Centennial Coal

RESPONSE TO SUBMISSIONS

Springvale Mine Extension Project

State Significant Development 5594

Modification 2

March 2017

Centennial Coal
Springvale

Springvale Mine

SSD 5594 – Modification 2

RESPONSE TO SUBMISSIONS

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1.0 INTRODUCTION

This Response to Submissions (RTS) report has been prepared by Centennial Coal Company Pty Limited (Centennial Coal) in response to submissions lodged with the NSW Department of Planning and Environment (DPE) during the public exhibition of the *Statement of Environmental Effects* (SEE) for the proposed modification to Springvale Mine Extension Project (MOD 2), State Significant Development (SSD) 5594. The SEE supporting the proposed modification to SSD 5594 was exhibited from 24 January to 28 February 2017.

The RTS report clarifies and addresses issues raised in submissions received on the SEE during the public exhibition period. The report builds on information presented in the SEE supporting the modification application, and is to be read in conjunction with that document.

1.1. Background

1.1.1. Springvale Mine

Springvale Mine is an established underground longwall coal mine located in the Western Coalfield of New South Wales (NSW), approximately 15 kilometres (km) northwest of Lithgow and 120 km west-northwest of Sydney. Springvale pit top is accessed via the Castlereagh Highway and is located 3 km east of the township of Wallerawang.

Springvale Mine is owned by Centennial Springvale Pty Limited (as to 50%) and Springvale SK Kores Pty Limited (as to 50%) as participants in the Springvale unincorporated joint venture. Springvale Coal Pty Limited (Springvale Coal) is the operator of Springvale Mine on behalf of the joint venture.

Underground coal commenced in 1995 following the granting of the development consent DA 11/92 on 27 July 1992 pursuant to Section 101 under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The consent DA 11/92 lapsed on 30 September 2015. Springvale Mine currently operates under State Significant Development consent SSD 5594. This consent was granted to the mine, for the Springvale Mine Extension Project (SVMEP), on 21 September 2015 by the Planning Assessment Commission of NSW under Section 89E of the EP&A Act. The consent SSD 5594 allows Springvale Mine to carry out mining operations until 31 December 2028. The Springvale Mine Extension Project is a controlled action (EPBC 2013/6881) under the *Environment Protection and Biodiversity Act 1999* (EPBC Act). The approval under the EPBC Act was granted on 13 October 2015 and has effect until 8 October 2035.

Springvale Mine's State consent and the Federal approval allow extraction of coal from 20 longwalls (LW416 – LW432, LW501 – LW503), at the extraction rate of 4.5 million tonnes per annum (Mtpa) (subject to Springvale Mine Extension Project MOD 1), and the continued operation of the mine's surface infrastructure sites at the pit top and on Newnes Plateau. Springvale Mine is also approved to employ up to 310 full time personnel (subject to Springvale Mine Extension Project MOD 1) and carry out operations 24 hours per day, seven days per week.

1.1.2. Overview of the Proposed Modification

Springvale Coal is proposing to modify SSD 5594 under Section 96(2) of the EP&A Act to amend Schedule 4 Condition 12:

- To remove the requirement to *Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017*
- To defer to 30 June 2019 the requirement *to 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*.

The SSD 5594 consent boundary for the SVMEP remains unchanged. There are no changes proposed to the surface infrastructure. No changes are proposed on the current surface operations, including the existing site water management regime.

All activities on the surface (pit top and Newnes Plateau infrastructure areas) will continue to be undertaken as approved. No change in rehabilitation activities is proposed.

There is no proposal to change the approved longwall mining technique or the approved mine plan. ROM coal will continue to be transported off site as approved in SSD 5594. Water management will continue as described in the SVMEP *Environmental Impact Statement*.

There is no proposal to reduce the life of the consent in this modification from the approved 13 years from the date of consent, and the consent expiry date (31 December 2028) will remain unchanged. Hours of operations are not proposed to change from the approved 24 hours per day and seven days per week

1.2. Document Preparation

The RTS has been prepared by Nagindar Singh of Centennial Coal Company Limited, with assistance from:

- Peter Corbett, Principal Technical Services Manager, Centennial Coal Company Limited
- David Randall, Projects Manager, Centennial Coal Company Limited
- Karl Rosen, Principal – Environment, GHD Pty Ltd
- Peter Eccleston, Principal Water Engineer, GHD Pty Ltd.

The following specialist consultant has provided additional technical advice included in **Appendix F** and **Appendix G** of the RTS:

- Dr Justin Bell, Senior Associate Environmental Engineer, Jacobs Australia Pty Limited.

2.0 SUBMISSIONS ON THE PROPOSED MODIFICATION

This section provides an overview of the submissions received on the proposed modification during the exhibition period, and summaries of these submissions.

2.1. Overview of Submissions

Of the 340 total submissions received on the SEE:

- 7 were from government agencies
- 5 were from special interest groups
- 328 were from community individuals.

Government agency submissions were received from:

- Lithgow City Council (LCC) – comments
- NSW Department of Primary Industries (DPI) – comments
- NSW Department of Industry - Division of Resources and Energy (DRE) – comments
- NSW Environment Protection Authority (EPA) – comments
- NSW Office of Environment and Heritage (OEH) – comments
- WaterNSW – comments
- Blue Mountains City Council – objects to the proposed modification.

Submissions from specialist interest groups were received from:

- 4nature (EDO)
- Lithgow Environment Group (LEG)
- Lock the Gate Alliance (LTGA)
- Blue Mountains Conservation Society (BMCS)
- The Colong Foundation for Wilderness Ltd (CFW).

Of the 328 submissions received from the public:

- One submission (EnergyAustralia Pty Limited) supports the proposed modification
- 327 submissions object to the modification.

A total of 333 objections were received on the modification.

2.2. Department of Planning and Environment – Key Issues

Key issues identified by the Department of Planning and Environment (DPE) that required focussed responses are included in **Table 1**. This table also provides section references where the issues have been addressed.

Table 1 – Key Identified by the Department of Planning and Environment for Focussed Responses

Issue	Section Reference
1. Water Treatment Agencies and special interest groups have asked for consideration of temporary treatment and storage or dilution of LDP009 discharges. Please investigate if any reasonable and feasible options are available to the company for the temporary treatment, storage and dilution of minewater in the interim period while the Springvale Water Treatment Project is developed.	**Section 3.0**
2. Compensatory Measures WaterNSW has requested compensatory measures are put in place to mitigate the continued discharge of minewater during the interim period. Please investigate the feasibility of undertaking catchment improvement works, detail where such works could be implemented and outline the relative benefits of the works.	
3. Assessment of MOD 1 Increased Discharge Please confirm if the assumptions made in the MOD 2 Water Assessment also included the water impacts of increased minewater discharges resulting from the proposed increase production rate of 5.5 Mtpa.	

2.3. Summaries of Submissions

2.3.1. Government Agency Submissions

Table 2 provides summaries of issues raised by government agencies listed in **Section 2.1**. **Table 2** also notes sections in the RTS where the issues raised are addressed. It is noted the submissions from majority of the government agencies are in the form of comments, except Blue Mountains City Council which objects to the proposed modification. .

Table 2 – Summary of Comments and Issues in Submissions from Government Agencies

Government Agency	Comment / Issue	Section Reference
DPI	DPI recommends the proponent consider additional options to improve the current water quality in Sawyers Swamp Creek rather than or in addition to modification of the Conditions of Consent and continued discharge of mine water at the current water quality criteria until the Springvale Water Treatment Plant (WTP) becomes operational. Potential alternatives for consideration may include: • storing the excess groundwater in the disused mine workings until the WTP is operational, or • shandying the groundwater to improve water quality before it is discharged at LDP009 into Sawyers Swamp Creek.	**Section 4.1.1**
DRE	DRE has reviewed and assessed the adequacy of information provided in the SEE and provides the following comments. DRE notes that there will be no changes to rehabilitation activities or timeframes as a result of the proposed modification and has no objections to the modification.	**Noted**
EPA	The EPA is concerned about the delay in treatment options being implemented for the ongoing discharge, however, it is understood that Springvale Coal is working towards an improved environmental outcome by linking this project with the Water Treatment Project (SSD 7592). The EPA	**Noted**

Government Agency	Comment / Issue	Section Reference
	notes that as the Water Treatment Project (SSD 7592) is yet to be approved, and the construction duration for the water treatment plant was predicted to be 18 months as stated in Volume 1 of the Environmental Impact Statement (EIS), the 2017 condition will not be met. While the proposed modification will delay the first stage of the treatment (2017 condition), the ultimate goal of achieving a salinity discharge limit of EC 500 µS/cm (90th percentile) and eliminating toxicity impacts to the Coxs River from LDP009 by 30 June 2019 will remain in place. The EPA recommended, and in December 2016 supported, an amended application to the Water Treatment Project (SSD 7592) to transfer all excess treated water from Mount Piper Power Station (MPPS) to Thompsons Creek Reservoir for Power Station reuse, rather than discharge to the Coxs River. While the proposed modification will delay the first stage of the treatment (2017 condition) the 2019 condition requiring EC 500 µS/ cm (90th percentile) be met, and the reuse rather than discharge all treated water will ensure that a better long-term environmental outcome will be achieved. The EPA therefore accepts that the 2017 condition will not be met and supports the modification given that all treated water excess to the Power Stations needs will now be stored and reused under SSD 7592 rather than discharged to the Coxs River. In the interim, the EPA would support any additional measures Springvale Coal could put in place to improve discharge water quality. The EPA has no other recommended conditions of consent with respect to SSD 5594 Modification 2. However the EPA considers it appropriate to include key milestones in any consent that DPE approves with respect to SSD 7592. Such milestones would provide certainty that Springvale Coal were working towards meeting their environmental responsibilities due at 30 June 2019. These milestones could include, designs being completed, tenders being let, construction and commissioning phases or similar. The EPA recommends that DPE seek timing and description of such milestones from the proponent and include these in any consent they decide to issue.	
LCC	Council considers the Environmental Assessment adequately highlights the relevant issues, and has no objection to the project subject to Council's original conditions remaining on the consent.	**Noted**
OEH	It is understood that the proposed modification would amend Schedule 4 Condition 12 of SSD 5594 to enable Springvale Mine to continue to discharge mine water at the current water quality criteria until the Springvale Water Treatment Project assessment and construction has been completed, and the project is operational. OEH has no specific comments to make on the proposed modification.	**Noted**
WaterNSW	**Overall Comments** WaterNSW is disappointed that there has been a delay in the implementation of measures to achieve the performance measures relating to salinity and toxicity of mine water discharges. In this regard WaterNSW notes that Centennial Coal agreed in July 2015 to meet a 50th percentile of 700, a 90th percentile of 900 and a 100th percentile limit of 1,000 micro-Siemens per centimetre Electrical Conductivity (µS/m EC) limits for salinity at LDP009 by July 2017. If the modification application is approved the result would be a greater concentration and load of salts entering the catchment downstream of LDP009 (than that currently permitted) with resulting current chronic toxicity continuing until June 2019 (or earlier if an appropriate mitigation measure is implemented). In such circumstances WaterNSW considers Centennial Coal should be required to undertake compensatory water quality and/or catchment improvement measures and suggests the imposition of an appropriate condition for such measures (with a specified monetary value) to be implemented at or within the vicinity of the impacted watercourses and that these measures are implemented by 30	**Section 4.1.2**

Government Agency	Comment / Issue	Section Reference
	June 2018. **Elimination of Acute Toxicity from LDP009 Discharges** The SEE states that acute toxicity has been eliminated from LDP009 discharges due to changes to flocculant agent and dosing rates. Therefore there is no need to modify the condition relating to acute toxicity.	
	Impact of SSD5594 MOD1 on SSD5594 MOD2 The SEE states that the proposed modification achieves NorBE by meeting the discharge limit for salinity as defined by the DPE 'base case' of 1200 µS/m for discharges at LDP009 into Sawyers Swamp Creek, that existed at the time of the original SMEP SSD 5594 application. WaterNSW notes that the SMEP Mod 1 (SSD 5594 MOD 1) estimated an increase in mine water discharges by 10 L/s or 0.86 ML/day at LDP009 into Sawyers Swamp Creek over that approved in the original application, as a result of the proposed increase in annual coal production to 5.5 Mtpa. WaterNSW considers the SMEP Mod 2 appears to not have considered the mine water discharge increases as a result of SMEP Mod 1. Recent additional sensitivity analyses for SMEP Mod 1 by Jacobs (dated 2 February 2017) show minor deterioration of water quality downstream in the Coxs River catchment as a result of the SMEP Mod 1 compared to the original SMEP. Clarification and justification is required in this regard. The salinity in Table ES1 of the SEE for Mod 2 and Tables 4.12 and 4.22 (Jacobs December 2016) for 50 and 90%-ile for Lake Wallace (Node#074) and Lake Burragorang (Node#280) for approved case are not the same as in Tables 3.34 and 3.40 (Jacobs 26 March 2015); Table 6 (Jacobs 3 August 2015) and Additional Sensitivity Analyses for SMEP Mod 1 by Jacobs (dated 2 February 2017). Clarification is also required in this regard.	
	Impact of Springvale Mine Water Treatment Plant (SSD7592) on SSD5594 MOD 2 WaterNSW notes that a separate proposal is being considered by the Department for the Springvale Water Treatment Plant (SWTP) (SSD 7592). The SEE states that the SWTP will be operational by 30 June 2019. When the SWTP is operational, it will treat mine water to the water quality criteria of 500 µS/cm (90th Percentile) and that this treated water is proposed to be reused at Mount Piper Power Station, any excess water be discharged to Thompsons Creek Reservoir and mine water discharges at LDP009 will cease.	
	WaterNSW Recommendations Water NSW recommends that: 1. The SMEP Mod 2 is not determined until the Springvale Water Treatment Plant Project (SSD 7592) is determined and the SWTP should have a condition requiring the Project to be constructed and implemented within 18 months of the approval to ensure current untreated mine water discharges occurring at LDP009 as part of the SMEP proposal ceases as early as possible. 2. If the SWTP become operational before the 30 June 2019, the chronic toxicity criteria in Schedule 4, Condition 12 proposed to be deferred to 30 June 2019 should be met at such time when the Springvale Mine Water Treatment Plant (SSD 7592) becomes operational, whichever occurs first. 3. The proposed amended condition be reworded to: *Eliminate acute toxicity from LDP009 discharges to aquatic species by 30 June 2017 and chronic toxicity to aquatic species by 30 June 2019 or such time that the Springvale Mine Water Treatment Plant (SSD 7592) becomes operational (whichever occurs first), with acute toxicity*	

Government Agency	Comment / Issue	Section Reference
	defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group. 4. A condition is included in the consent which requires Centennial Coal to implement an appropriate level of water quality or catchment improvement at or within the vicinity of the watercourse impacted by the ongoing discharge of mine waters by 30 June 2018.	
Blue Mountains City Council	At its Ordinary Meeting of 31 January, 2017, Council resolved: That the Council writes to the Minister for Planning the Hon. Anthony Roberts MP, the Premier of NSW the Hon. Gladys Berejiklian MP and the Member for Blue Mountains Trish Doyle MP, expressing its concern at the Centennial Coal application to remove a license requirement to reduce the salinity of discharges from the Springvale mine into the Cox's River, and urging the Minister of Planning to maintain appropriate levels of protection for the drinking water supply and the Greater Blue Mountains World Heritage Area, noting its outstanding natural values and contribution to the Blue Mountains regional tourism economy. [Minute 09] Council is therefore is writing to express its concern regarding the application by Centennial Springvale Pty Limited and Springvale SK Kores Pty Limited, seeking to modify development consent SSD 5594 to: remove the requirement to meet limits for salinity by June 30, 2017, and; defer to June 2019, the requirement to Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by June 2017. As you are aware, Springvale Coal Mine is an established underground longwall coal mine, located in the Western Coalfield of New South Wales, approximately 15 kilometres from Lithgow. The mine currently discharges into the Cox's River, increasing the river's salinity, metal concentrations, pH and water temperature.	**Noted**
	Council asks that you do not approve the above application, and urges you to protect Sydney's drinking water supply and the Greater Blue Mountains World Heritage Area (GBMWHA), noting the potential for discharges from the mine to have a significant negative impact on these important values. In particular, the significant impact of the discharges on the fragile aquatic and riparian ecosystems of the Blue Mountains. The Minister should note that discharges from the mine are regulated by NSW Environment Protection Authority (EPA), and that this agency has indicated that further pollution of Cox's River by Springvale is inappropriate. This position is supported by recent research by the University of Western Sydney, which demonstrates that the health of many of the rivers within the GBMWHA, including the Grose, Wollangambe and the Cox's, are at risk from discharges resulting from the coal mining industry. It is Council's strong view that the application, if approved, will compound the existing significant impacts of the coal industry on the natural environment of the Blue Mountains, and the thriving nature-based tourism industry which relies on it. Council therefore again urges the Minister to reject this application.	**Section 4.1.3**

2.3.2. Submissions from Special Interest Groups

Submissions five special interest groups (4nature, LEG, LTGA, BMCS, CFW) were received. The **Table 3** provides a summary of issues raised by these special interest groups. **Table 3** also notes sections in the RTS where the relevant issues raised are addressed.

Table 3 – Summary of Comments and Issues in Submissions from Special Interest Groups

Special Interest Group	Issue	Section Reference
EDO on behalf of 4nature	Through the Modification Application, Centennial Coal is seeking to amend Schedule 4, Condition 12 of SSD 5594 to remove the requirement to meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1,000 (100th percentile) µS/cm EC by 30 June 2017 (the **30 June 2017 Requirement**). As the Department would be aware, the mine's impact on Sydney's drinking water catchment was the source of much objection from members of the public, WaterNSW (formerly the Sydney Catchment Authority) and the EPA during consultation on the original development application (SSD 5594). Initially, the EPA did not support the initial SSD due to its impacts on the drinking water catchment, and only gave its support once Centennial Coal agreed to meet the 30 June 2017 Requirement. That agreement is found in a letter dated 29 May 2015 sent from Mr David Moult, Managing Director and the CEO of Centennial Coal to the EPA in which he states that, "Centennial acknowledges and agrees to the EPA's proposal for 700/900 EC limits as discussed in your letter." Additionally, the PAC records in its First Review Report that, "The Applicant has advised the EPA that it could meet a performance measure of 700 µS/cm to 900 µS/cm at LDP 9 by 31 December 2016, using a combination of pre-treatment of discharge water, duplication of existing reverse osmosis infrastructure and blending of water from Clarence Colliery." Centennial Coal's agreement and active acceptance of the 30 June 2017 Requirement was acknowledged by the PAC in its Second Review Report (dated 15 September 2015, six days prior to granting consent, at p 4)[1]. [1] Available here: http://www.pac.nsw.gov.au/resources/pac/media/files/pac/projects/2015/08/springvale-mine- extension-project-second review/review/springvalemineextensionprojectsecondreviewreportpdf.pdf	**Noted**
	The Modification Application is not "substantially the same development" Centennial Coal is now seeking a modification to those conditions under s 96(2) of the *Environmental Planning and Assessment Act 1979*, on the basis that the development as modified will be "substantially the same" as the project for which consent was given in 2015. With respect, we do not agree. If the Modification Application is approved, this would constitute a substantial alteration to the mine as originally approved, as it would allow Centennial Coal to effectively increase the pollutant concentrations for salinity in the mine water it discharges into Sydney's drinking water catchment, compared with the development that was originally approved containing the 30 June 2017 Requirement. Such a change would result in development that is not substantially the same as that which was originally approved.	**Section 4.2.1**
	The Modification Application cannot rely on the proposal for a Water Treatment Project Centennial Coal relies in its Modification Application on its proposed Water Treatment Project (WTP) being approved and implemented, which is the subject of a separate SSD application (SSD 16_7592). We note that the WTP is currently at the assessment stage, and has not yet been approved by the PAC, or implemented by Centennial Coal. The Department should avoid any perception that the SSD application for the WTP has been predetermined.	**Noted**
	Request to consider the timing of the Modification Application Our client is concerned as to the timing of the request to modify the consent. As set out above, the PAC Review Reports in 2015 referenced Centennial Coal's agreement to the pollutant concentration limits for salinity (including	**Section 4.2.1**

Special Interest Group	Issue	Section Reference
	the 30 June 2017 Requirement) proposed by the EPA on 29 May 2015. Our client queries exactly when it was that Centennial Coal became aware that it would be unable to comply with the undertakings it gave to the EPA (and therefore also to the PAC during the course of the PAC's consideration of whether to approve the development), given that it applied for this modification on 22 December 2016, just 15 months after the PAC's approval of SSD 5594 subject to the conditions to which Centennial had agreed. For the WTP, Centennial Coal sought the Secretary's Environmental Assessment Requirements just four months after the PAC's approval of SSD 5594. In this regard, our client asks that the Department satisfy itself as to the timing of when Centennial became aware that its agreement with the EPA made in May 2015 and referred to by the PAC in September 2015 could not be met, with a view to ensuring compliance with s148B of the *Environmental Planning and Assessment Act 1979* in relation to the approval of the Springvale Extension Project (SSD 5594).	
LEG	The Lithgow Environment Group Inc. (LEG) **objects** to this proposal to defer compliance with the September 2015 development consent conditions for a further 2 years until 30 June 2019. **ABUSE OF THE PLANNING SYSTEM** LEG members are outraged that Springvale Colliery are being permitted to flagrantly abuse the aims and intent of the NSW Planning system by failing to comply with the original September 2015 Consent Condition 12 of SSD 5594 by: • Seeking to remove the requirement to meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017; and, • Deferring to 30 June 2019 the requirement to eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% relative to the control group and chronic toxicity as >20% relative to the control group. And LEG members are outraged that the DP&E is allowing Springvale Colliery to delay further by lodging this Modification whilst numerous intimately related DA's are currently in play, ie. • The Springvale Water Transfer and Treatment Project SSD 16_7592; • The proposed Modification of SSD 16_7592 proposal to store treated mine water in the Thompsons Creek Reservoir; • The Western Coal Services SSD 5579 Mod 1 (proposed emplacement of waste from the water treatment plant); • And this application Springvale Mine SSD 5594 Mod 2. It is plainly obvious to everyone except perhaps the NSW DP&E that Springvale Colliery never had any intention of complying with the original September 2015 Consent Condition 12 of SSD 5594. Springvale freely agreed to comply with this condition so that mining (and pollution of the Coxs River) could continue 'business as usual'. But just as clearly had every intention of delaying, stonewalling, and muddying the waters (pun intended) to avoid compliance with the Consent Conditions. And when the proposed date of compliance for this Modification arrives in June 2019, Springvale will no doubt lodge yet another Modification to defer again. Centennial Coal are not proposing to fix a minor error in the original Consent, or make a minor Modification to the Consent that will cause minimal environmental harm - they are abusing Section 96 (4) of the EP&A Act to avoid compliance with a Consent Condition they don't like! How can the DP&E stand by and allow such flagrant abuse of the NSW Planning system (or is the DP&E complicit, and colluding with Centennial Coal?) Why have Centennial Coal consistently been given preferential treatment in the	**Noted**

Special Interest Group	Issue	Section Reference
	Lithgow region compared to coal mines in the Hunter region which must comply with Salinity limits under the Hunter Salinity Trading Scheme - similar to Condition 12 of SSD 5594? Why are Centennial Coal continually allowed to waste huge sums of NSW taxpayer funds on – • Having numerous concurrent and intimately related Planning Assessments in play under the EP&A Act (ie. SSD_5594 MOD 2; SSD 16_7592; SSD 5579 Mod 1, SSD 5594 Mod 2)? • Having numerous unresolved Court Cases ongoing for both Springvale and Clarence Colliery's, whilst continuing to operate business as usual? • Continually delaying compliance with, or totally ignoring compliance with, numerous Pollution Reduction Notices issued under the POEO Act over many years? • Allowing Springvale Colliery to maintain its dubious record of having the highest number of POEO Licence Non-compliances for any mine in NSW without penalty? • Wasting huge sums of taxpayer funds by causing massive delays (in excess of 2 years) on the yet to be completed Review of the Clarence Colliery EPL 726? • Triggering yet another PAC Hearing only 18 months after approval of SSD 5594? Centennial Coal appears to have received a high degree of preferential treatment over many years in the Lithgow region from the NSW Government. They operate wholly on publicly- owned land in Newnes State Forest, and the NSW public therefore have a right to scrutinize the relationship between Centennial Coal and the NSW Government, to judge if it is totally open, honest and above board, or whether more sinister dealings have taken place? LEG members believe that a Royal Commission is justified, and urgently required. **ACUTE AND CHRONIC TOXICITY OF THE LDP009 DISCHARGES TO AQUATIC SPECIES** What part of the words **Acute, Chronic, and Toxic** doesn't the DP&E seem to understand??? LEG cannot comprehend how the DP&E or PAC could possibly have approved the original Springvale Extension in September 2015 despite knowing it was **Acutely and Chronicly Toxic?** Appendix 10 of the Springvale Extension *Coxs River Ecotoxicology Assessment* clearly stated that the LDP009 discharge was found by the OEH to be significantly toxic to most tested species of animals and plants, with algae and hydra being more sensitive than cladoceran. The LDP009 discharge was acutely toxic (ie. effectively lethal) to all tested fish species. Despite originally failing to identify this **Acute and Chronic Toxicity** in their original 2015 EA, Centennial now give us dubious assurances that this Modification will have no impact on the macroinvertebrate ecology downstream of the LDP009 discharges for another 2 years? And Centennial once again dubiously claim the LDP009 discharge will achieve NorBE (Neutral or Beneficial Effect) on water quality, despite the fact the SCA's Mr Malcolm Hughes wrote to the DP&E's Mr Howard Reed on 12 December 2014 clearly stating that neither the Springvale or Angus Place Colliery Extensions achieved a NorBE on water quality, and recommended refusal unless the applicant treated the mine water to an appropriate level prior to discharge. The 'creative accounting' used by the DP&E to ignore the SCA's expert advice should also be the subject of a Royal Commission! **HUNTER SALINITY TRADING SCHEME** LEG raised this issue in our original submission on the Springvale Extension, but	

Special Interest Group	Issue	Section Reference
	it was of course totally ignored by the DP&E and PAC. So we will raise it again. Why has Centennial Coal in the Lithgow region been given preferential treatment and competitive advantage over coal mines in the Mudgee Region and Hunter Valley Region? All operating coal mines (and coal-fired power stations) in Hunter region must comply with Salinity discharges limits specified under the Hunter Salinity Trading Scheme – • When the Hunter River is in low flow, no discharges are allowed; • When the river is in high flow, limited discharges are allowed using a system of salt credits; • The volume of discharge allowed depends on the ambient salinity in the river, so can change daily; • The total allowable discharge is calculated so that the Salinity doesn't go above 900 µS/cm in the middle and lower sectors of the river, or above 600 µS/cm in the upper sector; • When the river is in flood unlimited discharges so long as salinity doesn't go above 900 µS/cm. Springvale Colliery operates in the upper sector of the Coxs River, so if the Hunter Trading Scheme limits were applied fairly across NSW, then the LDP009 discharge would be limited to 600 µS/cm. Yet the LDP009 discharge is more than double that – quoted by Centennial at 1200 µS/cm, but regularly higher. Today (28/2/2017) Sawyers Swamp Creek had a Salinity level of 1240 µS/cm. It has been up to 1350 µS/cm in recent months, exceeding the Springvale EPL3607 discharge limit of 1200 µS/cm. The Coxs River in Lidsdale today was 1340 µS/cm. LEG could supply all our data for Salinity in Sawyers Swamp Ck and downstream of LDP009, but we doubt the DP&E wants to know. However LEG requests that the DP&E advise the NSW public in its assessment report – • How many other mines in NSW have a 1200 µS/cm discharge limit on their EPL? • Why does protecting water quality in Hunter River have a higher priority than protecting water quality in the Coxs River? • Why are cows and horses which drink water from the Hunter River given a higher level of protection than 4.4 million humans in the Sydney catchment who rely on the Coxs River for a large percentage of their drinking water supply? • Is aquatic life in the Lithgow region more resistant to pollution than in the Hunter? • Why have Centennial Coal in Lithgow been given a competitive advantage by having to comply with less stringent water quality standards than mines in the Hunter and Mudgee? • Is this yet another perverse 'subsidy' to the mining industry, and will it set a precedent? • Does the Hunter R flow through a National Park or World Heritage area like the Coxs River? • Why was Ulan Mine required to install a Reverse Osmosis Plant to treat Salinity in its mine water in 2008 (MOD 3 DA 113-12-98), yet Springvale aren't being required to install one? • Will relaxing discharge limits at Springvale set a precedent for all NSW mines to follow? **CENTENNIAL COAL MUST PROVIDE INTERIM SOLUTIONS**	

Special Interest Group	Issue	Section Reference
	Just because Springvale Colliery cannot meet the long-term deadline of transferring the mine water to Mount Piper Power Station, this does not mean that the only solution is to continue polluting the Coxs River until June 2019. Alternative solutions exist. The DP&E must reject this modification and require Springvale to implement interim solutions after 30 June 2017 deadline, or risk setting a precedent that all NSW coal mines may follow. It is not LEG's job to find interim solutions, however below are two examples. By requiring such a solution Springvale will have an economic incentive to find a timely long-term solution. **1. Reverse Osmosis Plant – Ulan Coal Mine – 2008** • Title: Modification - Ulan Coal Mine – Reverse Osmosis Plant • MOD 3 to DA 113-12-98 • Approved: 19 December 2008 • Description: The modification involves construction of a reverse osmosis plant • Location: Ulan • Applicant: Ulan Coal Mines Limited • Local government area: Mid-Western Regional • Capital cost of development: $3,500,000 • F/T construction jobs: 0 • F/T post construction jobs: 0 • Approval authority: Executive Director, Major Project Assessment as delegate for the Minister for Planning • Relevant legislation: Section 96(1A), Part 4 of the *Environmental Planning and Assessment Act 1979* • Details of approval: Director-General's Assessment Report, notice of modification approval and consolidated conditions of consent (as amended) **2. Cost of a Desalination Plant for minewater** *From:* Report to Queensland Premier - Review of the Fitzroy River Water Quality Issues November 2008, Professor Barry Hart Water Science Pty Ltd and Water Studies Centre, Monash University ***Option 5b: Mobile desalination plant*** *This Option would involve installation of a mobile desalination plant to supply either:* a. *supplemented 'drinking' water only (would require residents to collect the water), or* b. *desalinated town water through the existing town reticulation system.* *Desalination plants to provide an output of about 100 kilolitre/day (or equivalent to about 9 litre/person/day for the total populations of Dysart, Middlemount, Tieri and Blackwater) are available and multiple units of this capacity can increase the capacity.* *The combined lease, operation and maintenance cost for such a plant would be about $20,000 per month. Company's that set up these plants can monitor the plants performance remotely and will provide technical backup advice if required.* *For comparative purposes, a reverse osmosis desalination plant providing an output of about 1.5 ML/day (1,500 kilolitre /day or equivalent to 130 litre/person/day for the total populations of Dysart, Middlemount, Tieri and Blackwater) would cost about $100,000 per month ($66,000 per month leasing plus $30,000 per month operation and maintenance) plus the cost of brine disposal. Such plants are available commercially, generally in a transportable*	

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	container and are used for mining and construction camps. ***Assessment*** *This is a sensible and feasible Option. Obviously funding would have to be found to implement this Option. It is recommended that this option be part of a contingency plan should the water quality deteriorate further.* **RECOMMENDATIONS** That the DP&E reject this modification and require Springvale to implement interim solutions to remain compliant with Condition 12 of SSD 5594 after 30 June 2017. That the DP&E and PAC combine all current proposals related to the Springvale Mine and Transfer Pipeline to Mount Piper Power Station together in assessing this proposal. That the DP&E applies Consent Conditions for water quality in a fair, open, honest and transparent manner on Statewide rather than mine-by-mine, or region-by-region basis. **CONCLUSION** LEG has been monitoring water quality in the local area since 2006. Over the ensuing 11 years we have lodged numerous Submissions to the DP&E raising serious concerns about water quality in the Upper Coxs River Catchment. The DP&E has ignored many of our concerns. As a consequence water quality in the upper Coxs River catchment has continued to seriously deteriorate, despite the closure of one power station and 72% (9 of 12) of the then operating coal mines. Salinity in the Coxs River is at its highest level since the prolonged drought in the early 2000's, and Salinity has quadrupled at one site (Springvale LDP006) since 2006, and may quadruple again unless the DP&E begins to act in an environmentally responsible manner. The general public naturally blames coal mines for the deteriorating water quality. However LEG attributes that blame entirely on the DP&E, who have been fully aware of what has been going on, yet continued to ignore the expert advice of the NSW Government's own advisers in the EPA, OEH, SCA, and NOW; continued to allow mining companies like Centennial Coal to abuse the EP&A Act; and continued to relax environmental standards. This Proposal is just another example. LEG is extremely disappointed with the DP& E's approval record in the Lithgow LGA in relation to its disregard water quality over the last decade. LEG wonders why the DP&E bothers to ask respondents to lodge submissions, when it has every intention of totally ignoring any and all of their concerns. However we submit this, because apparently we and the environment have rights?	
LTGA	Lock the Gate Alliance objects to this modification. It expressly counters advice and assurances upon which the consent for the Springvale extension project was granted two years ago. It seems to us highly likely that consent would not have been granted for the project without the conditions that this modification is now seeking to remove and delay, since those conditions were crucial to the EPA's acceptance of the project. Centennial Coal has acted in bad faith and has been repeatedly in breach of the generous licencing conditions imposed on them by the EPA. The Department of Planning must uphold the agreement made between Centennial and the EPA and instruct the proponent that it must pursue another path to ensuring the mine complies with its conditions of consent. **Modification would undermine negotiated basis on which consent was granted** With this modification, Centennial proposes two remove or change two conditions limiting polluted discharge to the Coxs River, which enters Warragamba Dam, Sydney's primary drinking water storage, 80km	**Noted**

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	downstream from the discharge point at the Springvale coal mine which is at issue with this modification. According to the Independent Expert Scientific Committee, the Coxs River is the second largest tributary in the Warragamba catchment and contributed approximately 30 percent of the total inflow volume to Warragamba Dam during 2012-13. The main justification provided for this modification by the proponent is "to ensure Springvale mine will be compliant with its consent conditions." That is, rather than take action to ensure they can comply with conditions the company agreed to more than eighteen months ago, Centennial now seek the removal of conditions imposed on the operation to improve and safeguard the water supply upon which Sydney relies for drinking water. We urge the Department of Planning to reject this application. The correspondence between the EPA and the Department and Centennial Coal on this issue make very clear that these two conditions are crucial to its acceptance of the project. In a letter to David Kitto dated 22 June 2015, the Chief Regulator of the EPA, Mark Gifford wrote that, "The purpose of this letter is to provide the EPA's position that support for the Springvale Mine Extension Project (SSD 5594) and agreement to licence this project (subject to planning approval) is dependent on these key limits being include as statutory variations to environmental protection licences for any discharge from the Centennial Springvale Colliery." After which, they list the limit agreements. These are that by 30 June 2017 Centennial will meet a 50th percentile of 700, a 90th percentile of 900 and a 100th percentile limit of 1,000 microsiemens per centimetre Electrical Conductivity (EC) and that by 30 June 2019, Centennial meet a 90th percentile limit of 500 EC. Gifford appended to his letter to David Kitto a copy of a letter from Centennial Coal which "acknowledges and agreed" to the EPA's 700/900 limits and agreed "in principle" to the 500 limit by 2019, "subject to the completion of Centennial's feasibility of such further reductions and the subsequent commercial evaluation required to assess the impact to those operations." They add, "To be clear any commitments made to further reductions need to ensure continuity of supply to the local power stations and provide long term security of employment to the Lithgow community." There is no equivocation in the company's acceptance of the 2017 salinity limits. Indeed, the letter from the EPA to Centennial dated 28 May 2015 which is also provided, shows that the timeframe was proposed by Centennial itself and that the EPA relaxed its proposed longer term limit of 350 microsiemens at Centennial's request (insistence?). In that letter, too, the EPA cites a document prepared for Centennial by GHD which reported acute toxicity of the mine discharge to some aquatic species. Was Centennial unaware and unprepared at that time for the work that would be required in order to meet these limits that they come to the Department eighteen months later to plead for time? Or did they intentionally mislead the Department and the EPA, knowing that they would not be able to meet the limit, but agreeing to it in the middle of 2015 on the assumption that before two years had passed, they would be able to apply to have the conditions lifted? Either possibility casts Centennial Coal in a very poor light. In fact, it appears from the documentation provided that Centennial may be counting on another chance to plead for time in June 2019. The SEE states that the development consent, design and procurement phases of the water treatment project may not be completed until mid-2017 and that it may take two years to construct and commission. This does not leave any additional time to meet the June 2019 deadline for the much lower salinity limit. We are aware that development consent under the *Environmental Planning and Assessment Act* runs with land, and that the character and history of the company or person proposing an action is not relevant to the Act. It is, however, relevant to the EPA, who must decide whether to grant an	

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	Environment Protection Licence to this operation.	
	History of non-compliance and pollution at Springvale We provide some context in this submission, which we believe should demonstrate that these conditions should not be lifted and this modification not be granted. Springvale is licensed to discharge mine-affected water from seven discharge points, some of which are licensed for pollution by metals and some are not. The discharge points release water into waterways feeding two rivers - the Wolgan River, which flows north to the Capertee Valley and Wollemi National Park, and the Coxs River, which forms part of the Hawkesbury-Nepean and flows eventually into Warragamba dam. The Coxs River also receives polluted waste water from nearby coal fired power stations. Testing carried out by researchers from the Blue Mountains Conservation Society showed that this part of the river had high levels of heavy metals including zinc, copper and manganese, 125 times more sulphate than surrounding streams and only 5% of the oxygen that fish need. The mine had been transferring up to 30ML per day of water from the mine workings to the Wallerawang Power Station for use in cooling towers, but since the power station closed, they have needed to discharge it to dispose of it. In the data reported to the National Pollution Inventory (NPI) in 2013/14, Springvale was the largest single reported water polluter of Cobalt and compounds in New South Wales, producing 44% of the total reported volume of Cobalt to water that year. Springvale also reported the second largest level of Chromium III pollution into water in the NPI, producing a quarter of the total amount reported that year. It was the third largest polluter of Mercury, the fourth largest polluter of Lead and the fifth largest water polluter of Copper. It also reported polluting water with Zinc, Beryllium, Boron, Fluoride and Nickel. In the most recent NPI reporting year, Springvale was the largest single source of Cobalt pollution to water in NSW and the second largest source of lead pollution to water, being responsible for 28% and 20% of the total pollution to water of these toxins in NSW. The EPA stated that it intended to place water quality limits for these pollutants on discharges at this point based on the results of this assessment. The company was tasked by the EPA to assess "the acute and chronic toxicity of the mine water being discharged from Licensed Discharge Point 9" by August 2014. It has repeatedly been found by the EPA to be in breach of its licence for exceeding limits on arsenic and other pollution from one discharge point, and for failing to monitor properly from another. After several non-compliance findings when Centennial breached the volume limit for water discharges, EPA responded by varying the licence to remove volume discharge limit. In 2013, there was an incident at LDP 009 where dirty water was discharged into Sawyers Swamp Creek and ultimately to the Coxs River. The EPA issued a Penalty Infringement Notice of $1,500 for discharging water that exceeded the turbidity limit for up to four and other $5000 PIN for not immediately reporting an incident which threatened material harm to the environment. In September 2014, wet coal fines overtopped a dirty water drainage channel and into a discharge channel leading to discharge point 001, sending them into a wetland in the upper reaches of the Coxs River and the EPA later issued an caution notice to Springvale Coal over the incident. Springvale exceeded the electricity conductivity (EC) limit at LDP009 on 15 occasions in 2015 and environmental monitoring data shows that for much of last year the water discharged at LDP009 was in breach of the generous 1,200 microsiemens per centimetre EC limit that currently applies on Springvale's Environment Protection Licence. The mine also breached the arsenic limit on its EPL last year. We have written to the EPA seeking action from them to enforce the condition of the EPL and issue a compliance order to Centennial Coal. In June this year the mine is supposed to meet the tighter conditions that keeps the EC limit below 700 microsiemens per centimetre half the time. There was	**Noted**

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	no time last year when they dropped below 1,000 microsiemens. This background information reveals three things. Firstly, that Centennial Coal is a company with a poor track record of environmental compliance and that the EPA should consider revoking its licence if the company refuses to meet the conditions very generously granted to it. Secondly, it reveals that the EPA has been in discussion with Centennial about the need to reduce salinity of its discharge for at least three years, since well before the Springvale Extension was granted consent and the new conditions imposed. The company has had ample time to comply and indeed, does not appear to have acted in good faith in its dealings with the EPA. Finally, and crucially for this application, the EPA made clear to the company that the toxicity and salinity of its discharge were above acceptable limits and that they must be reduced. In a further demonstration of bad faith, the company compares the effect of removing the salinity and toxicity conditions with what it calls "historical water quality levels" and draws conclusions about the environmental impact via that comparison. But the "historical" pollution levels at the discharge site, Centennial's own discharge site, are already above acceptable limits. That is the purpose of the condition, to reduce it.	
	Poor and misleading assessment of impacts The assessment material provided with this modification application is self-serving and misleading and reinforces Springvale's unfitness to be operating a highly polluting mine in an environmentally sensitive area. The company refers throughout the assessment to water quality in Lake Burragorang, without using the more commonly used name Warragamba Dam. The assessment material presents the results of salinity modelling in milligrams per litre without indicating what the electrical conductivity is likely to be for the salt concentrations expected. This is despite the consent conditions and the company's Environment Protection Licence setting salinity limits with EC measures. Using a formula provided by OEH, and applying it to the modelling results presented in Table 20, we can infer that the EC of the Coxs River Upstream of Lake Wallace will be over 1000 microsiemens per cm at the 90th percentile, and over 1,200 at maximum, above what would be considered good drinking water. Such tricks are designed to disguise the environmental impact of the mine. They are relatively simple to see through, but that does not mean that the Department of Planning should accept such obfuscation as a matter of course. Recent work by the Department of Planning has sought to improve the accessibility and honesty of mining project assessment material. It is disappointing to have to read through a misleading and at times incoherent assessment document for such a controversial mine. The company gives itself a pass on the Neutral or Beneficial Effect test when compared to the "base case" it says was defined by the Department of Planning and Environment as an electrical conductivity of 1,200 microsiemens. The company states that there is will be "no change to modelled median salinity in Lake Burragorang over the prediction period, compared to that currently approved." This is ambiguous. What is currently approved is for the salinity limits to drop in June 2017 and then again in June 2019. Is this the "currently approved" scenario against which the company is modelling its impact, or are they modelling against the "current approved" activity being undertaken right now, which this modification would propose to continue unchanged after June 2017? This is a crucial point which creates considerable confusion in the SEE. The sole sentence that comprises the assessment of the impact of the modification on macroinvertebrates states that "Given that the modification is a continuation of mine water discharge at current and historical water quality, there is no change to environmental consequences with respect to aquatic ecology (macroinvertebrates) compared to that presented in the SVMEP EIS (Golder Associates, 2014)." The same sentence comprises the assessment for the impact on the Coxs River:	**Section 4.2.2**

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	"Given that the modification is a continuation of mine water discharge at current and historical water quality, there is no change to environmental consequences with respect to aquatic ecology (macroinvertebrates) in Coxs River catchment compared to that presented in the SVMEP EIS." The proponent relies on the EIS for the Extension Project as if that document were a demonstration that the mine without Schedule 4 condition 12 imposed would not have a significant impact, entirely suppressing the origin of the conditions in question and their purpose. When the EIS was published, the EPA's response to the mine was that, "The EPA is unable to support the Springvale and Angus Place expansions in their current form given the absence of any commitment in the EISs to address the handling/treatment of the mine water, in either the short or long term. It is important to the EPA that any approval by the Department, if granted, aligns with the ongoing programs of the EPA. The EPA recommends that treatment to significantly reduce the salt and contaminant levels of this mine water, or achieve beneficial re-use (or a combination of both by a set date should be a condition of consent if the extension projects are approved.)"[1] The Coxs River Ecotoxicology Assessment prepared for the proponent following Departmental feedback that the EIS had failed to address the effect of toxicity on macro-invertebrate ecology showed that, "the discharge at LDP009 is having an acute impact on cladoceran species at the Sawyers Swamp Creek site downstream of discharges." The new toxicology assessment presented with this application claims that there is no longer an acute toxicity problem, but that chronic toxicity remains. It concludes "that salinity is the potential cause of toxicity in Springvale Mine water discharges." Along with the interim salinity limit, Centennial is now seeking to remove the condition of its consent that requires it to eliminate acute and chronic toxicity from the LDP009 discharge to aquatic species by 30 June 2017, with acute toxicity defined as greater than 10 percent effect relative to the control group and chronic toxicity defined as greater than 20 percent effect relative to the control group. This is not acceptable and this modification application must be rejected. The proponent includes information about the salt balance for the Springvale Delta Water Transfer Scheme that contradictory and unclear. In the Executive Summary of this SEE it is stated that "salt balance modelling for mine water discharges for the proposed condition in 2031 (when the mine inflows will be maximum)" at 10,067 tonne/year of salt. It calls this the "do nothing scenario" but also says the salt load will stop when the water transfer project is operational and the discharges cease. Immediately below this, the proponent describes another "do nothing scenario" with salt-load contribution on a catchment level at 21,583 tonnes per year which it claims will reduce to 12,219 "for a modelled operational scenario of 50% power generation (correlates to recent historical trends and corresponds to the approximate volume of water available from the [Springvale Delta Water Transfer Scheme]." The meaning of this sentence, and how it related to the previous figure for "do nothing" salt loads is opaque. In any case, the modelling for the Springvale Delta Water Transfer scheme is not relevant. That project is being assessed on its merits. If the proponent has failed to have arrangements in place to begin the scheme in time to meet the conditions of consent for the Springvale Extension, then it must come up with alternative arrangements. The alternative should obviously have been that the PAC should have withheld consent until the Water Transfer Scheme and/or a water treatment option was operational. A condition of consent should have been imposed that prevented the company moving to operating the Springvale Extension without adequate water treatment and handling infrastructure in place that would ensure the Neutral or Beneficial Effect test was met and Sydney's drinking water protected. The company claims that the impacts of this modification "is insignificant compared to the significant benefit in water quality improvements in the Coxs River catchment that will be achieved by the operation of the Springvale WTP	

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	and the subsequent cessation of minewater discharges" This is not a valid comparison to draw, given that the company has already undertaken to build the WTP and meet the criteria. This modification must be subjected to the NORBE test against the current legal requirements for the company: the conditions requiring lower salinity limits by June 2017. We hope that the Department of Planning rejects this request for a modification and works with the EPA and the proponent to pursue another course of action that would ensure the mine complies with its conditions of consent. [1]Letter from the EPA to DPE, November 2014. https://majorprojects.affinitylive.com/public/17ad8f0af07de60af15dd822ab0299fc/Springvale%20MEP_%20Environment%20Protection%20Authority's%20comments%20on%20RTS.pdf	
BMCS	**2. The justification for Mod 2 – according to the Company** Springvale Coal is seeking to modify development consent SSD 5594 to amend Schedule 4 Condition 12 of SSD 5594 by: • **removing** the requirement to meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017; and, • **deferring** to 30 June 2019 the requirement to 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. The Company justifies this on the bases that [Statement of Environmental Effects (SEE) page ix]: **a)** it will be unable to meet the interim water quality criteria because the Springvale WTP, which was developed to meet the SSD 5594 water quality performance criteria, will not be operational by 30 June 2017 due to the time-consuming processes involved in project design, development consent, procurement, construction and commissioning; **b)** the proposed Mod will allow Springvale Mine to remain compliant with its consent conditions **after 30 June 2017**; **c)** the Mod is a continuation of mine-water discharge **at current and historical water quality**, so there is no change to environmental consequences with respect to the macroinvertebrate ecology in the EIS; **d)** modelling of the proposed removal of the interim water quality criteria suggests that changes will be minor to negligible compared with what is currently approved in SSD_5594; and, in summary**,** **e)** the Mod is deemed to meet the Neutral or Beneficial Effect test (NorBE) when compared to the 'base case' defined by DPE (2015) as the LDP009 EPL 3607 limit of 1,200 µS/cm existing at the time of the SSD 5594 development application.	**Section 4.2.3**
	3. BMCS rejects the Company's justification for Mod 2 **a)** **In relation to 2a**, the Company strongly resisted the transfer of LDP009 discharges to Mt Piper. Then when it finally saw sense, it presented a proposal which had excess treated water from Mt Piper (with a salinity of 500 µS/cm EC) sent to Wangcol Ck to help dilute the high-salinity discharges from LDP006 – this was not sensible because the outcome would have been unsatisfactory in terms of the long-term objective for the Coxs river – and in any case, because of unacceptable metal-contents, the LDP006 discharges needed to be fully treated rather than diluted. The Company next decided (following strong submissions by envirogroups) that the excess treated water should be sent to Thompsons Ck Reservoir to be used by Mt Piper at times of greater need (i.e., when running at 75% or even full capacity); but nothing has yet been done in relation to LDP006,	

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	although it is supposedly to be handled by the EPA as a separate issue! There is still more to be resolved, but it is clear that the Company has gone along with what it calls 'delays', because, in the interim, the LDP009, LDP006 and other lesser discharges will still keep pouring into the Coxs system with impunity. **b) Item 2b is ridiculous.** The proposed Mod has removed one requirement and deferred another, when the aim of consent condition 12 was to have a staged improvement with significant 'deadlines' leading up to the best outcomes by June 30, 2019. If the Company isn't compliant by 2017 within the context of a staged process, it has fallen behind and is unlikely to catch up by 2019. The Society believes that granting Mod 2, will lay the ground for the next Mod as June 2019 approaches – the company might be happy to leave things unchanged! **c) Item 2c is specious.** The Company defies logic in saying that the Mod will have no impact on the macroinvertebrate ecology; were the Company on track to being compliant with condition 12, there would at least have been much-needed research about meeting the toxicity specifications together with some marginal improvements in water quality. **d) Item 2d** modelling results – the Society notes the limitations of this type of modelling and points out that data from upstream of Wangcol Ck are irrelevant, whereas from Sawyers Ck onward there are negligible to minor changes as a consequence of the Mod – this effectively says that the Mod has a small degree of impact rather than negligible impact. **e) Item 2e** – having demonstrated with the modelling that the Mod would cause minor impacts downflow from Sawyers Ck, the Company now invokes the nonsensical NorBE test as a form of justification. This beggars belief. The reasoning is that as the Mod does not cause a 'significant' increase/decrease in salinity relative to the LDP009 EPL 3607 limit of 1,200 µS/cm at the time of the SSD_5594 development application, then the Mod is neutral and the NorBE test is satisfied. The only **'justification'** coming from this is that (SEE pvii) Springvale is allowed to continue discharging mine-water with the water quality governed by EPL 3607 for a further two years!	
	4. Springvale's previous acceptance of Condition 12 Mr David Moult (Managing Director and CEO) replied formally to the EPA (letter dated May 29, 2015) stating that the Company accepts the 700/900 EC limits as per the EPA's letter. The gist of this was affirmed by the Planning Assessment Commission (see the PAC Report, June 2015), which noted that Springvale's advice to the EPA that, by combining pre-treatment of discharge water, duplication of existing reverse osmosis infrastructure, and dilution with water from Clarence Colliery, a performance measure of 700 µS/cm to 900 µS/cm at LDP009 could be met by 31 December 2016. Subsequently, the EPA agreed to a two-year timeframe (i.e., to 30 June 2017) for Springvale to meet the limits in Section 2, dot-point 1 (above). This was locked in, no ifs, no buts! As with most consent conditions, those for SSD_5594 resulted from protracted interaction between the DPE, EPA, PAC and the Company, plus some input from the 'community'. Once these conditions are established, compliance (i.e., the specifics of how their requirements are achieved) is the company's operational decision. In Springvale's case, the SSD_5594 Conditions were issued and their obligations accepted. The Society acknowledges that the Company is within its rights to seek modification of SSD_5594 Condition 12, but strongly believes that its application should be rejected for the reasons in Section 3 (above).	
	5. Potential Outcomes	

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	5.1 Rejection and a possible resolution The DPE should reject the modification and require Springvale to implement an interim solution. The latter should be in place while Springvale progresses the various factors (e.g., the time-consuming processes involved in project design, development consent, procurement, construction and commissioning, together with any expedient delays by the Company)) which preclude it from meeting SSD_5594 Condition 12. There may be various interim solutions open to Springvale. However, an obvious one, which would meet the specified salinity standards and also deal with acute and chronic toxicity from LDP009 discharges (→19 ML/day), would involve the additional installation of a temporary reverse osmosis plant. There are obviously costs associated with this, but failure to comply with the consent conditions could result in a substantial re- evaluation of the consent conditions for SSD_5594 and might/should incur financial penalties. **5.2 Approval with additional conditions attached** The DPE could conceivably approve Mod 2 and reach an agreement whereby a commitment is given to treat the LDP006 charges by reverse osmosis. This could be done by sending the discharges straight to the Mt Piper treatment plant, or to Thompsons Ck Reservoir for blending and ultimate transfer to Mt Piper when needed. The Company has suggested that direct transfer to Mt Piper's treatment plant is not feasible for reasons linked to the plant's capacity and the high-salinity of the LDP006 discharges. However, these aspects might constitute trade-offs, as opposed to the EPA conducting an independent investigation and engaging in drawn-out discussions with Centennial-Springvale over LDP006 and nearby reservoirs such as Cooks Dam. **5.3 Approval with no real safeguards** This is included because there seems to be little attempt to hold Springvale accountable for the ongoing pollution resulting from LDP006, LDP009, and all other Centennial-linked LDPs within the Upper Coxs River catchment, as required under the long-overdue Upper Coxs River Action & Monitoring Plan (SSD_5594 Condition 13). Approval without significant trade-offs would send the wrong message to the Company. It would effectively be saying that any time the Company can't comply with a consent condition and submits a modification, the DPE will be 'understanding'. The question inevitably becomes whether or not failure to meet the June 30, 2019 deadline due to (say) design/construction delays would be approved? The next question becomes whether or not the Company is exploiting or even engendering delays, while it's mine-water discharges continue to pollute the Upper Coxs catchment, and ultimately Lake Burragorang, with impunity? Indeed, why would Springvale be in a hurry to spend money on treatment of its polluted discharges, when it has got away with it for years? The Society emphasises that the Company is not being accused of unconscionable behaviour, which would be the case were the Company to be deliberately employing such practices, but there seems to have been little attempt to comply with SSD_5594 Conditions 12 and 13 in part.	
	6. A rational approach following fragmentation The decision to transfer LDP009 discharges to Mt Piper has resulted in a series of proposals and contingent modifications. The fragmentary nature of these proposals/modifications has, almost without exception, caused uncertainty and criticisms, including comments about LDP006 being the elephant in the room. Largely reflecting such concerns, the Society has felt the need to oppose the proposals/modifications, while in fact welcoming the broader objective of improving water quality in the Upper Coxs River catchment. The proposals/modifications are: • Springvale Mine SSD 5594 Mod 2 Western Coal – the present submission;	**Noted**

Special Interest Group	Issue	Section Reference
	• Springvale Water Transfer and Treatment Project SSD 16_7592 proposal to deal with LDP009; • the anticipated modification of SSD 16_7592 embodying the transfer of treated mine-water, excess to Mt Piper's needs, to the Thompsons Ck Reservoir proposal; • Western Coal Services SSD 5579 Mod 1 involving the emplacement of waste from the Mt Piper water treatment plant; and, • the proposed referral of LDP006 discharges to the EPA for investigation and action (but when?), despite this being part of Springvale's mining operations, the site being owned by Centennial Springvale, and LDP006 being specified in SSD_5594 Condition 13(c) within the context of the Upper Coxs River Action & Monitoring Plan. Very simply, the proposals/modifications are intertwined and need to be evaluated within the broader context rather than treated discretely. The Society therefore reaffirms its previous call for the 'fragments' to be collectively assessed by the DPE and PAC.	
Colong Foundation	The Colong Foundation objects to Springvale Mine modification 2 because the proponent must comply with the clean-up timetable specified for mine water discharge from LDP009 set in the September 2015 development consent and agreed by the proponent in an exchange of letters. We welcome the proposed improvements that will remove mine water from the Coxs River, but the Foundation opposes any weakening of initial consent conditions to allow continued pollution of Sydney's drinking water supplies. In the June 2015 Review Report, the Planning Assessment Commission stated that the Applicant 'advised the EPA that it could meet a performance measure of 700 µS/cm to 900 µS/cm at LDP 9 by 31 December 2016, using a combination of pre-treatment of discharge water, duplication of existing reverse osmosis [RO] infrastructure and blending of water from Clarence Colliery. The EPA has since agreed to a timeframe of two years (i.e. until 30 June 2017) for the Applicant to meet a 50th percentile of 700 µS/cm, a 90th percentile of 900 µS/cm for salinity and a 100th percentile limit of 1000 µS/cm EC' (page 19). Further Mr David Moult Managing Director and CEO wrote to the Environment Protection Authority on May 29, 2015 to say that 'Centennial acknowledges and agrees to the EPA's proposal for 700/900 EC limits as discussed in your letter.' The terms agreed in the exchange of letters are clear and specific, so there are no reasonable grounds for Modification 2 to be granted. The Environment Protection Authority (EPA) and the Department of Planning and Environment (DPE) do not state how liquid waste from LDP009 is to be cleaned up. The means of compliance is a matter for the proponent. The DPE and EPA role is to propose and negotiate a compliance timetable and set water quality standards, in consultation with the proponent and the community. Having done that, the Planning Assessment Commission reviews the information and makes first an assessment and then a determination. These steps have been taken and it is not appropriate for the proponent to now seek relief from its agreed obligations to clean up the discharge point, LDP009. We understand that the proponent, Centennial Coal, cannot met these conditions with the proposed long term solution of mine water transfer, storage in Thompsons Creek reservoir and reuse of mine water in the Mt Piper power plant. It does not follow that the proponent must obtain a consent variation, although we acknowledge that the long term solution is a good solution. The Colong Foundation for Wilderness is concerned that Centennial Coal is "gaming the planning system" by seeking this modification. Section 96(4) of the Environmental Planning and Assessment Act, 1979 (EP&A Act) states that "*The modification of a development consent in accordance with this section is taken not to be the granting of development consent under this Part, but a reference in this or any other Act to a development consent includes a reference to a development consent as so modified.*" As a consequence of this provision in	**Section 4.2.4**

Special Interest Group	Issue	Section Reference
	the EP&A Act regarding consent modification, the evaluation of this current modification need not strictly apply the prohibition of clause 10(1) of the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011, as this applies only to new development applications. Centennial Coal is using the section 96 (4) provision to game the development consent modification process in a manner inconsistent with the intent of modification of section. In other words Centennial Coal is not fixing an error in their consent or making a minor modification to the consent that causes minimal environmental impact, but rather Centennial are extracting an aspect of the consent they now no longer wish to comply with. The proposed modified consent will then allow continuation of a major environmental impact and so it can't be said to be substantially part of the same project. In under words, the proposed modification is not consistent with the modification provisions in the Act and this proposal and the Department of Planning and Environment (DPE) has to recommend refusal of consent. The loophole created by section 96 (4) enables Centennial Coal to avoid the obligations they agreed to under the planning evaluation process of their own free will. As a result only section 79(C) of the EP&A Act will apply to the modification application. The determining authority need only consider the State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011 and not strictly apply the neutral or beneficial effect test to mine water discharges from LDP0009. Again the intent of the modification provisions of the Act would be defeated, adding to the grounds on which the DPE should recommend refusal of this modification of consent.	
	The terms of the September 2015 consent should still apply The terms of the consent require a short term solution to meet the above discharge standards. For example, the proponent could install additional temporary RO plant at LDP0009 to meet discharge standards by 30 June 2017. Energy Australia installed a portable RO Plant at Wallerawang Power Plant to ensure Springvale's mine water was suitable for reuse at the power plant. So a temporary water treatment solution is not unusual in this region, and RO plants of a suitable size for LDP009 are available. The Colong Foundation can envisage a scenario where the construction of its proposed long term treatment proposal is delayed, and further consent modifications as a means of gaining extensions of time. The current extension would bring to four years the period required before discharges from LDP009 need to be further treated. A few years after that and Centennial Coal may argue that the long term treatment proposal is not worthwhile for the time remaining before consent lapses. Modification 2 should be refused and the proponent should be required to comply with the consent conditions. Centennial Coal should only be allowed to legally continue its discharge of 19ML/day of toxic mine water into Sydney's drinking water supplies if it treats the discharge to the standards specified by the 30 June 2017 deadline. The Foundation also disputes that the mine water is no longer acutely toxic. We find the evidence presented regarding an unspecified change in discharge treatment in the environmental assessment to be unconvincing, given the state of the Coxs River and the levels of lead, cobalt, mercury and lead in the mine water discharge. The Colong Foundation requests that the following proposals be dealt with together through Department of Planning and Environment, and the Planning Assessment Commission processes: • Springvale Mine SSD 5594 Mod 2 Western Coal (the proposed discharge deregulation that is the subject of this submission); • Springvale Water Transfer and Treatment Project SSD 16_7592 proposal; • The foreshadowed modification of SSD 16_7592 proposal for the storage of	

Special Interest Group	Issue	Section Reference
	treated mine water in the Thompsons Creek Reservoir proposal; • The Western Services SSD 5579 Mod 1 (proposed emplacement of waste from the water treatment plant); and • The revision of LDP006 discharge standard as this discharge is part of Springvale mining operations, water emplacement from the water treatment plant and the site is owned by Centennial Springvale. The above proposals are all intimately related to one another and will only be properly understood if assessed together.	

2.3.3. Submissions from Members of the Community

Submissions from the members of the community are provided in **Table 3** (Form Letter Submissions) and **Table 4** (Individual Contributions). Majority of the community submissions are form letters submissions. A small number of these submissions included minor changes to the form letter content, however the minor changes are mostly comments and did not require any responses.

Table 4 and **Table 5** also provide section references where the responses to submissions have been provided, as relevant. The names of submitters corresponding to the IDs noted in the tables are provided in **Appendix A**.

Table 4 – Summary of Issues in Submissions from Members of the Community – Form Letter Submissions

ID (refer Appendix A)	Issue	Section Reference
All submissions listed in **Appendix A** except individual contributions (**Table 5**) with the following IDs: 187967, 188061, 181280, 189955	I object to the proposed modification of the Springvale Mine consent that would allow mine water treatment to be deferred for two more years. This consent modification proposal would cause on-going pollution of the Coxs River catchment, the Greater Blue Mountains World Heritage Area and Sydney's drinking water resources with toxic metal salts. Centennial Coal must not be granted legal relief arising from its foreshadowed default on the mine water discharge standards that it had previously agreed to with regulatory authorities. Mine water discharges to Sawyers Swamp Creek that immediately flows into the Coxs River that is part of Sydney's drinking water catchment. Managing Director and CEO of Centennial Coal wrote to the Environment Protection Authority on May 29, 2015 to say that `Centennial acknowledges and agrees to the EPA's proposal for 700/900 EC limits as discussed in your letter'. The Planning Assessment Commission then placed these conditions in the September 2015 consent. I support the company's plans to remove mine water from Sydney's drinking water supplies by 30 June 2019 but Centennial Coal must be required to meet its consent obligations as agreed when the mine was approved. Centennial Coal must install a temporary water treatment facility to meet the terms of its development consent so that mine water flowing into drinking water supplies receives at least a basic standard of treatment. Further, this proposed consent modification is one of five modification proposals by Centennial Coal related to Springvale's mine water treatment. The other proposals are: the mine water transfer, treatment and reuse at Mt Piper Power Plant; storage of treated mine water in Thompsons Creek Reservoir; the emplacement of waste from the water treatment plant; and effective treatment of highly polluting discharges from the emplacement area. I request that these five proposals be considered together through the Department of Planning and Environment, and Planning Assessment processes. Each proposal will not be properly understood unless these matters are assessed together.	**Section 4.3.1**

Table 5 – Summary of Issues in Submissions from Members of the Community – Individual Contributions

ID (refer Appendix A)	Issue	Section Reference
187967	**Submission from EnergyAustralia Pty Limited** We wish to confirm our strong support for this modification. EnergyAustralia owns and operates the nearby Mt Piper power station, which provides up to 15% of NSW's electricity. Springvale mine is the only supplier of coal to Mt Piper and without a timely approval to this modification, Mt Piper will have no access to coal beyond 1July 2017 and would cease operations once coal stocks are exhausted. Ongoing operation of Mt Piper is critical to provide supply into the NSW and national electricity markets during a time when supply and demand are precariously balanced and to minimise price increases for NSW customers now and into the future. This modification is a necessary administrative amendment to give effect to the broader condition of Springvale Mine's consent to improve discharge water quality from the mine as defined by the regime specified in Schedule 4 Condition 12 of that consent (SSD 5594). The Planning Assessment Commission[1] following detailed submissions from local environmental groups, recommended a Water Transfer Option that transfers Springvale mine water to Mt Piper for treatment be considered. This modification proposal must be considered alongside, and considered integral to, the Water Treatment Plant (WTP) project (SSD 16_7592) that responds to the Planning Assessment Commission recommendation. A reverse osmosis WTP is proposed to treat Springvale mine water to enable industrial re-use of the treated water through Mt Piper's cooling system. Furthermore, the WTP proposal has been strengthened by an amendment in December 2016 to enable surplus treated water to be transferred to the Thompsons Creek Reservoir for later re-use at the power station. In totality, this proposal is a comprehensive, long-term solution to improve water quality in the Cox's River that materially exceeds the requirements of Schedule 4 Condition 12 of the Springvale consent by effectively reducing discharges from the Springvale Mine to negligible levels. EnergyAustralia and Springvale Coal have been working together to develop the WTP since the Springvale Expansion Project was approved in October 2015 and the conditions of consent in relation to water discharge quality were imposed. This State Significant Development (SSD) has been fast-tracked with design, planning, procurement and tendering activities well advanced. Given its size and complexity, this project could not proceed at a faster rate. It is not possible to achieve the 1 July 2017 milestone date. The target for commissioning the WTP is by 1 July 2019. In this context, EnergyAustralia strongly supports the timely provision of approval for this modification. Removal of the 1July 2017 intermediate salinity target is in the best interests of the region and the state, environmentally and economically. [1] *Springvale Mine Extension Project - Second Review Report (Sept 2016). NSW Planning Assessment Commission. Section 4.2 Minewater Discharge.*	**Noted**
181280	Springvale Mine should not be allowed to delay the cleaning up of their discharge water as this was one of the key "strict conditions" of their last mine extension approval. They (and other nearby coal mines) have been polluting our waterways for decades, and often exceeding the approved limits for salt, arsenic, cobalt, etc. Has no one noticed that the price of coal has doubled in the last 6 months, so the coal companies can surely afford to implement any equipment required for an improved discharge water quality outcome. They install any new equipment quicksmart when it has to do with coal production, or any possible delay to production. And Centennial's woeful 3 cents per saleable ton for the	**Noted**

ID (refer Appendix A)	Issue	Section Reference
	Lithgow Community fund will not have much impact financially when they are getting over $100 a ton. Why isn't this indexed to the price of coal? Mine extensions should not be approved in the first place if the "strict" conditions are not adhered to, but are subsequently weakened in MOD's after approval. The government must make the Springvale Coal comply with the current approval conditions, and not approve this proposed MOD, otherwise it makes a mockery of the whole approval process and the so-called strict environmental conditions of consent.	
189955	I object to the proposed modification of the Springvale Mine consent (SSD 5594 - MOD 2) that would allow additional mine water treatment of the Springvale Mine discharge to be deferred for at least two more years. Springvale Mine discharges toxic mine water to Sawyers Swamp Creek which immediately flows into the Coxs River. Coxs River is part of Sydney's drinking water catchment. This consent modification proposal, if approved, would cause on-going pollution with toxic metal salts of the Coxs River catchment, the Greater Blue Mountains World Heritage Area and Sydney's drinking water resources. Centennial Coal must not be allowed to avoid the mine water discharge standards that it had previously agreed to with regulatory authorities while ever it discharges to the Coxs River as approved in September 2015. The consent conditions subject to the modification application (MOD 2 conditions) set out a timetable for progressively cleaning up the discharge of mine waste water, with upper limits on salinity level to be met by 30 June 2017 (Springvale Mine Expansion Project (MEP) conditions of consent, Schedule 4, Condition 12) . Centennial is seeking to remove the requirements to meet reduced salinity levels by 30 June 2017 and to delay eliminating acute and chronic toxicity to aquatic species by two years (30 June 2019 rather than 2017). If approved, this would allow the current high level of discharge to continue for at least two more years. The only target remaining is meeting a limit of 500 micro siemens/cm by 30 June 2019. The applicant says that this would allow them to comply with the (amended) consent conditions and to meet them through the Springvale Water Treatment scheme (Springvale Water Treatment) (SSD 7592), if it is built and operating by 30 June 2019. Centennial Coal agreed to the MOD 2 conditions in May 2015. The Managing Director and CEO of Centennial Coal wrote to the Environment Protection Authority (EPA) on May 29 2015 to say that 'Centennial acknowledges and agrees to the EPA's proposal for 700/900 EC limits as discussed in your letter'. In the June 2015 Review Report, the Planning Assessment Commission stated that the Applicant 'advised the EPA that it could meet a performance measure of 700 µS/cm to 900 µS/cm at LDP 9 by 31 December 2016, using a combination of pre-treatment of discharge water, duplication of existing reverse osmosis [RO] infrastructure and blending of water from Clarence Colliery'.(emphasis added) The EPA has since agreed to a timeframe of two years (i.e. until 30 June 2017) for the Applicant to meet a 50th percentile of 700 µS/cm, a 90th percentile of 900 µS/cm for salinity and a 100th percentile limit of 1000 µS/cm EC' (page 19). The Managing Director and CEO wrote to the Environment Protection Authority on May 29 2015 to say that ''Centennial acknowledges and agrees to the EPA's proposal for 700/900 EC limits as discussed in your letter.' The Planning Assessment Commission then added these conditions to the September 2015 consent. While the modification retains the June 2019 target it removes the progressive reduction of salinity and toxics which was agreed to and added to the consent conditions. The health of the river is now being brushed aside on the basis of a mere proposal. This water transfer scheme is yet to be approved, built and commissioned so there are a lot of unknowns. If approved, it could still be delayed, it could be reduced in scale to meet funding constraints. It is up to the mine operator how they meet these performance targets.	**Section 4.3.2**

ID (refer Appendix A)	Issue	Section Reference
	They have already set out how they could achieve this (see quote above). For instance, they could install a temporary water treatment facility to meet the terms of its development consent so that mine water flowing into drinking water supplies receives at least a basic standard of treatment. These salinity reduction targets need to stay to reduce the discharge to the river as long as Springvale mine continues to discharge highly saline toxic waste to the river. **Improving the health of Coxs river was reason for imposing the conditions that MOD 2 seeks to remove** "The section 96 procedure cannot be used as an indirect means of challenging a condition imposed on the original consent It has been held that in order to properly assess and consider an application to modify a condition of consent, it is generally important to have regard to the perceived reason why the condition was imposed in the first place (Randall Pty Ltd v Willoughby City Council (200) 137 LGERA 25)"1. The reasons for the MOD 2 conditions are clearly to progressively reduce toxicity in the Coxs River focussing particularly salinity in the short and long term. An indicator of how important these conditions were is that the EPA could not support the EIS "…given the absence of any commitment in the EISs to address the handling/treatment of the mine water, in either the short or long term"2 The EPA had previously advised that "the EIS had not adequately assessed the potential environmental impacts of the proposed discharge of saline mine water to the Coxs River system"3 The EPA had an "ongoing program of improving the handling of mine water to either improve the quality before discharging to the environment or implementing an option of beneficial re-use, in order to protect the local aquatic environment"4That ongoing program included a Pollution Reduction Program to treat mine water before discharge. The Program began in 2012 but was put on hold by the Springvale MEP application. Before the Springvale MEP was applied for, the "EPA's current position (was) a continuation of a regulatory effort to reduce the salinity concentrations of the upper Coxs River." 5 As well, the EPA considered the discharge limits before Springvale MEP was approved were only "…interim until a change in the management of the mine water management (handling, treatment etc) was implemented".6 EPA Chief Environmental Regulator reported on the agreement with Centennial Coal regarding staged reduction levels of salinity. He advised the Department of Planning (DPE) that the EPA's "…support for Springvale MEP and agreement to licence this project (subject to planning approval) is dependent on these key limits being included as statutory variations to environment protection licences for any discharge from the Centennial Springvale Colliery".7 These conditions were added to the consent conditions and became part of the approved conditions of consent in September 2014. The health of the river and its continuing improvement was clearly was the reason for the additional conditions. This should goal should not be abandoned while a replacement treatment process is not in place. **These same conditions were central to the approval process and meeting mandatory requirements under the Sydney Drinking Water SEPP** State Environmental Planning Policy No 58—Protecting Sydney's Water Supply (SEPP 58) states that a development consent cannot be approved if it does not to satisfy the SEPP requirements. SEPP 58 contains a concurrence power in which the designated Chief Executive has to consider such matters including that "…the development or activity will have a neutral or beneficial effect on the water quality of rivers, streams or groundwater in the hydrological catchment…" [SEPP 58, cl 10 Matters for consideration]. The importance of the consent conditions, including specifically the staged reduction timetable, was recognised by the Land and Environment Court	

ID (refer Appendix A)	Issue	Section Reference
	as important proof that SEPP 58 and its NorBE test had been applied. Pepper J said that : [199] "The PAC was advised that the Department regarded the NorBE test as satisfied and that the discharge limits for salinity agreed between Centennial and the EPA would have a beneficial impact on water quality…." "[202] "The PAC sought expert advice from the EPA and Water NSW which was recorded in the second PAC Review Report. The EPA advised the PAC that it was satisfied that NorBE existed through the recommended conditions, especially in relation to drinking water. Water NSW advised the PAC that it accepted the agreement between the EPA and Centennial as to salinity in the discharge of the mine water from the project (the 22 June 2015 agreement). The second PAC Review Report recorded the PAC's satisfaction that the proposed discharge limits for salinity the subject of the agreement with the EPA, and the requirement for an Upper Coxs River Action and Monitoring Plan (included in the conditions attached to the consent), were appropriate. [203] "The PAC had before it not only the text of cl 10(1) of the Catchment SEPP but was aware of its obligation under the clause. The PAC was also aware of the various assessments of the application of the NorBE test to the project and the advice of the Department and the EPA that the NorBE test would be satisfied if the recommended conditions concerning salinity were imposed. The granting of the consent with the adoption of the recommended conditions is, in my opinion, a powerful indicator that the PAC formed the requisite state of satisfaction." If this test had not been satisfied, the consent would have been refused. So what does it mean to now remove some of those key conditions? These conditions were key factors in the application of the NORBE test which were recognised and accepted by the regulatory authorities. **Attempting to use a loophole in the planning law to avoid consent requirements** It also appears that seeking to remove the timetable through a modification is using a loophole in the *Environmental Planning and Assessment Act, 1979* (EPAA) to weaken the consent. Section 96(4) of the EPAA states that "The modification of a development consent in accordance with this section is taken not to be the granting of development consent under this Part…" As approving a modification is not in itself a separate development consent, (s.96(4)), SEPP 58 may not have the concurrence force which applies to the awarding of development consent. The applicant is attempting to use this loophole to remove conditions which it very clearly did not want in the first place. **DPE constrained if the water transfer scheme is delayed or does not go ahead** If for some reason, the water transfer scheme does not go ahead the conditions removed cannot be restored by the consent authority. Unlike the federal environmental protection law, the consent authority under the EPAA cannot initiate changes to consent conditions. Only the proponent can seek to change the consent. In summary, the MOD 2 conditions should be retained for the continuing protection and improved health of the Coxs River; the aim the EPA so tenaciously pursued in the negotiation of the Springvale MEP consent and a key factor in the court's review of that decision. How the applicant meets the agreed targets is up to the applicant. Any need to review the conditions should be left until after the water treatment scheme is operating. **All Springvale related modifications application should be treated together** This proposed consent modification is one of five modification proposals by Centennial Coal related to Springvale's mine water treatment. The other proposals are: the mine water transfer, treatment and reuse at Mt	

ID (refer Appendix A)	Issue	Section Reference
	Piper Power Plant; storage of treated mine water in Thompsons Creek Reservoir; the emplacement of waste from the water treatment plant; and effective treatment of highly polluting discharges from the emplacement area. I request that these five proposals be considered together through the Department of Planning and Environment, and Planning Assessment processes. Each proposal will not be properly understood unless these matters are assessed together. [1] D Farrier and P Stein, *The Environmental Law handbook* 6th Edition,2016, p. 257. [2] EPA Letter to Department of Planning 3 June 2014 p.2 [3] EPA Letter to Department of Planning 3 June 2014 p.1 [4] EPA Letter to Department of Planning 3 June 2014 p.2 [5] EPA Letter to Department of Planning, 4 November 2014 p.2 [6] EPA Letter to Department of Planning, 4 November 2014 p.2 [7] EPA Letter to Department of Planning 22 June 2015 p.1	
188061	**Mining proposal** Modification to amend Schedule 4 Condition 12 of SSD 5594 to: a) remove the requirement to Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017 b) defer to 30 June 2019 the requirement to 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. **Springvale Mining Claim** a) it will be unable to meet the interim water quality criteria because the Springvale WTP, which was developed to meet the SSD 5594 water quality performance criteria, will not be operational by 30 June 2017 due to the time-consuming processes involved in project design, development consent, procurement, construction and commissioning; b) the proposed Mod will allow Springvale Mine to remain compliant with its consent conditions after 30 June 2017; **My Submission** Pollution and mining since September 2015 has been previously allowed whilst a time for Springvale Mining to provide a staged solution has now expired and mining activity should stop until the pollution by Springvale Mining of the upper Coxs River, natural environment and Sydney's drinking water stops. After eighteen months of polluting, enough is enough and we need to accept Springvale Mining has not only failed to develop a solution, but by requesting a further two year extension, it seems is not close to a solution, yet planning to pollute for four continuous years. Further, it is fundamentally wrong to suggest the removal of non-pollution obligations to allow compliance. The consent conditions are a requirement the company admits they have failed to achieve. Approval should not be provided as it is ridiculous to pollute for the past eighteen months, plan to pollute for four years, to be unable to comply with salinity levels and then claim current and historical water quality is unchanged. **Suggested Outcome** Reject the proposed modification, close production on 30 June 2017 until solution is achieved to meet approval condition obligations. It is felt there are temporary and permanent solutions with reverse osmosis and/or use of facilities at Mt Piper or the implementation of the proposed treatment plant that are available to Springvale Mining to become compliant with the consent conditions.	**Noted**

3.0 DEPARTMENT OF PLANNING AND ENVIRONMENT – KEY ISSUES

Issue

1. Water Treatment

Agencies and special interest groups have asked for consideration of temporary treatment and storage or dilution of LDP009 discharges. Please investigate if any reasonable and feasible options are available to the company for the temporary treatment, storage and dilution of minewater in the interim period while the Springvale Water Treatment Project is developed.

Response

The following options have been investigated for the management of mine water in the interim period while the Springvale Water Treatment Project (SWTP) is developed:

- Temporary mine water treatment in the vicinity of Springvale Mine's LDP009 within Sawyers Swamp Gully – included in **Appendix B**
- Underground storage at Angus Place Colliery and Springvale Mine – included in **Appendix C**
- Dilution of LDP009 discharges with lower salinity Clarence Colliery's mine water – included in **Appendix D**.

Issue

2. Compensatory Measures

WaterNSW has requested compensatory measures are put in place to mitigate the continued discharge of minewater during the interim period. Please investigate the feasibility of undertaking catchment improvement works, detail where such works could be implemented and outline the relative benefits of the works.

Response

Refer to **Section 4.1.2** and **Appendix E**.

Issue

3. Assessment of MOD 1 Increased Discharge

Please confirm if the assumptions made in the MOD 2 Water Assessment also included the water impacts of increased minewater discharges resulting from the proposed increase production rate of 5.5 Mtpa.

Response

Refer to Section 2.1 of **Appendix F**.

4.0 RESPONSE TO SUBMISSIONS

4.1. Response to Government Agency Submissions

4.1.1. Department of Primary Industries – Water

Issue

DPI recommends the proponent consider additional options to improve the current water quality in Sawyers Swamp Creek rather than or in addition to modification of the Conditions of Consent and continued discharge of mine water at the current water quality criteria until the Springvale Water Treatment Plant (WTP) becomes operational. Potential alternatives for consideration may include:

- *storing the excess groundwater in the disused mine workings until the WTP is operational, or*
- *shandying the groundwater to improve water quality before it is discharged at LDP009 into Sawyers Swamp Creek.*

Response

A number of potential alternative options to improve the current water quality of LDP009 mine water discharges to Swayers Swamp Creek have been investigated, including the two options noted by DPI. The options assessments are included in **Appendix B**, **Appendix C** and **Appendix D**. As requested by DPI the options assessment for storing excess groundwater in the disused mine workings until the SWTP is operational is included in **Appendix C**. The options assessment for shandying the groundwater with low salinity water before it is discharged at LDP009 has been included in **Appendix D**.

4.1.2. WaterNSW

Issue

If the modification application is approved the result would be a greater concentration and load of salts entering the catchment downstream of LDP009 (than that currently permitted) with resulting current chronic toxicity continuing until June 2019 (or earlier if an appropriate mitigation measure is implemented). In such circumstances WaterNSW considers Centennial Coal should be required to undertake compensatory water quality and/or catchment improvement measures and suggests the imposition of an appropriate condition for such measures (with a specified monetary value) to be implemented at or within the vicinity of the impacted watercourses and that these measures are implemented by 30 June 2018.

Response

In response to WaterNSW's submission, Springvale Coal proposes to undertake catchment improvement works to maintain or enhance the biodiversity values in the Coxs River catchment on Centennial owned and/or operated lands on areas referred to as:

- Wolgan Road Southern site
- Brays Lane site:
- Coxs River and Angus Place site.

These management areas are shown on a plan included in **Appendix E**, and the relevant Lot/DPs are listed in **Table E1** (**Appendix E**). **Table E1** identifies Lot/DPs of parcels of lands within each of the management site noted above (Wolgan Road Sourthern, Brays Lane, Coxs River and Angus Place).

The land management actions proposed for the three identified areas comprise the following.

- Wolgan Road Southern site:
  - Removal of grazing pressures
  - Riparian restoration along Coxs River and drainage lines including native species planting
  - Weed removal / control.
- Brays Lane site:
  - Removal of grazing pressures
  - Riparian restoration along Coxs River including the replanting of derived native grasslands
  - Weed removal / control and rabbit control.
- Coxs River and Angus Place site

- Removal of grazing pressures
- Riparian restoration along Coxs River including native species planting
- Weed removal / control and rabbit control.

The proposed restoration of riparian vegetation in all three management areas provides a number of potential benefits in Coxs River, including:

- Improved aquatic habitat and with a potential for improvements to stream health
- Improved oxygenation of water in the river by macrophytes which will result in better dissolved oxygen (DO) levels in the river
- Less eutrophication in the river which will result in lower nitrogen based nutrient concentrations and hence reduced propensity for algal blooms.

A Land Management Plan will be prepared for the works and will include detailed and specific management actions, performance and completion criteria, and will be developed in consultation with WaterNSW, OEH and Local Land Services, if relevant. An indicative timeline is provided below.

- Q2 2017 – Commence development of the Land Management Plan
- Q2 2018 – Implementation of initial land management actions (one year program)
- 2019 to 2028 – Ongoing maintenance and management of land management action (nine year program) to achieve completion criteria.

It is noted that the proposed catchment improvement practices proposed will be complemented by the works that will be undertaken to improve the riparian habitat of Wangcol Creek for at least 100 m of the proposed Link Haul road bridge crossing the creek in accordance with Schedule 3 Condition 26 of Western Coal Services consent SSD 5579.

WaterNSW has recommended in their submission that a condition is included in Springvale Mine's consent SSD 5594 which requires Springvale Coal to implement an appropriate level of water quality or catchment improvement at or within the vicinity of the watercourse impacted by the ongoing discharge of mine waters by 30 June 2018. Springvale Coal considers the proposed land management practices are of appropriate level and commensurate with the assessed minor impact in salinity predicted in Lake Wallace and negligible impact in Lake Burragorang due to the proposed removal of the 2017 water quality criteria from SSD 5594 conditions.

Issue

Impact of SSD5594 MOD1 on SSD5594 MOD2

The SEE states that the proposed modification achieves NorBE by meeting the discharge limit for salinity as defined by the DPE 'base case' of 1200 µS/m for discharges at LDP009 into Sawyers Swamp Creek, that existed at the time of the original SMEP SSD 5594 application.

WaterNSW notes that the SMEP Mod 1 (SSD 5594 MOD 1) estimated an increase in mine water discharges by 10 L/s or 0.86 ML/day at LDP009 into Sawyers Swamp Creek over that approved in the original application, as a result of the proposed increase in annual coal production to 5.5 Mtpa. WaterNSW considers the SMEP Mod 2 appears to not have considered the mine water discharge increases as a result of SMEP Mod 1. Recent additional sensitivity analyses for SMEP Mod 1 by Jacobs (dated 2 February 2017) show minor deterioration of water quality downstream in the Coxs River catchment as a result of the SMEP Mod 1 compared to the original SMEP. Clarification and justification is required in this regard.

Response

Refer to Section 2.1 of **Appendix F** and Section 2.2 of **Appendix F** under 'Issue WaterNSW01)'.

Issue

The salinity in Table ES1 of the SEE for Mod 2 and Tables 4.12 and 4.22 (Jacobs December 2016) for 50 and 90%-ile for Lake Wallace (Node#074) and Lake Burragorang (Node#280) for approved case are not the same as in Tables 3.34 and 3.40 (Jacobs 26 March 2015); Table 6 (Jacobs 3 August 2015) and Additional Sensitivity Analyses for SMEP Mod 1 by Jacobs (dated 2 February 2017). Clarification is also required in this regard.

Response

Refer Section 2.2 of **Appendix F**, under 'Issue WaterNSW02)'.

4.1.3. Blue Mountains City Council

Issue

The Minister should note that discharges from the mine are regulated by NSW Environment Protection Authority (EPA), and that this agency has indicated that further pollution of Cox's River by Springvale is inappropriate.

This position is supported by recent research by the University of Western Sydney, which demonstrates that the health of many of the rivers within the GBMWHA, including the Grose, Wollangambe and the Cox's, are at risk from discharges resulting from the coal mining industry.

It is Council's strong view that the application, if approved, will compound the existing significant impacts of the coal industry on the natural environment of the Blue Mountains, and the thriving nature-based tourism industry which relies on it. Council therefore again urges the Minister to reject this application.

Response

Blue Mountains City Council has not provided a reference to the research by the University of Western Sydney (UWS) that support their claim that the health of many of the rivers within the GBMWHA, including the Grose, Wollangambe and the Coxs rivers, are at risk from discharges resulting from the coal mining industry. It is not known if the UWS research has been published, or if it is published in an internationally recognised peer-reviewed journal. Therefore it is not possible to provide a commentary on the research being referred to, or if the research is scientifically robust.

Blue Mountains City Council's assertion that the modification application will compound the existing significant impacts of the coal industry on the natural environment of the Blue Mountains is speculative and not substantiated with scientific evidence.

4.2. Response to Submissions from Special Interest Groups

4.2.1. 4nature

Issue

The Modification Application is not "substantially the same development"

Centennial Coal is now seeking a modification to those conditions under s 96(2) of the Environmental Planning and Assessment Act 1979, on the basis that the development as modified will be "substantially the same" as the project for which consent was given in 2015. With respect, we do not agree.

If the Modification Application is approved, this would constitute a substantial alteration to the mine as originally approved, as it would allow Centennial Coal to effectively increase the pollutant concentrations for salinity in the mine water it discharges into Sydney's drinking water catchment, compared with the development that was originally approved containing the 30 June 2017 Requirement. Such a change would result in development that is not substantially the same as that which was originally approved.

Response

Section 9.2 of the SEE (Centennial Coal, 2016a) provides justification on why the Springvale Mine Extension Project (SSD 5594) following modification will be substantially the same development that was approved on 21 October 2015. There are no new physical works proposed in the modification. The modification will not result in any change in the core elements of the approved mining operations under SSD 5594. The water management will continue to be undertaken as was described in the EIS that supported the development consent application for the Springvale Mine Extension Project (SSD 5594). There is no proposal to increase mine inflow discharges into the Coxs River catchment via Springvale Mine's LDP009 than that approved in SSD 5594.

Table 9 of the SEE relating to Clause 115 requirements for Section 96 applications states that the modification will have minimal environmental impacts. The Surface Water Assessment (Jacobs, 2016) supporting the modification application and the SEE concludes that the removal of the 2017 water quality performance criteria results in minor to negligible changes in median salinity at the modelled locations in the Coxs River catchment and Lake Burragorang. However, the environmental consequences of the assessed impacts will be negligible, discussed in Section 7.7 of the SEE. On this basis the development as modified will be substantially the same as the project for which consent was given in 2015.

Issue

Request to consider the timing of the Modification Application

Our client queries exactly when it was that Centennial Coal became aware that it would be unable to comply with the undertakings it gave to the EPA (and therefore also to the PAC during the course of the PAC's consideration of whether to approve the development), given that it applied for this modification on 22 December 2016, just 15 months after the PAC's approval of SSD 5594 subject to the conditions to which Centennial had agreed. For the WTP, Centennial Coal sought the Secretary's Environmental Assessment Requirements just four months after the PAC's approval of SSD 5594.

Response

Springvale Coal has made considerable and rapid progress in developing the Springvale Water Treatment Project (SWTP) (SSD 7592) with the aim of achieving the water management performance measures included in Schedule 4 Condition 12 of Springvale Mine's consent SSD 5594.

Feasibility investigations and options analysis were completed between September 2015 and January 2016, to identify technically and financially viable options capable of achieving the salinity reduction targets included in SSD 5594. A preferred option was selected to provide the most technically viable solution with the greatest overall benefit to the receiving water catchment and has been subject to ongoing development throughout the progressive development of the SWTP.

The preferred option requires new water transfer and treatment systems, which are not authorised as part of the Springvale Mine's SSD 5594 consent. The proposed water infrastructure is permissible only with consent so either a new development application or modification to existing consent would be required to implement the proposed solution. Early engagement with the DPE in February 2016 confirmed a new state significant development (SSD) application would be required for the SWTP in order to meet the water management performance measures included in the Springvale Mine's consent SSD 5594.

The need for a new SSD assessment process to be triggered in order to comply with an existing development consent, is a function of the assessment processes in the *Environmental Planning and Assessment Act 1979*. A new development consent would also be required for all alternative water treatment solutions capable of achieving the salinity reduction targets stipulated in Springvale Mine's consent. The SWTP is inherently linked to the Springvale Mine Extension Project SSD 5594, as it is

providing the necessary infrastructure required to meet the requirements of the consent condition and therefore the proposed Springvale MOD 2 cannot be considered in isolation and vice versa.

The SWTP requires determination by the NSW Minister for Planning (or delegate such as the NSW Planning Assessment Commission). The development assessment procedures result in a comprehensive and lengthy approval process, limiting the practicality to implement any water treatment solution to achieve the initial 30 June 2017 salinity reduction targets.

Springvale Coal has been proactive in progressing the approvals process for the SWTP with regular consultation with government stakeholders and the community. This has included fast tracking a comprehensive *Environmental Impact Statement* (EIS) (GHD, 2016a) to address the SEARs and ongoing formal and informal meetings with DPE and relevant government authorities. This has enabled key issues to be identified early in the assessment process and the project amended to achieve a superior overall outcome for the environment. The transfer of treated water to Thompsons Creek Reservoir for storage and subsequent reuse has recently been added to the SWTP to address stakeholder concerns in regards to the continued release of mine water, albeit treated as initially proposed in the SWTP, to the catchment.

The concept design and procurement activities required for the delivery of the SWTP have also been progressing in parallel to the development approvals program and three shortlisted consortiums are currently finalising tenders for the construction and operation of the project. The procurement process is well advanced for such a complex and high value project and will be finalised to ensure construction and commissioning will be completed to meet the long term salinity reduction targets of 30 June 2019 in the Springvale Mine's SSD 5594 consent.

Springvale Coal has become progressively aware that the initial 2017 water quality salinity reduction targets would not be practically achievable through the ongoing development of the SWTP. The options identification phase, analysis of approval requirements and market sounding activities were required in order to gain a firm understanding of the timeframe required for the future development of the project.

A meeting was held with DPE on 17 June 2017 to provide an overview of the progress of the SWTP and the concerns regarding the ability to meet the 30 June 2017 water quality performance targets. The outcome of the meeting was that Springvale Coal would continue to expedite the SWTP with an aim of meeting the performance improvement program and any deviation from the prescribed dates would trigger a modification to consent.

The SWTP has been progressively developed and will achieve compliance with the long term water management performance specifications by effectively eliminating mine water discharges from LDP009 by 30 June 2019. This preferred strategy will also provide a better overall outcome for the Coxs River catchment than would be achieved by compliance with progressive water quality performance specifications or any of the alternate water management strategies investigated during the development of the project.

However, the timeframe required to develop a water treatment option to meet the interim 30 June 2017 water quality criteria cannot realistically be developed within two years from the date of Springvale Mine's consent (21 September 2015). The interim targets are therefore not practically achievable and a modification to consent is required to allow sufficient time for development of the optimum water treatment solution.

4.2.2. Lock The Gate Alliance

Issue

The company refers throughout the assessment to water quality in Lake Burragorang, without using the more commonly used name Warragamba Dam. The assessment material presents the results of salinity modelling in milligrams per litre without indicating what the electrical conductivity is likely to be for the salt concentrations expected. This is despite the consent conditions and the company's

Environment Protection Licence setting salinity limits with EC measures. Using a formula provided by OEH, and applying it to the modelling results presented in Table 20, we can infer that the EC of the Coxs River Upstream of Lake Wallace will be over 1000 microsiemens per cm at the 90th percentile, and over 1,200 at maximum, above what would be considered good drinking water. Such tricks are designed to disguise the environmental impact of the mine. They are relatively simple to see through, but that does not mean that the Department of Planning should accept such obfuscation as a matter of course. Recent work by the Department of Planning has sought to improve the accessibility and honesty of mining project assessment material. It is disappointing to have to read through a misleading and at times incoherent assessment document for such a controversial mine.

Response

Refer to **Appendix G**, under 'Issue LTGA01)'.

Issue

The company gives itself a pass on the Neutral or Beneficial Effect test when compared to the "base case" it says was defined by the Department of Planning and Environment as an electrical conductivity of 1,200 microsiemens. The company states that there is will be "no change to modelled median salinity in Lake Burragorang over the prediction period, compared to that currently approved." This is ambiguous. What is currently approved is for the salinity limits to drop in June 2017 and then again in June 2019. Is this the "currently approved" scenario against which the company is modelling its impact, or are they modelling against the "current approved" activity being undertaken right now, which this modification would propose to continue unchanged after June 2017?

Response

Refer to **Appendix G**, under 'Issue LTGA02)'.

Issue

The new toxicology assessment presented with this application claims that there is no longer an acute toxicity problem, but that chronic toxicity remains. It concludes "that salinity is the potential cause of toxicity in Springvale Mine water discharges."

Response

The toxicological assessments undertaken have been described in Section 7.4.6 of the SEE for MOD 2 (Centennial Coal, 2016a). These assessments were undertaken on mine water discharges at LDP009 and upstream and downstream of LDP009 within the Coxs River catchment in August and October 2014 (GHD, 2014), April 2015 and May 2016 (mine water treated with flocculants) and raw mine water (i.e. prior to any treatment with flocculants) collected in October 2014 and May 2016 (GHD, 2016b) for toxicity screen testing (freshwater cladoceran) showed the following.

- The acute toxicity observed during testing in 2014 was due to the flocculent used in the settlement ponds at the time. The change in the flocculent has eliminated the acute toxicity but the chronic toxicity has remained.
- This toxicity impact was observed to diminish with increasing distance downstream of LDP009, with no adverse impacts identified in the upper portion of Lake Wallace or any points downstream.
- GHD (2016b) indicate that water quality analyses of LDP009 do not contain dissolved metals in significant concentrations to cause toxicity, and conclude that salinity is the potential cause of toxicity in Springvale Mine water discharges.

The toxicity testing on LDP009 discharges is ongoing, to further understand the likely causes of the chronic toxicity in the LDP009 discharges. From June 2019 the mine water discharges will cease at LDP009 and the water will be transferred to the SWTP for treatment within a water treatment plant based on desalination technology to meet the 2019 water quality criteria in Springvale Mine's consent

SSD 5594 (Schedule 4 Condition 12), namely salinity of 500 µS/cm (90th percentile). The quality of the treated water will be confirmed during the commissioning phase of the water treatment plant. Treated water surplus to Mount Piper Power Station's cooling water requirements will be transferred to Thompsons Creek Reservoir (TCR) for storage and subsequent use at the power station. GHD (2016c) consider that water quality to be released to TCR is expected to resemble a water quality similar to that of TCR already regulated through the process systems within the plant. Further, GHD (2016c) consider metal and nutrient toxicant concentrations in the treated water are not predicted to exceed the relevant Default Guideline Value (ANZECC 2000) and therefore no impact on the fish community in the TCR is predicted due to toxicity.

Issue

The proponent includes information about the salt balance for the Springvale Delta Water Transfer Scheme that contradictory and unclear. In the Executive Summary of this SEE it is stated that "salt balance modelling for mine water discharges for the proposed condition in 2031 (when the mine inflows will be maximum)" at 10,067 tonne/year of salt. It calls this the "do nothing scenario" but also says the salt load will stop when the water transfer project is operational and the discharges cease. Immediately below this, the proponent describes another "do nothing scenario" with salt-load contribution on a catchment level at 21,583 tonnes per year which it claims will reduce to 12,219 "for a modelled operational scenario of 50% power generation (correlates to recent historical trends and corresponds to the approximate volume of water available from the [Springvale Delta Water Transfer Scheme]." The meaning of this sentence, and how it related to the previous figure for "do nothing" salt loads is opaque. In any case, the modelling for the Springvale Delta Water Transfer scheme is not relevant. That project is being assessed on its merits.

Response

A summary of the regional water and salt balance (GHD, 2016c) for the SWTP was presented in the SEE to demonstrate the diminution of the water quality impacts in the Coxs River catchment in the future when that project becomes operational and the LDP009 mine water discharges cease. The SWTP has been developed to meet the water quality performance measures specified in Schedule 4 Condition 12 of SSD 5594, and will provide significant environmental benefits when operational in June 2019. It permits beneficial reuse of mine water and improves the water quality in the Coxs River catchment through cessation of mine water discharges. The project will operate as a zero discharge system (surplus treated water will be transferred to TCR, noted above) and will provide benefits to the catchment beyond the requirements of the performance measures included in Springvale Mine's consent.

Details of the regional water and salt balance results for the SWTP and the MPPS operational scenarios modelled is provided in the Water Resources Impact Assessment (GHD, 2016c) prepared for the Amended Springvale Water Treatment Project (SSD 7592) (GHD, 2016d) and appended as Appendix A. This report is available at the DPE website:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7592

The 'Do Nothing Scenario' assessed in GHD (2016c) represents the case that untreated mine water from the Springvale Delta Water Transfer Scheme (SDWTS) would continue to discharge via LDP009 into the Coxs River catchment indefinitely. In this case, based on the current mine inflows predictions (CSIRO, 2016) at Springvale Mine and Angus Place Colliery (shown in Figure 4-2 of GHD (2016c)) the maximum amount of salt that will discharged via LDP009 will be 10,067 tonne/year and this will occur in 2031 when the mine inflow will peak at 36 ML/day. The data presented in the SEE were from modelled scenarios when MPPS operates at 50%, which correlates to recent historical trends in operations at MPPS, and corresponds to the approximate volume of water available from the SDWTS. The 10,067 tonne/year salt load is only from mine inflow discharges via LDP009 and does not include salt load contributions from other sources in the catchment. For the 'Do Nothing Scenario' at the catchment level the salt load contributions to the total salt load (21,583 tonne/year) in 2031 arise from a number of sources (not just LDP009), noted in Table 6-4 of GHD (2016c), namely:

- Direct rainfall onto storages and catchment run-off
- Transfer from Clarence Colliery to Farmers Creek Dam
- LDP discharge from Angus Place Colliery (LDP001)
- LDP discharge from Angus Place Colliery (LDP002)
- LDP discharge from Lidsdale Siding (LDP004)
- LDP discharge from Springvale Coal Services Site (LDP006)
- LDP discharge from Springvale Mine (LDP001)
- LDP discharge from Springvale Mine (LDP009)
- Transfers from MPPS to TCR

and these salt transfers are shown schematically in Figure 6-17 of GHD (2016c). When the LDP009 discharges cease and the SWTP becomes operational the total salt load inputs to the catchment decreases by 10,067 tonne/year, however, increases by 335 tonne/year from the LDP006 discharges due to the residuals transfer from the SWTP to the reject emplacement area at the Springvale Coal Services Site and also a transfer of 368 tonne/year salt load from MPPS to TCR due to transfer of excess treated water.

4.2.3. Blue Mountains Conservation Society

Issue

There may be various interim solutions open to Springvale. However, an obvious one, which would meet the specified salinity standards and also deal with acute and chronic toxicity from LDP009 discharges (→19 ML/day), would involve the additional installation of a temporary reverse osmosis plant. There are obviously costs associated with this, but failure to comply with the consent conditions could result in a substantial re- evaluation of the consent conditions for SSD_5594 and might/should incur financial penalties.

Response

A number of options assessments have been undertaken to investigate interim solutions for water treatment and management. These include consideration of temporary treatment and storage or dilution of LDP009 discharges. The options assessments have been included in **Appendix B** (temporary water treatment plant at LDP009), **Appendix C** (underground storage), and **Appendix D** (dilution of LDP009 discharges).

Issue

Approval with additional conditions attached

The DPE could conceivably approve Mod 2 and reach an agreement whereby a commitment is given to treat the LDP006 charges by reverse osmosis. This could be done by sending the discharges straight to the Mt Piper treatment plant, or to Thompsons Ck Reservoir for blending and ultimate transfer to Mt Piper when needed.

The Company has suggested that direct transfer to Mt Piper's treatment plant is not feasible for reasons linked to the plant's capacity and the high-salinity of the LDP006 discharges. However, these aspects might constitute trade-offs, as opposed to the EPA conducting an independent investigation and engaging in drawn-out discussions with Centennial-Springvale over LDP006 and nearby reservoirs such as Cooks Dam.

Response

The SWTP has been developed to transfer LDP009 mine water discharges to MPPS for treatment in a water treatment plant to meet the 2019 water quality criteria in Springvale Mine's consent SSD 5594

(Schedule 4 Condition 12), namely salinity of 500 µS/cm (90th percentile). The SWTP will make a major contribution to improving water quality in the Coxs River catchment, but cannot be seen as providing a single standalone solution for management of all water quality issues in the Western Coalfield, including high salinity water discharges from LDP006 (Western Coal Services Project). Moreover, the SWTP has been designed to operate within the existing operating parameters at the MPPS. This includes variable power generation requirements and associated cooling water system make up requirements and the capacity of the existing brine management facilities at MPPS. The design parameters of the proposed water treatment plant cannot be significantly increased without a major overhaul to the existing MPPS operations and development of further solutions for LDP006 discharges. The LDP006 water has a much higher salinity than the mine water salinity (median EC of 1,170 µS/cm) than the proposed water treatment plant in the SWTP is currently being designed to treat.

In summary, management of water from sources other than the Springvale and Angus Place mine dewatering facilities does not currently form part of the SWTP. It is noted, however, that Springvale Coal has commenced investigations of beneficial reuse options for the management of Springvale Coal Services' very high salinity water surplus to the operational requirements of the Western Coal Services Project. This beneficial reuse option, when identified, would comprise the long term solution to the management of the high salinity water at the SCSS and would be implemented concurrently with the grant of development consent for the Angus Place Extension Project (SSD 5602). In the short to medium term, Springvale Coal will continue to progress with investigations to augment the current understanding of the existing surface and groundwater environments at the SCSS. Water management measures are progressively being implemented at the site for improved water quality outcomes in discharges off site.

4.2.4. Colong Foundation for Wilderness

Issue

The terms of the September 2015 consent should still apply

The terms of the consent require a short term solution to meet the above discharge standards. For example, the proponent could install additional temporary RO plant at LDP0009 to meet discharge standards by 30 June 2017.

Energy Australia installed a portable RO Plant at Wallerawang Power Plant to ensure Springvale's mine water was suitable for reuse at the power plant. So a temporary water treatment solution is not unusual in this region, and RO plants of a suitable size for LDP009 are available.

Response

Refer to **Appendix B**.

Issue

The Foundation also disputes that the mine water is no longer acutely toxic. We find the evidence presented regarding an unspecified change in discharge treatment in the environmental assessment to be unconvincing, given the state of the Coxs River and the levels of lead, cobalt, mercury and lead in the mine water discharge.

Response

The toxicological assessments described in Section 7.4.6 of the SEE for MOD 2 (Centennial Coal, 2016a) have been undertaken on mine water discharges at LDP009 over a number of years starting in August and October 2014, then in April 2015 and May 2016 (mine water treated with flocculants) and in October 2014 and May 2016 (raw mine water (i.e. prior to any treatment with flocculants) for toxicity screen testing (freshwater cladoceran). Water quality sampling was undertaken at the same time. The toxicity screen testing and water quality testing has been undertaken more than once and hence datasets are reliable. The following conclusions have been drawn from the datasets.

- The acute toxicity observed during testing in 2014 was due to the flocculent used in the settlement ponds at the time. The change in the flocculent has eliminated the acute toxicity but the chronic toxicity has remained.
- This toxicity impact was observed to diminish with increasing distance downstream of LDP009, with no adverse impacts identified in the upper portion of Lake Wallace or any points downstream.
- GHD (2016b) indicate that water quality analyses of LDP009 do not contain dissolved metals in significant concentrations to cause toxicity, and conclude that salinity is the potential cause of toxicity in Springvale Mine water discharges.

The toxicity testing is ongoing to further understand the likely causes of the chronic toxicity in the LDP009 discharges. From June 2019 the mine water discharges will cease at LDP009 and the water will be transferred to the SWTP for treatment within a water treatment plant based on desalination technology to meet the 2019 water quality criteria in Springvale Mine's consent SSD 5594 (Schedule 4 Condition 12), namely salinity of 500 µS/cm (90th percentile). The quality of the treated water will be confirmed during the commissioning phase of the water treatment plant. Treated water surplus to Mount Piper Power Station's cooling water requirements will be transferred to Thompsons Creek Reservoir (TCR) for storage and subsequent use at the power station. GHD (2016c) consider that water quality to be released to TCR is expected to resemble a water quality similar to that of TCR already regulated through the process systems within the plant. Further, GHD (2016c) consider metal and nutrient toxicant concentrations in the treated water are not predicted to exceed the relevant Default Guideline Value (ANZECC 2000) and therefore no impact on the fish community in TCR is predicted due to toxicity.

4.3. Response to Submissions from Members of the Community

4.3.1. Form Letter Contributions

Issue

Centennial Coal must install a temporary water treatment facility to meet the terms of its development consent so that mine water flowing into drinking water supplies receives at least a basic standard of treatment.

Response

Refer to **Appendix B.**

4.3.2. Individual Contributions

Submitter ID 189955

Issue

It is up to the mine operator how they meet these performance targets. They have already set out how they could achieve this. For instance, they could install a temporary water treatment facility to meet the terms of its development consent so that mine water flowing into drinking water supplies receives at least a basic standard of treatment. These salinity reduction targets need to stay to reduce the discharge to the river as long as Springvale mine continues to discharge highly saline toxic waste to the river.

Response

Refer to **Appendix B.**

5.0 REVISED STATEMENT OF COMMITMENTS

A revised Statement of Commitments (SoC) is provided in **Table 6**. The SoC provided in the SEE (Centennial Coal, 2016a) has been updated to include an additional commitment relating to Coxs River Restoration Program described in **Section 3.2.2** of the RTS, and shown in red in **Table 6**.

Springvale Mine will continue to implement the management controls already at place including those noted in the SoC of the SVMEP EIS (Golder Associates, 2014) and the Response to Submissions (Springvale Coal, 2014) on the EIS, and SoC included in the SEE (Centennial Coal, 2016b) for the proposed SVMEP Modification 1, the revised SoC included in the Response to Submissions on Modification 1 (Centennial Coal, 2016c), when that modification is approved (currently under assessment).

Table 6 – Revised Statement of Commitments

Desired Outcome	Action
1. General	
Undertake all operations in a manner that will minimise the environmental impacts associated with the operation of Springvale Mine.	Operations will be undertaken in accordance with operations approved in the Springvale Mine Extension Project (SSD 5594) as modified (MOD 1 and MOD 2).
2. Hours of Operation	
Undertake all operations within the approved operating hours.	Operations will be undertaken 24 hours a day and seven days a week.
3. Groundwater and Surface Water Resources	
All surface water, groundwater and aquatic impacts are minimised to the greatest extent possible.	The surface and groundwater management and monitoring will continue to be managed in accordance with the site's Water Management Plans, Swamp Monitoring Program and Upper Coxs River Action and Management Plan, prepared in accordance with SSD 5594 conditions.
4. Coxs River Restoration Program	
Improved aquatic habitat and potential improvements to stream health in Coxs River.	The Coxs River Restoration program, comprising riparian restoration measures in Coxs River, will be undertaken as described in Section 3.2.2 of the *Response to Submissions.*

6.0 CONSULTATION

Regular communication on the proposed modification has been maintained with the DPE following the submission of the SEE. The proposed modification was discussed with the EPA at a meeting held 15 February 2017 to discuss a number of Centennial Coal operations in the western coalfields.

7.0 REFERENCES

ANZECC (2000), *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, National Water Quality Management Strategy, Australian and New Zealand Environment and Conservation Council Agriculture and Resource Management Council of Australia and New Zealand.

Centennial Coal (2016a), *Springvale Mine Extension Project: Modification 2 Statement of Environmental Effects*, Centennial Coal Company Limited, December 2016.

Centennial Coal (2016b), *Springvale Mine Extension Project: Modification 1 Statement of Environmental Effects*, Centennial Coal Company Limited, July 2016.

Centennial Coal (2016c), *Springvale Mine Extension Project: Modification 1 Response to Submissions*, Centennial Coal Company Limited, November 2016.

CSIRO (2016), *SPR then APE including LW423, LW501 to LW503 Model Results*. Consultant letter prepared by CSIRO to Springvale Coal Pty Ltd. Reference No. N/A, dated 15 September 2016. In conjunction with: CSIRO (2015), *Appendix G – Alternative Mine Schedule: Angus Place and Springvale Colliery Operations - Groundwater Assessment.* Adhikary, D.P and A. Wilkins, Consultant report prepared for Centennial Angus Place Pty Ltd and Springvale Coal Pty Ltd by the CSIRO. Reference No. EP15346, January 2015.

GHD (2014), *Coxs River Ecotoxicology Assessment* GHD Pty Limited, Report No 22/1747, September 2014

GHD (2016d), *Springvale Water Treatment Project*: *Environmental Impact Statement*, GHD Pty Ltd, September 2016.

GHD (2016b), *Centennial West: Ecotoxicology Assessment of Springvale Mine LDP009*, GHD Pty Ltd, November 2016.

GHD (2016c), *Amended Springvale Water Treatment Project: Water Resources Impact Assessment*, GHD Pty Ltd, December 2016.

GHD (2016d), *Springvale Water Treatment Project*: *Amendment to DA Application*, GHD Pty Ltd, December 2016.

Golder Associates (2014), *Springvale Mine Extension Project: Environmental Impact Statement*, Golder Associates Pty Ltd, April 2014.

Jacobs (2016), *Water Assessment – SSD 5594 Modification 2*, Jacobs Group (Australia) Pty Ltd Reference No. IA132100-0006-NW-RPT-00006_Rev2, 16 December 2016.

Springvale Coal (2014), *Springvale Mine Extension Project: Response to Submissions*, Springvale Coal Pty Limited, October 2014.

APPENDIX A

List of Community Members Who Made Submissions

Table A1 – List of Members of Community who made Submissions

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
191528	Abrahall	Kathleen	183554	Blakestone	Michael	191316	Brown	Cale	191348	Clayton	Louisa
191472	Adamson	Claire	183741	Bleach	Annabel	192106	Brown	David	191380	Clayton	Tom
189417	Ambler	Susan	192098	Boekel	Rob	192126	Buckland	Cath	191400	Clayton	Lorna
183765	Anderson	Cindy	183771	Bolotin	Yu	191492	Buddle	Kate	191252	Clough	Michael
189447	Armstrong	Jane	183527	Booth	Margaret	183662	Burns	Kate	191514	Coleman	Zoe
191330	Arnold	Thomas	185890	Booth	Prunella	191526	Butler	Zoe	183568	Connor	Andrew
191498	Bacchiella	Christina	185896	Booth	Ian	189421	Cameron	Jemima	192056	Conroy	Bodil
183533	Baratt	Liesje	191434	Bosch	Tanya	183509	Carden	Teresa	191957	Contractor	Steefan
183785	Barley	Airelle	183438	Brayshaw	Emily	183540	Chadwick	Jane	191296	Corbett	Sophie
192084	Barnes	Roy	192015	Brennan	Natalie	183505	Chalmers	Carly	192032	Costello	Pat
183487	Bartley	Megan	192042	Brennan	Ashley	183552	Chan	Michael	183501	Cowie	Michael
191989	Bartush	Rhys	192040	Bright	Molly	191456	Chudleigh	Kas	191947	Cranney	Sean
191310	Bell	Amy	183667	Brown	Stacey	185830	Clarke	Lesley	183601	Croft	Emma
185868	Bennett	Ruth	183761	Brown	Pam	191396	Clarke	Ireni	191274	Csokas	Kathy
191993	Blackwell	John	191312	Brown	Joannna	191938	Clarke	Greg	183791	Curley	Toni

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
183475	Curran	Bernard	192112	Doyle	Maddison	183443	Fathers	Neville	183745	Garcia	Gary
183783	Curran	Lawrence	191450	Drinkall	Jacquelene	183616	Fernandes	Febreece	192001	Gerner	Pemberton
191965	Dabelstein	Joshua	191482	Dzwinek	Kara	191936	Ferrier	Ellen	183624	Gialouris	Joshua
181605	Daley	Sue	183511	East	Ruth	189400	Field	Peter	183596	Gill	Liam
183795	Darcey	Kerry	189404	Ebersoll	Thomas	192024	Finfer	Joshua	185904	Grahamslaw	Daniel
183612	Davis	Kate	192028	Edgar	Joanne	191951	Fisher	Hugh	181609	Grant	Jesse
183645	Davis	Curtis	183777	Edwards	Dan	185886	Fitzgerald	Maria	191991	Gray	Lindsey
189433	Davis	Glen	183469	Eggins	Kel	192050	Flower	Jono	181591	Green	Peter
183606	Dawes	Pamela	191442	Ellis	Cecil	191438	Foley	Kathryn	185902	Grierson	David
191490	De Vries	John Wiggers	185908	Emmott	Brian	192122	Foote	Luci	191987	Griffiths-Menzies	Ewen
191412	De-Campo	Gabriel	187967	EnergyAustralia		183769	Foran	Julie	183519	Grognard	Rene
191973	De-Campo	Aurora	192088	Engel	Monica	183481	Foser	Ken	192052	Guice	Janine
183441	Denny	Elizabeth	192013	Eramus	Anna	192009	Foster	Athol	183759	Hall	Sean
192120	Dinsdale	Jane	192048	Fairlie-Cunninghame	Robert	191504	Fowler	Sophia	183579	Hamilton	Patricia
192082	Dods	Tallulah	183681	Farlow	Toni	183749	Galea	Amanda	183638	Hamon	Margaret

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
183727	Hantos	Vince	183546	Hull	Elly	189427	Joyia	Faizan	189480	Lathbury	Laura
181603	Harris	Ben	185920	Hutchins	Sue	191286	Juchkov	Maria	183574	Lawrence	Ian
183566	Harris	Matt	183560	Imrie	Julia	191955	Kanagaratnam	James	183556	Laws	Andrew
183656	Harris	Claire	183687	Jamieson	Roy	192090	Karapetian	Tadeh	192054	Lawson	Liberyu
183693	Harriss	Vicki	183495	Jenkinson	Steve	191486	Kenny	Jane	192034	Leckie	Allison
192007	Harvey	Tom	185906	Jenn	G	183699	Kentwell	Dale	192078	Lee	Michael
191328	Hawkins	Amelia	191480	Jerrat	Zoe	191995	Kerr	Alex	183676	Leesing	Erika
189453	Head	John	181617	Johnson	Jerry	183664	King	Robert	183747	Lemic	Caroline
183715	Hein	Angela	183515	Johnson	Nathan	191308	King	Madeleine	183523	Lethlean	Keith
183650	Herring	Jesse	185814	Johnson	Sean	183648	Kinneym	Lesley	183537	Li Sin	Su
191250	Hethcote	Joanne	191322	Johnson	Narelle	185802	Kitching	Lynette	191272	Lieberman	Lila
183447	Hobbs	Stephen	191500	Johnson	Marion	183775	Lacher	Claudia	185810	Lindsay	Shona
191266	Hope	Rachel	191306	Jones	Anada	183548	Lalor	Bethany	183735	Lissarrague	Amanda
192073	Houldahan	Kate	191446	Jones	Rob	191983	Langdon	Sarah	191985	Lucas	Kate
185918	Hufton	David	192118	Jorgensen	Chloe	192018	Larkin	Zacc	183531	Luchetti	Marilyn

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
181593	Lynch	Robert	191999	McQuade	Amy	181551	Name Withheld		183445	Parkes	Jane
191290	Lynch	Alexandra	183773	Mews	Lyn	189411	Nash	Paul	192060	Parsonage	Simon
189955	MacLean	Madi	191967	Michaels	Jana	192036	Naumann	Coralie	183695	Parsons	Kelly
183544	Mader	Gerarda	192005	Mkwanazi	Bheki	192003	Neville	Angelica	181607	Partridge	Ian
185840	Magee	Jocelyn	192058	Molinari	Lily	192096	Noble	David	192110	Paton	Chloe
191326	Mahony	Terry	185838	Moore	Sally	191432	North	Jacqui	181589	Pearse	Warwick
191338	Manning	Kathleen	192044	Moore	Ingelle	191440	Nutting	Brett	185818	Pettit	John
192100	Mansfield	Jonathan	183629	Morris	Viola	192116	Nyssen	Manon	189437	Powys	Vicki
192114	Mansfield	Drew	183685	Morris	Peter	185900	Oakes	Greg	191458	Price	Michael
183467	Matthews	Tina	191522	Morrison	Claire	191977	OKeeffe	Sean	183619	Rayment	Marea
191408	Maude	Richard	183751	Mosley	Geoff	183691	Olive	Gregory	183658	Rayment	James
183723	McCann	Paul	192068	Mould	Simon	183743	on Dewitz	Anna-Kathrin	188061	Read	Malcom
192064	McDougall	Lee	191358	Nakazawa	Claire	185804	Packman	James	191961	Reynolds	Rachelle
192038	McMillan	Boyd	180928	Name Withheld		191264	Palmer	Martyn	183671	Rider	Grant
183719	McPherson	Andrew	181276	Name Withheld		192046	Parker	Holly	191979	Rienmueller	Kristina

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
181615	Ringe	Brigitte	183479	Shiva	Rainbow	181611	Speirs	Roland	191360	Teoman	Lale
183586	Ripper	Michelle	191944	Sidoti	Dominic	183779	Spruce	Melanie	191366	Thearle	John
181599	Robens	John	192128	Simpson	Peter	183465	Stavert	Kate	189465	Theol	Janene
189459	Roberts	Martin	191953	Singh	Malavika	191478	Steer	Louise	191282	Thomas	Gareth
183517	Robertson	Ellie	183641	Skellam	Sumi	181613	Stephens	Geoff	191302	Thomas	Louise
185822	Robertson	Steven	191494	Smart	Ciara	191346	Stephens	A	191444	Thorley	Jan
183711	Robinson	Joel	183542	Smith	Antonia	192102	Stevens	Rosanna	183608	Thornton	Darlene
183673	Rothery	Lisa	185888	Smith	Melanie	191436	Stewart	Ruth	192108	Thorper	Roslyn
191256	Sams	Milton	191270	Smith	Alyssa	191254	Stott	Caz	191942	Tims	Alice
183701	Sawtell	Kristy	191388	Smith	Kevina-Jo	183485	Street	Mrs	183654	Toms	Courtney
191424	Scott	Nick	191462	Smith	Lia	191244	Strong	Claire	185832	Trotman	Elaine
183703	Sear	Maranne	192124	Smith	Scott	181595	Stuart	James	192020	Tubman	Wendy
189457	Self	Kay	183471	Snelling	Lisa	183535	Sykes	Ruth	183564	Tynan	Chris
191932	Shakeshaft	Tim	185836	Somerville	Peter	185828	Szumyn	Wayde	192104	Ulanova	Marina
185910	Shearer	Jennifer	183588	Spatenkova	Eva	191971	Taylor	Daniel	191965	Vale	Owen

Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	Last Name	First Name	Reference ID	First Name	Last Name
181280	Valja	Andrew	183737	Wallace	Chris	191372	Westlake	Nigel	181597	Wolczyk	Martin
191262	Van Kleef	Margaret	191476	Wallace-Crabb	Virginia	183513	White	Colin	191981	Wylie	Kate
192076	Virik	Kara	185806	Walters	Colin	192062	Whittaker	Michael	183731	Wymer	Charles
192070	Von Ahlefeldt	Karen	191416	Wang	Charles	183583	Wickham	Irene	191448	Yeo	Rod
191518	Vos	Amy	191969	Wardhaugh	Jessica	192094	Wilcox	Robert	183503	Zampetakis	Helene
191284	Wadick	Saffron	183599	Warren	Jenni	181601	Wiles	Nick	183789	Zubakin	Victor
183713	Walker	Catherine	183570	Webber	Ric	191975	Wilkinson	George	183483	Zylstra	Aletha

APPENDIX B

Temporary Water Treatment Facility at Swayers Swamp Gully

Options Assessment for the Establishment of aTemporary Water Treatment Facility at Swayers Swamp Gully

1. Introduction

This options assessment has been prepared in response to submissions from Special Interest Groups and members of the community who noted that Springvale Coal considers the potential for the establishment of a temporary water treatment plant to treat groundwater or mine inflows from the Springvale Delta Water Treatment Scheme (SDWTS). The proposal is for the installation of a temporary water treatment plant in Sawyers Swamp Gully to enable mine water to be treated to meet the limits of salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm by 30 June 2017, as required by Schedule 4 Condition 12 of Springvale Mine's consent SSD 5594, prior to discharges through licensed discharge point LDP009.

This assessment provides details on the viability for implementation of a temporary water treatment facility at LDP009 to meet the above noted initial salinity reduction targets included in the SSD 5594, and builds on investigations that were undertaken during the development of the Springvale Water Treatment Project (SWTP) (SSD 7592) (GHD, 2016a). Additional infrastructure required to be established and approvals obtained prior to the operation of a temporary water treatment facility at LDP009 are discussed.

2. Background

A number of alternative water management and treatment strategies were considered during the development of the SWTP with the aim of progressively reducing the salinity for mine water discharges to ultimately achieve a limit of 500 µS/cm EC (90th percentile) for all mine water discharges by 30 June 2019, as required by Springvale Mine's consent SSD 5594.

The proposed water management strategy in the SWTP will achieve compliance with the long term water management performance specifications included in the SSD 5594 consent by effectively eliminating discharges from Springvale Mine's LDP009 discharges by 30 June 2019. This preferred strategy will also provide a better overall outcome for the Coxs River catchment than required by the stipulated water quality performance specifications in SSD 5594 or that could be achieved by any of the alternate water management strategies investigated during the development of the SWTP.

The alternative water management strategies investigated have been described in Chapter 4 of the SWTP's *Environmental Impact Statement* (EIS) (GHD, 2016a), available at:

http://majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=7592

The strategies investigated included consideration of the potential to establish a new water treatment plant adjacent to the existing LDP009 in Sawyers Swamp Gully. The new treatment plant would need to incorporate appropriate desalination technology to meet the salinity reduction targets in mine water prior to discharge to Sawyers Swamp Creek in the Upper Coxs River Catchment.

The potential transfer of the existing Reverse Osmosis (RO) desalination plant at Wallerawang Power Station site to LDP009 was also considered as part of the initial strategy development for the SWTP. However, the existing plant has a capacity of 6 ML/day, which is insufficient to meet the interim water quality discharge standards. In this option approximately 80% of the incoming mine water would need to be treated in a desalination plant (about 30 ML/day capacity), for a blend of treated and untreated water to be able to meet the discharge salinity limits. Use of the Wallerawang RO plant was discounted as it would be a complex operation to disassemble and relocate the existing equipment to a new location at LDP009. This equipment was also considered to present greater project risks from unreliable operation due to the age and nature of the equipment.

3. Water Treatment Plant Facility and Scale of Development

A water treatment facility based on desalination technology generally comprises the following components:

- Pre-treatment or clarification
- Water treatment to reduce salinity (eg by reverse osmosis)
- Management of the products produced by the treatment and desalination process, which include:
    - Treated water meeting the prescribed limits of salinity
    - Residuals from the clarification process
    - Brine from the water treatment process.

Chapter 5 of the SWTP's EIS describes these processes in detail and as relevant to that project, noting that the SWTP has been developed to satisfy the water quality performance measures specified in Schedule 4 Condition 12 of SSD 5594. Any water treatment facility to be established at the LDP009 location will require infrastructure to accommodate the water treatment processes and management of by-products.

A new water treatment plant established at LDP009 would need to be designed with capacity to treat all incoming mine water flows up to 30 ML/day to manage mine inflows at Springvale Mine and Angus Place Colliery. A temporary water treatment plant could comprise containerised modular units that can be brought to site as prefabricated units. They would then need to be installed and piped together to form a single integrated plant of the required capacity. Constructing a temporary water treatment plant to provide 30 ML/day of treatment capacity based on containerised modular units will require a significant number of modules to build up the required pre-treatment and RO process capacities.

Utilisation of the 6 ML/day RO unit from Wallerawang Power Station was considered as part of a temporary modular solution. However, as it will differ in configuration and design to the units that would need to be acquired new, and also for the reasons noted earlier, its reuse was not considered feasible. It is also noted commercial agreement to gain access to this equipment would be required.

There is limited available land area in proximity to LDP009 in Sawyers Swamp Gully to establish the scale of water treatment plant required to achieve the discharge water quality standards specified in the Springvale Mine's consent. The land belongs to EnergyAustralia Pty Limited (EA) and commercial agreements between EA and Springvale Coal would be required to be established.

The containerised modules are only part of the facilities required to construct the plant. Pipelines, storage ponds, internal roads, electrical transformer stations and switchrooms, chemical storage areas, maintenance facilities are all also required as part of a plant of this kind. It is estimated that an approximate five hectare footprint would be required to establish a water treatment plant of a similar scale and capacity to the reference design forming the preferred water treatment option for the SWTP. A water treatment plant at LDP009 would result in a considerable earthworks requirement and associated clearance of native vegetation (predominantly the vegetation community HN570 Red Stringybark – Brittle Gum – Inland Scribbly Gum dry open forest of the tablelands, South Eastern Highland). However, it is noted that the endangered ecological community Tableland Gully Snow Gum- Ribbon Gum Montane Grassy Forest, listed under the *Threatened Species and Conservation Act 1995* exists in the area and further assessment would be required to confirm any potential impacts upon this community.

A new power supply would also need to be established to for the temporary water treatment plant at LDP009. A new substation and transmission line from the nearest supply (likely to be in the vicinity of the Wallerawang Power Station) would result in an expanded disturbance footprint and increase the overall cost of establishing an interim solution.

Management of the brine and residuals stream would also be required for the establishment of a desalination treatment plant at LDP009. A concentrated brine stream of 3 to 4 ML/day would be produced from mine water treatment and a typical residuals stream in the range 0.16 – 0.35 ML/day and a maximum 0.43 ML/day will be produced as a result of the pre-treatment requirements under

peak mine water quality conditions. There are limited available options for the management of the brine and residuals streams in the vicinity of LDP009. Potential options include the following.

- Establishing large evaporation ponds to increase the solids content of the residuals which would further increase the disturbance footprint of the development and be cost prohibitive. The dried residuals would then have to be excavated from the ponds and trucked off site to a licenced disposal area, or, buried in place, and new ponds constructed in new areas of the plant site.
- Brine and residuals transfer pipelines to Mount Piper Power Station (MPPS) and the Springvale Coal Services Site reject emplacement area, respectively, as has been proposed in the SWTP. The additional distance these pipelines would need to traverse would increase the cost and footprint of the development. Such an option could not be implemented more quickly than the proposed SWTP in any event.
- Offsite disposal of both the brine and residuals by-products to a specialised landfill licensed to receive high salinity waste streams which would be cost prohibitive and result in considerable number of heavy vehicle movements on the road network.

None of these potential options for the management of residuals and brine are feasible. As noted below the temporary water treatment plant at LDP009 would have significant environmental impacts and similar implementation times to the proposed SWTP in any event. Additionally, the remote location would also lead to higher operating costs associated with the delivery of chemicals, disposal/transport of residuals and brine.

4. Receiving Waters and Environmental Impacts

A Surface Water Impact Assessment (Jacobs, 2016) undertaken to support the proposed modification to SSD 5594 (Springvale MOD 2) to remove the 2017 interim water quality criteria indicates the removal of the criteria does not lead to a significant difference in predicted salinity within the Coxs River catchment, over the prediction period, compared to that currently approved. Assessed impacts on salinity range from minor (Lake Wallace) to insignificant (Lake Lyell) at the modelled nodes in the Coxs River catchment. Modelling also indicates no change to modelled median salinity in Lake Burragorang, over the prediction period, compared to that currently approved. There are no impacts on flows.

As discussed in Section 7.7 of the SEE (Centennial Coal, 2016a) the assessed minor to negligible salinity impacts result in no to negligible environmental consequences (geomorphology, aquatic ecology, downstream surface water users) in the Coxs River catchment. It is emphasized these impacts will only be sustained for a further two years up till 30 June 2019 when the SWTP becomes operational.

A key objective for the SWTP is to maximise the reuse of the mine water within the MPPS cooling water system. Establishing a water treatment plant in the vicinity of LDP009 would not facilitate the reuse of mine water, which would therefore continue to be released to the Coxs River catchment within the limits of the consent. It would not be economically viable to develop an interim treatment at LDP009 concurrently with the development of the overall SWTP.

The preferred option for the SWTP has been recently amended to incorporate the transfer to Thompsons Creek Reservoir allowing for the maximum reuse of treated water within the MPPS cooling water system. This will provide a superior outcome to the catchment than would be achieved through the progressive reduction in the salinity of discharges via a treatment system at LDP009 and can be implemented in a similar timeframe.

The regional water and salt balance (GHD, 2016c) undertaken for the SWTP indicates there will be a lower total salt contribution to Lake Burragorang within one year of commissioning of the SWTP than would be achieved by the progressive reduction in salinity in mine water discharges in accordance with the Springvale Mine's consent.

Additionally, the environmental impact profile (disturbance footprint, noise and air quality impacts, traffic impacts) due to the installation of the temporary water treatment plant will likely far outweigh the minor to negligible impacts predicted for the continued discharge of untreated mine water into the Coxs River catchment for a further two years, even if the four year lead time (refer below) required to implement such a scheme could somehow be eliminated.

5. Consent Requirements

A water treatment plant to be established at LDP009 for the period 01 July 2017 to 30 June 2019 before the SWTP becomes operational would trigger the need for either a new development application or a modification to the SVMEP SSD 5594 consent.

A desalination facility was not included in the description of the proposed development within the SVMEP EIS and did not form part of the site infrastructure operating at the Springvale Mine prior to the consent. Any new water treatment plant would therefore not be authorised by the existing consent triggering the need for a new approvals process.

LDP009 is located within Zone SP2 Infrastructure land zone under the *Lithgow Local Environment Plan 2014*. A water treatment plant is incidental to the purpose of the prescribed land zone and would therefore only be considered permissible with consent.

A water treatment plant would also be considered state significant development as it meets the definition of development specified in Schedule 1 of the *State Environmental Planning Policy (State and Regional Development 2011*. The water treatment plant is development for a mining related activity that is ancillary to another State Significant Development Project with a capital investment value of over $30 million. Schedule 1 also includes state significant development triggers for water treatment facilities including development for the purpose of desalination plants that have a capital investment value of more than $10 million. Either trigger would result in the treatment plant being classified as state significant development requiring approval from the NSW Minister for Planning.

A new water treatment plant could alternatively be authorised through a modification to SSD 5594 under Section 96 of the EP&A Act. For the modification pathway to be adopted the modified operations would need to constitute substantially the same development. Given the existing SSD5594 authorises an underground mining operation and the water treatment plant would be augmenting the existing water management scheme for the mine the operation of Springvale Mine, it is likely the mining operations as modified would be considered to be substantially the same development.

Either a new development application or a modification to an existing consent would require determination by the NSW Minister for Planning (or delegate such as the NSW Planning Assessment Commission). The determination would require a comprehensive and lengthy approval process including preparation of the initial supporting documents (EIS or SEE), public exhibition for community and government stakeholder feedback prior to assessment and determination. This approvals process is likely to take up to 18 months.

Given the above requirements the installation of a temporary water treatment plant at LDP009 location is unlikely to be achievable before Springvale Mine is required to meet the water quality criteria stipulated in Schedule 4 Condition 12 of SSD 5594 by 30 June 2017. The scale of this temporary facility is almost of the scale as the SWTP, but with greater environmental impact profile mainly due to the distant location.

The initial salinity reduction targets for June 2017 are not considered realistically achievable through the establishment of a temporary water treatment facility at the LDP009 location, given a new SSD approvals process would be triggered and infrastructure is required to be constructed and commissioned.

The timeframe required to develop a preferred solution and obtain development consent to allow the procurement, construction and commissioning of the project would not realistically allow any form of treatment system to be developed within two years from the date of consent. A four year minimum

timeframe is more realistic to allow development of the scale as the proposed SWTP, a temporary water treatment facility described in this options assessment.

6. Construction and Commissioning

Construction and commissioning of infrastructure for a temporary water treatment plant could take up to 18 months. This period includes 6 – 9 months required for the delivery of the containerised treatment modules, land preparation, installation of the facility, construction of the overland pipelines for brine and residuals disposal and testing and commissioning.

7. Conclusion

It is not technically feasible to install a temporary water treatment facility by 30 June 2017 to enable Springvale Mine to meet the water quality criteria as required by Schedule 4 Condition 13 of SSD 5594. A lead time of a minimum of four years is required to obtain approvals and then construct and commission a water treatment plant of the scale required to manage mine water discharges from LDP009, up to 30 ML/day in the period 01 July 2017 – 30 June 2019. This is no quicker than the proposed SWTP. Based on the four year realistic timeframe for approvals and construction works for a temporary water treatment plant, meeting the June 2019 water quality as proposed in the SWTP is more practical.

APPENDIX C

Underground Mine Water Storage at Angus Place Colliery and Springvale Mine

Options for Storing Excess Groundwater in the Disused Mine Workings

1. Introduction

This options assessment has been prepared in response to Department of Primary Industry's submission that Springvale Coal consider potential alternatives for the management of mine inflows from Springvale Mine (Springvale) and Angus Place Colliery (Angus Place) rather than or in addition to modification to Springvale Mine's consent conditions for the continued discharge of mine water at the current water quality criteria until the Springvale Water Treatment Project (SSD 7592) becomes operational in June 2019. This assessment specifically addresses the suggested potential alternative of storing excess groundwater in the disused mine workings.

Angus Place and Springvale have to date undertaken numerous investigations to determine the feasibility of storing mine water underground within historical workings for extended periods. The following sections describe the potential storage areas available and the possibility of using these areas for the storage on mine water from the Springvale Delta Water Transfer Scheme (SDWTS), which manages mine water from both Springvale and Angus Place between 01 July 2017 and 30 June 2019.

2. Underground Storage at Angus Place Colliery

Angus Place currently has two underground storage areas for mine water – the 800 Panel Area and the 900 Panel Area, shown in **Figure C1**.

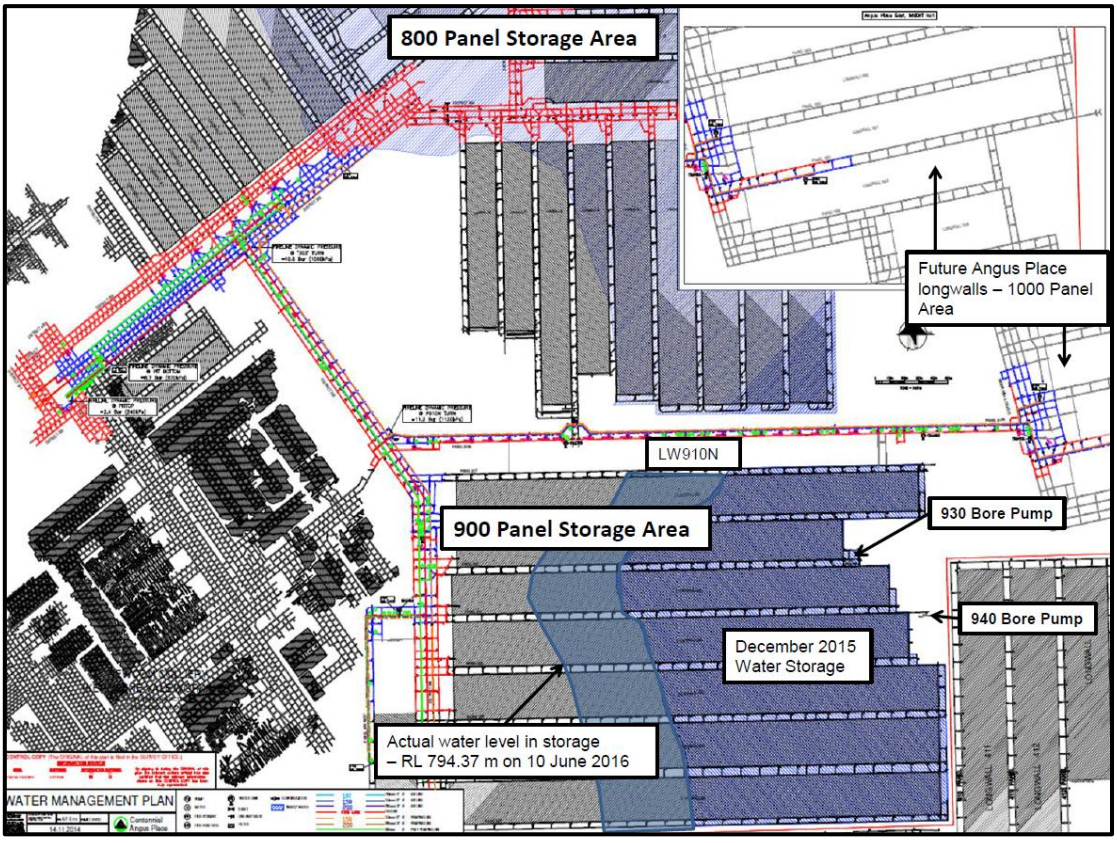


Figure C1 – The 800 and 900 Panel Storage Areas at Angus Place Colliery

The 800 Panel Area is at capacity. Pumping of water from this area is required continuously in order to prevent build-up of water which would otherwise flood the future longwalls within the 1000 Panel Area (Angus Place East) via the LW910 gateroads (**Figure C1**). Currently mine inflows into the 800 Panel Area from the existing workings are balanced through pumping to the surface and discharge into Kangaroo Creek via LDP001 at the rate of 1.5 – 2 ML/day allowed on Angus Place's EPL 467.

For these reasons there is no potential for any future underground storage of mine water in this 800 Panel area.

The 900 Panel Area is the only viable water storage area underground at Angus Place, however as discussed below is unsustainable. Water from this area (which includes mine inflows) is transferred to the surface into the SDWTS via the 940 Bore Pump (**Figure C1**) for subsequent discharge into Coxs River via Springvale Mine's LDP009 on EPL 3607. Water can be transferred to the 900 Panel Area from the SDWTS via the 930 Bore Pump (**Figure C1**).

The 900 Panel Area water level has been steadily rising due to limitations in underground pumping facilities, and water access licence allocations which restrict the volume of water that can be extracted underground and transferred to the surface for discharge into Coxs River. The volume of water that can be discharged from the SDWTS into Coxs River via LDP009 is currently restricted to 30 ML/day on EPL 3607, and comprises mine water from both Angus Place and Springvale. .

The rise in the water level in the 900 Panel Area, monitored since April 2014, is shown in **Figure C2**. The storage capacity in the 900 Panel Area is defined by the critical water level of RL 805 m AHD. Void ratios of the 900 Panel goaves have been calculated based on measured mine inflows, measured goaf area and the measured rate of rise of water levels. On this basis a storage volume in this area has been calculated at approximately 1610 ML. The current bore level is recorded as 789.7 m AHD, suggesting that the 900 Panel Area is approximately 70% full.

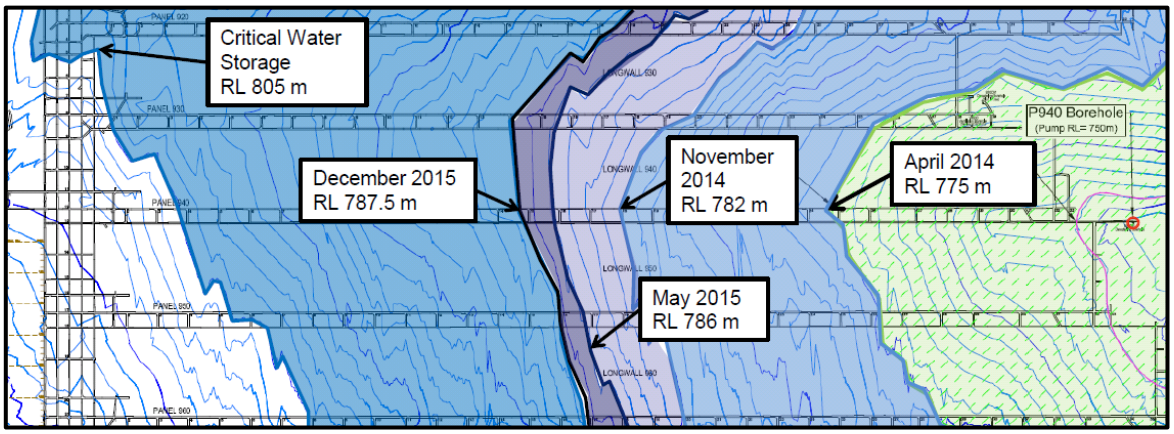


Figure C2 – Monitored Water Level in the 900 Panel Storage Area

Based on the approximately 30% or 480 ML of remaining storage within the 900 Panel Area and measured inflows of 95 L/s from the existing workings at Angus Place it is estimated that the 900 Panel Area will be completely full approximately 2 months after 940 Bore Pump is turned off. If the total Springvale Mine and Angus Place mine inflows at 25 ML/day (CSIRO (2016)) are to be stored in this area then it will take <3 weeks for the remaining storage volume to be exhausted. When the storage capacity in the 900 Panel Area is exhausted, mine water will overflow and flood the LW910N panel, which has already been developed under Angus Place's current project approval (PA 06_0021).

The 910 Panel Area is required to access the 1000 Panel Area (Angus Place East) which is the future longwall mining area following the grant of development consent for the Angus Place Mine Extension Project. The inundation of 1000 Panel Area and the 910N Panel Area will result in the strata failure (extensive roof damage and potential major roadway roof falls) in the future mining areas. Strata failure due to inundation can occur through the following mechanisms.

- Inundation with water causes tuffaceous claystones in the roof to swell and soften. This effect destroys roof integrity and causes strata failure.
- Inundation of future mine workings with water causes corrosion of support and compromises integrity of roof support system.

The 900 Panel Area is required to be maintained at much less than the full capacity since it functions as the emergency storage area in the event that mine water from Springvale Mine cannot be transferred to LDP009 via the SDWTS due to issues with the pipelines or other infrastructure associated with the dewatering bore facilities. This management of emergency discharge at the 900 Panel Area was used once last year, and will be used in the future (June 2019 onwards) for the Springvale Water Treatment Project for when the water treatment plant in that project is not operating to treat mine water.

Once flooded the recovery of the flooded workings would be significantly protracted due to the design and pumping capacity of the current mine dewatering system, which has limited excess capacity to remove stored water in addition to the ongoing water make. With the current pumping infrastructure it has been determined, based on measured pump data, for one day of ceased pumping it will take approximately eight days to recover the resulting flooding. The pumping system would need to be upgraded (at a significant cost) for increased pumping rate required to lower the water levels underground to manageable levels following inundation of the underground. However, the volume of water that can be extracted will be limited by the water access licence allocations and the maximum volume that can be discharged from the SDWTS is limited by the EPL volumetric limit for LDP009 on EPL 3607, which as noted above is limited to 30 ML/day.

Notwithstanding, for the 900 Panel Area to provide storage of untreated mine water from Springvale Mine (full extraction scenario) and Angus Place (care and maintenance scenario) in the period 01 July to 30 June 2019 a storage capacity of 18,250 ML would be required based on a conservative mine inflow rate estimate 25 ML/day (CSIRO, 2016). This capacity does not exist underground at Angus Place Colliery within the historical mine workings.

3. Underground Storage at Springvale Mine

Springvale Mine does not currently have any viable underground storage area. Springvale Mine is currently mining within its northern longwall block area. There is no opportunity to store mine water in the historical mine workings (LW1, LW401-LW418) because of the mine plan and floor contours which dip to the east-northeast (ENE). This means the current workings are always down-dip from these historical workings i.e. the active extraction area is always at the lowest point in the mine. Any effort to pump water into the historical workings will result in the water running down-dip under gravity to the area of active extraction and interfere with the operations.

When mining in the northern longwall blocks is completed the goaves have the potential to provide up to seven weeks of mine water storage (at current Springvale mine water make), whilst longwall mining is ongoing to the south of the mains headings. This is due to the ENE seam dip. Storage of water beyond seven weeks would fill back to the main headings. The mains headings cannot be inundated as they are required to provide access to the southern longwall block longwalls. Additionally, inundation of the mains headings for even limited periods cannot occur because the integrity of the roof support system will be compromised due to strata failure arising from the two strata failure mechanisms discussed above, and increasing the potential for major roof falls.

However, the Northern Block Storage Area will not be available until all longwalls within this area have been extracted, expected in mid-2019. This will be outside the period (01 July 2017 – 30 June 2019) required for the management of untreated mine water, or at any time in the future beyond mid-2019 for extended (greater than seven weeks) periods.

4. Conclusion

Storage of mine water from both Springvale Mine and Angus Place Colliery underground until the SWTP becomes operational is not feasible. Whilst limited underground storage is available at Angus Place Colliery's 900 Panel Area storage of mine water on an ongoing basis for extended periods is unsustainable. Any future storage at Springvale Mine will not be available till after mid-2019 outside the period (01 July 2017 – 30 June 2019) required for the management of untreated mine water from the both Springvale Mine and Angus Place Colliery via the SDWTS.

APPENDIX D

Dilution of Mine Water through Blending

Options Assessment for Blending Mine Water from Clarence Colliery and Springvale Delta Water Transfer Scheme

1. Introduction

This options assessment has been prepared in response to Department of Primary Industry's submission that Springvale Coal considers potential alternatives for the management of mine inflows from Springvale Mine (Springvale) and Angus Place Colliery (Angus Place) rather than or in addition to modification to Springvale Mine's consent conditions for the continued discharge of mine water at the current water quality criteria until the Springvale Water Treatment Project (SSD 7592) becomes operational in June 2019. This assessment specifically addresses the suggested potential alternative of shandying or blending the groundwater from the Springvale Delta Water Transfer Scheme (SDWTS) to improve water quality before it is discharged at LDP009 into Sawyers Swamp Creek.

Centennial Coal has previously undertaken investigations to reduce the salinity of LDP009's mine water discharges (median electrical conductivity (EC) 1170 µS/cm) by blending with Clarence Colliery's mine water (EC ~410 µS/cm). The preliminary feasibility report identified that additional infrastructure at significant cost will be required at Clarence Colliery, on Newnes Plateau and in the vicinity of the LDP009 settlement ponds in Sawyers Swamp Gully for this option to be realised. Approvals for the establishment of the additional infrastructure will be required prior to any construction and operation of the blending scheme.

The additional infrastructure, identified constraints, and approvals required are discussed below. Additional infrastructure for the most likely blending scenario is described.

2. Additional Infrastructure Requirements

The following sections discuss the additional infrastructure that will be required for the blending of mine water from the SDWTS and Clarence Colliery. Infrastructure with the capacity to manage mine inflows up to 55 ML/day, comprising maximum 30 ML/day of LDP009 discharges and up to 25 ML/day of inflows from Clarence Colliery will be required.

2.1 Infrastructure for Blending Mine Inflows from Clarence Colliery and the SDWTS

The preferred location for the mixing of the mine inflows from the two mines is at Sawyers Swamp Gully in the vicinity of existing LDP009 location. Locating the blending infrastructure at Sawyers Swamp Gully provides an opportunity to use the existing water treatment facilities at LDP009 as appropriate. The new infrastructure will require to be established on EnergyAustralia (EA) owned land, which is currently being rehabilitated. The use of the EA land will require a commercial agreement to be set up between EA and Springvale Coal Pty Limited.

The existing settlement ponds at LDP009 are designed with sufficient capacity for treatment mine inflows from the SDWTS, and this infrastructure will continue to be utilised for receiving mine water from the existing SDWTS using existing pipelines. A duplicate settlement pond with sufficient capacity to treat mine inflows from Clarence will require to be established in the vicinity of the existing settlement pond. Installation of a new mine water transfer pipeline from Clarence (with a minimum transfer capacity of 25 ML/day) to this settlement pond will be required, discussed below (**Section 2.2**).

Treatment of mine water in the two settlement ponds to remove suspended solids including colloidal matter will be undertaken using appropriate polyamine flocculants. Flocculant dose will be controlled based on real time monitoring of the total suspended solids concentration, consistent with the current practice employed at the LDP009 settlement ponds. Sludge will build up within the two settlement ponds and its disposal will require to be managed. The sludge will be taken off site for disposal.

Treated water from the two settlements ponds will be discharged, via two separate pipelines of sufficient capacities, into a 55 ML/day capacity pipeline (where mixing of the treated water from the two mines will occur) for discharge to the Coxs River catchment.

Currently, treated SDWTS mine water is discharged from the existing settlement pond through a weir into a culvert / channel and runs along the base of the Sawyers Swamp Creek Ash Dam wall before flowing into the Swayers Swamp Creek located downstream of the settlement pond, and subsequently discharged into Coxs River. The increased blended mine inflows of 55 ML/day could likely damage the base of the Ash Dam wall, and for this reason the 55 ML/day pipeline will be extended from the settlement ponds to the Swayers Swamp Creek for direct discharge into the creek. The LDP009 would be located at this location.

It is noted that EC of the blended mine water from the two mines will not controllable, using the blending procedure discussed above, and hence there is no guarantee that the blended water would meet the 2017 water quality criteria ((500 µS/cm (50th percentile), 700 µS/cm (90th percentile) and 1000 µS/cm (100th percentile)) specified in Schedule 4 Condition 12 of Springvale Mine's consent SSD 5594. In order to meet the 2017 water quality criteria a water treatment plant incorporating desalination technology, with minimum 55 ML/day capacity and suited to delivering water with the 2017 water quality criteria will require to be installed to further treat the blended mine water to achieve the consent conditions. The disposal of by-products of the water treatment process, residuals from the pre-clarification process and brine Brine management will be required. The viability of installing a temporary water treatment plant at the LDP009 location and approvals required is discussed in **Appendix B**.

2.2 Pump Station and Transfer Pipeline Systems for the Transfer of Mine Water from Clarence Colliery

Two locations for the pump station have been investigated.

2.2.1 (i) Clarence Pit Top

Clarence currently treats mine water through aeration, chemical dosing and dissolved air flotation processes prior to discharge to Wollangambe River. The treatment plant operates primarily to reduce filterable manganese and iron concentrations in the mine water, however other metals such as nickel, and zinc are also reduced during the treatment process. The treatment plant is not designed to reduce salinity of the mine water. The process however increases the salinity of the raw mine water and the treated water has an EC ~410 µS/cm).

To transfer mine water from the Clarence pit top to the settlement pond in Sawyers Swamp Gully the following infrastructure will be required.

- Installation of a new pump station at the pit top with the following features and infrastructure components.
    - Adequate pumping capacity to pump up to 25 ML/day of treated mine water to the new settlement pond at Sawyers Swamp Gully.
    - Adequate electrical capacity including motors, pump starters, and transformers within the pump station.
    - Installation of a new 11 kV substation and Motor Control Centre plus new CITECT (SCADA) control system.
    - Installation of fibre optic cable for accurate control of the new pumping infrastructure to protect personnel, operation and the environment. The fibre optic cable will be trenched with the pipeline.
- Establishment of a new pipeline system from Clarence pit top to Sawyers Swamp Gully, with at least 25 ML/day transfer capacity. The pipeline will have an approximate length of 23 km. The existing SDWTS pipelines or sections of it cannot be used since they have insufficient capacity to manage the required combined flows of 55 ML/day, and are only sufficient for managing mine water flows from Springvale and Angus Place mines.

2.2.2 Newnes Plateau

Alternatively a pump station could be established on Newnes Plateau at a suitable location above the Clarence mining area to allow transfer of raw mine water directly from the underground to the surface using submersible pumps. The approach would be similar as currently utilised at Angus Place and Springvale dewatering bore facilities on Newnes Plateau to transfer mine water directly from the underground to the surface to feed into the SDWTS. Given that mine water would be drawn directly from underground the mine water will not be treated to remove metals prior to transfer to Sawyers Swamp Gully, which would occur if mine water was transferred from the pit top (as discussed in Section 2.2.1 above).

The following infrastructure will be required to be established on Newnes Plateau and Clarence underground in this option:

- An in-seam to surface pumping infrastructure (comprising up to three submersible pumps) to transfer water from the underground to the surface
- A pump station (including power supplies) on Newnes Plateau site compound to pump mine water from the underground to the surface for subsequent transfer to Sawyers Swamp Gully.
- A pipeline with up to 25 ML/day transfer capacity to extend from the Newnes Plateau pump station compound to Swayers Swamp Gully (approximately 17 km in length)

Arrangements will be required to be made with an electricity supplier to provide power for the Newnes Plateau site compound.

3. Identified Constraints

3.1 Water Quality, Ecotoxicological and Geomorphological Assessments

Centennial Coal has limited understanding of the resulting water quality when mine water from Clarence and LDP009 discharges are blended together. A detailed water quality assessment including jar testing will be required. A regional water quality impact assessment will be required to understand the impact (flow, salinity) of the increased flow (up to 50 ML/day) albeit lower salinity of the blended water in the Coxs River catchment and Lake Burragorang. Similarly, there is no current understanding of water ecotoxicology of the blended water. A detailed water ecotoxicology assessment would be required.

A geomorphological assessment will require to be undertaken within Sawyers Swamp Creek and Coxs River (upstream of Lake Wallace) to assess the impact of the up to 50 ML/day discharge of water at LDP009.

3.2 Meeting SSD 5594 Water Quality Criteria

It is understood the expectation in the DPI submission is that the blending of the mine water from the LDP009 discharges with Clarence mine water would result in water which would meet the 2017 water quality criteria (500 µS/cm (50^{th} percentile), 700 µS/cm (90^{th} percentile) and 1000 µS/cm (100^{th} percentile)) stipulated in Schedule 4, Condition 12 of Springvale Mine's consent SSD 5594 and should be implemented until the SWTP becomes operational in June 2019. As noted above blending of mine water from the identified two sources as described in this options assessment is a rudimentary procedure and there will be no control on the salinity of the resulting blended water. As such there is not guarantee the blended water will meet the stipulated water quality criteria and Springvale Mine will meet its consent condition. In order to achieve the water quality criteria a temporary water treatment plant with minimum 55 ML/day capacity will require to be installed in the vicinity of the settlement ponds to further treat the blended water. Brine from the treatment plant and sludge from the settlement ponds will be required to be managed appropriately. A detailed discussion on the requirements of establishing a temporary water treatment plant is provided in **Appendix B**.

4. Approvals Required and Timing

For the above additional infrastructure to be constructed the following approvals would be required:

4.1 Modification to Springvale Mine's consent (SSD 5594)

A modification to Springvale Mine's consent will be required to:

- Receive mine water from Clarence for blending with the LDP009 discharges
- Establish additional infrastructure (settlement pond) and additional pipelines at Swayers Swamp Gully
- Install a temporary water treatment plant in Sawyers Swamp Gully
- Transfer the brine from the water treatment plant and sludge from the settlement ponds to offsite locations.

The preparation of the relevant technical assessments (traffic, fauna and flora, cultural heritage, noise, air quality and greenhouse gas emissions, water resources), the *Statement of Environmental Effects* to support the modification application, the assessment process and determination could take up to one year.

4.2 State Significant Development Application from Clarence Colliery

The establishment of the infrastructure for the transfer of mine water from Clarence to Swayers Swamp Gully required could be considered state significant development given the capital investment value will be more than $30 million.

The preparation of the technical assessments (water resources, fauna and flora, cultural heritage, noise, air quality and greenhouse gas emissions, social and economic assessments, the *Environmental Impact Statement*, the assessment process and determination could take 2 years.

4.3 Other Approvals

Secondary approvals following the approvals of both Springvale Mine's modification application and Clarence Colliery's state significant development application will also be required to be obtained.

- A permissive occupancy permit from Forestry Corporation of NSW for the construction of infrastructure on Newnes Plateau.
- A mining lease for the pump station on Newnes Plateau and the pipeline corridor.
- Variation to Springvale Mine's EPL 3607 to:
    - Relocate the LDP009 to a new location
    - Receive mine water from Clarence
    - Increase volumetric limit of LP009 discharges from the current 30 ML/day to 55 ML/day.

5. Construction and Commissioning

Construction and commissioning of infrastructure at Sawyers Swamp Gully could take 9 – 12 months. Construction of the pump station and pipeline systems could take 18 – 24 months.

6. Conclusion

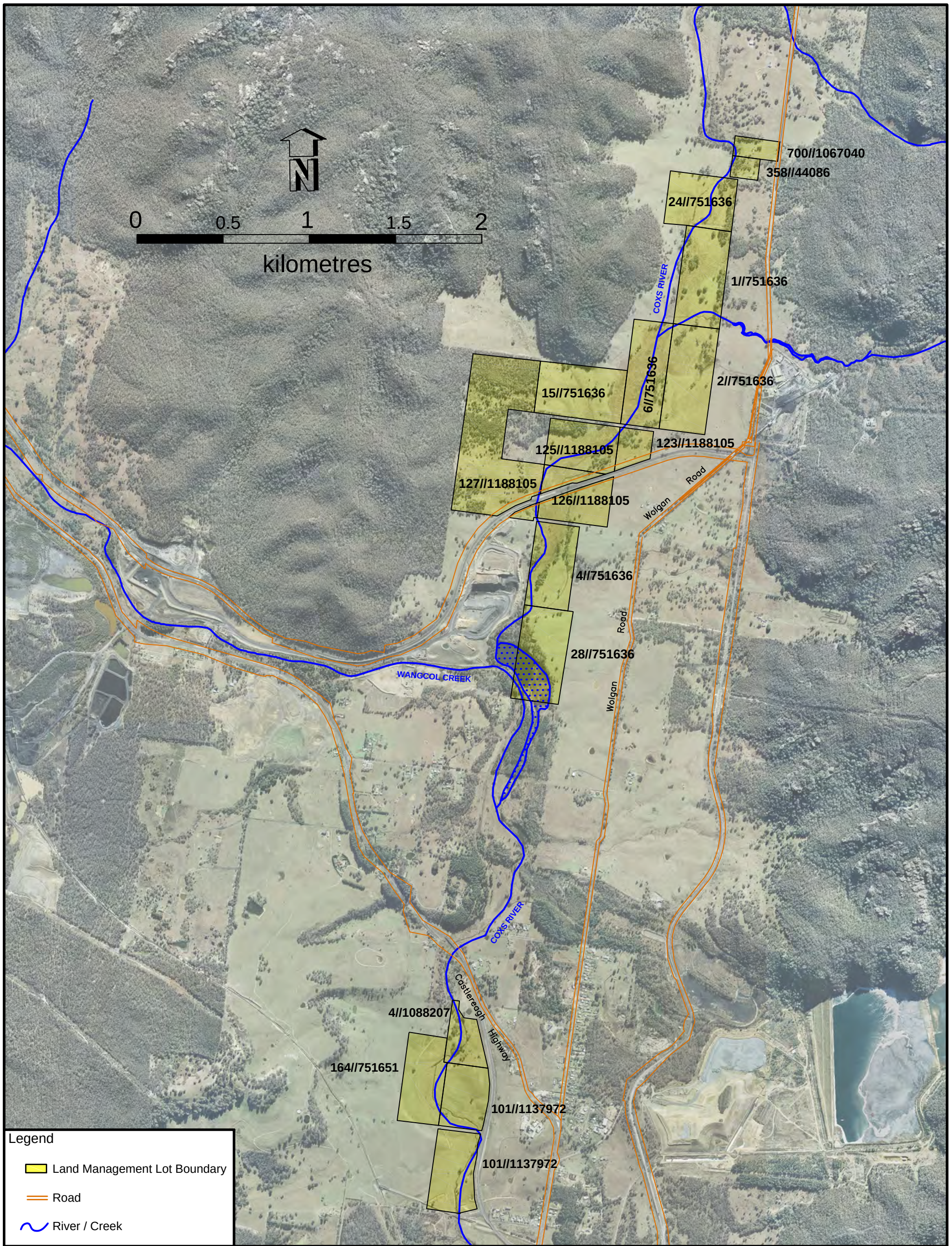
The minimum time required for obtaining all necessary approvals and undertaking construction of the infrastructure to allow blending of mine water from Clarence Colliery and LDP009 discharges is four years. The blending option to reduce the salinity of LDP009 discharges is not a viable option for reducing salinity in the LDP009 discharges within the timeframe required, and meeting the relevant water quality criteria stipulated in Schedule 4 Condition 12 of SSD 5594 by 30 June 2017.

APPENDIX E

Coxs River Land Management Areas

Table E1 – Lot and DPs of Coxs River Land Management Areas

Land Management Area	Lot and DP
Wolgan Road Southern site	Lot 125 DP1188105 Lot 127 DP1188105
Brays Lane site	Lot 164 DP751651 Lot 4 DP1088207 Two lots - Lot 101 DP 1137972
Coxs River and Angus Place site	Part of - Lot 1 DP751636 Lot 15 DP751636 Lot 2 DP751636 Lot 24 DP751636 Lot 28 DP751636 Lot 4 DP751636 Lot 6 DP751636 Lot 123 DP1188105 Lot 126 DP1188105 Lot 358 DP44086 Lot 700 DP1067040



LOCATION	Western Region
SEAM	
DRAWN	C.P.T.
CHECKED	N.S.
APPROVED	
SCALE	Refer to scalebar

Centennial Coal Company Limited
Coxs River Land Management Areas

Centennial Coal

DATE 11-04-2017

PC6381

APPENDIX F

Additional Response to Submissions – WaterNSW Submission

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16 March 2017

Attention: Nagindar Singh
Springvale Coal Pty Ltd
PO Box 198
WALLERAWANG
NSW 2845

Project Name: Springvale Mine Extension Project - Modification 2
Project Number: IA132100

Subject: Hydrological Advice on Response to Submissions

Dear Nagindar

1. Introduction

This letter has been prepared in accordance with our proposal (IA132100-PRO-0024_Rev0, dated 6 March 2017) seeking hydrological advice, as relevant, in preparing a Response to Submissions received from DP&E(2017) and WaterNSW (2017) on the *Water Assessment – SSD 5594 Modification 2* that was prepared by Jacobs (2016b).

2. Proposed Response

2.1 Issues raised by DP&E

1. Assessment of MOD 1 Increased Discharge

Issue DPE01) *Please confirm if the assumptions made in the MOD 2 Water Assessment also included the water impacts of increased minewater discharge from the proposed increase production rate of 5.5Mtpa.*

The numerical groundwater model for Springvale Mine Extension Project (CSIRO, 2013) was re-run in January 2015 to account for the change to sequential operation of Springvale Mine and then Angus Place Colliery. That simulation (referred to as CSIRO (2015)) was for a production rate of 5.5Mtpa at Springvale Mine (and 4.0Mtpa at Angus Place Colliery), however, did not include all of the approved longwalls at Springvale Mine (LW423, LW501 to LW503 were excluded). The model was therefore re-run in 2016 (referred to as CSIRO (2016)), based on the full mine plan.

Figure 1 presents the modelled inflows to underground operations at both Springvale Mine and Angus Place Colliery for the CSIRO (2015) and CSIRO (2016) simulations.

Figure 1 : CSIRO (2015) and CSIRO (2016) predictions of inflow to underground workings for Sequential Operations of Springvale Mine and Angus Place Colliery

From **Figure 1**, there is negligible difference between the CSIRO (2015) and CSIRO (2016) simulations, except that the CSIRO (2016) predictions are translated in time approximately 16 months.

With respect to inflows into Springvale Mine specifically, **Figure 2** presents modelled mine inflows into underground operations at Springvale from the CSIRO (2015) and CSIRO (2016) simulations.

The Springvale Mine Extension Project EIS simulations (referred to as CSIRO (2013)) are also presented in **Figure 2**, for the purpose of reference.

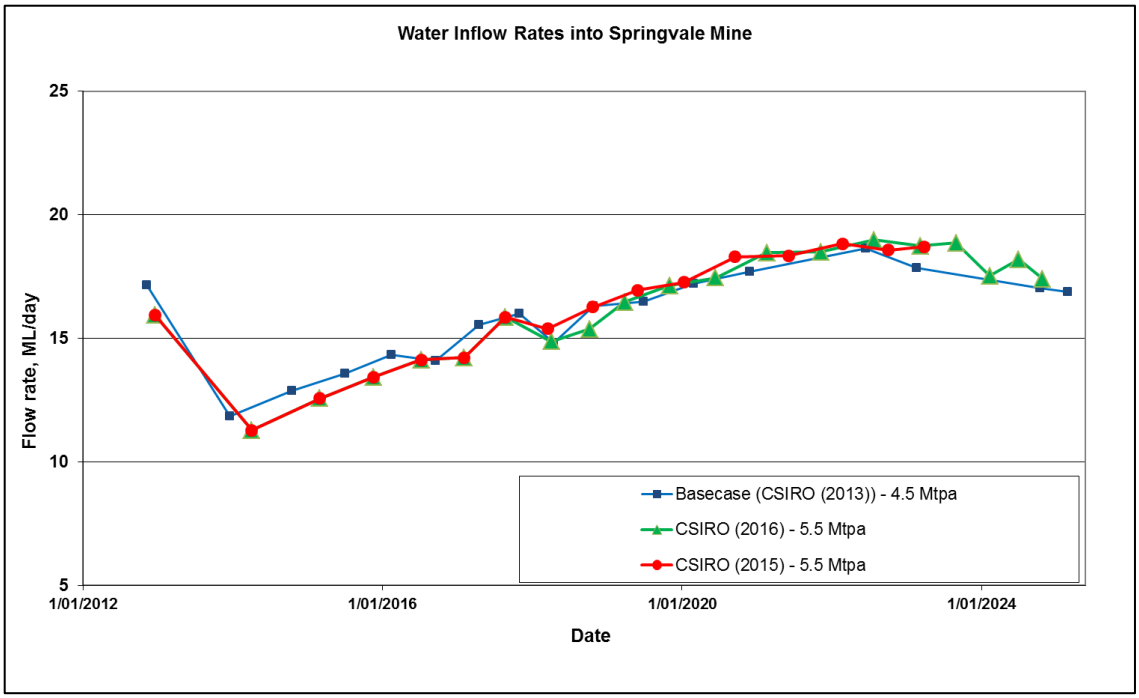

Figure 2 : CSIRO (2013), CSIRO (2015) and CSIRO (2016) predictions of inflow to underground workings for Sequential Operations of Springvale Mine and Angus Place Colliery (Springvale Mine Inflows Only)

From **Figure 2**, as noted in Section 2.5 of Jacobs (2016a), the CSIRO (2016) predictions show that the maximum inflow to underground operations at Springvale for the assessed 5.5Mtpa production case (19.0ML/d in 2022) increases by 0.4ML/d (18.6ML/d in 2022) from the 'Basecase' approved for 4.5Mtpa.

As such, the CSIRO (2016) results include the impacts of the minor increase in mine water discharge resulting from the proposed increase in production rate of 5.5Mtpa, which is the main subject of Springvale Mine Extension Project MOD 1.

Section 4.4.3 of Jacobs (2016b) presents the assumed mine water inflows adopted in the MOD 2 Water Assessment, namely that the CSIRO (2016) were used in the MOD 2 Water Assessment.

The relevant section in Jacobs (2016b) is quoted directly below:

"*…the current revision of predicted inflows to underground workings were used in the prediction simulation. This was based on CSIRO (2016); incorporating the translocation in time for the approved and now modelled other longwalls.*"[Section 4.4.3, page 31 of Jacobs (2016b)]

2.2 Issues raised by WaterNSW

Impact of SSD5594 MOD1 on SSD5594 MOD2

Issue WaterNSW01) *WaterNSW notes that the SMEP Mod 1 (SSD 5594 MOD 1) estimated an increase in mine water by 10L/s or 0.86 ML/day at LDP009 into Sawyers Swamp Creek over that approved in the original application, as a result of the proposed increase in annual coal*

production to 5.5 Mtpa. WaterNSW considers the SMEP Mod 2 appears to not have considered the mine water discharge increases as a result of the SMEP Mod 1. Recent additional sensitivity analysis for SMEP Mod 1 by Jacobs (dated 2 February 2017) show minor deterioration of water quality downstream in the Coxs River catchment as a result of the SMEP Mod 1 compared to the original SMEP. Clarification and justification is required in this regard.

As presented in our response to issue *DPE01*, Section 4.4.3 of Jacobs (2016b) states that the CSIRO (2016) simulations, which incorporate the 5.5Mtpa increased production rate, were used in the MOD 2 Water Assessment.

Additional uncertainty analysis was undertaken of the RWQIAM (presented in Jacobs (2017a)) as part of MOD 1. The work was prepared in response to DP&E's request for analysis of potential daily fluctuation in groundwater inflow to underground operations, as identified in CSIRO (2016). Potential fluctuation in groundwater inflow to underground operations leads to potential fluctuation in mine water discharge. The uncertainty analysis considered increases in mine water discharge of +2ML/d through to +6ML/d.

The outcome of uncertainty analysis with respect to Lake Wallace indicated a change in modelled median salinity of ≤ 5% and was assessed as a minor impact (refer to Section 2.1, Table 2.1 of Jacobs (2017a)). The change in modelled median salinity in Lake Wallace of ≤ 5% in the +6ML/d simulation still falls within the historical range observed in Lake Wallace.

It is highlighted that the worst case scenario assessed in the uncertainty analysis for MOD 1 represents a discharge rate in excess of that currently permitted at Springvale LDP009 of 30ML/d (EPL 3607) and therefore can not occur without amendment to the volumetric limit.

The change in modelled median salinity in Lake Burragorang was ≤1% and was assessed as insignificant (refer to Section 2.1, Table 2.2 of Jacobs (2017a)).

DP&E (2015a) define the 'base case', with respect to the Neutral or Beneficial Effect (NorBE) test (WaterNSW, 2015) for Springvale Mine, as the EPL limit of 1,200µS/cm at LDP009 existing at the time of the development application. On the basis of that definition, the uncertainty analysis simulations presented in Jacobs (2017a), of increased volumetric discharge (modelled as a constant and maximum increase in MOD 1), but at the same water quality (1,200µS/cm), is regarded as a neutral impact with respect to the NorBE water quality effect test.

Issue WaterNSW02) *The salinity in Table ES1 of the SSE for Mod 2 and Tables 4.12 and Table 3.22 (Jacobs December 2016) for 50 and 90%-ile for Lake Wallace (Node#074) and Lake Burragorang (Node#280) for approved case are not the same as in Tables 3.34 and 3.40 (Jacobs 26 March 2015); Table 6 (Jacobs, 3 August 2015) and Additional Sensitivity Analyses for SMEP Mod 1 by Jacobs (dated 2 February 2017). Clarification is also required in this regard.*

Section 4.4.3 of Jacobs (2016b) presents detailed assumptions adopted in the MOD 2 Water Assessment, namely that a different value for mine water discharge quality was used in MOD 2.

The relevant section in Jacobs (2016b) is quoted directly below:

"***Mine Water Discharge***

To assess the impact of the proposed modification in the RWQIAM, several time-series were generated.

The approach adopted in the assessment is an improvement to the approach presented in RPS (2014b) and Jacobs (2015b), insofar as it attempts to incorporate the observed natural variability in the salinity of mine water discharge, as opposed to assuming a constant static value." [Section 4.4.3, page 34 of Jacobs (2016b)]

It is noted that "*RPS (2014b)*" and "*Jacobs (2015b)*" are referenced in this letter as RPS (2014) and Jacobs (2015ab).

There was a change to the assumed salinity of mine water discharge from a constant value of 1,200µS/cm used in the Response to Submissions on the Springvale Mine Extension Project (RPS, 2014 and Jacobs, 2015ab) and MOD 1 (Jacobs, 2016a) to a statistically-based time-series (e.g. a randomly generated time-series, with mean of 1,140µS/cm and standard deviation of 30µS/cm) for MOD 2 (Jacobs, 2016b). This was necessary for the reason presented in Section 4.4.3 of Jacobs (2016b), but also because the Conditions of Consent for the project (DP&E, 2015b), Schedule 4 (Environmental Performance Conditions), Condition 12, Table 6 stipulates a statistically-based water quality characteristic. That water quality characteristic could not be reasonably assessed using a constant and static assumed value.

For the purpose of completeness, an equivalent additional uncertainty analysis to that prepared for MOD 1 (Jacobs, 2017a) (with respect to potential daily fluctuations in mine water discharge) has also been undertaken with respect to the MOD 2 Water Assessment. That uncertainty analysis is presented as Attachment A to this letter.

The outcome of the uncertainty analysis presented in Attachment A (Jacobs, 2017b) indicates that the increase in mine water discharge considered (up to +6ML/d) does not lead to significantly different modelled water quality to that presented in the Water Assessment for MOD 2 (Jacobs, 2016b).

It is noted that, as per Jacobs (2017b), however that the limit to discharge to the Coxs River via Sawyers Swamp Creek is capped at 30ML/d under the Environmental Protection Licence for Springvale Mine (as presented in EPL 3607).

3. References

CSIRO, 2013. *Angus Place and Springvale Colliery Operations – Groundwater Assessment.* Consultant report prepared by the CSIRO (Adhikary, D.P. and A. Wilkins) for Centennial Angus Place Pty Ltd and Springvale Coal Pty Ltd. Reference No. EP13279946, dated May 2013.

CSIRO, 2015. *Appendix G – Alternative Mine Schedule: Angus Place and Springvale Colliery Operations - Groundwater Assessment.* Consultant report prepared by the CSIRO (Adhikary, D.P. and A. Wilkins) for Centennial Angus Place Pty Ltd and Springvale Coal Pty Ltd. Reference No. EP15346, dated January 2015.

CSIRO, 2016. *SPR then APE including LW423, LW501 to LW503 Model Results*. Consultant letter prepared by the CSIRO for Springvale Coal Pty Ltd. Reference No. N/A, dated 20 September 2016.

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DP&E, 2015b. *Development Consent (SSD 5594)*. Reference No. https://majorprojects.affinitylive.com/public/74584795362a536d5c8b13076ebdad24/11.%20Springvale%20MEP_Development%20Consent.pdf), dated 21 September 2015.

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Jacobs, 2015a. *Additional Simulations of the Regional Water Quality Impact Assessment Model – Angus Place and Springvale Mine Extension Projects.* Consultant report prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA059800/002c, dated 26 March 2015.

Jacobs, 2015b. *Supplement to Additional Simulations of the Regional Water Quality Impact Assessment Model*. Consultant letter prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA059800/067b, dated 3 August 2015.

Jacobs, 2016a. *Springvale Mine: SSD 5594 Modification 1 – Response to Submissions (Groundwater and Surface Water)*. Consultant letter prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA097101/033b, dated 28 September 2016.

Jacobs, 2016b. *Water Assessment – SSD 5594 Modification 2*. Consultant report prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA132100-0006-NW-RPT-00006_Rev2, dated 16 December 2016.

Jacobs, 2017a. *Springvale Mine Extension Project – Modification 1: Additional Water Quality Uncertainty Analysis (Mine Water Discharge).* Consultant letter prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA097101/048d, dated 2 February 2017.

Jacobs, 2017b. *Springvale Mine Extension Project – Modification 2: Additional Water Quality Uncertainty Analysis (Mine Water Discharge).* Consultant letter prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA132100-0006-NW-LTR-0020_Rev2, dated 23 February 2017.

RPS, 2014. *Regional Water Quality Impact Assessment – Angus Place and Springvale Mine Extension Projects*. Consultant report prepared by RPS Aquaterra Pty Ltd for Centennial Angus Place Pty Ltd. Reference No. S187E/021b, dated 10 September 2014.

WaterNSW, 2015. *Neutral or Beneficial Effect on Water Quality Assessment Guideline*. Guideline prepared by WaterNSW (formerly Sydney Catchment Authority). Reference No. ISBN 987-0-9874680-3-1, dated February 2015.

WaterNSW, 2017. *Springvale Mine Extension Project Modification (SSD5594 MOD2)*. Letter prepared by Water NSW to NSW Department of Planning and Environment. Reference No. D2017/18308, dated 2 March 2017.

4. Closing

Should you require additional information then please do not hesitate to contact our office.

16 March 2017
Subject: Hydrological Advice on Response to Submissions

Yours sincerely

Dr Justin Bell
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Justin.Bell@Jacobs.com

Attachments – Attachment A: Springvale Mine Extension Project Modification 2: Additional Water Quality Uncertainty Analysis (Mine Water Discharge)

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23 February 2017

Attention: Nagindar Singh
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NSW 2845

Project Name: Springvale Mine Extension Project - Modification 2
Project Number: IA132100

Subject: Additional Water Quality Uncertainty Analysis (Mine Water Discharge)

Dear Nagindar

1. Introduction

This letter has been prepared in accordance with our proposal (IA097101/047a, dated 14 December 2016) to undertake additional uncertainty analysis simulations of the Regional Water Quality Impact Assessment Model (RWQIAM).

The letter has been prepared in advance of a request from the Department of Planning and Environment (DP&E) for additional water quality uncertainty analysis of the *Water Assessment – SSD 5594 Modification 2* prepared by Jacobs (Jacobs, 2016).

This letter has been prepared in advance due to a similar request made by DP&E with respect to the Surface Water Assessment of Modification 1 (DP&E, 2016) in regard to the impact of potential daily fluctuations in mine water discharge.

The uncertainty analysis was undertaken on results presented in Jacobs (2016) with respect to Approved and Proposed conditions in regard to Modification 2. The uncertainty analysis comprised modelling potential increase in daily mine water discharge, however, conservatively, was assumed to be a constant and maximum increase ranging from +1ML/d to +6ML/d.

The outcome of uncertainty analysis, detail presented below, is that modelled results are not significantly different to that already presented with respect to Modification 2 in Jacobs (2016).

It is highlighted that the current limit to discharge (quantity) at Springvale Licensed Discharge Point 009 (LDP009) is 30ML/d.

2. Analysis and Assessment

2.1 Model Approach

As presented in Jacobs (2016), the RWQIAM was updated to account for several small changes to the calibration model.

For the purpose of consistency with Jacobs (2016), the calibration and prediction periods have been left unchanged in the uncertainty analyses presented in this letter as:

- 1 January 1979 to 30 June 2014 (Calibration Period)
- 1 July 2014 to 31 December 2032 (Prediction Period)

Mine Inflow Distribution

Mine water inflows used in the RWQIAM for the Water Assessment – SSD 5594 Modification 2 (Section 4.4.3 of Jacobs (2016) were based on the recently updated groundwater model predictions by the CSIRO (presented in CSIRO, 2016). Those predictions incorporate the translocation in time of the approved and now modelled other longwalls (LW423 and LW501 to 503). This is an updated simulation from CSIRO (2015).

Figure 1 is the mine inflow distribution used in the RWQIAM (after Figure 4.6 of Jacobs (2016)). Further detail is presented in Section 4.4.3 of Jacobs (2016).

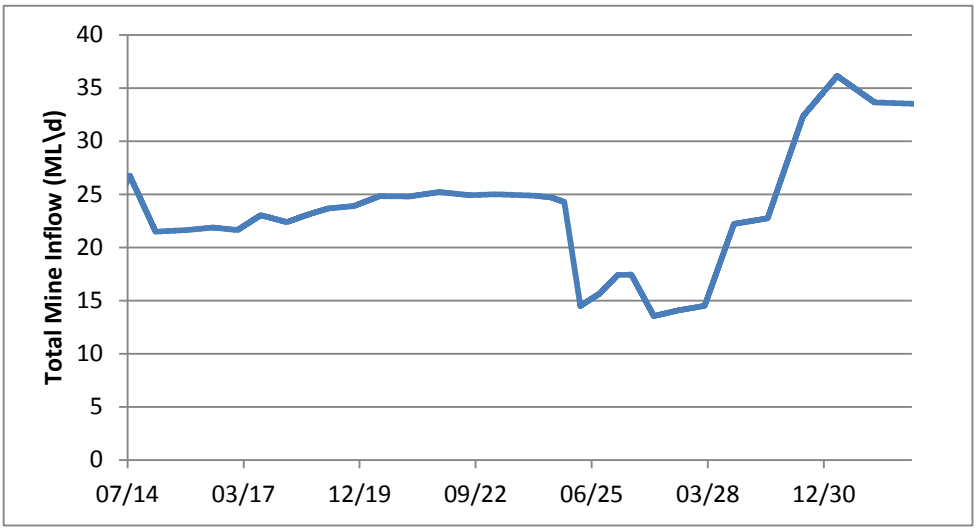

Figure 1 : Assumed Mine Inflow Distribution (ML/d, after Figure 4.6 of Jacobs (2016))

Potential Daily Fluctuation in Mine Inflow

During discussion with DP&E, it was noted that day-to-day variability in mine inflow can be up to +6ML/d. To assess the change in water quality in the Coxs River due to changes in mine water inflow incorporating potential daily fluctuations in mine water discharge, a conservative approach was adopted. The approach adopted was to add a constant and maximum increase to the mine inflow rate presented in **Figure 1**.

Several simulations were prepared:

- +1ML/d, +2ML/d, +3ML/d, +4ML/d and +6ML/d.

As noted in Jacobs (2016), inflow to underground operations do dominate the local site water balance at both Angus Place and Springvale mines. An assumption adopted in the RWQIAM has been that these inflows are representative of mine water discharge.

From **Figure 1**, peak mine inflow rate is 36ML/d in 2031. The current discharge limit at Springvale LDP009, as prescribed in EPL 3607 is 30ML/d. With respect to the simulations presented in this letter, mine inflow rates represent a peak inflow of 42ML/d in 2031, being 36ML/d + 6ML/d = 42ML/d.

Jacobs (2016) presents simulations of Water Strategy WS2b-S. The water strategy definitions refer back to the time of the EIS. WS2b-S assumes mine water discharge at Angus Place LDP001 to Kangaroo Creek is constant at 2ML/d, with the remainder discharged through Springvale LDP009 to Sawyers Swamp Creek. The "-S" nomenclature refers to sequential implementation. The sequential implementation simulations were prepared at the time due to Angus Place being placed into Care and Maintenance in March 2015.

Figure 2 presents the mine inflow distribution incorporating the constant and maximum increase in flow rate used in the uncertainty analyses presented in this report.

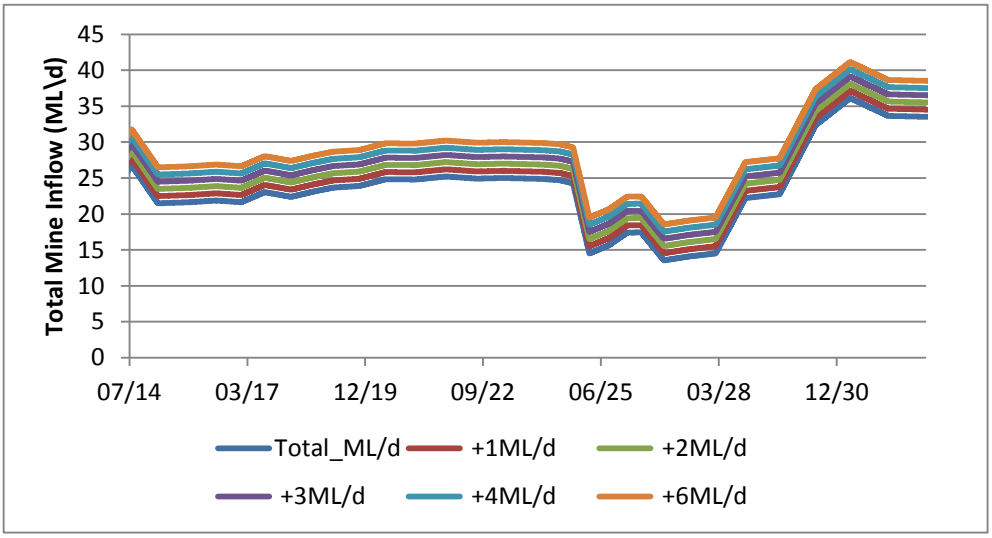

Figure 2 : Mine Inflow Distribution (ML/d) – Uncertainty Analysis Simulations

From **Figure 2**, peak mine inflow rate, and therefore mine water discharge rate, is 42ML/d in the +6ML/d simulation.

Water Quality Characteristics

Jacobs (2016) presents, in detail, the approach adopted in representing water quality characteristics of mine water discharge to Kangaroo Creek (Angus Place LDP001) and Sawyers Swamp Creek (Springvale LDP009).

The water quality criterion comprises (from the Conditions of Consent for SSD 5594):

- "*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) µS/cm EC by 30 June 2017*
- *Meet a limit for salinity of 500 (90th percentile) µS/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*".

Two interpretations of the water quality criterion were presented in Jacobs (2016):

- Linear Fit
- Stepped Fit

The 'Linear Fit' approach assumed a linear difference between the 0th percentile (set at 500µS/cm) and the 50th percentile (700µS/cm), a linear difference between the 50th and the 90th percentile (900µS/cm) and a linear difference between the 90th percentile (900µS/cm) and the 100th percentile (1000µS/cm).

The 'Stepped Fit' approach assumed a constant value for salinity between the 0th percentile (set at 700µS/cm) and the 50th percentile (700µS/cm), and a constant value for salinity between 51st percentile (900µS/cm) and the 90th percentile (900µS/cm) and a constant value between 91st percentile (1000µS/cm) and the 100th percentile (1000µS/cm).

Uncertainty analyses presented in this letter considered both of these interpretations.

It is noted that the assumed water quality characteristics presented in Jacobs (2016) were not changed; merely the magnitude of mine water discharge at Springvale LDP009 was increased by +1ML/d, +2ML/d, +3ML/d, +4ML/d and +6ML/d. **Figure 2** presents graphically, the increase in magnitude. As noted above, the assumption of 2ML/d discharge from Angus Place LDP001 was not changed in the simulations presented in this letter.

2.2 Model Results

The change in water flow and salinity is quantified at multiple locations in the RWQIAM. Appendix A provides model output locations, including a list of modelled reservoirs.

As noted, the change to flow and salinity is modelled at multiple locations (~280 nodes), however, output from the RWQIAM, for the uncertainty analysis is only presented at two locations, as these are pertinent:

- Lake Wallace (Model Node #074)
- Lake Burragorang (Model Node #280)

Lake Wallace was selected as it is the first water store in the Upper Coxs River catchment and has been adopted as the reporting location with respect to Condition 13, Schedule 4 of SSD 5994. Lake Burragorang was selected because it is relevant with respect to the Neutral or Beneficial Effect test (WaterNSW, 2015).

2.2.1 Linear Fit to Water Quality Criteria

The model control files pertaining to the 'Linear Fit' uncertainty analysis simulations are as follows:

- 0020_Rev0_UNC-WS2b-S_1ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_1ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_2ML_01a.gsp

- 0020_Rev0_UNC-WS2b-S_2ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_3ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_3ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_4ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_4ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_6ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_6ML_01a_NUL.gsp

Lake Wallace (Model Node #074)

Table 2.1 presents the outcome of the uncertainty analysis simulations at Lake Wallace (#074).

The results from Jacobs (2016) are also presented in **Table 2.1** for the purpose of reference. It is highlighted that the percentage differences are calculated with respect to the original results from Jacobs (2016) in regard to Approved simulations. For the Proposed simulations, the percentage differences are calculated with respect to the equivalent Approved simulation. Further detail is provided in the footnote to **Table 2.1**.

As discussed in Jacobs (2016) the Approved and Proposed simulations take into account the water quality characteristics (linear fit and stepped fits discussed above) and therefore are a more sophisticated approach to that presented in the original environmental impact assessment was required.

From **Table 2.1**, the modelled median salinity in Lake Wallace in the Approved simulation is 305mg/L, is 305mg/L (0% increase) in the Approved +1ML/d simulation and is 306mg/L (0% increase) in the Approved +6ML/d simulation.

From **Table 2.1**, the modelled 90th percentile salinity in Lake Wallace in the Approved simulation is 426mg/L, is 428mg/L (1% increase) in the Approved +1ML/d simulation and is 441mg/L (4% increase) in the Approved +6ML/d simulation.

From **Table 2.1**, the modelled median salinity in Lake Wallace in the Proposed simulation is 306mg/L and is 307mg/L (0% increase) in the +6ML/d simulation.

From **Table 2.1**, the 90th percentile modelled salinity is 480mg/L in the Proposed simulation and is 502mg/L (5% increase) in the +6ML/d simulation.

The modelled increase in salinity between Approved and Approved +6ML/d simulation and the Proposed and Proposed +6ML/d simulation is 0% with respect to modelled median salinity and is 5% at modelled maximum salinity. Uncertainty analysis indicates that the modelled increase in mine water discharge does not lead to a significantly different water quality to that already presented in the Modification 2 Water Assessment (Jacobs, 2016).

As noted in Jacobs (2016), the increase in salinity in Lake Wallace between the Approved and Proposed simulation is considered to be minor.

Lake Burragorang (Model Node #280)

Table 2.2 presents the outcome of the uncertainty analysis simulations at Lake Burragorang (#280).

Table 2.1: Prediction Daily Statistics at #074 (Lake Wallace) (adapted from Table 4.12 of Jacobs (2016)) – Linear Fit to Water Quality Criteria

	APPROVED Jacobs (2016)	APPROVED +1ML/d	% Change[1]	APPROVED +2ML/d	% Change[1]	APPROVED +3ML/d	% Change[1]	APPROVED +4ML/d	% Change[1]	APPROVED +6ML/d	% Change[1]	PROPOSED Jacobs (2016)	PROPOSED +1ML/d	% Change[2]	PROPOSED +2ML/d	% Change[2]	PROPOSED +3ML/d	% Change[2]	PROPOSED +4ML/d	% Change[2]	PROPOSED +6ML/d	% Change[2]
Minimum	157	157	0%	157	0%	157	0%	157	0%	157	0%	157	156	-1%	156	-1%	156	-1%	156	-1%	156	-1%
5%	233	234	0%	235	1%	235	1%	236	1%	237	2%	234	235	0%	236	1%	237	1%	238	2%	240	3%
10%	255	256	0%	257	1%	258	1%	258	1%	260	2%	256	256	0%	257	0%	258	1%	259	1%	261	2%
20%	275	275	0%	276	0%	276	0%	277	1%	278	1%	275	276	0%	276	0%	277	1%	277	1%	278	1%
50%	305	305	0%	305	0%	306	0%	306	0%	306	0%	306	306	0%	306	0%	307	0%	307	0%	307	0%
80%	369	371	1%	373	1%	373	1%	374	1%	377	2%	392	396	1%	399	2%	403	3%	407	4%	415	6%
90%	426	428	0%	430	1%	433	2%	435	2%	441	4%	480	484	1%	487	1%	491	2%	495	3%	502	5%
95%	462	466	1%	469	2%	472	2%	475	3%	479	4%	518	523	1%	527	2%	531	3%	535	3%	543	5%
Maximum	561	566	1%	571	2%	576	3%	580	3%	589	5%	600	605	1%	609	2%	614	2%	618	3%	627	5%

Note 1: % Change is Percentage Change compared to Approved Simulation. i.e. APPROVED +1ML/d is compared to APPROVED.

Note 2: % Change is Percentage Change compared to Proposed Simulation. i.e. PROPOSED +1ML/d is compared to PROPOSED.

Table 2.2: Prediction Daily Statistics at #280 (Lake Burragorang) (adapted from Table 4.22 of Jacobs (2016)) – Linear Fit to Water Quality Criteria

	APPROVED Jacobs (2016)	APPROVED +1ML/d	% Change[1]	APPROVED +2ML/d	% Change[1]	APPROVED +3ML/d	% Change[1]	APPROVED +4ML/d	% Change[1]	APPROVED +6ML/d	% Change[1]	PROPOSED Jacobs (2016)	PROPOSED +1ML/d	% Change[2]	PROPOSED +2ML/d	% Change[2]	PROPOSED +3ML/d	% Change[2]	PROPOSED +4ML/d	% Change[2]	PROPOSED +6ML/d	% Change[2]
Minimum	88	88	0%	88	0%	89	1%	89	1%	89	1%	88	88	0%	88	0%	89	1%	89	1%	89	1%
5%	91	91	0%	91	0%	91	0%	91	0%	91	0%	91	91	0%	91	0%	91	0%	91	0%	91	0%
10%	92	92	0%	92	0%	92	0%	92	0%	93	1%	92	92	0%	92	0%	92	0%	92	0%	93	1%
20%	96	96	0%	96	0%	96	0%	96	0%	96	0%	96	96	0%	96	0%	96	0%	96	0%	96	0%
50%	100	100	0%	100	0%	100	0%	100	0%	100	0%	100	100	0%	100	0%	101	1%	101	1%	101	1%
80%	102	102	0%	102	0%	102	0%	102	0%	102	0%	102	102	0%	102	0%	102	0%	102	0%	103	1%
90%	102	102	0%	103	1%	103	1%	103	1%	103	1%	103	103	0%	103	0%	103	0%	103	0%	103	0%
95%	103	104	1%	104	1%	104	1%	104	1%	104	1%	104	104	0%	104	0%	104	0%	104	0%	104	0%
Maximum	104	104	0%	104	0%	104	0%	105	1%	105	1%	104	104	0%	105	1%	105	1%	105	1%	105	1%

Note 1: % Change is Percentage Change compared to Approved Simulation. i.e. APPROVED +1ML/d is compared to APPROVED.

Note 2: % Change is Percentage Change compared to Proposed Simulation. i.e. PROPOSED +1ML/d is compared to PROPOSED.

From **Table 2.2**, the modelled median salinity in Lake Burragorang in the Approved simulation is 100mg/L, is 100mg/L (0% increase) in the Approved +1ML/d simulation and is 100mg/L (1% increase) in the Approved +6ML/d simulation.

From **Table 2.2**, the modelled 90th percentile salinity in Lake Burragorang in the Approved simulation is 102mg/L, is 102mg/L (0% increase) in the Approved +1ML/d simulation and is 103mg/L (1% increase) in the Approved +6ML/d simulation.

From **Table 2.2**, the modelled median salinity is 100mg/L in the Proposed simulation and is 101% (1% increase) in the Proposed +6ML/d simulation.

From **Table 2.2**, the modelled 90th percentile salinity in Lake Burragorang is 104mg/L in the Proposed simulation and is 105mg/L (1% increase) in the Proposed +6ML/d simulation.

The modelled increase in salinity between Approved and Approved +6ML/d simulation and the Proposed and Proposed +6ML/d simulation is 1% with respect to modelled median salinity and is 1% at modelled maximum salinity. Uncertainty analysis indicates that the increase in mine water discharge does not lead to a significant change in modelled water quality in Lake Burragorang in the Approved +6ML/d and Proposed +6ML/d simulation compared to Approved and Proposed simulations already presented in the Modification 2 Water Assessment (Jacobs, 2016).

As noted in Jacobs (2016), the increase in salinity in Lake Burragorang between the Approved and Proposed simulation is considered to be negligible.

2.2.2 Stepped Fit to Water Quality Criteria

The model control files pertaining to the 'Stepped Fit' uncertainty analysis simulations are as follows:

- 0020_Rev0_UNC-WS2b-S_Step_1ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_Step_1ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_Step_2ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_Step_2ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_Step_3ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_Step_3ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_Step_4ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_Step_4ML_01a_NUL.gsp
- 0020_Rev0_UNC-WS2b-S_Step_6ML_01a.gsp
- 0020_Rev0_UNC-WS2b-S_Step_6ML_01a_NUL.gsp

Lake Wallace (Model Node #074)

Table 2.3 presents the outcome of the uncertainty analysis simulations at Lake Wallace (#074).

From **Table 2.3**, the modelled median salinity in Lake Wallace in the Approved simulation is 340mg/L, is 342mg/L (0% increase) in the Approved +1ML/d simulation and is 347mg/L (2% increase) in the Approved +6ML/d simulation.

Table 2.3: Prediction Daily Statistics at #074 (Lake Wallace) (adapted from Table 4.12 of Jacobs (2016)) – Stepped Fit to Water Quality Criteria

	APPROVED Jacobs (2016)	APPROVED +1ML/d	% Change[1]	APPROVED +2ML/d	% Change[1]	APPROVED +3ML/d	% Change[1]	APPROVED +4ML/d	% Change[1]	APPROVED +6ML/d	% Change[1]	PROPOSED Jacobs (2016)	PROPOSED +1ML/d	% Change[2]	PROPOSED +2ML/d	% Change[2]	PROPOSED +3ML/d	% Change[2]	PROPOSED +4ML/d	% Change[2]	PROPOSED +6ML/d	% Change[2]
Minimum	157	157	0%	157	0%	157	0%	157	0%	156	-1%	157	156	0%	156	0%	156	0%	156	0%	156	-1%
5%	242	244	1%	245	1%	247	2%	248	2%	251	4%	244	245	1%	247	1%	249	2%	250	2%	254	4%
10%	270	272	1%	274	1%	275	2%	277	3%	280	4%	272	273	1%	275	1%	277	2%	279	3%	282	4%
20%	301	303	1%	304	1%	305	1%	307	2%	309	3%	302	303	1%	305	1%	306	1%	307	2%	309	3%
50%	340	342	1%	343	1%	344	1%	345	1%	347	2%	342	343	1%	344	1%	345	1%	346	1%	348	2%
80%	404	406	0%	409	1%	410	1%	411	2%	414	2%	413	414	0%	416	1%	417	1%	420	2%	421	2%
90%	443	445	0%	447	1%	450	2%	453	2%	458	3%	482	486	0%	490	1%	494	2%	498	2%	505	3%
95%	470	473	1%	477	1%	480	2%	483	3%	489	4%	520	524	1%	528	1%	532	2%	537	3%	544	4%
Maximum	561	566	1%	571	2%	576	3%	580	3%	589	5%	600	605	1%	609	2%	614	3%	618	3%	627	5%

Note 1: % Change is Percentage Change compared to Approved Simulation. i.e. APPROVED +1ML/d is compared to APPROVED.

Note 2: % Change is Percentage Change compared to Proposed Simulation. i.e. PROPOSED +1ML/d is compared to PROPOSED.

From **Table 2.3**, the modelled 90th percentile salinity in Lake Wallace in the Approved simulation is 443mg/L, is 445mg/L (0% increase) in the Approved +1ML/d simulation and is 458mg/L (4% increase) in the Approved +6ML/d simulation.

From **Table 2.3**, the modelled median salinity in the Proposed simulation is 342mg/L and is 348mg/L (2% increase) in the Proposed +6ML/d simulation.

From **Table 2.3**, the modelled 90th percentile salinity in the Proposed simulation is 482mg/L and is 505mg/L (3% increase) in the Proposed +6ML/d simulation.

The modelled increase in salinity between Approved and Approved +6ML/d simulation and the Proposed and Proposed +6ML/d simulation is 0% with respect to modelled median salinity and is 5% at modelled maximum salinity. Uncertainty analysis indicates that the modelled increase in mine water discharge does not lead to a significantly different water quality to that already presented in the Modification 2 Water Assessment (Jacobs, 2016).

As noted in Jacobs (2016), the increase in salinity in Lake Wallace between the Approved and Proposed simulation is considered to be minor.

Lake Burragorang (Model Node #280)

Table 2.4 presents the outcome of the uncertainty analysis simulations at Lake Burragorang (#280) with respect to the stepped fit to water quality characteristics.

From **Table 2.4**, the modelled median salinity in Lake Burragorang in the Approved simulation is 100mg/L, is 100mg/L (0% increase) in the Approved +1ML/d simulation and is 101mg/L (1% increase) in the Approved +6ML/d simulation.

From **Table 2.4**, the modelled 90th percentile salinity in Lake Burragorang in the Approved simulation is 103mg/L, is 103mg/L (0% increase) in the Approved +1ML/d simulation and is 104mg/L (1% increase) in the Approved +6ML/d simulation.

From **Table 2.4**, modelled median salinity in the Proposed simulation is 100mg/L and is 101mg/L (1% increase) in the Proposed +6ML/d simulation.

From **Table 2.4**, the modelled 90th percentile salinity in the Proposed simulation is 103mg/L and is 104mg/L (1% increase) in the Proposed +6ML/d simulation.

The modelled increase in salinity between Approved and Approved +6ML/d and Proposed and Proposed +6ML/d is 1% with respect to modelled median salinity and is 1% at modelled maximum salinity. Uncertainty analysis indicates that the increase in mine water discharge does not lead to a significant change in modelled water quality in Lake Burragorang in the Approved +6ML/d and Proposed +6ML/d simulation compared to Approved and Proposed simulations already presented in the Modification 2 Water Assessment (Jacobs, 2016).

As noted in Jacobs (2016), the increase in salinity in Lake Burragorang between the Approved and Proposed simulation is considered to be negligible.

Table 2.4: Prediction Daily Statistics at #280 (Lake Burragorang) (adapted from Table 4.22 of Jacobs (2016)) – Stepped Fit to Water Quality Criteria

	APPROVED Jacobs (2016)	APPROVED +1ML/d	% Change[1]	APPROVED +2ML/d	% Change[1]	APPROVED +3ML/d	% Change[1]	APPROVED +4ML/d	% Change[1]	APPROVED +6ML/d	% Change[1]	PROPOSED Jacobs (2016)	PROPOSED +1ML/d	% Change[2]	PROPOSED +2ML/d	% Change[2]	PROPOSED +3ML/d	% Change[2]	PROPOSED +4ML/d	% Change[2]	PROPOSED +6ML/d	% Change[2]
Minimum	88	88	0%	88	0%	89	1%	89	1%	89	1%	88	88	0%	88	0%	89	1%	89	1%	89	1%
5%	91	91	0%	91	0%	91	0%	91	0%	91	0%	91	91	0%	91	0%	91	0%	91	0%	91	0%
10%	92	92	0%	92	0%	92	0%	92	0%	93	1%	92	92	0%	92	0%	92	0%	92	0%	93	1%
20%	96	96	0%	96	0%	96	0%	96	0%	96	0%	96	96	0%	96	0%	96	0%	96	0%	96	0%
50%	100	100	0%	101	1%	101	1%	101	1%	101	1%	100	101	1%	101	1%	101	1%	101	1%	101	1%
80%	102	102	0%	102	0%	103	1%	103	1%	103	1%	102	103	1%	103	1%	103	1%	103	1%	103	1%
90%	103	103	0%	103	0%	103	0%	104	1%	104	1%	103	103	0%	103	0%	104	1%	104	1%	104	1%
95%	104	104	0%	104	0%	104	0%	105	1%	105	1%	104	104	0%	104	0%	105	1%	105	1%	105	1%
Maximum	105	105	0%	105	0%	105	0%	106	1%	106	1%	105	105	0%	105	0%	105	0%	106	1%	106	1%

Note 1: % Change is Percentage Change compared to Approved Simulation. i.e. APPROVED +1ML/d is compared to APPROVED.

Note 2: % Change is Percentage Change compared to Proposed Simulation. i.e. PROPOSED +1ML/d is compared to PROPOSED.

2.3 Assessment and Conclusion

Uncertainty analysis has been undertaken on potential daily fluctuations in mine water discharge on predicted change to salinity in the Coxs River using the RWQIAM.

For the purpose of conservativeness, the uncertainty analysis simulations in the RWQIAM were conducted assuming a constant and maximum increase in mine water discharge rate, ranging from +1ML/d to 6ML/d.

Two sets of analysis were undertaken, one with respect to a Linear interpretation of the water quality criteria and the other with respect to a Stepped interpretation of the water quality criteria.

Results indicate an increase of 5% in maximum salinity between Approved and Approved +6ML/d simulation and between Proposed and Proposed +6ML/d simulation with respect to Lake Wallace. Results indicate an increase in maximum salinity between Approved and Approved +6ML/d and Proposed and Proposed +6ML/d of 1% with respect to Lake Burragorang. The outcome of uncertainty analysis indicates that the increase in mine water discharge does not lead to significantly different modelled water quality compared to that already presented in the Modification 2 Water Assessment (Jacobs, 2016).

The environmental consequences of a further 5% increase in modelled 90th percentile salinity is considered to be minor with respect to water quality, since modelled and actual water quality remains within the range of historical observation.

The current limit to mine water discharge to the Coxs River via Sawyers Swamp Creek is 30ML/d, as presented in EPL 3607. If the discharge was 42ML/d, compared to the currently expected peak discharge of 36ML/d, the impact to flooding and geomorphology is considered to be negligible, since the discharge rate is significantly lower than that experienced in a typical 1 year ARI (Average Recurrence Interval) rainfall event.

Given the uncertainty analysis was undertaken with respect to mine water discharge, with no change to assumed water quality, there is no change to the assessment presented in Jacobs (2016) that the proposed modification to consent (MOD 2) will have a neutral impact with respect to the Neutral or Beneficial Effect water quality effect test.

3. References

CSIRO, 2015. *Appendix G – Alternative Mine Schedule: Angus Place and Springvale Colliery Operations - Groundwater Assessment.* Consultant report prepared by the CSIRO (Adhikary, D.P. and A. Wilkins) for Centennial Angus Place Pty Ltd and Springvale Coal Pty Ltd. Reference No. EP15346, dated January 2015.

CSIRO, 2016. SPR then APE including LW423, LW501 to LW503 Model Results. Consultant letter prepared by the CSIRO for Springvale Coal Pty Ltd. Reference No. N/A, dated 20 September 2016.

DP&E, 2016. *Springvale Coal Mod 1 – Information Request*. Correspondence to Springvale Coal Pty Ltd from the Department of Planning and Environment. Reference No. N/A, dated 13 December 2016.

Jacobs, 2016. *Water Assessment – SSD 5594 Modification 2*. Consultant report prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA132100-0006-NW-RPT-00006_Rev2, dated 16 December 2016.

WaterNSW, 2015. *Neutral or Beneficial Effect on Water Quality Assessment Guideline*. Reference No. ISBN 987-0-9874680-3-1, dated February 2015.

4. Closing

Should you require additional information then please do not hesitate to contact our office.

Yours sincerely

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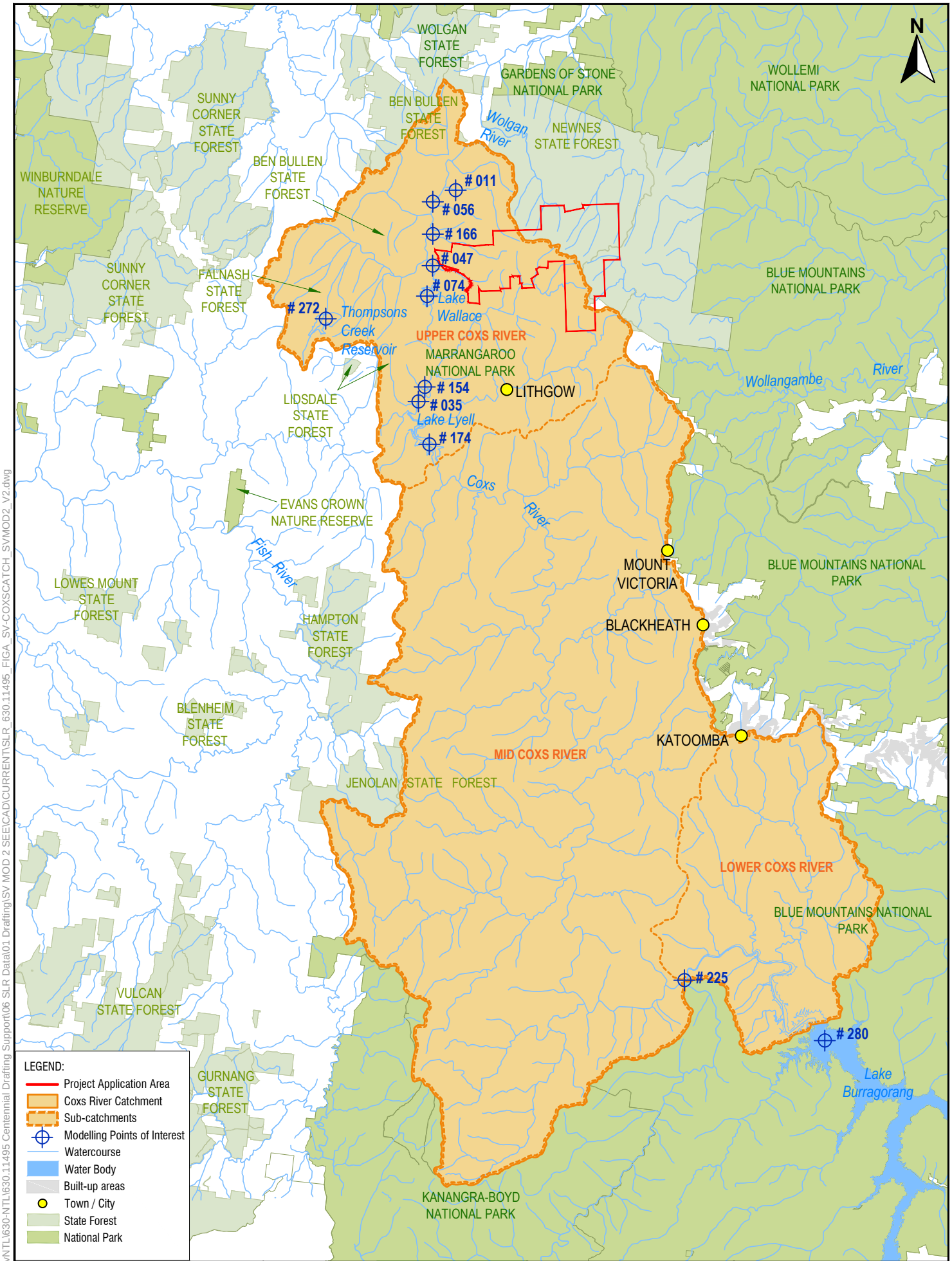
+61 2 9032 1685
Justin.Bell@Jacobs.com

Attachments: Water Balance Modelling Locations (Figure and List)



DATE	03.02.2017
SEAM	LITHGOW
REFERENCE	SLR_WCS_630.11495_FIGA_COXSCATCH_V2.dwg
SCALE	1 : 350000

Figure A
Water Balance Modelling Locations in Coxs River Catchment

0.0 6.25 12.5 KM

Centennial Coal
Western Coal Services

Prepared by: SLR

A4

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List of Model Output Locations

Five reservoirs, shown in **Figure A**, have been included in the RWQIAM:

- Lake Wallace (Node #074)
- Lake Lyell (Node #174)
- Thompsons Creek Reservoir (Node #272)
- Sawyers Swamp Creek Ash Dam (Node #297)
- Lake Burragorang/Warragamba Dam (Node #280).

Model predictions are presented for the following modelled locations in the Coxs River catchment and Lake Burragorang (**Figure A**).

Lake Wallace:

- Node #074[1] (Lake Wallace)

Lake Burragorang and above Lake Burragorang

- Node #280[1] (Lake Burragorang).

Note 1. All RWQIAM nodes are included in the simulations undertaken; however, output from only Node #074 and Node #280 is presented in this letter.

APPENDIX G

Additional Response to Submissions – Lock The Gate Alliance Submission

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16 March 2017

Attention: Nagindar Singh
Springvale Coal Pty Ltd
PO Box 198
WALLERAWANG
NSW 2845

Project Name: Springvale Mine Extension Project - Modification 2
Project Number: IA132100

Subject: Hydrological Advice on Response to Submissions (Lock The Gate Alliance)

Dear Nagindar

1. Introduction

This letter has been prepared in accordance with our proposal (IA132100-PRO-0024_Rev0, dated 6 March 2017) seeking hydrological advice in preparing a Response to Submissions to part of the submission received from the Lock The Gate Alliance on the *Water Assessment – SSD 5594 Modification 2* that was prepared by Jacobs (2016b).

2. Proposed Response

2.1 Issues raised by Lock The Gate Alliance

Issue LTGA01) *The company refers throughout the assessment to water quality in Lake Burragorang, without using the more commonly used name Warragamba Dam. The assessment material presents the results of salinity modelling in milligrams per litre without indicating what the electrical conductivity is likely to be for the salt concentrations expected. This is despite the consent conditions and the company's Environment Protection Licence setting salinity limits with EC measures. Using a formula provided by OEH, and applying it to the modelling results presented in Table 20, we can infer that the EC of the Coxs River Upstream of Lake Wallace will be over 1000 microsiemens per cm at the 90th percentile, and over 1,200 at maximum, above what would be considered good drinking water. Such tricks are designed to disguise the environmental impact of the mine. They are relatively simple to see through, but that does not mean that the Department of Planning should accept such obfuscation as a matter of course. Recent work by the Department of Planning has sought to improve the accessibility and honesty of mining project assessment material. It is disappointing to have to read through a misleading and at times incoherent assessment document for such a controversial mine.*

As presented in Section 10.2.4.1 of the EIS (Centennial Coal, 2014), the salinity of mine water discharge exceeds the default ANZECC guideline value for the Water Quality Objective – Protection of Aquatic Ecosystems of 350uS/cm, however, is generally consistent with the Australian Drinking Water Standard (ADWG) (NHMRC, 2016), where the drinking water standard considers a TDS of 600mg/L (~895uS/cm) to be good quality drinking water and a

TDS of between 600 and 900 mg/L (~895uS/cm to 1,345uS/cm) to be fair quality drinking water. It is noted that the guidance values for salinity in the ADWG is an aesthetic-based value and is not a health-based value.

Centennial have not been provided with the formulae referred to in the submission, however, as presented in RPS (2014) and Jacobs (2015ab), a distributed rainfall-runoff model of the Upper Coxs River catchment through to Lake Burragorang was developed using GoldSIM, combined with the Australian Water Balance Model (AWBM). As presented in RPS (2014), salt mass flux was determined based on a simple model depending on several land-use types. The model approach was updated (minor) in Jacobs (2015ab), to better account for the circumstance of minimum flow. The model is referred to in the MOD 2 Water Assessment as the Regional Quality Impact Assessment Model (RWQIAM). Importantly the RWQIAM includes all relevant sources, sinks and storages within the Coxs River / Lake Burragorang catchment.

Calibration of the RWQIAM presented in RPS (2014) and Jacobs (2015ab) indicates acceptability of the model as the basis for impact assessment of the Springvale Mine Extension Project and subsequently the current modification, MOD 2.

Issue LTGA02) *The company gives itself a pass on the Neutral or Beneficial Effect test when compared to the "base case" it says was defined by the Department of Planning and Environment as an electrical conductivity of 1,200 microsiemens. The company states that there is will be "no change to modelled median salinity in Lake Burragorang over the prediction period, compared to that currently approved." This is ambiguous. What is currently approved is for the salinity limits to drop in June 2017 and then again in June 2019. Is this the "currently approved" scenario against which the company is modelling its impact, or are they modelling against the "current approved" activity being undertaken right now, which this modification would propose to continue unchanged after June 2017*?

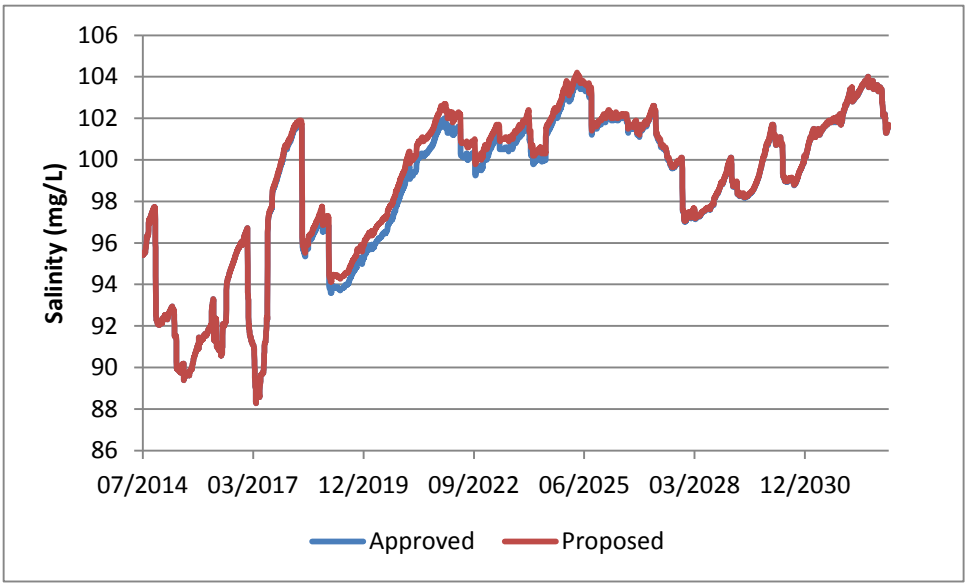
The RWQIAM was constructed to account for the interaction between the primary sources, sinks and storages within the Coxs River/Lake Burragorang catchments. As presented in RPS (2014) and Jacobs (2015ab), there is large-scale extraction of water from Lake Lyell for use in the Mount Piper Power Station. Historically this also included Wallerawang Power Station with respect to Lake Wallace.

As exemplified by the calibration results, the interaction between historical discharge and subsequent extraction is important in explaining long-term trends in water quality in the Coxs River catchment insofar as the role that storages at Lake Wallace, Lake Lyell and Thompsons Creek Reservoir play in the recirculation of salt mass. For example, the increasing trend in salinity in Thompsons Creek Reservoir since it's commissioning.

Figure 4.54 presents of the Water Assessment for MOD 2 (Jacobs, 2016) presents the prediction time-series of salinity in mg/L at Node #280 (Lake Burragorang) for both the Linear Fit and Stepped Fit interpretation of water quality characteristic.

Due to the effect of extraction in the catchment, the difference in the time-series (minor in magnitude as stated in Jacobs (2016)) occurs over a much longer period than just 1 July 2017 to 30 June 2019.

Figure 1 presents the data from Figure 4.54 of Jacobs (2016) on an enhanced scale.



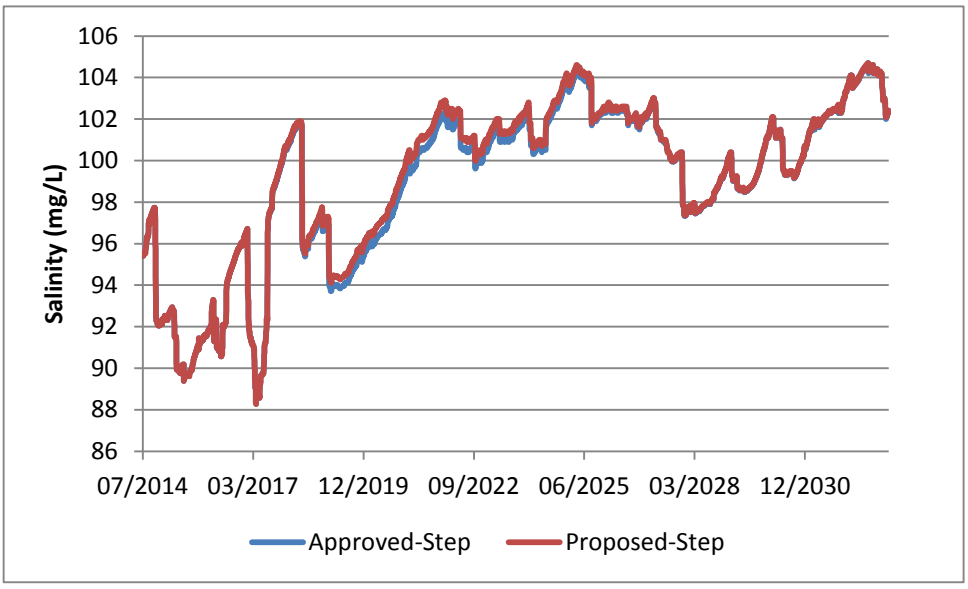


Figure 1 : Prediction Time-Series Chart at #280 (Lake Burragorang) – Salinity mg/L (adapted from Figure 4.54 of Jacobs (2016)).

From **Figure 1**, it can be seen that the difference due to the proposed modification (both with respect to the Linear Fit and Stepped Fit cases) continues well after 30 June 2019. The reason for this is because of the interaction of extraction and storage within the catchment.

Accordingly, the approach adopted by Jacobs (2016) in presenting the impacts with respect to the whole prediction period was and remains appropriate.

3. References

Centennial Coal, 2014. *Springvale Mine Extension Project – State Significant Development 5594. Environmental Impact Statement – Volume 1: Report*. Consultant report prepared by by

Golder Associates Pty Ltd for Springvale Coal Pty Ltd. Reference No. 127623060_152_R_Rev4_SVC, dated 7 April 2014.

Jacobs, 2015a. *Additional Simulations of the Regional Water Quality Impact Assessment Model – Angus Place and Springvale Mine Extension Projects.* Consultant report prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA059800/002c, dated 26 March 2015.

Jacobs, 2015b. *Supplement to Additional Simulations of the Regional Water Quality Impact Assessment Model*. Consultant letter prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA059800/067b, dated 3 August 2015.

Jacobs, 2016. *Water Assessment – SSD 5594 Modification 2*. Consultant report prepared by Jacobs Group (Australia) Pty Ltd for Springvale Coal Pty Ltd. Reference No. IA132100-0006-NW-RPT-00006_Rev2, dated 16 December 2016.

RPS, 2014. *Regional Water Quality Impact Assessment – Angus Place and Springvale Mine Extension Projects*. Consultant report prepared by RPS Aquaterra Pty Ltd for Centennial Angus Place Pty Ltd. Reference No. S187E/021b, dated 10 September 2014.

4. Closing

Should you require additional information then please do not hesitate to contact our office.

Yours sincerely

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