THE COLONG FOUNDATION FOR WILDERNESS LTD.

Tuesday December 13th, 2016

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

Dear Sir/Madam,

Submission regarding Western Coal Services SSD 5579 Mod 1

The Colong Foundation finds the modelling analysis that predicts a decrease of salt load from LDP006 following modification 1 to be unconvincing. This optimistic prediction is based on the diversion of so-called clean water, which is not clean, but the modelling asserts it will become clean following the proposed minor earthworks. The modelling also has omitted the cumulative impacts from the approved significant extensions of the ash emplacement area to the Lamberts North and Lamberts South areas, along with the water quality influence of the Springvale Coal Services Site coal reject emplacement (REA). These are major omissions to the cumulative impact assessment must result in a gross understatement of likely salinity of discharges from LDP006.

The potential role of the municipal waste emplacement also needs to be considered, as it may not be secured from groundwater due the liner integrity issues that will be explained in this submission.

The Colong Foundation requests that the assessment of SSD 5579 Mod 1 be combined with consideration of SSD7592 Springvale Water Treatment Project and the two matters be dealt with together and subject to a Planning Assessment Commission review and determination process. The justification for making this request is that these two matters are interconnected and both involve control of major pollution of Sydney's drinking water supplies.

Modelling omits cumulative impacts located within the project area

The Department of Planning and Environment must require the water and salinity load modelling to be redone with the cumulative impacts within the project area to be fully accounted for, as the likely consequences of these impacts are likely to greatly magnify the already large salinity problem associated with LDP006. Salinity levels at Cooks Dam discharge, LDP006, already approaches 5,000µS/cm.

The modelling analysis for the proposed minor works modification combines the beneficial outcomes from the treatment and power plant reuse of Springvale mine water from LPT009 with the adverse saline discharge from LTP006, to predict favourable cumulative downstream flows and salinity outcomes. While the cumulative assessment for this modification proposal is done for the downstream environment, the cumulative water input flows and salinity assessment is not done *for* the project area. This selective cumulative modelling assessment of the proposed modification creates an unreasonably favourable outcome that cannot eventuate as saline inputs from the ash and REA waste emplacements are omitted from the model.

Statement of Environmental Effects (SEE) does not recognise the need to treat the toxic water discharging from LDP006 in any way whatsoever, even though there is recognition of its saline nature this is downplayed. This salinity problem will be magnified by the already approved Reject Emplacement Area and extensions of the ash emplacement on this porous landscape. The SEE does not appropriately respond to or even identify these overlapping environmental problems – as depicted on *Figure 1* on the following page. Groundwater contamination also may be increased by establishment of a municipal waste heap if there is a failure in the heap liner as will be discussed.

The modelling assessment admits that mine water from old underground mine workings will find its way to LPT006 through Cooks Dam to Wangcol Creek (see *Figure 3 modelling schematic*) but ignores the large non-point groundwater discharges from the project area (see *additional Figure A* at the end of this submission).

Adequate Treatment of discharges from LDP006

This proposed modification must not be approved unless the Cooks Dam Licenced Discharge Point (LDP006) and the associated 'clean water diversion' flows are adequately treated. The maximum flow rate for LDP006 is 36ML/day and the SEE fails to acknowledge the importance of treating this large point source of salinity.

The Colong Foundation has been advised by the EPA that LDP006 is unsuitable for treatment and reuse in the power plant. If that is the case, then the LDP006 discharge must be treated at the point of discharge by metals removal and another reverse osmosis water treatment plant established for this discharge point to tackle this major source of pollution. The joint funding contributions from EnergyAustralia, Centennial Coal and perhaps Lithgow City Council will require resolution.

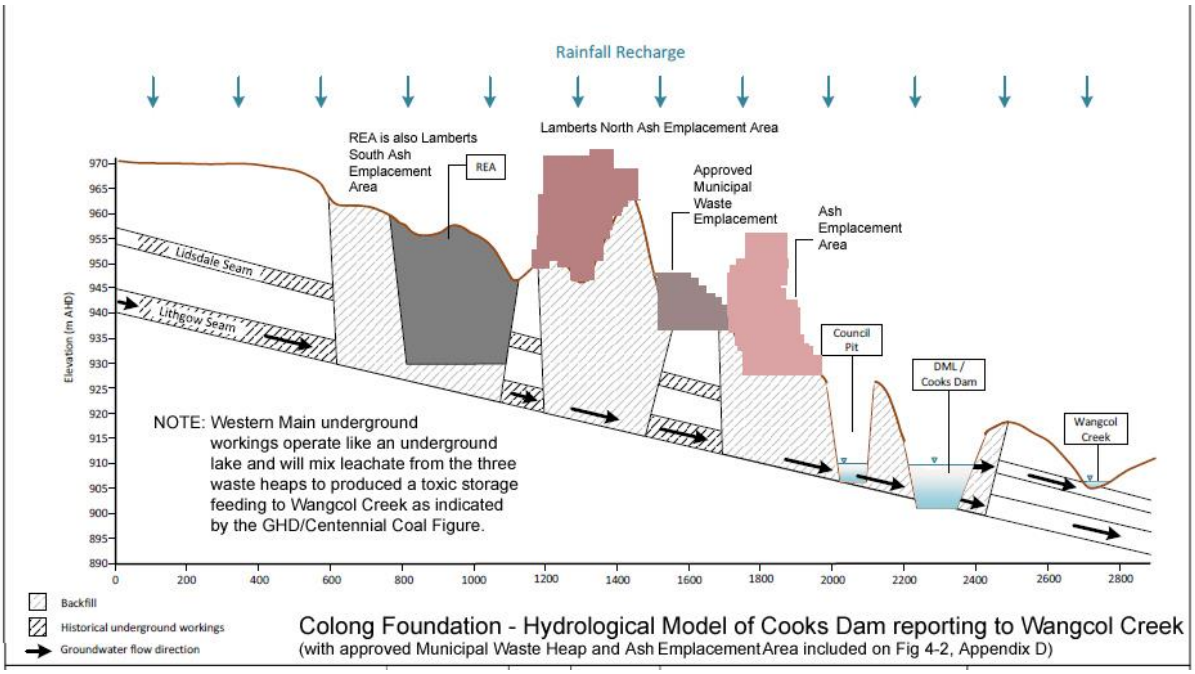


Figure 1 - Revised Cooks Dam/Wangcol Creek hydrological model to include significant cumulative impacts of leachate from various waste heaps on project site groundwater.

Deposition of water treatment plant residuals

The consent must require selective emplacement of contaminated residual materials from the water treatment plant.

There is no evidence in the SEE that the salinity from residuals will be closer to the raw mine water feed than laboratory bench top 'jar test' data of the residual materials. This assertion is based on heavy treatment of these liquid residual materials to render it environmentally inert. The treatment assertion will be swamped by the cumulative leachate contributions to groundwater from the ash and coal reject emplacement that will occur in with the residual emplacement area (see *Figure 1*, and addition *figures B* and *C* at end of this submission). These combined contributions will result in increasingly high contamination levels in Cooks Dam and Wangcol Creek via LDP006. These leachate contributions will also increase salinity of uncontrolled groundwater contamination of Wangcol Creek (see *additional figure A*).

The placement of water treatment residuals in the *existing* ash emplacement area is restricted. The brine conditioned ash is placed above the water conditioned ash, but this practice does not appear to be a consideration in the proposed modification in relation to combined REA/ash emplacement.

The SEE states that 'the water balance modelling predicts an increase in the volume of water discharged through LDP006 as a result of the increased load on the SCSS water management system due the residuals transfer.' The saline load on Wangcol Creek must increase as LPT006 receives discharges from three types of waste. The effect of mixing leachate from coal reject, ash emplacement and the water treatment plant residuals is possibly synergistic but not considered by the SEE.

The proposed cancellation of this increase through separation of clean surface water will not eventuate for reasons that will outlined in the following section.

Clean and dirty water flows from the project area

The claim of clean water diversion flows as described on page 23 of SEE is unconvincing. Lamberts Gully is the main feature of the "clean catchment" and it contains an old rehabilitated open cut coal mine.

The Retention Pond where the clean area diversion water collects has an EC of 1146 µS/cm (Table 5-4, Appendix D, Vol 2), which is nothing like clean background surface water. It is not clean water and the proposed measures are unlikely to significantly improve the quality of water in the Retention Pond due to the presence of decant water from the Co-disposal Area and runoff from the old Lamberts Gully open cut area.

Figure 5-2, Appendix D of Volume 2 shows the clean water diversion includes the main sediment dam (also known as the Conveyor Dam). Figure 5-2 shows the clean/rehabilitated catchment diverted from LDP006 catchment receives water from the main sediment dam that sometimes can be too dirty to discharge. Sediment settling appears to be the only purpose of the "clean water" diversion, as the runoff is saline, but not nearly as saline as Cooks Dam.

The lower part of the proposed "clean" catchment surrounds appears to be separated from the Co-disposal REA. This REA is described in the text on page 28 as having six cells. The two eastern cells are described as holding decant water, however *figure 3* shows decant water from these cells going to LDP006.

The Co-disposal REA is not separate from the clean area. The decant water discharges/reports to the Retention Dam and mixes with the clean water in the Retention Dam downslope of the two ponds. These flows contaminate and compromise the purpose of the clean catchment separation.

Further, as discharge from the "clean" catchment then flows into and mixes with the LDP006 discharge, so the purpose of clean catchment separation is defeated at the discharge point.

The minimisation of the moderately contaminated water collected in the Retention Dam must be adequately treated. The proposed water treatment plant could treat this water as it is only moderately contaminated. Without treatment the proposed clean/rehabilitated catchment separation is unable to provide any significant environmental gain in water quality.

If the water quality of discharges from the separated clean/rehabilitated catchment markedly declines, then it should be collected with LDP006 discharges and treated in a specific purpose water treatment facility as discussed in the previous section.

Groundwater controls the project area water balance – implications for dirty catchment monitoring and pollution control

Half the water balance in the SEE modelling for the project area is groundwater that reports to Wangcol Creek. As far as project area groundwater is concerned, the separation of "clean" and dirty catchments is not possible. In other words, the outcome of proposed separation of clean and dirty catchments is further compromised by the highly porous nature of these catchments.

Groundwater is interconnected through the old bord and pillar workings of the Western Main mine, (see *figure 2*). The "clean" groundwater may "float" on top of the denser more saline groundwater within the mine workings. Such saline groundwater behaviour has implications for monitoring and management if it commences to report to Wangcol Creek in considerable volume.

The regulation and treatment of contaminated groundwater within the project area is not investigated by the SEE. Ground water collection at Cooks Dam seems the most favourable option for its collection and subsequent treatment according to the schematic below (see *Figure 3*).

There is evidence that non-point source groundwater from the project area already reports to Wangcol Creek.

This ability of Cooks Dam to collect contaminated groundwater should be subject to further investigation. *Additional Figure A* indicates that Cooks Dam *does not* collect all saline groundwater.

Further, surface salinity monitoring data for Wangcol Creek demonstrates salinity increases from the Newbecks Creek junction to the Wangcol Creek gauge station to 585µS/cm (see Table 5-3, Vol 2, Appendix D of SEE) and again to the Wangcol Up Stream sampling site that read 2,577µS/cm, compared to LDP006 reading of 4,722µS/cm (Table 5-9, Vol 2, Appendix D of SEE, both sampled May

2016). These data when read with the groundwater cross section suggests that LDP006 does not collect all saline groundwater from the project site.

The project area groundwater must be further investigated to determine the proportion of saline groundwater that can be monitored and treated at LDP006. For example, it may be possible to control non-point groundwater discharges reporting to Wangcol Creek by a grout barrier or by management of storage levels in Cooks and DML dams at lower storage levels.

The consent should require further consideration of groundwater pollution with the view to improved containment and treatment.

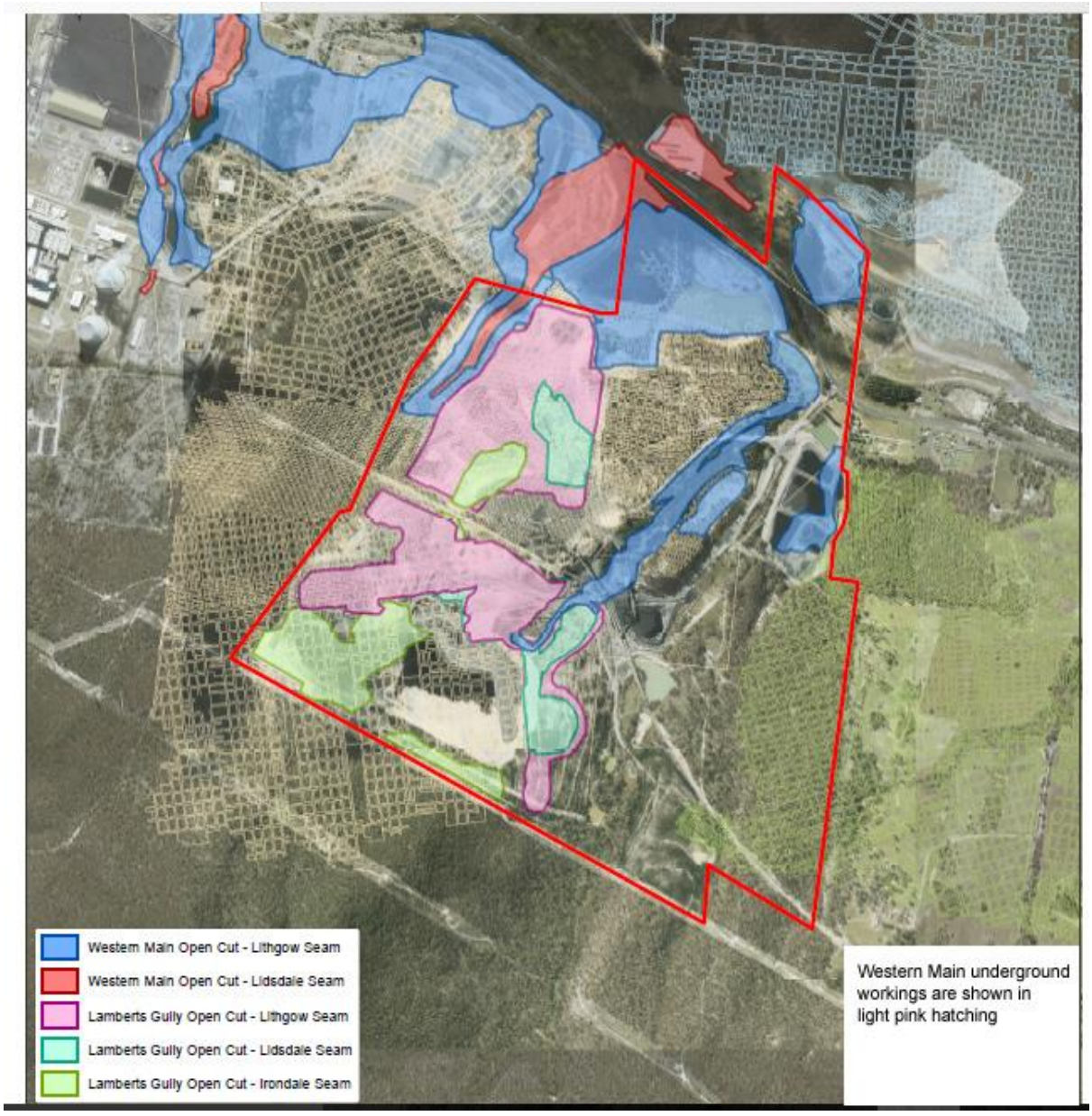


Figure 2 shows extent of shallow old mine workings and open cut mines that make the project area porous and ensures that groundwater controls the water balance of the project area.

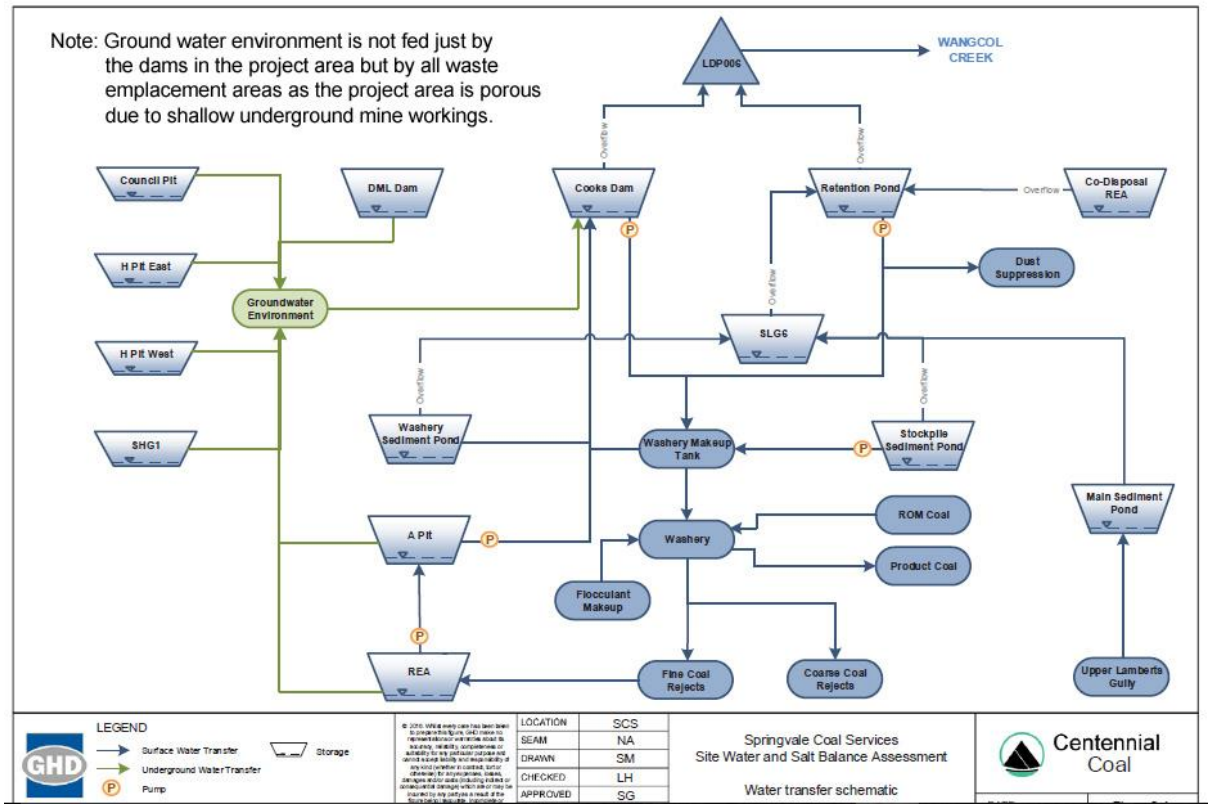


Figure 3 The water transfer schematic does not explain that the 'Groundwater Environment' receives large inputs from the extensive waste heaps in the project area, not just the REA but also the ash emplacement areas, and possibly metropolitan waste area.

The approved Municipal Waste Emplacement Area should never be developed

Lithgow's approved municipal waste emplacement area overlies shallow mine workings. The coal pillars of these old workings are unlikely to support the additional loads arising from of this large waste heap and movement of heavy machinery over it. Collapse of the pillars or the bord areas is a likely contingency as it regularly happens in areas of shallow mine workings that are not subject to additional loadings. Subsidence events must compromise any liner places under the metropolitan waste heap leading to groundwater contamination.

In these circumstances where the approved municipal waste heap can not be sealed from groundwater when sitting over old and perhaps unstable underground workings, suggests that the site needs to be reconsidered.

The toxic mine waters and ash heap leachate may then combine with rubbish heap leachate in a shallow groundwater aquifer that (from the groundwater salinity data above) already reports to Wangcol Creek.

Placing municipal waste on land subject to mine subsidence at the head of the Coxs River catchment is highly inappropriate.

Municipal waste dump development also will replace a large part of the "Lamberts Gully Rehabilitation offset areas" (see *additional figure D*). Loss of this offset appears not to be accommodated by further offsets, and is a poor practise, as ecosystems can't be traded as commodities without unexpected ecological outcomes.

The municipal waste emplacement must not proceed in such an inappropriate area that risks contaminating Sydney's drinking water supplies with such a potentially nasty toxic cocktail.

The EPA and DPE should work with Lithgow Council and the community to identify locations for waste facilities that are not located on highly inappropriate porous ground.

Rehabilitate Kerosene Vale Stockpile Area

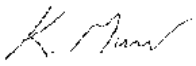
The Kerosene Vale Stockpile Area should be outside the mine operations envelope for Centennial Coal's mines now that Wallerawang Power Plant is being rehabilitated. This stockpile site is now unnecessary.

The stockpile area is located near the village of Lidsdale and generates contaminated runoff that can be avoided. The use of this stockpile area will require truck haulage, and adversely affect air quality at Lidsdale and also annoy people with truck movements. There is no necessity to create a very large stockpile of coal next to Lidsdale and if the municipal waste emplacement area does not proceed, as the coal stockpile could go there instead. This would avoid expensive and unnecessary double handling and truck movements.

The Kerosene Vale Stockpile Area should be rehabilitated and planted with native species of local provenance.

Thank you for the opportunity to comment.

Yours sincerely,



Keith Muir
Director
The Colong Foundation for Wilderness Ltd

SSD 7592, Vol 2, App B pg 149

NOTE: localtion of groundwater and Wangcol Creek.

Entire project area subject to open-cut or bord and pillar coal mining.

Implications for pollution control of salinity are dire.

Non-point salinity pollution of Wangcol Creek is certain to increase unless groundwater intercepted.

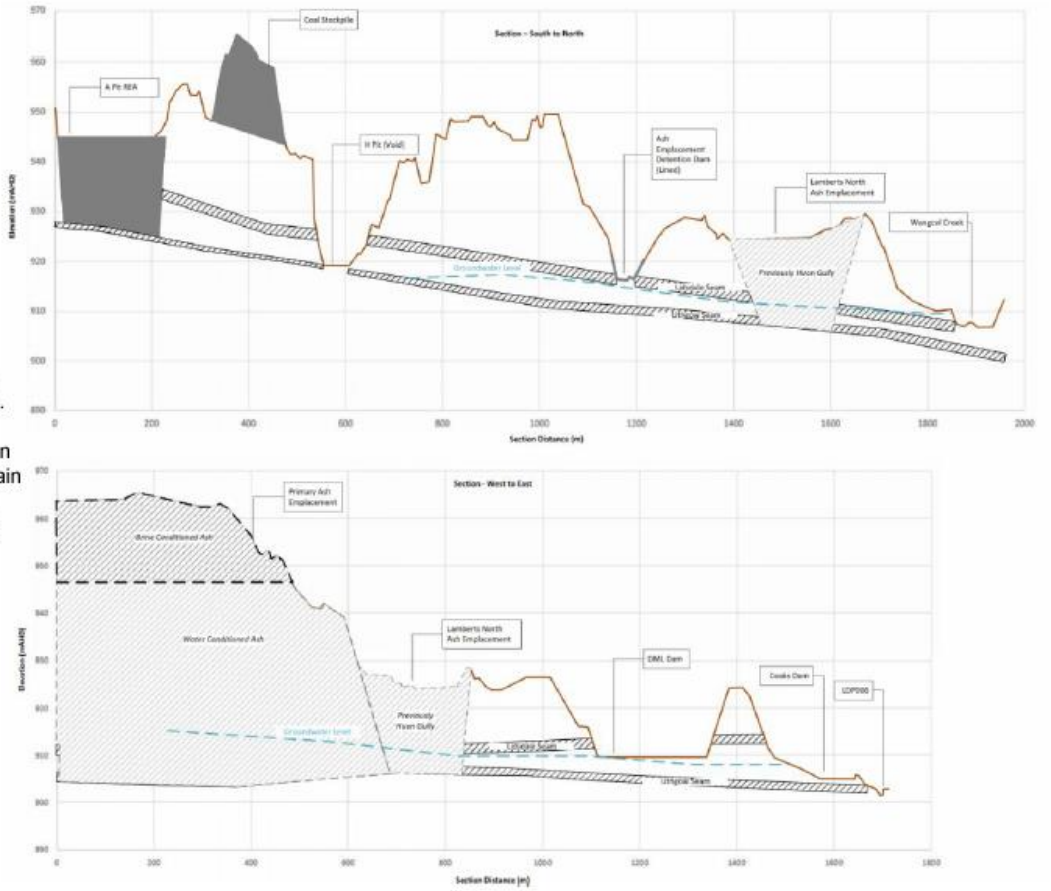
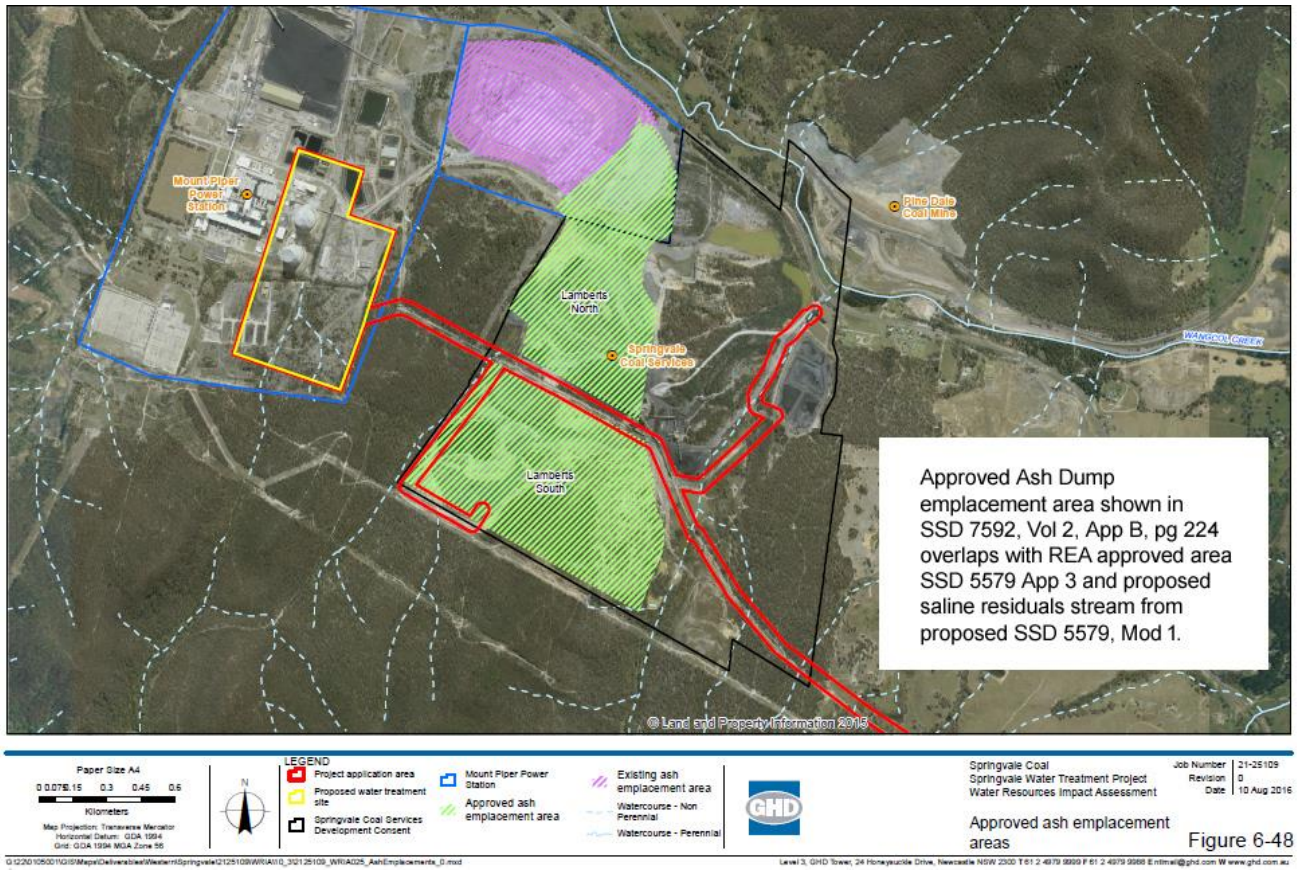


Figure 5-27 Groundwater level cross sections

Additional Figure A – Saline groundwater – a growing non-point source of Wangcol Creek pollution.



Additional Figure B - shows approved brine modified ash emplacement overlaps – Lamberts South - with approved SCSS REA as shown in Addition Figure C below, which all overlap with the proposed residuals emplacement from the water treatment plant.

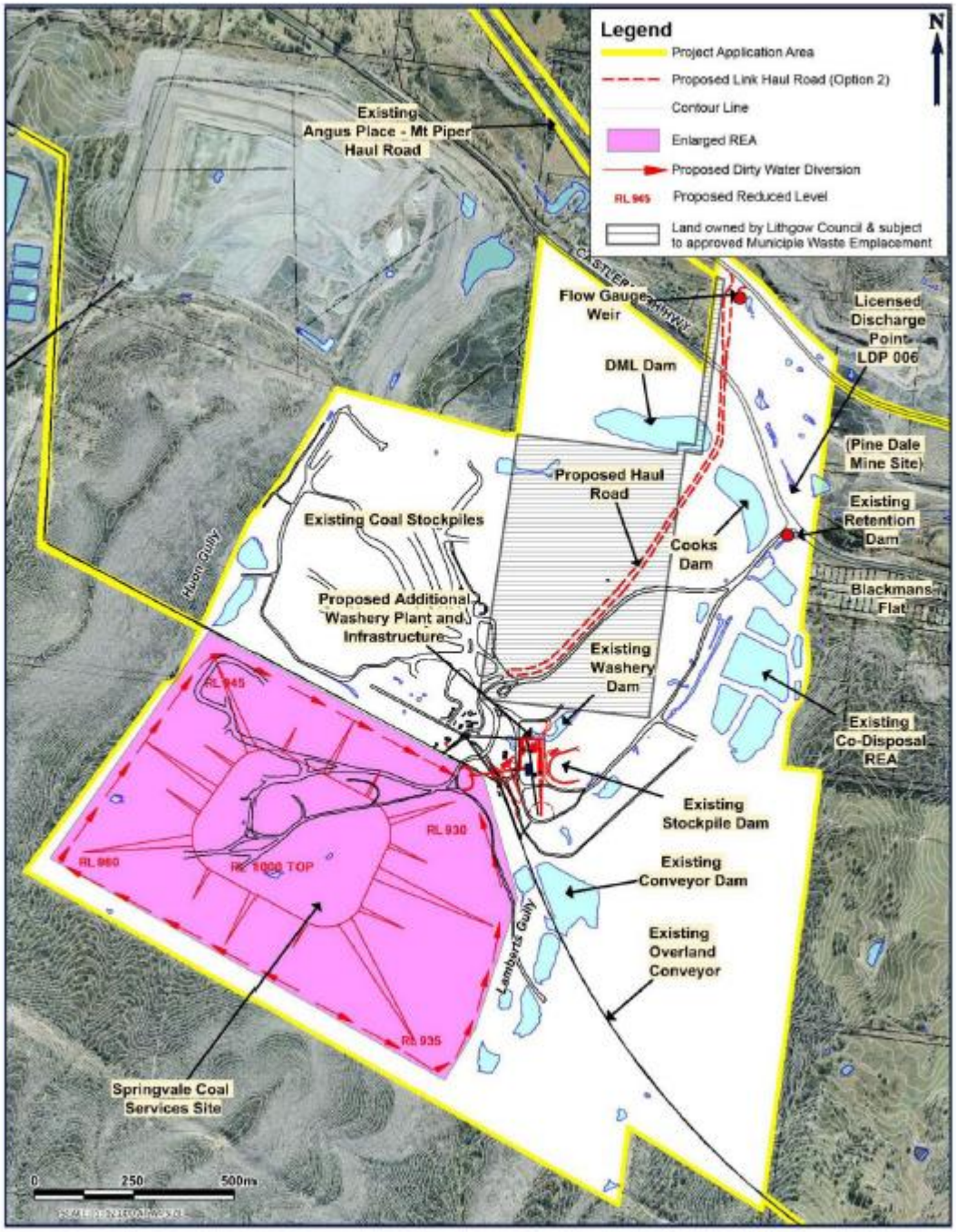
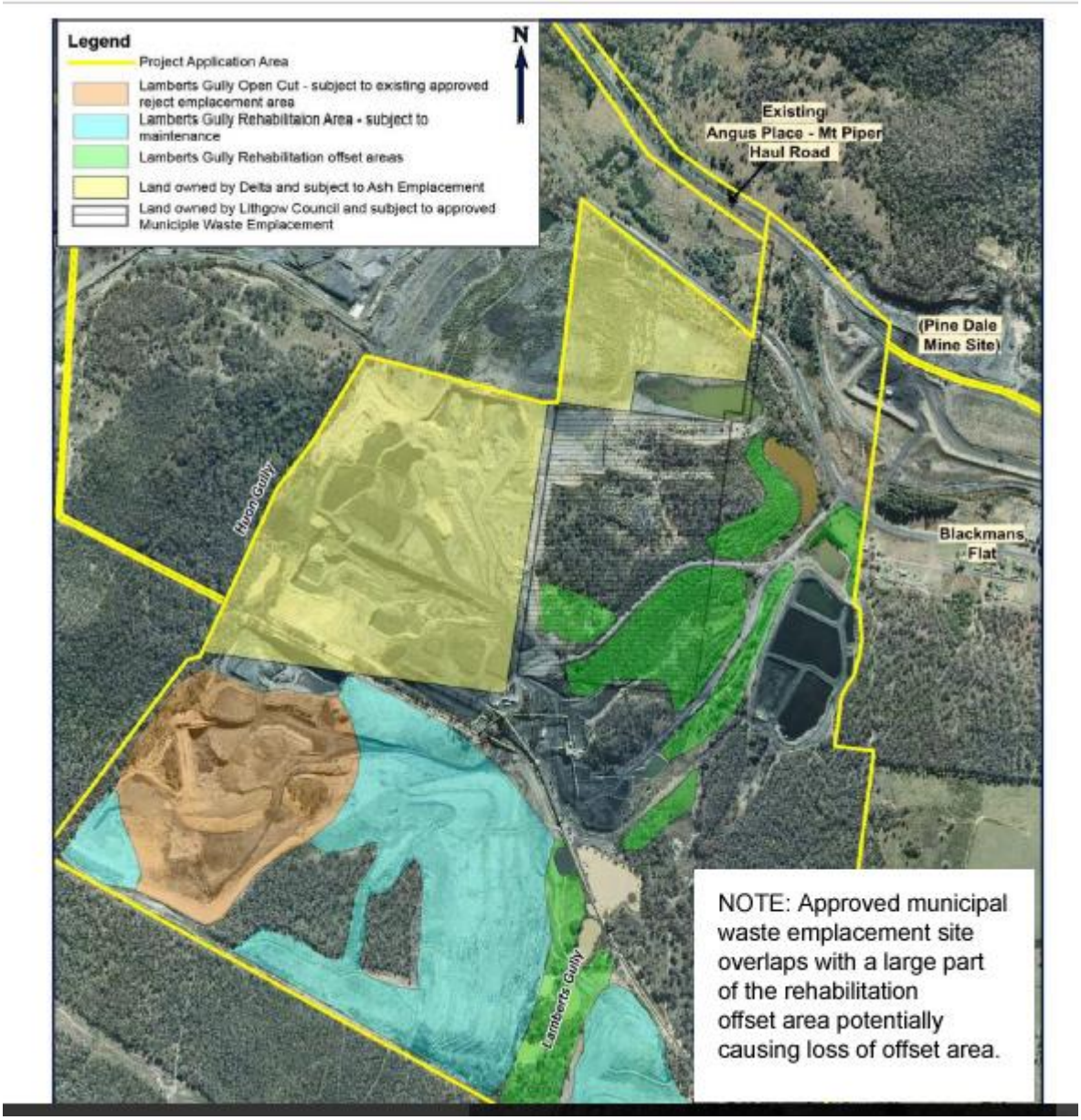


Figure 1: *General layout of proposed infrastructure on the SCSS*

NOTE: Location of Municipal Waste Emplacement to SCSS site, DML & Cooks Dams

Addition Figure C - shows size of SCSS site where co-disposal is proposed for saline residuals and large size of metropolitan waste emplacement area relative to it and the coal washery.



Additional figure D – a rehabilitation offset is to be replaced by a large municipal waste heap.