THE COLONG FOUNDATION FOR WILDERNESS LTD.

Mining and Industry Projects
NSW Department of Planning & Environment
GPO Box 39
Sydney NSW 2001

Dear Sir/Madam,

Re: Springvale Water Transfer and Treatment Project SSD 16_7592

The Colong Foundation welcomes the decision to eliminate mine water by its reuse in the Mount Piper Power Plant. The Foundation believes that this proposal should have been part of the Springvale mine extension, and if it were it would have saved time and money.

The current proposal must be revised though as it:

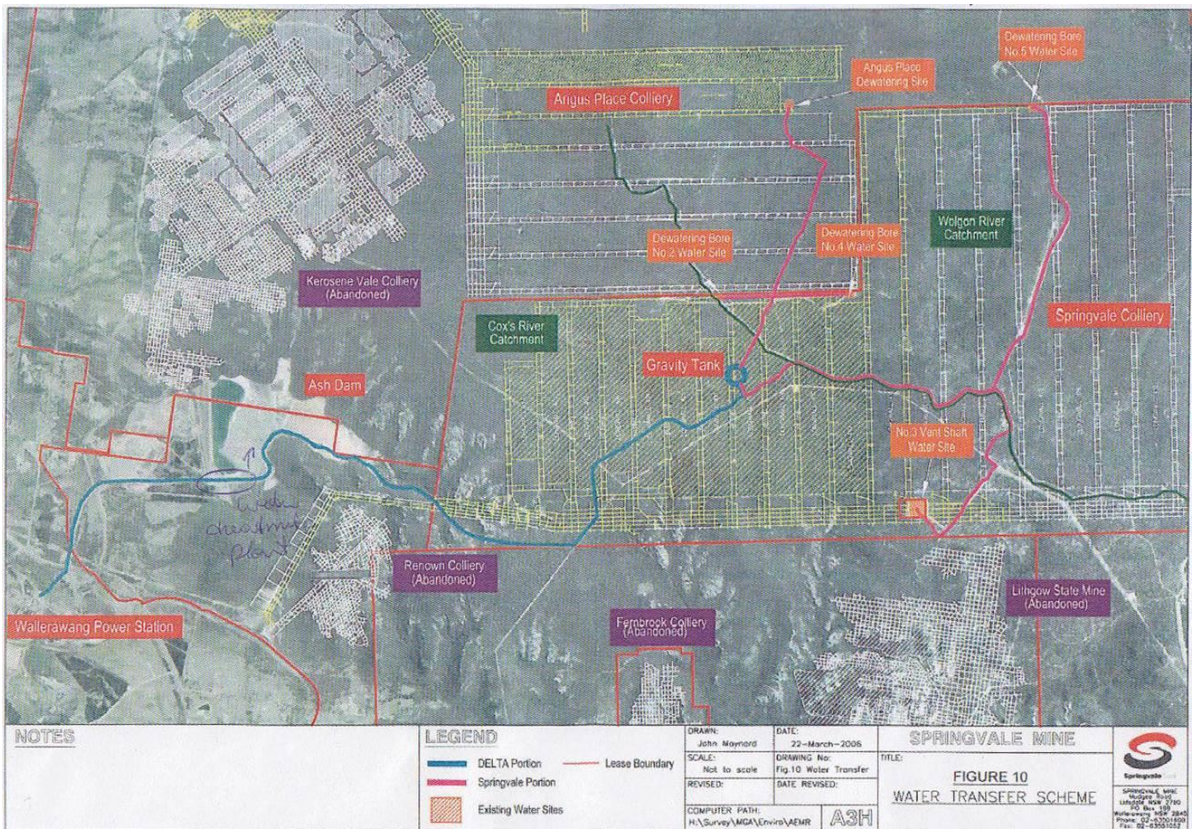
1. Cuts through an Endangered Ecological Community (EEC);
2. Duplicates Springvale's existing pipeline and therefore the environmental impact on Newnes Plateau and its escarpment;
3. Fails to examine the benefits of mine water reuse replacing untreated, 'raw' drinking water;
4. Does not remove all mine water, including nearby LDP006 which continues to discharge from the Cooks Dam;
5. Seeks approval for an unnecessary new treated mine water discharge point and does not adequately consider treated mine water storage options;
6. Adopts discharge standards that create perverse incentives to encourage the discharge of treated mine water, rather than its reuse in the Mt Piper power plant – the discharge standards in the Springvale mine extension consent should not apply to this consent;
7. Fails to identify Wangcol Creek as an unsuitable receiving water for mine water discharge; and
8. Proposes temporary mine water storage in Angus Place mine, which should not be part of this transfer project.

1 Pipeline relocation cuts through an EEC

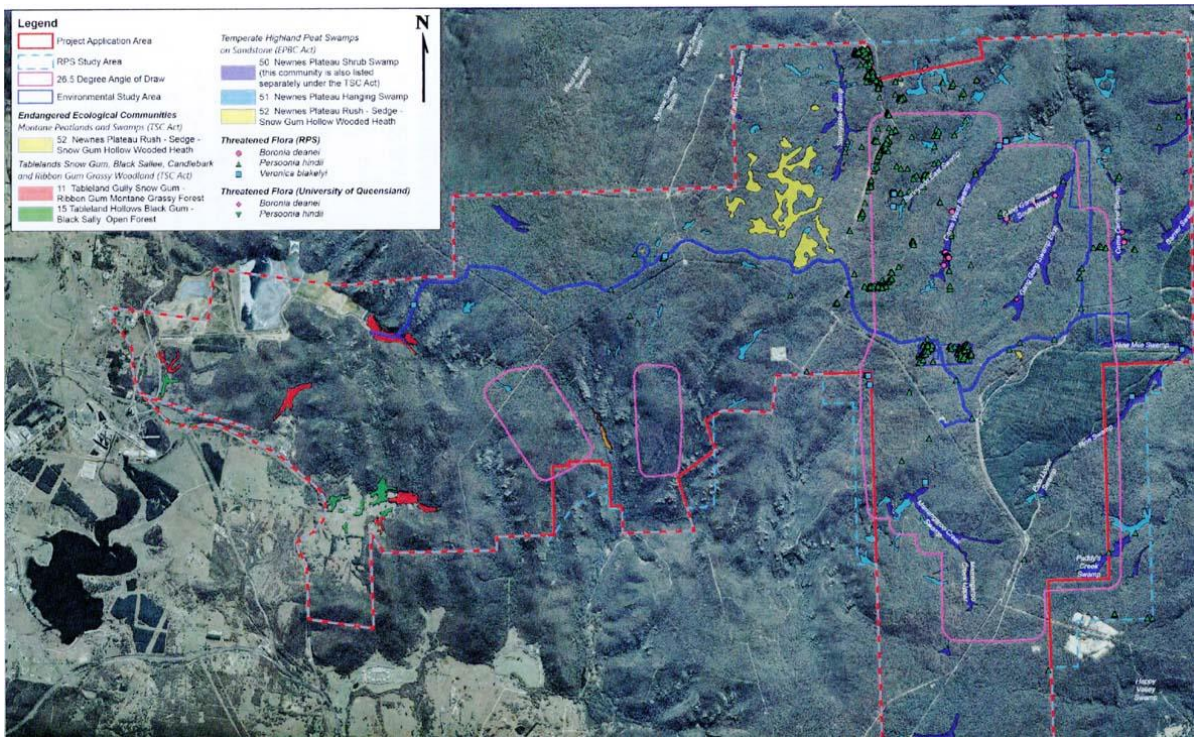
The consent for the proposed new pipeline should be required to follow the existing SDWTS pipeline alignment off Newnes Plateau to prevent unnecessary damage to a scenic and ecologically important part of the Gardens of Stone region known as the Clerestory Spurs that link downslope with an EEC community beside Sawyers Swamp Creek.

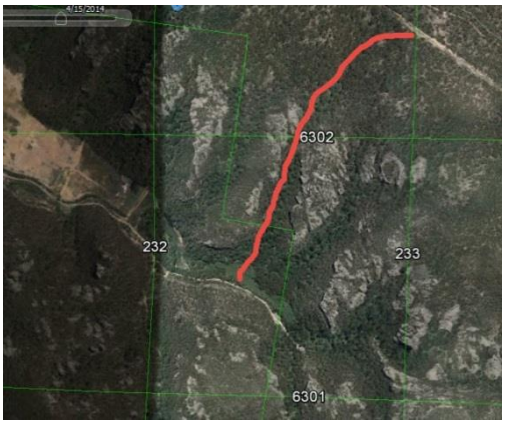
On face value, the EIS conclusion that a new pipeline following an existing pipeline route will have greater environmental impact than establishing a new pipeline route is not credible. The comparison between the existing pipeline route and new route is flawed, as disturbance of the existing easement environment should have discounted impacts when compared to those of the proposed new easement. If the new easement is to save money or to ensure pipeline reliability, or if the old route was found to be unsuitable for further development, then these reasons should have

been clearly stated. The EIS instead presents a strained numerically-based argument that contradicts the common sense impact minimisation of using the existing easement.

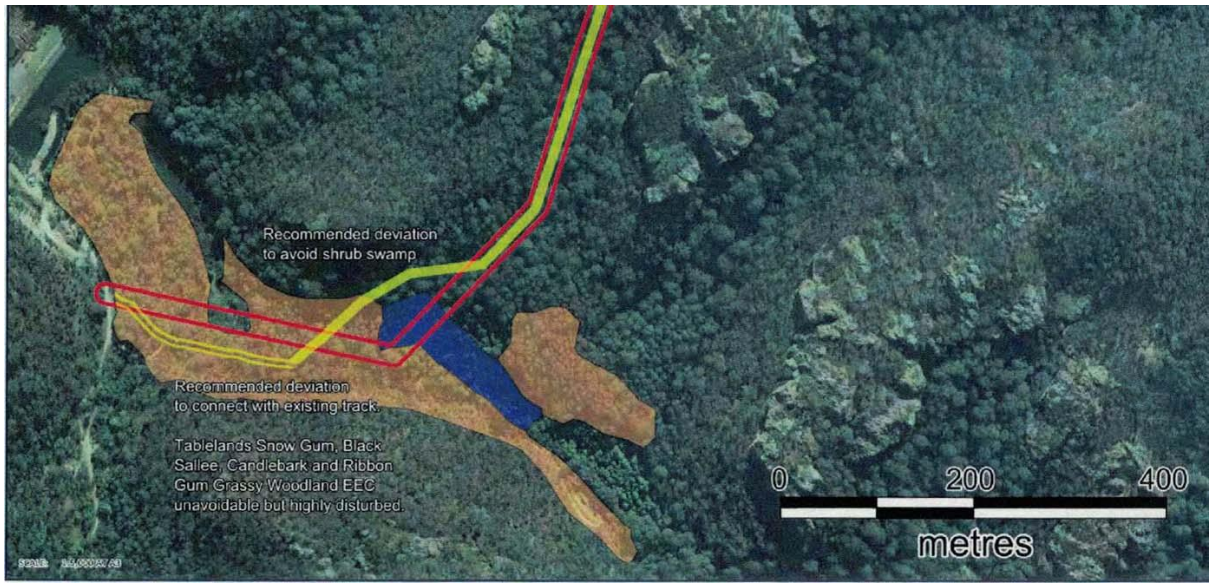


Existing transfer pipeline enters Sawyers Swamp Creek valley from the west (figure above), the proposed pipeline would enter this valley from the north causing unnecessary environmental disturbance (figure below from the 2014 Springvale Mine extension EIS).





Proposed pipeline and road route descends through a gully that lies between Clerestory Spurs 7 and 8 and then proposes to clear MU11, an endangered ecological community. How can this be less damaging than following the existing pipeline easement, and what are the justifications for pipeline relocation? (figure below from the 2014 Springvale Mine extension EIS).



2 Duplicates escarpment disturbance

One easement is better than two, unless there are exceptional extenuating circumstances, such as avoidance of further impacts on EECs. To reduce environmental impact, the rule should be to minimise surface disturbance, not duplicate it.

The Colong Foundation requests removal of the proposed new easement from this project.

3 The benefits of mine water reuse by the energy industry not examined

The water balance analysis in the EIS is unhelpful because it does not examine the benefits of substituting surface water with mine water for power generation. In other words the EIS does not determine how much more drinking water is made available by replacing it with mine water in power generation. In fact on page 10-25 the EIS water modelling concludes that 'Compared to the

do nothing scenario, the inflow to Lake Wallace was slightly reduced, due to the cessation of discharges from LDP009 following commencement of the Project.' So, according to the EIS the project is taking water from Sydney's water supply.

The modelling is misleading. The Project does not reduce the amount of drinking water available when the power plan is operating at or greater than 50% capacity. The water modelling in the EIS creates an incorrect impression regarding the benefits of the proposal.

At 50% plant capacity, all the mine water would be used for the purpose of power generation releasing surface water (raw drinking water) for use in the water supply downstream. Further, the remarks under scenario 3 that "The cessation of LDP009 discharges associated with the Project resulted in a slight decrease in the upper ranges of the Coxs River flow into Lake Burragorang" (pg 10-26) are also unhelpful. Again the assessment does not distinguish industrial quality mine water from surface runoff (raw drinking water) but instead considers them to be of equivalent value.

Data released in April from the National Pollution Inventory showed that the Springvale coal mine increased its discharge of heavy metals into the water catchment of the Warragamba Dam in 2015, despite already being one of the worst polluters in the previous year. These data are the result of LDP009 discharges and mine water should not be considered as suitable raw drinking water in the modelling for this project.

Since the closure of Wallerawang power plant in 2014, Springvale's operation has caused the Coxs River to become much more saline due to the discharge of mine water. The median Electrical Conductivity (EC) of the mine effluent from LDP009 is 1055µS/cm (microSiemens per centimetre), while background for the Coxs River headwaters is 30µS/cm[1]. The pollution emitted at LDP009 is about 35 times background salinity. The mine wastes discharged at LDP009 contain unnatural concentrations of calcium, zinc, potassium, magnesium, sulfate, alkalinity, chloride and sodium. Conservation groups are understandably concerned about the toxicity of the discharge.

The purpose of the proposed transfer scheme must be to eliminate mine water discharges to the environment, by transfer and use in the power plant. The use of mine water in the cooling towers of Mt Piper power plant releases surface water from this use. The benefit of making surface water available for drinking, by the reuse of mine water, is not considered by the EIS, which as a result grossly underestimates the value of the proposal.

In 2015 the Department of Planning and Environment was incorrect in concluding that there would be an environmental benefit to the Coxs River from the discharge of treated mine water discharged by the Springvale mine extension. Mine water disposal to the environment is an inferior outcome to the proposed waste elimination process outlined in the EIS. Surely the waste elimination process must strive for no mine water releases to the environment.

The water licence for the power plant supports a no mine water release policy. EnergyAustralia must not take any water from the Coxs River under Water Access Licence #27428 unless the Licence Holder has first used *all available mine water from its storages* for the purpose of power generation (condition 4 and my emphasis). The Colong Foundation believes that the clear intent of this licence

[1] Birch, G., Siaka, M., and Owens, C. (2001). The source of anthropogenic heavy metals in fluvial sediments of a rural catchment: Cox's River, Australia. Water, Air and Soil Pollution **126**, pp.13-35. [Reference for background salinity of 30µS/cm]

condition is to ensure the use of as much mine water as possible in the power plant. The licence also indicates that it would be appropriate for treated mine water to be stored in Thompsons Creek Reservoir for use by the power plant.

Mt Piper power plant is said to not currently discharge effluent. The Coxs River can be restored to health if the plant is required to use 'all available mine water from its storages'. The removal of this mine's toxic effluent will help to protect Sydney's Drinking Water Supply and the integrity of the Greater Blue Mountains World Heritage Area.

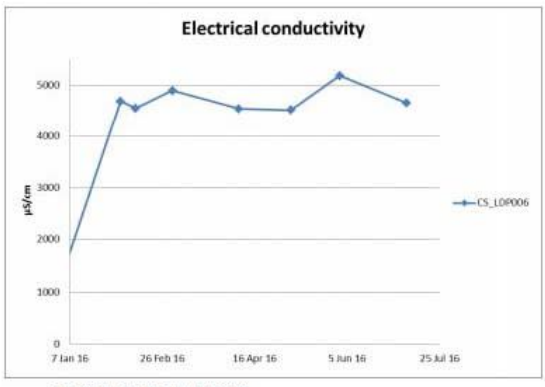
It is clear that the EIS does not implement the intent of condition 4 by storing mine water in Thompsons Creek reservoir, just as the EIS does not clearly state the main benefit of the project.

Thompsons Creek reservoir should be used to store all treated mine water and achieve compliance with condition 4 of the power plant's water licence. The current proposal is in breach of the power plant's water licence and should not be approved until this is fault remedied.

4 Does not remove all mine water and LDP006 discharges from the Coxs River

The intent of the Springvale mine water transfer is to remove mine water from the Coxs River. The proponents have designed continued discharges from the Coal Services Area at LDP006 and proposed a new LDP beside it into Wangcol Creek.

The failure to divert waste water in the Cooks Dam storage above LDP006 into the mine water treatment plant is a design weakness in the proposal. LDP006 has a very high salinity of 5,150µS/cm, in June 2016 making the Cooks Dam the most saline of all waste water in the Coxs River catchment. To protect the Coxs River catchment the highly saline wastes in Cooks Dam must be sent to the water treatment plant and then used in the Mt Piper power plant. If this is not done, then the Colong Foundation believes the Cooks Dam will pollute the Coxs River via LDP006.

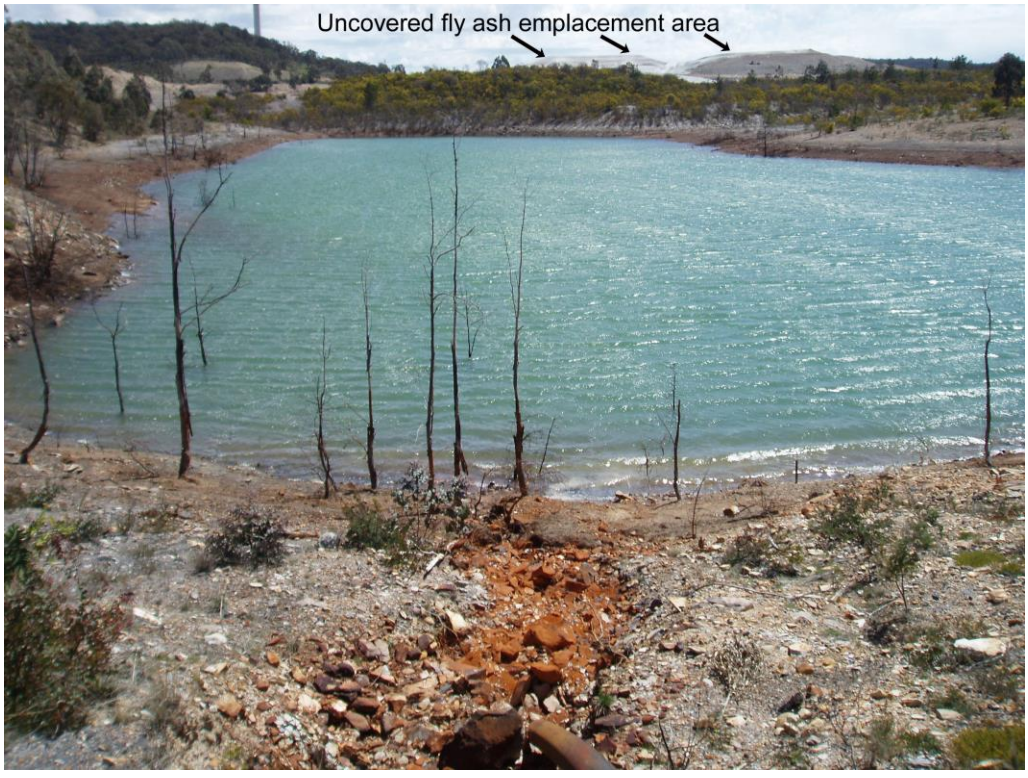


LDP006 Electrical Conductivity 2016

Springvale Coal Services, Environmental Monitoring Data, July 2016, Pg 7.

From examination of images of Cooks Dam, the adjoining DML Dam and the Ash Emplacement, as well as Google Earth images, the Cooks Dam seems to be hydrologically connected with the Ash Emplacement Area through the DML Dam and various storages to the west that spill into it.

The uncovered fly ash emplacement area has not been continuously rehabilitated as revealed in this 2016 Google Earth image, above, and a plume highly saline groundwater and runoff finds its way to LDP 006 and Wangcol Creek via DML Dam below. Note also the scour due to discharge from pipe shown at bottom of image.



The proposed increased discharges from LDP 006 are unacceptable. The highly saline discharges from LDP006 must be removed from the Coxs River catchment by reuse after water treatment in the power plant.

When the power plant is operating at 50 % capacity or greater, the modelled salinity discharge for LDP 006 indicates it is the prevailing source of salt to Wangcol Creek of 1,613 tonnes/year. When the power plant is operating below 50% capacity the proposed licensed discharge point will emit up to 3,312 tonnes/year to Wangcol Creek in addition to LDP 006. The large salt load of up to

5,000 tonnes/year under these proposed arrangements indicate that the water treatment process is inadequate for discharge to the drinking water catchment.

Cooks Dam located just south of DML Dam was close to overflowing in October and a quantity of water had recently been pumped between it and DML Dam.

Condition 13 of Schedule 4 of the consent for the Springvale mine expansion, SSD 5594 requires the "identification" of water management measures to meet discharge criteria, including water transfer to the power plant and "consideration" of all discharge points in the Upper Coxs river catchment. This direction should require Centennial Coal to examine in detail treatment of water stored in Cooks Dam, which is alleged to be runoff from the Springvale Coal Services Area.

In addition to the mine water transfers, LDP 006 and the storage proposal at Thompsons Reservoir, an expansion of the Springvale mine water transfer proposal should include capacity for Clarence Colliery mine water transfer. Such an enlarged pipeline would enable Centennial to meet upgraded EPL renewal requirements for Clarence colliery.

The pipeline should have capacity for an additional 15ML/day of mine water from Clarence Colliery to clean up the Wollangambe River.

The advantage of inclusion of this transfer in the pipeline capacity would be that such a future transfer would remove all pollution from the Wollangambe River. The river is listed as a wild river and the Greater Blue Mountains World Heritage Area is only a kilometre downstream of the mine's primary discharge point. The 15ML/day mine water discharge currently kills 90 per cent of macroinvertebrate life in the river for at 20 kilometres downstream of the mine.

Rarely does one single treatment initiative result is such a potential dramatic improvement in stream condition as would be achieved by the transfer of Clarence mine water to the Mt Piper power plant.

5 New licensed discharge is unnecessary

The annual water licence extractions permitted for the power plant are up to 23,000 ML/year or 63 ML/day from the Coxs River system, and 8,184 ML/year or 22 ML/day from the Fish River system (GHD, p 3.10, WAL 27428 and WAL 36230 summarised at p 3.15).

It is difficult to understand how the Mt Piper power plant, with a water licence allocation of 85 ML/day, requires a mine water transfer system with a licensed discharge to Wangcol Creek of up to 32 ML/day. The mine water is only 37% of the daily water licence allocation and could be comfortably doubled by the addition of say mine water from the Clarence Colliery, as long as the proposed mine water treatment system incorporated storage at Thompsons Creek Reservoir.

The water treatment plant does not need to be designed for discharge for the Springvale mine water project, as it can easily be designed as a closed system with the introduction of storage into the project. The proposal must be redesigned to store any temporary excess mine water in Thompson Creek reservoir as required by Water Access Licence #27428.

The EIS fails to quantify in detail the proposed amounts of mine water to be released under the project. These discharges could grow to unacceptable levels and in ways contrary to the power plant's water licence.

The rejection of the storage of treated mine water in Thompsons Creek reservoir because of its environmental impacts appears to be an excuse to avoid expense. The stated impacts on trout are unimportant as these fish are regularly released into Lake Lyell, which is used for fishing and it seems strange to use another smaller dam for the same purpose in the same catchment. The Colong Foundation does not support the release of trout upstream of the Greater Blue Mountains World Heritage Area into either storage. Trout are a feral fish and do not belong in national parks.

6a Discharge standards in the Springvale mine extension 2015 consent must be reviewed to prevent perverse incentives encouraging treated mine water discharge rather than its reuse in Mt Piper power plant

The Coxs River, a source of raw drinking water, must not be worse off if less or no coal power is generated using coal from Springvale mine.

It is possible, and perhaps even likely, that other future coal suppliers may provide the power plant with cheap open-cut thermal coal. Economic drivers will then see low ash thermal coal from Springvale Mine exported. In these circumstances, water treatment should be enhanced to reduce salt levels in Lake Burragorang and Wangcol Creek to the same level as if power generation was operating at 100% capacity using Springvale coal. In other words Springvale mine water treatment must be decoupled from Springvale coal consumption.

The total salt discharged to Lake Burragorang via Wangcol Creek also should not be inversely proportional to power generation, where an increase in cooling water uptake will result in increased salt removal (p 10.28). Discharged water requires higher levels of treatment when the amount of coal power generated is reduced as the treated mine water is to become a source of drinking water.

The alternative is to store treated mine water to prevent the perverse outcome where less coal power produces more mine water pollution.

If it is cheaper to discharge than to reuse mine water, then more mine water will be discharged than necessary and the power plant water licence will be ignored. Mine water treatment/discharge standards must be increased to prevent a perverse incentive where mine water discharge is cheaper than its reuse. This would encourage treated mine water storage.

Mine water is the main variable in the salinity load in the catchment. Mine water must be eliminated by industrial reuse or treated to a standard equivalent to that of the Coxs River headwater streams.

6b Springvale mine water discharge standard not relevant to a mine water reuse project

The discharge standards in the September 2015 consent for the Springvale mine extension are not appropriate to this project. This is a new development application for a different project, primarily for mine water reuse, not mine water discharge. It must be considered with new eyes.

To encourage compliance with the Mt Piper Power Plant water licence so that reuse of mine water is maximised through storage, there must be a considerable financial and regulatory disincentive for any discharges from the water treatment project. Water quality standards are the best tool to ensure discharges are either minimised or prevented altogether.

Mine water discharge to Wangcol Creek can only become environmentally neutral by being treated to an EC standard of 30µS/cm, which is the natural background for the Coxs River headwaters. Otherwise discharges will be maximised and the project will become a waste of resources.

Blue-green algae Red alerts have occurred in Lake Wallace, between Lake Wallace and Lake Lyell, in the past 3 years. These alerts are due to high levels of nutrients in these lakes. Mine water from the Springvale mine is associated with high levels of ammonia. Plant nutrients must be removed from mine water to prevent future algae and aquatic weed outbreaks.

The long term water quality objective in the development consent (SSD 5594) of reducing salinity in the Coxs River to 350 uS/cm is unachievable unless all sources of salinity are addressed by the proposed mine water transfers to and use by the Mt Piper Power Station.

7 Wangcol Creek unsuitable to receive treated mine water

The Springvale Water Treatment Project proposes to discharge to Wangcol Creek. On page 5.17 the EIS states that 'The treatment process would result in losses through the treatment process associated with the residuals and brine management streams resulting in up to 32 ML/day potentially available for either use in the power station or release to Wangcol Creek.'

The analysis on table 10.7 on page 10-29 is a considerable understatement and not based on real measurements from this creek but on assumed salinity levels. If there are new discharges to Wangcol Creek, the salt balance modelling has understated the consequent salt loads for scenarios 1 to 3 because of unassessed contributions made by contaminated groundwater. Wangcol Creek carries salt emitted from waste heaps associated with Mt Piper power plant and former open-cut areas that surround it. When discharges flow through Wangcol Creek, areas previously subjected to open-cut mining will emit saline groundwater to Wangcol Creek. These unassessed groundwater

contributions will then flow to the Coxs River. There may also be seepages from the uncapped fly ash emplacement area that emerge upstream of LDP 006.

The more water discharged to Wangcol Creek, the more salinity will be discharged from near-surface groundwater in open-cut areas located downstream from the discharge point. More water from the treatment plant will also facilitate salt to be swept through Wangcol Creek.

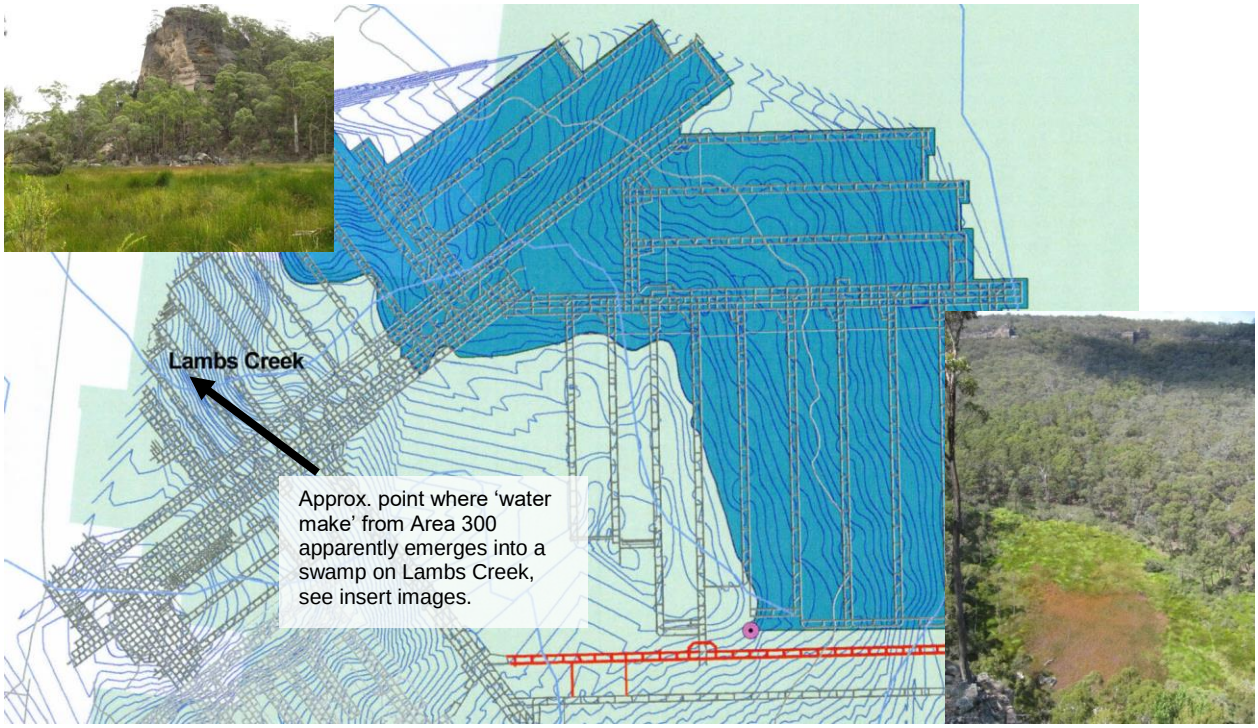
While headwater streams naturally have low salinity of around 30µS/cm, highly disturbed Wangcol Creek flows are much more saline than 108µS/cm, and not just due to LDP006. The catchment runoff salinity could be at least an order of magnitude greater than the estimate of 316.3 tonnes/year.

The very last thing that should be proposed is to increase discharges down Wangcol Creek, as they will be highly saline. The Colong Foundation is totally opposed to any discharges to Wangcol Creek and these discharges will push a plume of salt down the Coxs River.

8 Proposed temporary mine water storage in Angus Place mine should not be part of this project

Angus Place Mine has in the past denied that it is possible for mine water to emerge at Lambs Creek as their storage is about 100 metres below the surface. The Colong Foundation retains doubts about this underground storage and Lambs Creek. The large unnatural 'spring' on Lambs Creek at the point indicated below remains a mystery.

The figure and inset images above indicate the arrangement of Angus Place underground storage and a very



green, iron stained swamp that lies above it. Swamps that receive mine effluent, such as those at the Baal Bone Colliery have a similar appearance.

The Colong Foundation opposes use of this underground storage as part of the Springvale Water Treatment project. The spring that surfaces at Lambs Creek is suspect and probably contaminated

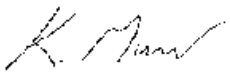
with untreated mine water. The use of this storage may see untreated additional mine water discharged to Lake Burragorang via Lambs Creek.

The Colong Foundation proposes the following consent conditions:

1. The existing pipeline easement from the balance tank on Newnes Plateau to LDP009 should be used by any future pipeline.
2. The operator of Mt Piper Power Plant must store all surplus mine water in its storages.
3. The operator of Mt Piper Power Plant must use all available mine water from its storages for the purpose of power generation.
4. The operator of Springvale Mine must provide all mine water to the operator of Mt Piper Power Plant in a manner suitable for reuse in the plant's cooling towers.
5. The operator of Springvale Mine must construct the mine water transfer pipeline with sufficient capacity to accept transfers from the Clarence Colliery.
6. No treated mine water shall be released to Wangcol Creek. [As an alternative to this preferred condition, Mine water discharged to Wangcol Creek must be treated to an EC standard of 30µS/cm.]
7. Cooks Dam shall not discharge to Wangcol Creek.
8. All water stored in Cooks Dam must be provided to the operator of Mt Piper Power Plant in a manner suitable for reuse in the plant's cooling towers.
9. Mine water must not be stored in Angus Place mine as part of the Springvale Water Treatment Project.

Thank you for the opportunity to comment on the Springvale Water Treatment Project.

Yours sincerely,



Keith Muir
Director
The Colong Foundation for Wilderness Ltd