

Springvale Mine Extension Project

3 September 2015. Dr Ian A. Wright. Lecturer, Western Sydney University

Introduction

I have been engaged by EDO NSW on behalf of the Blue Mountains Conservation Society to review documents relating to the Springvale Mine Extension Project. These include the Department of Planning and Environment's (DPE) draft conditions of consent, the Planning Assessment Commission Review Report dated June 2015 and other related documents provided in advance of the PAC's 2nd review (RO 32/15). I have been asked to produce an independent expert report, relevant to my field of expertise in response to these documents. My brief has explained that my primary purpose is to assist the Planning Assessment Commission, who have been requested by the NSW Minister of Planning to review the project. My report has been prepared in accordance with the *Uniform Civil Procedure Rules 2005* (NSW) and the Expert Witness Code of Conduct of the NSW Land and Environment Court.

DPE Recommended Conditions of Approval inadequate

The latest documentation on Surface Water impacts for the second PAC review of the proposed expansion of the Springvale coal mine have been reviewed for this submission. My previous submission remains relevant and should also be considered by the PAC in their second review.

Extract below from: DPE) 'Appendix G Recommended Conditions of Approval', Schedule 4 (Environmental Performance Conditions', Page 15/16, Table 6 'Water Management Performance Measures').

	<i>m/s</i>
Mine water discharges	<ul style="list-style-type: none">• Discharge all groundwater inflow mine water (except from the Renoun workings) through the Springvale Delta Water Transfer Scheme• Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1,000 (100th percentile) $\mu\text{S/cm}$ EC by 30 June 2017• Meet a limit for salinity of 500 (90th percentile) $\mu\text{S/cm}$ EC by 30 June 2019• Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group

I regard these DPE recommended control measures as incomplete and inadequate.

Insufficient Information Available

1. The Springvale coal mine has 10 wastewater discharge points identified on its current Environment Protection Licence (EPL) #3607. Any conditions of consent should add the pollutant discharge limits for all of these discharge points, with concentration limits (and percentiles) for all pollutants. Given the importance of surface water pollution for this proposed expansion, the 'mine water discharges' urgently needs more detail to recognise the importance of this environmental issue. The DPE Conditions of Consent need far more detail as they will become the basis for future regulation of mine water pollution of surface waters for future years and decades.

2. What exactly does discharge through the 'Springvale Delta Water Transfer Scheme' mean?

I assume this means discharge through Springvale LDP009 which is a discharge point to Sawyers Swamp Creek?
For the sake of clarification this needs to be made clear.

3. Where exactly are these salinity level performance measures recorded and regulated? Are these 'end of pipe'?
Which pipe? In the waterway?

4. Water pollution from the Springvale mine is very complex, with numerous toxicants of environmental concern including nutrients nitrogen and phosphorus, metals and minerals (such as bicarbonate). The DPE regulations that focus on salinity simplify the nature of the water pollution impacts. Toxicity issues with the mine discharge are also unresolved.

5. These salinity levels are too high – they are 10 to 20 times higher than background stream salinity.

Sydney Water, IPART and Fishers should be consulted

The DPE documents make frequent reference to the Upper Cocks River (Mt Piper Power Station) providing 15 % of NSW's electricity. Whilst I agree this is an important statistic, I am bemused that no mention is made of the water provided by the Upper Cocks River to Sydney, local residents and other users of the Cocks River. The Cocks River is the second largest river supplying raw water to Lake Burragorang. Unlike electricity, supply cannot be provided by other generators. The EIA documents however do indicate that the Springvale mine is a major source of pollution to the Cocks River and the expansion of the mine is likely to generate much larger volumes of wastewater (and an increase in Lake Burragorang salinity).

In my opinion a number of stakeholders are missing from the consulting process. For example the trout fishers of the Cocks River should be consulted. The Cocks River is one of NSW's most popular trout fishing waterways.

Given the importance of pollution in Lake Burragorang, Sydney Water, WaterNSW and IPART have responsibility and accountabilities to drinking water customers. Whilst the PAC have consulted WaterNSW, who have expressed the view that the mine expansion contravenes its SEPP (Sydney Drinking Water Catchment) test for neutral or beneficial effects on water pollution. The water consumers of Sydney are just one customer to them (Sydney Water Corporation). For Sydney Water they are responsible for and accountable to millions of individual customers. Given that the proposed mine expansion has been shown by the proponent's consultants that it will degrade water quality in Lake Burragorang I suggest that Sydney Water Corporation urgently needs to be consulted by the PAC. The PAC may also need to consult the Independent Pricing and Regulatory Tribunal (IPART) regarding this issue, particularly given current re-evaluation of Sydney water's operations by IPART. I see both Sydney Water and IPART as stakeholders in this major decision and I am surprised that they have not been consulted to date. I expect that both would strongly support the statements by the NSW EPA and WaterNSW on the importance of the mine expansion having a 'neutral or beneficial impact' on water quality in Lake Burragorang. In my opinion a forecast of a 5 to 6 % increase in salinity is a major negative impact.

NOTE: My later comments suggest that both stakeholders also have a role to support further payment by drinking water consumers for better mine waste treatment.

EC Levels are too high

The Electrical Conductivity levels (nominated by the DPE as key water management performance measures) are about 10 to 20 times higher than natural background salinity levels (see my previous submissions) as streams in naturally vegetated in the western Blue Mountains area are generally less than 50 $\mu\text{S}/\text{cm}$. The earlier correspondence from NSW OEH and EPA (mostly 2014 and early 2015) called for greater levels of wastewater treatment and discharge of treated mine waste at much lower levels of salinity (and other pollutants).

Page 18 of the PAC Review Report (June 2015) explains that the EPA has asked the mine for a discharge limit of 350 $\mu\text{S}/\text{cm}$ and for treatment options to achieve this. The same page then adds that a report (prepared on behalf of the mine) found that treatment of wastewater to achieve such a target (350 $\mu\text{S}/\text{cm}$) would be impractical and too expensive. Later correspondence shows that the EPA have now agreed to higher EC levels. I remain convinced that the EC level should be 350 $\mu\text{S}/\text{cm}$ or less with additional funding supplied to help share the costs in advanced water treatment (discussed further later).

EC levels greater than 350 $\mu\text{S}/\text{cm}$ considered 'too expensive': Perhaps Sydney's water consumers should pay more?

I consider this to be a decision of critical importance for Sydney's water supply, and also for natural waterway ecosystems and for other downstream water users. The previous EIS and modelling information suggests that the expanded mine operation will increase salinity in Lake Burragorang by 5 to 6 %. The recent submission (and meetings with the PAC) by WaterNSW have clearly outlined how seriously they regard this increase in mine wastes and salinity. It is also a controversial issue as the PAC meeting with Lithgow Council (according to the PAC review report) identified a discharge limit of 350 $\mu\text{S}/\text{cm}$ could be onerous (according to Council) and make the mine upgrade uneconomic, with major negative consequences for the local community if it were to close. I consider both of these views to be valid.

The current position adopted by the DPE appears to accept that the cost of thorough advanced water treatment is too high for the current mine operation (estimated by the mine to be in the order of \$60 million in capital costs) so the Cops River will have to accept more saline water than the EPA and others wanted. I would generally suggest that the industry that generates the pollution be responsible for paying to have it treated to an acceptable standard for human health and the environment. Perhaps in this situation the wider community (i.e. Sydney) be asked to contribute?

Given the importance of Cops River as a water supply to Lake Burragorang (I think it supplies about 25 to 30%) I suggest that this is an issue of national importance and that it should be at least partly funded by Sydney Water perhaps through the former Sydney Catchment Authority. The Sydney Catchment Authority (now called WaterNSW) sells its water to customers for more than \$200 million per year and it has partly funded major upgrades to sewerage treatment plants in the Cops catchment (Lithgow and Wallerawang). Given the importance of the Lake Burragorang water supply for Sydney, the future operation of the wastewater treatment should be considered as an investment for the quality of a safe and healthy water supply that is also consistent with healthy aquatic ecosystems. A cleaner Cops River would also have local ecological and human benefits.

As such investments in water quality would be in the interest of its individual customers I suggest that PAC consult WaterNSW and Sydney Water, even just for the sake of due diligence and openness and transparency. Whether or not the increased salinity in Lake Burragarang would have any human health issues, it almost certainly would not, but in terms of public concerns and perceptions I think this issue should be thoroughly canvassed. Sydney is fortunate to have such a well managed water supply system and safe and clean water and their contribution to fix this problem would help secure a clean and sustainable water supply.

There have been many media reports on the impact of the expanded mine discharge on drinking water and I think that a social survey on Sydney's water consumers would establish their willingness to pay for such additional safeguards (from the mine expansion) for a long term safe and healthy water supply. If the PAC are uncertain of this, I recommend that they suggest a rigorous social survey is conducted, perhaps within the first year after approval. Perhaps the consumers of the water that benefit from its clean status and low salinity should help fund additional water treatment. This could be consistent with the principle of 'user pays'.

The Blue Mountains water supply and sewerage system is a local example where the huge expenditure to 'fix' a massive water pollution problem was beyond the resources of the local community. Prior to July 1980 it was the responsibility of the local Council (Blue Mountains). The 12 sewerage treatment plants were aged and achieved a poor water treatment. Sewer mains leaked and many residential areas were unsewered. The NSW Government gave the water supply and sewerage systems to the then Sydney Water Board to take over, and to 'fix up'. This was an enormous task that was essentially a cross-subsidy from the Sydney Water ratepayers to the Blue Mountains. The result was a vastly improved water and sewerage system. The degree of pollution of National Park streams was dramatically reduced. This action helped have the Blue Mountains recognised by UNESCO as a World Heritage area. One of the last steps in fixing the Blue Mountains sewerage system was the closure of the Blackheath and Mt Victoria sewerage treatment plants in 2006-8 at a cost of about \$30 million (then). Sydney Water can advise on this.

Given the degree of community concern about negative impacts of the Springvale mine on Warragamba water quality – I suggest that the users of the water (Sydney Water customers) be asked to pay extra to have the most effective and advanced mine water treatment conducted. This could be viewed as an example of user pays. In some ways it is also payment to the Cocks River for the vast volume of its water that are beneficially harvested and used for downstream economic activity.

Alternative advanced water treatment systems for Springvale

The mine proponent has indicated that the cost of advanced waste water treatment is prohibitive for this mine to reach salinity levels below 350 $\mu\text{S}/\text{cm}$. I recommend that further investigation is conducted to determine if the world's best technologies have been explored (with cost of treatment as one of the criteria). In my opinion an independent body should explore this. Given the importance to its customers and regulatory system I also think the PAC should consult Sydney Water and IPART on this matter before decisions on the EC discharge are made

Treatment of saline and metal contaminated water is an area currently experiencing a worldwide increase in research and application and testing of new technologies, for example, CSIRO have been developing such water treatment technologies such as 'Magnetic Ion Exchange'

(<http://www.csiropedia.csiro.au/pages/viewpage.action?pageId=426149>).

There are several local examples of desalination and brine management. For a local example of reverse osmosis and brine treatment and disposal, the Mt Piper Power Station near Portland is a shining example of an impressive use of similar technology to control water pollution. Similarly, in the south western outskirts of Sydney the Tahmoor coal mine and the Westcliff Coal mine at Appin both are using, or planning to use advanced water treatment to control contamination of local receiving waterways (Bargo/Nepean River and Georges River). The St Marys water recycling facility is also worthy of examining. I suggest that the PAC recommends an investigation includes an analysis of alternative advanced wastewater treatment systems that are currently in operation.

An obvious possibility is the construction of a pipeline to Mount Piper Power station and use of the Springvale water for cooling and then treatment in its desalination and brine disposal system. Given the important of the power station and the 15 % of the states electricity I think this would be an obvious sustainability solution for the user of the coal to also control the water pollution associated with the mine.

Given that the DPE has recommended an 'Upper Cocks River Action & Monitoring Plan' to be submitted by 30 June 2016, I recommend that this is a realistic time period to conduct such a detailed investigation into alternative advanced wastewater treatment systems and short list possible solutions. This would also be an idea opportunity to report such results, as the salinity problem in the Upper Cocks River is largely due to the discharge of mine wastes from Springvale mine.

Upper Cocks River Action & Monitoring Plan

I support this suggested initiative of the 'Upper Cocks River Action & Monitoring Plan'. Details such as the location of sampling sites, number of samples, water chemistry and biological attributes (such as algae, macroinvertebrates) needs to be made publically available as soon as possible, particularly given the inadequacy of data made available for this EIA. I understand from the EPA correspondence (28 May 2015 from Mark Gifford) that this will be a 'Pollution Reduction Program' as part of a revised EPL 3607. Given the high level of wider community interest, I seek that this information is made freely available to the public. As explained in the letter from EPA's Mark Gifford (28 May) the Upper Cocks River is also influenced by other pollution sources, including the possible transfer of waste from the Clarence Coal mine.

Other water pollutants (not just salinity)

Much of the water quality information in the first PAC review, the DPE Recommended Conditions of Approval and EIS information is focussed on salinity, as measured by electrical conductivity. I am concerned that this over simplifies the water pollution impacts from the Springvale Mine. As the OEH and EPA submissions (2014 and 2015) explain, there are multiple pollutants of concern, and issues of toxicity to aquatic ecosystems from the

LDP009 discharge remain as an issue of concern. My first submission noted the flawed process and inappropriate proposed trigger values that the mine proposed to use in a revised EPL. Given the importance of the Coxs River for multiple uses (water catchment, aquatic ecosystems, swimming, fishing, conservation) I expect to see a comprehensive draft of proposed EPL discharge limits for all discharge points, and for a comprehensive array of pollutants. In my opinion the oversimplification on salinity (as electrical conductivity) threatens to ignore other pollutants. Given the importance of future EPA regulation of the mine waste discharges, I expected to see the full details of all pollutants of concern listed for use as discharge limits in a revised EPL for the expanded mine.

Toxicity of waste discharge

An unresolved issue is the apparent toxicity of LDP009 to aquatic organisms. There is conflicting information presented, as the PAC would note, the mine consultants have a different opinion to that of the EPA. I note that NSW OEH have world-leading facilities and expertise on water ecotoxicity testing and I suggest to the PAC that further testing of LDP009 (and the other discharge points) be conducted, with 'toxicity identification evaluation' to obtain certainty about the individual pollutants (and/or the combination of pollutants) responsible for the reported toxicity. Such testing does need independent peer review. I believe that this is a major issue that is unresolved, and if the extension is approved, should also be included as a PRP under the new revised EPA EPL for Springvale. Obviously future revisions of the mine EPL could then incorporate reductions in those key pollutants that are responsible for the ecosystem toxicity.

My conclusions:

The latest documents available for the 2nd PAC review have not changed my opinion from my earlier PAC 1st review submission: I think sufficient information is available to indicate that the current Springvale Mine operation is causing regionally significant levels of water pollution in the Coxs River.

Similarly, sufficient information is available to show that the expanded mine operation will result in larger volumes of wastewater discharge to waterways and increased loads of pollutants, with major downstream consequences.

I remain frustrated that the EIS and further information (as presented on the PAC 2nd review website) supplies inadequate information that limits any ability to precisely predict future water pollution impact from the mine's expanded waste discharges to regional waterways. Currently the story is dominated by salinity, but many other pollutants seem to be forgotten. My earlier submissions (dated 26 May 2014 and PAC 1st review May 2015) explain many issues I have previously found relating to data inadequacies, both in terms of water quality and macroinvertebrate ecology in the EIS documentation. My issues expressed in both previous submissions still remain current in September 2015.

I remain critical of the apparent disregard of the DPE to the chorus of community and agency concerns about the weaknesses in the EIS (and proposed measures to mitigate further pollution in the proposed expansion). I consider the DPE Water Management Performance Measures ('Appendix G Recommended Conditions of Approval', Schedule 4, Page 15/16, Table 6 'Water Management Performance Measures') to be totally

inadequate. They do not recognise the range of chemical pollutants and only specify targets for salinity, which are far too high And appear to have weighted the costs of advanced water treatment much higher than coal mine profits.

The PAC first review highlights the seemingly unyielding and opposing positions held on the need for advanced treatment and regulation of the mine wastes. The PAC meeting with Lithgow Council indicated Council were of the opinion that the mine should have more lenient salinity targets than the EPA or many other submissions sought, due to the extravagant costs of additional water treatment making the future of the mine uneconomic. Given the heightened importance of the mine being in Australia's most important water catchment (Coxs River supplies about 20% of Sydney's water needs) I recommend that further examination of water treatment is urgently required, to seek the world's best available technology to treat the mine waste to much safer levels. Given how expensive this may be, I think it is reasonable that the community that gains the benefit from a safe and reliable water supply (i.e. Sydney Water customers) is asked to pay a contribution of the anticipated costs required to supply the additional treatment. The precedence is the Blue Mountains sewerage system improvements.

The expansion of this coal mine has attracted considerable community interest. I urge the PAC to recommend that the community is included in future stakeholder meetings. For example, the Upper Coxs River Action & Monitoring Plan should be made publically available. There is such a lack of water quality information available, this is an opportunity to address this. In future, the community, as well as Government stakeholders, should be informed about water quality issues and trends.

Finally, the future revised EPA licence for the Springvale Coal Mine (EPL 3607) needs to be shared openly with the community given that so little quality pollutant information has been made available in this EIA process. I remain unaware of what pollutants and acceptable discharge concentrations will become the basis for future regulation of water pollution from this mine. I also remain concerned that the EPA submissions have not been addressed and I am expecting that they have little choice but to issue an EPL licence that legitimises future water pollution.