programs; or implementing tradeable emissions schemes or green offsets schemes.³ Many licences include concentration or volumetric limits for certain contaminants, which specifies the concentration of a pollutant that may be discharged

* Kristy Graham, Environmental Scientist at NSW Environmental Defenders Office (2007-2010); Ian A Wright, Lecturer in Environmental Science at University of Western Sydney.

¹ *Protection of the Environment Operations Act 1997* (NSW), Ch 3.

² *Protection of the Environment Operations Act 1997* (NSW), Sch 1.

³ *Protection of the Environment Operations Act 1997* (NSW), s 63.

or emitted from a certain point.⁴ EPLs are designed to regulate all types of pollution including air, water, noise and waste pollution in an integrated way⁵ and are administered by the Environment Protection Authority (EPA).

The EPA is the statutory body established under the *Protection of the Environment Administration Act 1991* (NSW) and was given responsibility for the EPL system under the POEO Act. Although it has been a part of a broader government department for a number of years, recent (November 2011) legislative amendments have elevated the function and responsibilities of the EPA, which now directly reports to the New South Wales Minister for the Environment. The Board of the EPA has been reconstituted with the number of Board members dropping from 10 to five, with four members having particular expertise (such as environmental science, environmental law, business and risk management). One Board member will be the Chairperson, who is directly responsible for the EPA.⁶ The fulltime Chairperson will oversee the strategic and day-to-day running of the EPA with the support of four part-time Board members.⁷ In undertaking their licensing functions, the EPA is required to take into consideration a number of factors, including: any protection of the environment policies; the objectives of the EPA; the pollution caused or likely to be caused and its impact on the environment; practical measures that could be taken to both prevent the pollution and to protect the environment from harm as a result of the pollution; and, in relation to water pollution, the environmental values of the water affected by the activity or work and the practical measures that could be taken to restore or maintain those environmental values.⁸

In terms of enforcement of licence conditions, there are strong powers given to the EPA to ensure compliance. Prompt reporting of pollution incidents to the EPA is a particularly high priority for the latest legislative changes. Failure to report pollution, by people responsible for causing the incident, now attracts the most severe penalties under the POEO Act, with a maximum of \$2,000,000 for corporations, with a further penalty of up to \$240,000 per day for continuing offences. Lesser penalties apply for people responsible for causing pollution, which attracts a maximum penalty of \$1,000,000 for corporations and up to \$120,000 per day.⁹ The EPA is also able to suspend or revoke an EPL if conditions have not been complied with,¹⁰ and the Minister may also suspend or revoke a licence if the holder is convicted of a major pollution offence.¹¹

EPLs were introduced with the intent of streamlining previous pollution licences and promoting an integrated approach to environment protection.¹² They were hailed as an integral tool in pollution prevention and therefore in preventing degradation of the environment.¹³ The POEO Act was also intended to give the EPA “teeth” in enforcement of licence provisions and more generally in environmental protection.¹⁴

⁴ Eg in EPL 766 there is a 100 percentile concentration limit of 1,600 mg/L for sulfate for discharges from licensed discharge point 4: New South Wales Government, *Environment Protection Licence 766* (Office of Environment and Heritage, 2011), <http://www.environment.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=30764&SYSUID=1&LICID=766> viewed 16 July 2012.

⁵ New South Wales, *Debates*, Legislative Assembly, 13 November 1997 (Pam Allen) – Second Reading Speech, *Protection of the Environment Operations Bill* (POEO Bill Second Reading Speech).

⁶ New South Wales Government, *The EPA Board* (Office of Environment and Heritage, 2012), <http://www.environment.nsw.gov.au/whoweare/epaboard.htm> viewed 16 July 2012.

⁷ *Protection of the Environment Legislation Amendment Act 2011* (Cth).

⁸ *Protection of the Environment Operations Act 1997* (NSW), s 45.

⁹ *Protection of the Environment Legislation Amendment Act 2011* (Cth).

¹⁰ *Protection of the Environment Operations Act 1997* (NSW), s 79(5).

¹¹ *Protection of the Environment Operations Act 1997* (NSW), s 82.

¹² POEO Bill Second Reading Speech, n 5.

¹³ POEO Bill Second Reading Speech, n 5.

¹⁴ POEO Bill Second Reading Speech, n 5.

In practice, however, these “teeth” are not utilised to their full capacity; community feedback suggests many circumstances of licence breaches or unlicensed discharges where no further action is taken by the EPA. It is also clear that at many localities EPLs are not preventing degradation of the environment. This is exemplified by a recent, landmark industrial incident where atmospheric discharge of a hazardous material (sodium chromate) to the Stockton residential area from the Orica industrial complex on Kooragang Island (near Newcastle) occurred in August 2011.¹⁵ There was a slow and seemingly ineffective response to the incident with local residents being informed three days after the “fallout” was deposited on their residential properties.¹⁶ This created considerable media attention and community outrage and led to legislative amendments to the POEO Act.¹⁷

Concern has been expressed from local communities relating to pollution discharged from licensed premises in a number of catchments around New South Wales. Research on individual waste discharges highlight that EPLs are not always achieving their stated objectives. Particular problems include: how concentration limits are set for contaminants regulated by EPLs; the lack of consideration of the cumulative impacts of multiple licensed discharges in catchments; the limited coverage of EPLs, meaning that many contaminants are being discharged but are not regulated; the limited enforcement of licence conditions by the EPA, including a lack of independent monitoring; the lack of publicly available pollutant information collected by licensed premises (in accordance with their EPLs); and the limited opportunity for public participation in the licensing process.

Although this article focuses on water pollution, many points are applicable to the licensing and regulation of other types of pollution, eg air. The article uses a number of case studies to demonstrate failings of the current licensing and pollution regulation framework, and provides suggestions for reform to ensure that pollution licensing in New South Wales achieves its objectives.

CRITIQUE OF THE CURRENT WATER POLLUTION LICENSING SYSTEM

Environmental values not reflected in licences

EPLs do not currently state which aspects of the environment they seek to protect. For wastewater discharges to waterways (such as rivers, streams and lakes) this could easily be achieved by naming the most important environmental values of waterways in the potential waste discharge contamination zone and catchment. According to the ANZECC guidelines, determining the environmental values of waterways is an essential first step in managing water quality within catchments.¹⁸ Environmental values establish the goals for water quality in the catchment and then water quality measures and discharge conditions can be implemented to protect these from adverse impacts of industrial waste discharges. Although the environmental values of waters to be affected and practical measures that could be taken to restore or maintain those environmental values must be considered by the EPA in undertaking its licensing functions,¹⁹ EPLs do not currently reflect these. Currently, licence concentration limits for contaminants, or the decision on whether to include licence limits for various contaminants, appear not to be determined with reference to the receiving environment and protecting its environmental values. Key values for all waterways have been established through the New South Wales water quality objectives,²⁰ and so these identified values should be reflected and protected by the EPL system, with concentration limits set with reference to protecting the identified values. This is currently not occurring.

¹⁵ “10kg of Chrome ‘Rained Down’ from Orica”, *Newcastle Herald* (17 August 2011) p 1.

¹⁶ O’Reilly B, *A Review into the Response to the Serious Pollution Incident at Orica Australia Pty Ltd Ammonium Nitrate Plant at Walsh Point, Kooragang Island on August 8, 2011* (New South Wales Department of Premier and Cabinet, 2011), <http://www.nsw.gov.au/sites/default/files/Orica-review.pdf> viewed 16 July 2012.

¹⁷ New South Wales, *Debates*, Legislative Council, 8 November 2011 (John Ajaka) – Second Reading Speech, *Protection of the Environment Legislation Amendment Bill 2011*.

¹⁸ ANZECC (Australian and New Zealand Environment and Conservation Council), *Australian and New Zealand Guidelines for Fresh and Marine Waters* (Department of Sustainability, Environment, Water, Population and Communities, 2000), <http://www.environment.gov.au/water/policy-programs/nwqms/#guidelines> viewed 16 July 2012.

¹⁹ *Protection of the Environment Operations Act 1997* (NSW), s 45.

²⁰ New South Wales Government, *Water Quality and River Flow Objectives* (Office of Environment and Heritage, 2006).

Case study

The Upper Cocks River has identified water quality objectives of protecting aquatic ecosystems, primary and secondary contact recreation, visual amenity, drinking water at point of supply, irrigation water supply, homestead water supply and for aquatic foods,²¹ and has also been identified as having areas of high conservation value.²² The Cocks River is also one of the largest rivers flowing into Warragamba Dam, the largest storage reservoir in Sydney's drinking water supply.²³ Due to the importance of the Cocks River as part of the drinking water catchment for Sydney, the Sydney Catchment Authority (SCA) has also identified a broad range of water quality objectives that apply in the Cocks catchment, and other catchment areas.

The water quality in the Upper Cocks catchment is degraded, largely from the discharge of 22 licensed premises,²⁴ and has been identified as a priority catchment for improvement in water quality by the SCA.²⁵ One of the main causes of degradation to water quality in the catchment is saline water discharges,²⁶ which has been shown to affect a wide range of freshwater aquatic biota.²⁷ Despite this, none of the EPLs for the 22 licensed premises in the catchment contain licence limits for salinity, although a number require monitoring. Background salinity levels in the upper reaches and clean tributaries are in the range of 39-70 uS/cm.²⁸ Moving downstream, salinity levels in the Cocks River increase as more coal mines and power stations discharge into it.²⁹ At one licensed discharge point salinity has been measured at up to 2,380 uS/cm,³⁰ nearly seven times higher than the ANZECC water quality guideline. This concentration of salinity does not ensure protection of aquatic ecosystems³¹ and is illustrative of the lack of regard for environmental values in establishing licence limits. It also demonstrates that the EPL system is currently not working to protect identified environmental values of the catchment from "licensed" water pollution.

Concentration limits not set based on scientific knowledge

The setting of concentration limits to be included as wastewater discharge conditions in licences must also be based on sound scientific knowledge of the impact of various contaminants on water quality, a process clearly established in the ANZECC guidelines, which have been adopted nationally.³²

²¹ Healthy Rivers Commission of New South Wales, *Independent Inquiry into the Hawkesbury Nepean River System: Final Report August 1998* (1998).

²² Hawkesbury Nepean Catchment Management Authority, *Upper Cocks River Subcatchment* (2008).

²³ Sydney Catchment Authority (SCA), *Annual Water Quality Monitoring Report 2008-2009* (2009).

²⁴ Including coal mines, coal-fired power stations and sewerage treatment plants

²⁵ SCA, n 23. Despite the Sydney Water Board identifying this as an important source of water pollution in Sydney's largest water supply catchment, the SCA do not have a routine water quality monitoring site in the Upper Cocks Catchment.

²⁶ Jones H, *Water Quality of Cocks River and Tributaries* (Report 92/41, Australian Water Technologies, 1992).

²⁷ Hart B, Lake P, Webb J and Grace M, "Ecological Risk to Aquatic Systems from Salinity Increases" (2003) 51 *Aust. J. Bot.* 689; Neilsen D, Brock M, Rees G and Baldwin D, "Effects of Increasing Salinity on Freshwater Ecosystems in Australia" (2003) 51 *Aust. J. Bot.* 655; ANZECC n 18; Potapova M and Charles D, "Distribution of Benthic Diatoms in US Rivers in Relation to Conductivity and Ionic Composition" (2003) 48 *Freshwater Biology* 1311; Kefford B, Nuggeoda D, Metzeling L and Fields E, "Validating Species Sensitivity Distributions Using Salinity Tolerance of Riverine Macroinvertebrates in the Southern Murray-Darling Basin (Victoria, Australia)" (2005) 63 *Can. J. Fish. Aquat. Sci.* 1865; Metzeling L, Perris S and Robinson D, "Can the Detection of Salinity and Habitat Simplification Gradients Using Rapid Bioassessment of Benthic Invertebrates be Improved through Finer Taxonomic Resolution or Alternative Indices" (2006) 572(1) *Hydrobiologia* 235.

²⁸ Wright I, *Investigation of Water Quality in the Upper Cocks River: Focus on the Influence of Wallerawang Power Station, Delta Electricity, Wastewater Discharges* (report filed in proceedings *BMCS v Delta Electricity* (2009) 170 LGERA 1).

²⁹ Lithgow Environment Group, *Streamwatch Data* (2011); Wright, n 28; New South Wales Government, *Audit of the Sydney Drinking Water Catchment* (Department of Environment Climate Change and Water, 2010) Ch 6.

³⁰ Wright, n 28

³¹ ANZECC water quality guidelines provide a trigger value of 350 uS/cm for salinity in south-eastern Australia Upland waterways. That salinity results are elevated to levels that signify a clear risk of ecological stress to aquatic biota is demonstrated by Hart et al, n 27; Neilsen et al, n 27; ANZECC, n 18; Potapova et al, n 27; Kefford et al, n 27; Metzeling et al, n 27.

³² ANZECC, n 18.

Currently the setting of licence limits, if any are included, appears to be driven by the licence holder and what is achievable. This reflects a trend to a more cooperative approach to pollution licensing³³ and means environmental values and the concentration limits needed to ensure their protection are not key considerations in the licensing process, despite the POEO Act encouraging this.

Case study

The water quality in the Upper Georges River is highly degraded below Brennans Creek.³⁴ Further investigation has shown that the two waterways in this catchment are impacted by discharge from coal mining wastewater from West Cliff Colliery via Brennans Creek Dam.³⁵ Salinity has been identified as a major contributor to degraded water quality downstream of the discharge point;³⁶ however, there are currently no licence concentration limits for salinity for discharges to the Upper Georges River from this mining operation (see Table 1). Salinity has been identified by the EPA as an issue requiring attention in the catchment, and EPL 2504 requires Endeavor Coal to derive a scientifically justifiable licence limit that will apply to discharges from Brennans Creek Dam, with the intention of incorporating this concentration limit into the EPL.³⁷

Although this condition and its reference to the ANZECC water quality values and relevant scientific literature is a positive step and should be reflected in licence conditions around New South Wales, a licence concentration limit should have been set for salinity when the licence was first issued. Saline discharges, and studies of these have been occurring since at least 2002, and damage to the aquatic ecosystem of the Upper Georges River has already occurred. This could have been avoided with more stringent licence conditions from the beginning of the operations.

It also appears somewhat ironic that through this licence condition the polluter is asked to nominate the salinity concentration limit. However, if the EPA ensures the suggested limit is scientifically justifiable and protective of identified environmental values, it will still generate a good environmental outcome for salinity in the waterway.

Cumulative impacts of multiple discharges within catchments

In addition to the current lack of consideration of the environmental values of the receiving environment, the cumulative impacts of the total discharges within catchments are not considered in setting licence concentration limits or in issuing EPLs. Cumulative impacts of multiple contaminants, which possibly act in a synergistic way, also cause additional stress to aquatic ecosystems.³⁸ Individual premises currently appear to be considered in isolation, despite provisions under the POEO Act for the making of Protection of the Environment Policies (PEPs) for the purpose of managing the cumulative impact on the environment of existing and future human activities.³⁹ Any PEPs that have been made must be considered by the EPA in undertaking its licensing functions.⁴⁰ However, as there are currently no PEPs made under the POEO Act, licensing decisions continue to be made without any reference to the cumulative impacts of discharges within catchments.

³³ Bates G, *Environmental Law in Australia* (7th ed, LexisNexis, 2010).

³⁴ Georges River Combined Councils' Committee *Georges River Community River Health Monitoring Program Catchment Scorecard* (2011); BHP Billiton, *Environmental Assessment Bulli Seam Operations* (2009), <http://www.bhpbilliton.com/home/aboutus/regulatory/Pages/default.aspx> viewed 16 July 2012.

³⁵ Wright IA, *Assessment of Impacts of Mine Drainage Discharge to Brennans Creek and Upper Georges River* (unpublished report, 2010).

³⁶ Wright, n 35

³⁷ New South Wales Government, *EPL 2504* (Office of Environment and Heritage, 2012), <http://www.environment.nsw.gov.au/prpoeoapp/ViewPOEOLicence.aspx?DOCID=30896&SYSUID=1&LICID=2504> viewed 16 July 2012.

³⁸ Folt CL, Chen CY, Moore NV and Burnaford J, "Synergism and Antagonism Amongst Multiple Stressors" (1999) 44 *Limnology and Oceanography* 864.

³⁹ *Protection of the Environment Operations Act 1997* (NSW), s 10.

⁴⁰ *Protection of the Environment Operations Act 1997* (NSW), s 45.

Case study

There are 22 licensed premises in the Upper Cocks River and a long history of contamination in the catchment with a multitude of water quality issues, such as eutrophication, salinity, heavy metals and their biomagnification,⁴¹ yet no assessment of the acceptable maximum environmental concentrations for various contaminants has been undertaken or incorporated into the EPLs. This is despite a commitment by the New South Wales government in 2001, as a result of the Healthy Rivers Commission Independent Inquiry into the Hawkesbury Nepean River system, to consider the cumulative impacts of discharges within subcatchments.⁴² As a PEP wasn't made, despite the recommendation by the Healthy Rivers Commission,⁴³ there has been no catchment or subcatchment-wide consideration of key contaminants.

Limited coverage of pollutants

Another key shortcoming of the operation of the current EPL system is that concentration limits, or even the requirement to monitor discharge, are not included for all pollutants being emitted from licensed premises. Hence premises may be emitting a number of contaminants not mentioned in their EPL, and exactly what is being emitted is often unknown by regulatory authorities, the facility and the community. Additional to this is the fact that some pollutants may be required to be monitored yet there is no concentration limit set in the EPL. The EPA receives monitoring data as part of the "annual returns" required for each EPL outlining the concentrations being discharged for all of these pollutants, yet under s 120 of the POEO Act they are not allowed to be discharged. This means the EPA is aware of the scale and nature of discharges in many catchments, yet chooses not to directly regulate these through concentration limits in the relevant EPLs.

Related to this issue is that there is no comprehensive assessment or monitoring program undertaken by industry, the EPA or any other government body to determine if all pollutants being emitted are being regulated. Without a program such as this there is no way to know if what is being regulated through the EPL is an accurate reflection of what is being discharged by any licensed (or unlicensed) premises.

Independent monitoring has been shown to be successful in catalysing water quality improvements. For example, the EPA (and its predecessor, the State Pollution Control Commission) conducted major water quality studies in the Lower Hawkesbury Nepean River that established the contamination of the lower reaches of the river with elevated nutrients.⁴⁴ This has led to tightening up of the EPL conditions for nutrients being discharged by wastewater treatment plants, and therefore major investment by Sydney Water (the major owner of several point-sources of nutrients into the river) in improved sewerage treatment that has resulted in improved water quality in the area.⁴⁵

Case studies

Delta Electricity's EPL for the Wallerawang Power Station (EPL 766) does not currently contain licence concentration limits for salinity, copper, nickel, arsenic, zinc, aluminium, boron or fluoride (see

⁴¹ Jolly VH and Chapman MA, "A Preliminary Biological Study of the Effects of Pollution on Farmers's Creek and Cox's River, New South Wales" (1966) 27 *Hydrobiologia* 160; Birch G, Siaka M and Owens C, "The Source of Anthropogenic Heavy Metals in Fluvial Sediments of a Rural Catchment: Cocks River, Australia" (2001) 126 *Water, Air and Soil Pollution* 13; Battaglia H, Hose GC, Turak E and Warden B, "Depauperate Macroinvertebrates in a Mine Affected Stream: Clean Water may be the Key to Recovery" (2001) 138 *Environmental Pollution* 132; Jasonsmith JF, Maher W, Roach AC and Krikowa F, "Selenium Bioaccumulation and Biomagnifications in Lake Wallace, New South Wales, Australia" (2008) 59 *Marine and Freshwater Research* 1048; Lithgow City Council, *State of the Environment Report* (2011).

⁴² New South Wales Government, *Statement of Joint Intent for the Hawkesbury Nepean River System* (2001).

⁴³ New South Wales Government, n 42.

⁴⁴ NSW Environment Protection Authority, *An Inventory of Pollutant Sources in the Hawkesbury-Nepean River Catchment* (1993); NSW Environment Protection Authority, *Water Quality. Hawkesbury-Nepean River System June 1990 to June 1993* (1993).

⁴⁵ Sydney Water and CSIRO, *Environmental Response to WaterPlan 21 STP Initiatives – Hawkesbury-Nepean River Catchment* (2002); New South Wales Government, *Hawkesbury-Nepean Environmental Monitoring Program: Final Technical Report* (Department of Environment and Climate Change, 2009), <http://www.environment.nsw.gov.au/resources/water/09112hnrempfintechrpt.pdf> viewed 16 July 2012.

Table 1); however, all of these have been measured at environmentally hazardous levels in the Tortuous watercourse, licensed discharge point 4.⁴⁶ The EPA is currently revising EPL 766 to add concentration limits for most of these pollutants⁴⁷ following longstanding concerns expressed by the Blue Mountains Conservation Society and the Lithgow Environment Group about the water pollution of the Upper Cocks River from the Wallerawang Power Station and the lack of effective regulation.⁴⁸ To address the shortfall of scientific water quality data, the Blue Mountains Conservation Society commissioned water quality assessment of discharges from Wallerawang Power Station and waterways in the Upper Cocks River catchment.⁴⁹

Additionally, EPL 766 imposes load-based licence fees for salt and selenium discharges from Wallerawang Power Station into Wallerawang Dam; however, there are currently no licence concentration limits for these discharges (see Table 1). This means that although these contaminants are being discharged, they are essentially unregulated by the EPA. Even for those pollutants acknowledged as being a problem by the EPA (through charging load-based licence fees), concentration limits are not set.⁵⁰

Studies on the Grose River and the Dalpura and Jinki Creeks in the environmentally-sensitive Blue Mountains World Heritage Area have shown that ecologically damaging levels of zinc continue to be discharged, through infiltration and leaching of contaminated water from the mine workings, into the Dalpura and Jinki Creeks from the now closed Canyon Colliery, despite the mine ceasing operation in 1997.⁵¹ EPL 558 permitted wastewater discharges from the mine with zinc concentration several hundred times above ANZECC guidelines for ecosystem protection (see Table 1). The mine has closed, the EPL has been surrendered, but the pollution continues and the discharge is currently unregulated and is in a regulatory vacuum.⁵² As the EPL for the mine has been surrendered and site remediation conditions do not cover ongoing water pollution, the company is not held responsible for the ongoing pollution. This demonstrates the need to ensure all discharges in catchments are regulated, including once premises have ceased operations, to enable management and ongoing improvement in water quality.

Lack of independent monitoring and enforcement

Monitoring of compliance with licence conditions is undertaken by licenced premises, and self-reported to the EPA through their annual returns. Annual returns, and the information contained within them, is not freely available to the community. There appears to be little or no independent monitoring of compliance with licence conditions and no auditing of self-reporting requirements. Additionally, self-reporting of monitoring data does not appear to be rigorously analysed or result in enforcement action being taken by the EPA. An examination of New South Wales Land and Environment Court cases that involved pollution, from 2000 to 2011, revealed the majority came to the attention of the EPA by public complaints (often due to reports of unpleasant odours) or due to EPL licence holders informing the EPA of an incident. In contrast, there were few pollution cases that were triggered as a response of EPA examination of EPL annual return performance data. There are three notable exceptions. The first was *EPA v Ballina Shire Council* (2006) 148 LGERA 278, where it

⁴⁶ Wright, n 28.

⁴⁷ New South Wales Government, *Licence Variation Application for EPL 766* (Office of Environment and Heritage, 2010), <http://www.environment.nsw.gov.au/resources/licensing/DeltaApplication.pdf> viewed 16 July 2012.

⁴⁸ Lithgow Environment Group, *Submission to EPA*, “Re: Variation to Delta Electricity’s EPL No. 766” (2011), <http://www.environment.nsw.gov.au/resources/licensing/LithgowDeltaLicenceVariation.pdf> viewed 16 July 2012.

⁴⁹ Wright, n 28.

⁵⁰ Delta Electricity, *2007 Annual Return for Licence EPL 766 – Salt and Selenium* (2008) p 42

⁵¹ Wright IA and Burgin S, “Comparison of Sewage and Coal-mine Wastes on Stream Macroinvertebrates within an Otherwise Clean Upland Catchment, Southeastern Australia” (2009) 204 *Water, Air and Soil Pollution* 227; Wright IA and Burgin S, “Effects of Organic and Heavy-metal Pollution on Chironomids within a Pristine Upland Catchment” (2009) 635 *Hydrobiologia* 15; Wright IA, Wright S, Graham K and Burgin S, “Environmental Protection and Management: A Water Pollution Case Study within the Greater Blue Mountains World Heritage Area, Australia” (2011) 28 *Land Use Policy* 353.

⁵² Wright et al (2011), n 51.

was found the operators of a landfill failed to provide leachate volume data, although this was required as a condition of their EPL annual returns. The data was not provided for a lengthy period (more than two years) and the EPA repeatedly requested the data and were assured by the licensee it was being collected. In a second case, *EPA v Transpacific Industries* [2010] NSWLEC 85, it was reported that the EPL holder submitted false information, as part of their self-reported annual returns, by omitting elevated levels of pollutants that were in excess of their EPL discharge conditions. A third case, *EPA v Norco Co-operative* (2000) 108 LGERA 137, resulted from an EPA investigation after an EPA officer reviewed annual return data, required under the *Pollution Control Act 1970* (NSW). The annual return indicated a number of incidents of non-compliance with wastewater licence conditions. This legislation was repealed by the POEO Act, but was similar in that it also required licence holders to submit annual returns, as specified in their pollution licences.

Case study

Delta Electricity have reported high levels of salinity⁵³ and other contaminants from licensed discharge point 4 in their annual returns, yet no enforcement action has been taken by the EPA. There are currently no discharge limits on salinity in EPL 766 (see Table 1). This is despite the fact that water quality is a priority issue for the catchment given that the Cocks River supplies water into the Warragamba drinking water catchment and is a popular recreational trout fishing stream. The SCA does not regularly measure water quality at any site in the vicinity of this outfall. The solitary example of independent monitoring in the area was the local community Streamwatch group, who originally alerted the wider community to the high levels of certain contaminants being discharged from Wallerawang Power Station.

Public participation

Public participation and community involvement feature heavily in the objects of the POEO Act; however, in the implementation of the EPL system community participation is often difficult and seemingly ineffective. This is partly a result of many details of licences and the licensing process not being publicly disclosed. Some of these details include the rationale for setting or not setting licence concentration limits, how licence concentration limits are derived, and the location of discharge points. This makes it difficult for the public to understand the environmental implications of the licence conditions, as well as constructively engage in the licensing process.

All EPLs and their variations are accessible through the internet on a public register.⁵⁴ This is useful in informing the public of the licence conditions for premises; however, annual returns are not included. Annual returns include all information obtained from self-monitoring of premises as required by licence conditions, including information about water quality in the catchment and of discharges from premises. Recent legislative amendments (POEO Act, s 66) now require annual “monitoring data that relates to pollution” to be made freely available by the EPL licence holder upon request. Previously, annual returns could be accessed under the *Government Information (Public Access) Act 2009* (NSW), but this process was cumbersome and expensive for the public.

Although public submissions are required to be considered in connection with a licence application,⁵⁵ they are rarely required to be considered for licence variations.⁵⁶ This means that, once a licence is issued, community submissions and community values for particular catchments have much less influence on licence conditions than what a licensed premise is prepared to voluntarily

⁵³ Delta Electricity (2006) annual returns from 2005 report an average salinity from LDP4 of 1,767 uS/cm and a maximum of 2,040 uS/cm. Delta Electricity (2007) annual returns from 2006 report an average salinity from LDP4 of 1,973 uS/cm and maximum of 2,526 uS/cm. Delta Electricity (2008) annual returns from 2007 report an average salinity from LDP4 of 2,264 uS/cm and a maximum of 2,695 uS/cm. Delta Electricity (2009) annual returns from 2008 report an average salinity from LDP4 of 215,464 uS/cm with a maximum value of 264,700 uS/cm; however, it is assumed there was a typographical error in these values and that the measured values would be an average of 2,154 uS/cm and a maximum of 2,647 uS/cm.

⁵⁴ New South Wales Government, *POEO Public Register* (Office of Environment and Heritage), <http://www.environment.nsw.gov.au/prpoeoapp> viewed 16 July 2012.

⁵⁵ *Protection of the Environment Operations Act 1997* (NSW), s 451(i).

⁵⁶ *Protection of the Environment Operations Act 1997* (NSW), s 58(6).

commit to. There is also no requirement for notification of neighbours about the application for a licence, or of exceedances of licence conditions, despite notification of neighbours occurring for relatively minor local developments under the *Environmental Planning and Assessment Act 1979* (NSW).⁵⁷

The limited opportunity for public input into the setting of licence concentration limits for pollutants, and in ongoing variations of licences, means the community has little influence in shaping the key feature of licences used to ensure environmental protection. If licence concentration limits were set to protect key environmental features or community values, eg contact recreation, stock and domestic use, then the public would have much greater confidence in this process. However, given that this does not occur, community groups and the general community in the environs of the discharges currently have little faith in the EPL system protecting their local environment.⁵⁸

There are also no public appeal rights to challenge the grant of a licence under the POEO Act, something that is included in the *Environment Protection Act 1970* (Vic), s 33B enabling the public to use the court system to ensure licences fulfill their role in environmental protection.⁵⁹

KEY RECOMMENDATIONS FOR REFORM

Licence limits to reflect receiving environment and address cumulative impacts

In exercising its licensing function, the EPA should have the overall goal of achieving or maintaining the environmental values of the catchment and waterways through EPLs, particularly for activities likely to cause water pollution.⁶⁰ This means ensuring water is of sufficient quality to, for example, protect aquatic ecosystems, enable secondary contact recreation, or for fisheries production, as applicable for each catchment. As this is fundamental to each EPL, it is recommended that the environmental values of the receiving environment should be stated clearly on each EPL. To ensure environmental values of the catchment are reflected and protected by the EPL system, licence concentration limits should be established by first studying the environmental values of the receiving environment, taking into account the established water quality objectives (see Fig 1, Box 1).⁶¹ With a clear idea of what uses or elements of the catchment EPLs should be protecting, the maximum level of various substances that will not cause an impact on those values in the catchment can be established based on scientific evidence (see Fig 1, Box 2).

Setting catchment-wide concentration limits for specific pollutants should particularly focus on the impact of those pollutants on the values or uses being protected in a waterway, eg aquatic ecosystems, stock and domestic use, irrigation use, drinking water. The framework for establishing robust values for various water quality parameters is outlined in the ANZECC guidelines.⁶² This is a system that should be used in the setting of catchment-wide concentration limits, ie using the trigger values established under the ANZECC guidelines to protect identified and agreed values of each waterway, and then deviating from these values if there is further catchment-specific information available on the extent of harm from various concentrations of the contaminant (see Fig 1, Box 2).

⁵⁷ Smith S, *Proposed New Pollution Control Legislation in NSW: Background and Commentary* (Briefing Paper No 5/97, NSW Parliamentary Library Research Service, 1997).

⁵⁸ Exemplified by the fact that the Blue Mountains Conservation Society felt compelled to take action to restrain a breach of s 120 of the POEO Act given the lack of faith in the EPA to adequately licence and enforce conditions of licences: *Blue Mountains Conservation Society v Delta Electricity* (2009) 170 LGERA 1.

⁵⁹ Victorian Government, *EPA Works Approvals and Licences* (EPA Victoria), <http://www.epa.vic.gov.au/compliance-enforcement/licences/default.asp#appeals> viewed 16 July 2012.

⁶⁰ *Protection of the Environment Operations Act 1997* (NSW), s 45F1.

⁶¹ New South Wales Government, n 20.

⁶² ANZECC, n 18.

These established catchment-wide limits could then be formalised as a PEP under the POEO Act⁶³ to ensure this is considered and incorporated in all licensing decisions in the catchment.⁶⁴

This fits well with the role and intention of PEPs, which were included in the POEO Act as an instrument to provide the means to set environmental goals, standards, protocols and guidelines to deal with the new generation of environmental problems. PEPs are required to be taken into account by public authorities, the EPA and planning authorities when making decisions affecting the environment.⁶⁵ When the POEO Act was introduced, it was hailed as an important mechanism to manage the cumulative impacts of development, by setting out the ambient environmental goals that the entire community is striving for, and form the backbone of the POEO Act's integrated approach to environmental protection.⁶⁶ Another benefit of PEPs is that they are implemented through a wide range of mechanisms, such as EPLs, development consents and regulations, which enable the goals, standards and guidelines to be put into enforceable instruments.⁶⁷ Despite this, no PEPs have been made and so this valuable tool is not being utilised.

Once the catchment-wide concentration limits (load limits or a cap) are established for key pollutants, this can be divided between the premises in the catchment to allocate the total concentration between licensed facilities, ensuring the total catchment-wide limits are not exceeded (see Fig 1, Box 3). Local studies should also be used to establish appropriate conditions for each licence. For example, these may be used to establish the likely dilution of discharged pollutants in the environment and the downstream extent of the pollutant discharge "plume". Calculation of EPL conditions should be based on rigorous evidence from environmental science and avoid "desktop" studies. Entrance of new premises emitting key pollutants could be accommodated by a reduction of the concentration limits of existing premises, or the establishment of a trading scheme to enable new premises to buy existing permits (Fig 1, Box 3).

A system such as this would ensure the cumulative impact within a catchment was within ecological limits; however, ongoing monitoring of environmental impacts of discharges should occur and amendments of licence conditions made if cumulative impacts are found to be unacceptable (see Fig 1, Box 4.1). The existence of a PEP would ensure existing licences, over a period of time, could be amended to incorporate cumulative impacts of all discharges within a catchment, as the PEP would mean the EPA would need to consider it in undertaking all its licensing functions, including reviews and variations of licences as these were undertaken.

Broader coverage

Given that many licences fail to include all the pollutants being emitted by a facility, or concentration limits for those listed, a comprehensive program of water quality monitoring, auditing of current licence requirements within the catchment, and then review and variation of licences should be undertaken. This should ensure licence conditions include concentration limits and the requirement to monitor all pollutants that have been measured in the catchment and that are likely to be emitted or discharged by each facility. Such information was required for Sydney Water to measure and publicly report a complex array of pollutant concentrations and loads discharged to the environment in treated sewage effluent, under the *Sydney Water Act 1994* (NSW).⁶⁸ The cumulative impact of all EPL discharges and how they are affecting the protection of key environmental values should also be considered, as discussed above. This would ensure that in future the EPA is regulating all pollutants being emitted in a catchment (Fig 1, Box 4.2).

⁶³ *Protection of the Environment Operations Act 1997* (NSW), Ch 2.

⁶⁴ *Protection of the Environment Operations Act 1997* (NSW), s 45 F1.

⁶⁵ POEO Bill Second Reading Speech, n 5.

⁶⁶ POEO Bill Second Reading Speech, n 5.

⁶⁷ POEO Bill Second Reading Speech, n 5.

⁶⁸ *Sydney Water Act 1994* (NSW), s 23, Sch 10.

The use of market-based approaches

Market-based approaches have long been seen by governments as a way to achieve environmental objectives at least cost to business and to the economy generally.⁶⁹ To enable the EPL system in New South Wales to more effectively achieve its aims, market-based approaches should be investigated to efficiently achieve catchment-wide targets for key pollutants and also to provide a real economic incentive to minimise pollution – a key component of ecologically sustainable development.⁷⁰

In order to more efficiently achieve catchment-wide targets for various pollutants, an auction of pollution units could be used to allocate the total catchment-wide concentration limit between premises, and a trading scheme established to enable new premises to enter the catchment (see Fig 1, Box 3). Essential to the environmental integrity of this type of mechanism would be first establishing a catchment-wide cap on the pollutant, as discussed above (see Fig 1, Box 2). Trading schemes for water pollutants have been demonstrated to be effective, with the Hunter River Salinity trading scheme demonstrating salinities consistently below the scheme target since commencement.⁷¹

Further to exploring the use of additional market-based instruments, State-wide instruments should be strengthened to create better economic incentives to improve water quality. Load-based licensing is currently the main market mechanism used in the management of water quality in New South Wales; however, given the degraded water quality in many catchments⁷² it could be argued that the costs of polluting under this mechanism are not high enough to provide a real incentive for cleaner production. For example, the load-based licence fee for total annual load of selenium discharge in 2006 from Delta Electricity (EPL 766) into the Cocks River and Lake Wallace was \$765.65.⁷³ The adequacy of this fee is dubious as selenium has been identified as bioaccumulating and biomagnifying in the food chain in Lake Wallace,⁷⁴ and such a minimal load-based licence fee is unlikely to act as an incentive to reduce its discharge.

The authors propose amendments to Sch 1 of the *Protection of the Environment Operations (General) Regulation 2009* (NSW) to include a much broader range of facility types in the list of those required to pay load-based licence fees for water pollutants,⁷⁵ to expand the list of pollutants to which load-based licence fees apply,⁷⁶ and to increase the pollutant fee units.⁷⁷ All of these measures would provide a much stronger economic incentive for water quality improvements.

Independent monitoring and enforcement

Adequately funded, independent monitoring of water quality as well as monitoring of compliance with licence conditions is essential to ensure all pollutants being discharged are regulated, and that there is adequate incentive for accurate self-reporting by licensed premises (see Fig 1, Box 4). There is one independent body in New South Wales that currently performs this function, the Natural Resources Commission, under the *Natural Resources Commission Act 2003* (NSW). The authors are not aware if the Natural Resources Commission provides independent advice on pollution discharges for EPLs.

⁶⁹ Bates, n 33, Ch 13.

⁷⁰ *Protection of the Environment Administration Act 1991* (NSW), s 6(2); *Protection of the Environment Operations Act 1997* (NSW), s 3.

⁷¹ New South Wales Government, *Scheme Successes* (Office of Environment and Heritage, 2010), <http://www.environment.nsw.gov.au/licensing/hrsts/success.htm> viewed 16 July 2012.

⁷² Hawkesbury Nepean Catchment Management Authority, n 22.

⁷³ Delta Electricity, *2006 Annual Returns for Licence EPL 766* (2007)

⁷⁴ Jasonsmith et al, n 41.

⁷⁵ *Protection of the Environment Operations (General) Regulation 2009* (NSW), Sch 1.

⁷⁶ *Protection of the Environment Operations (General) Regulation 2009* (NSW), Sch 2.

⁷⁷ *Protection of the Environment Operations (General) Regulation 2009* (NSW), cl 19(7).

One of the objectives of the *Natural Resources Commission Act* is “establishing a sound scientific basis for the properly informed management of natural resources in the social, economic and environmental interests of the State”.⁷⁸

Following independent monitoring of EPL discharges, there should be enforcement of discovered breaches of the POEO Act, including breaches of licence conditions (see Fig 1, Box 4.3). Although the POEO Act contains strong enforcement provisions, a more cooperative approach to licensing has been followed by the EPA, which has weakened the “teeth” in the legislation – one of the key features of the POEO Act when it was introduced.⁷⁹

It is noted that the EPA is required to audit, on an industry-wide or regional basis, compliance with licence requirements under the POEO Act⁸⁰ and whether such requirements reflect best practice in relation to the matters regulated by the licences. It is unclear how regularly these are undertaken; however, it is suggested they should be done on a regular basis so they are able to be considered when licences are renewed. For example, it is suggested that a five-yearly review be conducted on a regional basis to examine the collective contribution of each point-source to regional environmental impacts. An area that would particularly benefit from this approach is the Upper Coffs River, where all 22 licensed EPL discharges should be reviewed both collectively and individually. Such a review should be supported by independent monitoring and assessment of the regional environment, rather than merely assessing the 22 discharges at different times based on “end-of-pipe” performance.

These should also be made publicly available, so the community is aware of the progress made in various catchments towards protecting key environmental values.

Continuous improvement

Pollution Reduction Programs are another key feature of the licensing system, and are a way to implement continuous improvement for licence holders.⁸¹ However, they are currently not used as conditions in all EPLs, which means not all licence holders are required to improve their environmental performance. To ensure continuous improvement on a catchment-wide basis every EPL should implement a Pollution Reduction Program to regularly review and reduce the discharge of key pollutants of concern (see Fig 1, Box 5). Licensed premises need to begin an ongoing cycle of continuous improvement in order to meet the water quality objectives for the catchment and this is a simple way to stimulate this.

Continuous improvement has been pursued in some catchments for some contaminants, eg the large improvement in the quality of treated sewage effluent in the lower Hawkesbury Nepean River over the last 15 years. Sydney Water treat the majority of catchment sewage and its treatment plants have progressively discharged lower loads of nutrients into Hawkesbury Nepean catchment waterways, dropping from 8.1 tonnes (phosphorus) and 276 tonnes (nitrogen) in 2006/2007 to 6.6 tonnes (phosphorus) and 238 tonnes (nitrogen) in 2010/2011.⁸² A major factor in the continuous improvement in this area was the active role the EPA took in collecting water quality data and reporting on regional water quality issues, such as blue-green algae.

Public participation

A number of changes to the POEO Act would ensure greater public participation in the licensing process, which although an objective of the Act is provided only lip service by the EPA in carrying out their licensing functions. A key change would be to make annual returns, which are the self-reporting tool used by licensed premises, publicly available in conjunction with the EPA public register of EPL

⁷⁸ *Natural Resources Commission Act 2003* (NSW), s 3.

⁷⁹ POEO Bill Second Reading Speech, n 5.

⁸⁰ *Protection of the Environment Operations Act 1997* (NSW), s 78(4).

⁸¹ POEO Bill Second Reading Speech, n 5.

⁸² Sydney Water, *2010/11 Annual Report* (2011).

licences.⁸³ Additional amendments to the Act should be made to ensure the EPA considers public submissions on any licence application and in the review and variation to any EPL. In the absence of using the EPL system to protect established values for catchments, eg the water quality objectives, community input is essential in determining what kinds of impacts are acceptable from licensed premises. The EPA should explain the scientific basis for their EPL decisions.

TABLE 1 Wastewater discharge water quality conditions under the POEO Act, as specified in the following EPL 100% discharge limits (note: EPL 558 has been surrendered)

	EPL 558	EPL 766	EPL 2504
Discharges to	Dalpura Ck and Jinki Ck (Grose River catchment)	Lake Wallace and tributaries of the Coxs River (Upper Coxs River catchment)	Brennans Ck (Georges River catchment)
Number of points specified in licence to discharge to surface waters	2	7	6
Oil & Grease (mg/L)	10	10	10
Biochemical Oxygen Demand (BOD mg/L)	-	-	30
pH (pH units)	-	6.5-8.5 and 6.5-9.0	6.5-9.0 and 6.5-8.5
Total Suspended Solids (mg/L)	-	30	30 and 50 mg/L
Sulfate (mg/L)	-	1,200 and 1,600	
Turbidity (NTU)	-	25	
Iron (mg/L)	1	-	-
Zinc (mg/L)	5	-	-

⁸³ Environmental monitoring data collected as part of EPLs is now required to be made available to the public under the *Protection of the Environment Legislation Amendment Bill 2011* (NSW) (see n 17).

FIGURE 1 Overview of how the EPL system should function for regulating catchment-specific water pollution

