

APPENDIX D:

RESPONSE TO SUBMISSIONS



Springvale Water Treatment Project

Response to Submissions

February 2017



EnergyAustralia



Centennial Coal

Table of contents

1.	Introduction.....	1
1.1	Background.....	1
1.2	Overview of the Springvale Mine Water Treatment Project.....	1
1.3	Proposed minor amendments to the Project	1
1.4	Post EIS submission consultation.....	6
2.	Submissions on the Project.....	7
2.1	Overview of submissions	7
2.2	Summary of submissions.....	7
3.	Response to submissions	23
3.1	Responses to government agency submissions	23
3.2	Responses to community and special interest group submissions	42
4.	Updated Statement of Commitments.....	47

Table index

Table 1-1	Thompsons Creek Reservoir Transfer.....	2
Table 1-2	Water Treatment Plant Capacity.....	5
Table 2-1	Summary of comments and issues in submissions from Government agencies	8
Table 2-2	Summary of comments and issues in submissions from special interest groups and organisations.....	15
Table 2-3	Summary of comments and issues in submissions from members of the community – form letters.....	19
Table 2-4	Summary of comments and issues in submissions from members of the community – individual contributions	21
Table 3-1	Geographic and habitat features	35
Table 3-2	Survey methods	35
Table 3-3	Offset calculations.....	38

Figure index

Figure 1-1	Revised Project Application Area	3
Figure 1-2	Indicative Water Treatment System Layout.....	4
Figure 3-1	2016 daily discharge volumes from LDP006	27

Appendices

Appendix A – List of Community Members Who Made Submissions

1. Introduction

1.1 Background

Springvale Coal Pty Ltd (Springvale Coal) is seeking development consent for the Springvale Water Treatment Project (the Project). The overall objective of the Project is to improve environmental outcomes for the Upper Cocks River catchment, through the reuse of underground mine water at the Mount Piper Power Station (MPPS). The Project involves the transfer of water from existing dewatering facilities on the Newnes Plateau to a new water treatment plant located at MPPS. Treated water will be used as a priority for industrial reuse to meet the demand for make-up water requirements within the MPPS cooling water system.

An Environmental Impact Statement (EIS) was prepared to support the state significant development application (SSD 7592) and placed upon public exhibition from 27 September to 8 November, 2016. A total of 437 submissions were received on the Project from government agencies, special interest groups and community individuals.

This Response to Submissions report has been prepared by GHD Pty Ltd (GHD) on behalf of Springvale Coal Pty Ltd (Springvale Coal) to clarify and address issues raised during the public exhibition of the EIS. The report builds on information presented in the EIS and is to be read in conjunction with that document.

1.2 Overview of the Springvale Mine Water Treatment Project

The Project described in the EIS included the following major elements:

- A system to transfer up to 36 ML/day of dewatered mine water from the existing Gravity Tank forming part of the approved dewatering facilities on the Newnes Plateau, to the MPPS site.
- A new water treatment plant at MPPS incorporating desalination processes to reduce the salinity in mine water to a standard suitable for either industrial reuse or environmental release.
- Transfer of treated water from the water treatment plant for use in the MPPS cooling water system.
- Discharge of any excess treated water to a new licensed discharge point for environmental release to Wangcol Creek.
- Disposal of residuals from the pre-treatment process in the reject emplacement area (REA) at the Springvale Coal Services site.
- Transfer of the saline brine stream to the MPPS cooling water blowdown system for integration with existing treatment and brine disposal practices.
- Installing a crystalliser to provide further treatment of the additional salt load generated within the MPPS cooling water blowdown system.

1.3 Proposed minor amendments to the Project

1.3.1 Transfer of excess treated water to Thompsons Creek Reservoir

Initial stakeholder feedback indicated ongoing concerns in regards to the discharge of excess treated water to Wangcol Creek. Springvale Coal in collaboration with EnergyAustralia has undertaken additional investigations to identify alternative options for the management of water in excess of the MPPS short term cooling water make-up requirements.

A preferred alternative has been developed which involves transfer of excess treated water to Thompsons Creek Reservoir for storage.

Springvale Coal has therefore proposed a minor amendment to the SSD 16_7592 to include the transfer to Thompsons Creek Reservoir and remove the treated water discharge pipeline and associated infrastructure to Wangcol Creek. This will facilitate subsequent reuse in the MPPS cooling water system during periods of high cooling water demand and remove the need for a discharge to Wangcol Creek.

A new treated water pipeline would be required to connect the water treatment plant to the existing Coxs River Water Supply pipeline. The new pipeline would be approximately 300 metres in length and include all required isolation valves to support the connection to the existing transfer system. The new pipeline will fall entirely within the water treatment plant site and the Project Application Area described in the original EIS.

The treated water pump station proposed in the EIS incorporated an indicative power rating of 200 kW to allow transfer from the water treatment plant site to Wangcol Creek. The new transfer system will require additional pumping capacity to enable the transfer to Thompsons Creek Reservoir and require a pump station with an indicative power rating of 630 kW. The pump station would be designed with full redundancy to enable transfer of the full range of flows passing through the water treatment plant.

Treated water will continue to be used as priority for cooling water make-up and the majority of treated mine water is anticipated to continue to be directly reused within the MPPS operations. Transfer to Thompsons Creek Dam will only be required when MPPS is operating at less than approximately 50% capacity and the typical discharge volumes would be in the order of 0-5 ML/day. Transfers of all incoming flows would only be required during total power station shut downs which would typically occur a maximum of one to two days per year.

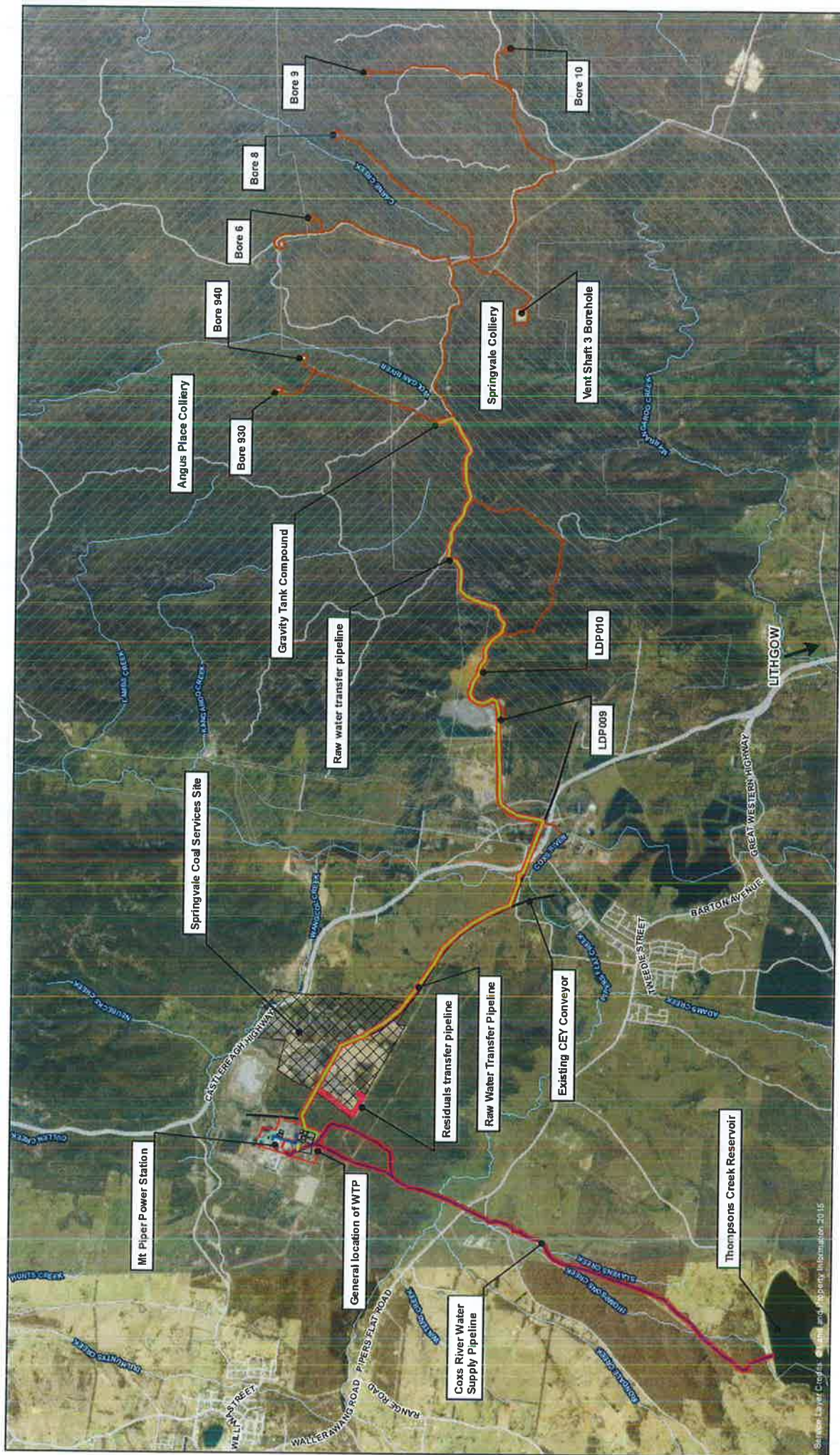
The treated water will be stored in Thompsons Creek Reservoir along with water drawn from Lake Lyell and will be used to supplement the cooling water make-up requirements during periods of high water demand. When the power station is operating at full capacity up to 54 ML/day of make-up water is required allowing for any excess water to effectively used in accordance with current practices following the transfer to Thompsons Creek Reservoir.

The new transfer system will remove the need for a treated water pipeline and discharge infrastructure to Wangcol Creek.

The revised Project Application Area and the indicative water treatment plant site layout is shown on Figure 1-1 and Figure 1-2 with a summary of amended Project components is included in Table 1-1.

Table 1-1 Thompsons Creek Reservoir Transfer

New Project components	Removed Project Components
New treated water pipeline to lower valve station on existing Coxs River Water Supply pipeline	Treated water discharge pipeline and associated release structure to Wangcol Creek
Treated water pump station capacity to be upgraded to allow pumping to Thompsons Creek Reservoir	No treated water to be released to Coxs River catchment via Wangcol Creek
Use of existing Coxs River Water Supply Pipeline to transfer excess treated water to Thompsons Creek Reservoir	
Use of water in Thompsons Creek Reservoir to supplement cooling water system make-up during periods of high demand	



Paper Size A4



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1984
Grid: GDA 1984 MGA Zone 58



LEGEND

- Proposed Alignment**
- Raw water transfer pipeline
 - Residuals transfer pipeline
 - Brine transfer pipeline
 - Crystallised salt transfer pipelines

- Treated water pipeline to cooling tower forebay
- Existing and Approved SDWTS
- Existing CEY Conveyor
- Cox's River Water Supply Pipeline
- Treated water pipeline to Coxs River Water Supply Pipelines

- Proposed WTP Layout
- Project application area (representative)
- Springvale Mine
- Angus Place Colliery
- Springvale Coal Services Site

Centennial Coal and EnergyAustralia
EY/CEY Water Treatment Project

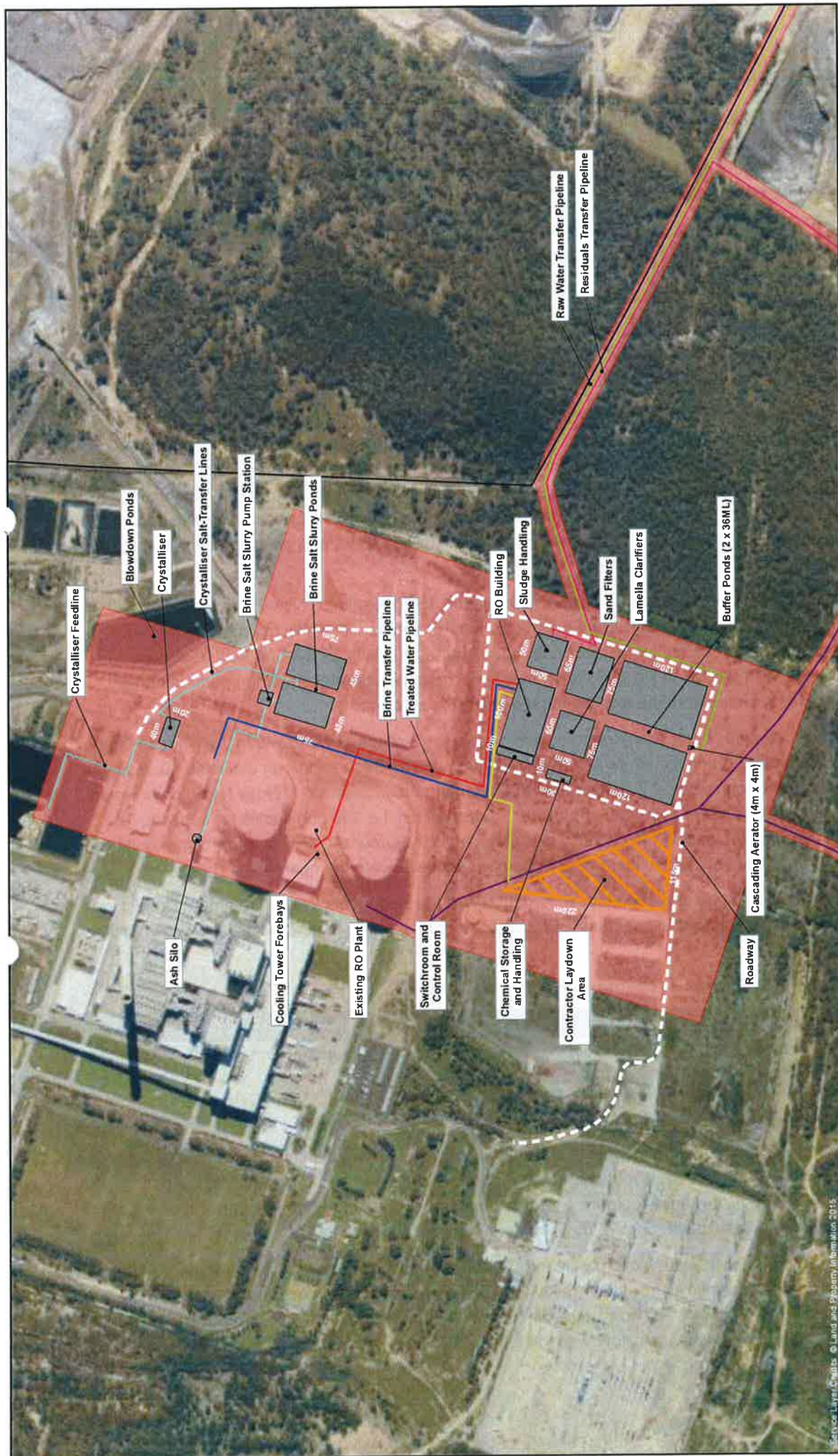
Job Number 21-25109
Revision A
Date 02 Nov 2016



Revised Project Application Area

Figure 1-1

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Data source: General Topo - NSW LPI DTDB 2012, Imagery - sixmaps 2015. Created by: mking3

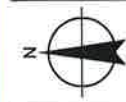


Centennial Coal and EnergyAustralia
EA/CEY Water Treatment Project



- Existing CEY Conveyor
- Project application area
- Proposed WTP Layout
- Contractor laydown area

- LEGEND**
- Proposed Alignment**
- Crystallised salt transfer pipelines
 - Raw water transfer pipeline
 - Residuals transfer pipeline
 - Brine transfer pipeline
 - Treated water pipeline to cooling tower forebay
 - Existing and Approved SDWTS
 - Cox's River Water Supply Pipeline
 - Treated water pipeline to Cox's River Water Supply Pipeline



Paper Size A4

0 50 100 200
Metres

Map Projection Transverse Mercator
Horizontal Datum GDA 1994
Grid GDA 1994 MGA Zone 56

Figure 1-2
Indicative Water Treatment System Layout

Level 15, 133 Castlereagh Street Sydney NSW 2000 T 61 2 9239 7100 F 61 2 9239 7199 E sydney@ghd.com.au W www.ghd.com.au

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Data source: General Topo - NSW LPI DTDB 2012. Imagery - s/m maps 2015. Created by mking

1.3.3 Increased water treatment plant capacity

Springvale Coal also propose to amend SSD 16_7592, to provide an increase the capacity of the water treatment plant from 36 ML/day to 42 ML/day. The amendment is required to ensure sufficient redundancy is incorporated into the treatment system to provide treatment of all incoming flows prior to the transfer to Thompsons Creek Reservoir. The increase in capacity will provide for:

- Management of any short-term fluctuations in mine water make
- Provision for maintenance of individual modules within the water treatment plant, whilst maintaining treatment capacity in the remainder of the water treatment plant
- Flexibility to temporarily increase flows to allow catch-up following water treatment plant maintenance or shut down periods.

Mine water inflows to the underground workings at Springvale Mine and Angus Place Colliery is variable and has been predicted to peak at 36 ML/day in detailed modelling undertaken by CSIRO. Due to the spatial and temporal resolution used in the CSIRO modelling, the predicted results are considered average inflows and may not capture all short term daily fluctuations to the required pumping rates from the underground workings. The proposed increase in capacity of the WTP will allow a buffer to ensure treatment for any short term deviations in water make from the modelling predictions.

The WTP will be designed for modular installation and operation. This will enable individual reverse osmosis (RO) units to be taken offline for maintenance, whilst maintaining flow and treatment capacity within the remainder of the plant. Provision of a 42 ML/day treatment capacity will provide flexibility to allow maintenance to be undertaken during periods of high transfer volumes from the existing mine dewatering systems.

The Project has been designed to accommodate the storage of water within the Angus Place 900 storage area in the event of a total WTP shut down. Based upon an available 10 days storage at Angus Place, it is estimated that pumping an additional 6 ML/day for 50 days would be required to draw down the emergency storage within the 900 panel area for subsequent availability. Increasing the capacity to 42 ML/day is therefore required to allow catch-up flows to be treated, whilst continuing to treat flows from active dewatering operations.

The Project will be undertaken in accordance with the Springvale Water Treatment Project Environmental Impact Statement (EIS) subject to the following amendments included in Table 1-2.

Table 1-2 Water Treatment Plant Capacity

New Project components	Removed Project Components
Water treatment plant with capacity to treat 42 ML/day	Water treatment plant with capacity treat 36 ML/day
Mine water transfer system with sufficient hydraulic capacity to allow transfer of 42 ML/day	Mine water transfer system with sufficient hydraulic capacity to allow transfer 36 ML/day

The additional treatment module is anticipated to be accommodated entirely within the indicative water treatment system layout presented Figure 1-2. The new treatment module will not increase the disturbance footprint or require any amendment to the project application area forming the basis of the original development application.

The mine water transfer system will be designed with sufficient hydraulic capacity to transfer all anticipated future flows from the gravity tank compound on the Newnes Plateau to the Mount Piper Power Station. The size of the pipeline will be subject to detailed design and is anticipated to remain consistent with the original DA which specified a nominal 630 mm

diameter pipeline subject to ongoing design development. The disturbance footprint and application area associated with transfer system will remain consistent with the original EIS.

Treated water, brine and residuals transfers are anticipated to remain in accordance with the original DA, with the exception of excess treated water being transferred to Thompsons Creek Reservoir in accordance with previous development application advice. The increase in capacity is required to improve the redundancy within the treatment system and will not in itself alter the overall volume of water transferred from the mining operations, which remains consistent with the original development application. The management of treated water, brine and residuals will therefore remain in accordance with the development described in the original development application for the Project.

An environmental assessment is being prepared to support these proposed minor amendments to the development application.

1.4 Post EIS submission consultation

Regular communication has been maintained with the Department of Planning and Environment (DP&E) and relevant NSW government agencies following the submission of the EIS.

An interagency meeting was held on the 17 November to discuss the proposed DA amendment for the transfer of excess treated water to Thompsons Creek Reservoir. The meeting was attended by representatives of DP&E, WaterNSW, Environment Protection Authority (EPA), Department of Primary Industries Water (DPI Water) and Office of Environment and Heritage (OEH) together with representatives of EnergyAustralia, Centennial Coal and GHD. The meeting involved a roundtable discussion in regards to potential issues for consideration as part of the amended DA and a site inspection of the Water Treatment Plant Site, Thompsons Creek Reservoir and sections of the existing Cocks River Water Supply transfer pipeline.

A meeting was also held with representatives of OEH at their Dubbo office on 02 November 2016 to discuss the proposed Centennial Coal's *Western Region Biodiversity Offset Package* (WRBOP), which includes the offset strategy for the proposed Springvale Water Treatment Project. Feedback received during the meeting was incorporated into a revised WRBOP that was re-submitted to OEH on 18 November 2016. As requested by OEH at the meeting the offset calculations for the offset sites were submitted to OEH through the online biobanking submission tool on 10 November 2016.

2. Submissions on the Project

This section provides an overview of the submissions received on the Project during the exhibition period, and summarises these submissions.

2.1 Overview of submissions

Of the 437 total submissions received on the EIS:

- 8 were from government agencies
- 6 were from special interest groups and organisations
- 423 were from community individuals

Government agency submissions were received from:

- NSW Department of Planning and Environment (DP&E)
- NSW Department of Industry – Division of Resources and Energy (DRE)
- WaterNSW
- Lithgow City Council (LCC)
- Forestry Corporation of NSW (FCNSW)
- Office of Environment and Heritage (OEH)
- Environment Protection Authority (EPA)
- Department of Primary Industries

Submissions from specialist groups and organisations were received from:

- Blue Mountains Conservations Society (BMCS)
- Ryde Hunters Hill Flora and Fauna Preservation Society
- Lithgow Environment Group
- 4Nature
- Colong Foundation for Wilderness (Colong Foundation)
- University of Sydney engineering students

Of the 423 community submissions received:

- 4 comprised individual contributions
- 419 comprised form letter contributions with some minor variations and additions

2.2 Summary of submissions

2.2.1 Government agency submissions

Table 2-1 provides summaries of issues raised by government agencies listed in Section 2.1. Table 2-1 notes sections in the Response to Submissions report where the issues raised are addressed.

Table 2-1 Summary of comments and issues in submissions from Government agencies

Government agency	Comment/issue	Section reference
Department of Planning and Environment	Discharges The Department notes that the development application will soon be amended to remove discharging excess water from the project to Wangcol Creek. However, emplacing the pre-treatment process residual waste could increase the daily discharge rate at the Springvale Coal Services site by 0.43 ML/day. The pre-treatment residual material would contain a range of metals. It is unclear in the EIS how the residual material would be emplaced to limit the mixing of these compounds with the shallow groundwater resources. Please provide further information on the following: <ul style="list-style-type: none"> whether the residual waste would contribute to an increase in the discharge rate at the Springvale Coal Services site; how and where the material would be emplaced at the Springvale Coal Services site; and the potential downstream impacts of the emplacement of this material on Wangcol Creek. 	Section 3.1.5
	Threatened species surveys The Biodiversity Assessment details the survey effort for the Bathurst Copper Butterfly and Broad-Headed Snake. OEH has raised concerns about how the surveys for Broad-Headed Snake were undertaken. Please clarify whether the pagoda formations (i.e. winter habitat for Broad-Headed Snake) were surveyed, and detail the measures that would be put in place to limit impacts to this habitat.	Section 3.1.15
	Offsets The Department notes that the FSA variation rules are proposed to be applied, as direct ecosystem and species credits are unavailable at the proposed Western Region Biodiversity offset site. The Department shares OEH's concerns about the application of the FBA variation rules in this instance. Please detail the steps that have been undertaken in accordance with Sections 10.5.4 and 10.5.7 of the FSA in reaching the decision to request consideration of varying the FSA rules for the project.	Section 3.1.15
	Rock formations A section of the water pipeline passes between a number of rock pagoda formations, including those known as the "Celestory Spurs". The EIS has not considered the potential stability impacts at these formations. Please comment on the potential stability impacts and the measures that would be put in place to limit the risk of these impacts occurring.	Section 3.1.13
	VPA Lithgow City Council has requested a Voluntary Planning Agreement for the project. Please provide details of consultation with Council on this issue.	Section 3.1.14

Government agency	Comment/issue	Section reference
Department of Industry: Division of Resources & Energy	Rehabilitation Section 5.6 of the EIS is very general and short on detail but does not contain any information considered to be inappropriate or incorrect, however further detail on rehabilitation within mining title areas will be expected in RMP/MOP documents to be subsequently submitted to the Division.	Noted
	Mining leases are shown in Figure 2.3 of the EIS. A total of 4 leases are identified: MPL314, ML1448, ML1352 and ML1323. However, CCL733 which includes surface areas is also within the project boundary and is not identified in this section of the EIS as being relevant to the project. The Division notes that a section of the Treated Water Transfer pipeline passes across a surface area of CCL733. This appears to be an oversight by the proponent in preparing the EIS.	Section 3.1.1
	The EIS states that no new titles will be required for this project. ESU notes that the existing MLA497, currently being assessed by the Division, covers a section of the proposed Treated Water Transfer Pipeline at the Western Coal Services site.	Noted
	The Division notes that key components of the project will not be located within a mining title, either at the Mt Piper Power Station (new water treatment plant) or off-title sections of the proposed new pipeline, and that the EIS does state (in Section 6.4.2) that Springvale Coal may apply for a mining lease in future for their Water Management Assets within State Forests on the Newnes Plateau.	Noted
	Rehabilitation Management Plan/Mining Operation Plan issues A condition of the Development Consent requires that activities within a Mining Title area must be covered in an approved Rehabilitation Management Plan/Mining Operations Plan (RMP/MOP) to be prepared to the satisfaction of the Division. A standard Rehabilitation Management Plan condition (in place for the Springvale Mine and Western Coal Services) would be appropriate. This requirement may be addressed by modification to the existing RMP/MOP documents for	Section 3.1.2
	<ul style="list-style-type: none"> Springvale Colliery (part MPL314, ML1323 and, if applicable, ML1326 – which is a subsurface only lease), Western Coal Services (part MPL314, CCL733, ML1448, ML1352 and any lease granted in respect of MLA497), and; Angus Place Colliery (if applicable). <p>The RMP/MOP, or modification to the existing MOP/RMP documents, is to be approved prior to commencement of the applicable surface disturbing activities.</p> <p>It is recommended that rehabilitation of areas not within a mining title should be in to the satisfaction of the landowner.</p> <p>The Division will hold a security bond to cover rehabilitation liabilities associated with the project in areas where mining titles are in place. Rehabilitation Cost Estimates will need to be submitted with MOP/RMP documents. As such, it should be clear in the Development Consent that the Division responsibility for rehabilitation is only applicable for these areas.</p>	
WaterNSW	General comments The Division should be given the opportunity to review proposed conditions prior to final approval.	Noted
	For consistency with the Springvale and Western Coal Services Development Consents, the Division would support a section on Progressive Rehabilitation and Rehabilitation Objectives.	Noted
	The Division has no objection to the project being approved.	Noted
	WaterNSW supports the implementation of the Springvale Water Treatment Project (SWTP) including the proposal to store excess treated mine water in Thompsons Creek Reservoir rather than discharging to Wangcol Creek. The SWTP has been proposed to meet performance measures for salinity of the discharge mine water required in the Springvale Mine Extension Project (SSD 5594) approval conditions including the Upper Cocks River Action & Monitoring Plan.	Noted

Government agency	Comment/issue	Section reference
	WaterNSW considers Springvale Coal should also investigate the provision of additional capacity at the water treatment plant for future integration of mine water from other current and future mining operations within the vicinity, particularly within the Wangcol Creek catchment. This would include consideration of LDP006 discharges and any discharges from the Neubecks Creek Coal Project, should this be approved.	Section 3.1.3
	WaterNSW will provide recommendations regarding conditions following assessment of the documentation on the amended Project. WaterNSW requests the opportunity to continue to be involved in any ongoing assessment of the Project.	Noted
	NorBE Assessment The neutral or beneficial effects (NorBE) assessment for the SWTP is mainly focused on salinity and associated impacts on water quality. The following have not been considered in the NorBE assessment: <ul style="list-style-type: none"> a detailed discussion of other water quality parameters (such as metals etc) during operations how the SWTP will have a neutral or beneficial effect on water quality during construction and decommissioning. Discussion on page 10-44 and 10-45 reports a slight deterioration in water quality at Wangcol Creek compared to existing conditions through increased discharges at LDP006 as a result of disposal of residue material from the treatment plant at the reject emplacement area (REA). This is considered to be a detrimental impact, not a beneficial impact as stated in the EIS.	Section 3.1.4
	Assessment of Impacts on Existing Licensed Discharge Point (LDP006) The disposal of solids from the treatment plant in the REA at the Springvale Coal Services Site (SCSS) and highly concentrated brine disposal with ash at Mount Piper Power Station (MPPS) have not been thoroughly assessed for their impact on LDP006. While it is noted that LDP006 is not part of the SWTP, the salt and water balances indicate discharges will be further impacted by the Project.	Section 3.1.5
	<ul style="list-style-type: none"> The discharge volumes from the SCSS at LDP006 are reported on average to be 1.29 ML/day, with historical ranges between 0-14 ML/day. WaterNSW understands that current discharges at LDP006 are close to 4-5ML/day. The correct volume should be identified and water and salt balance modelling should be updated accordingly. 	Section 3.1.5
	<ul style="list-style-type: none"> LDP006 discharge salinity is currently more than 3000 µSiem. It is likely that the salinity of existing discharges from LDP006 may increase due to disposal of SWTP solids at the REA at the SCSS. There may also be other potential water quality impacts from residue materials being deposited at the REA which have not been addressed in the EIS. The potential surface water and groundwater quality impacts should be thoroughly assessed. 	Section 3.1.5
	<ul style="list-style-type: none"> WaterNSW considers Springvale Coal should incorporate discharges from LDP006 into the SWTP. It is noted that the salinity- levels at LDP006 are currently considered too high to treat, and would require a new brine concentrator to be installed as part of the Project. WaterNSW understands an investigation is proposed to clarify where the increased dirty water is coming from, and results of investigations may lead to further modifications of the SWTP in the future. WaterNSW requests involvement in any discussions relating to LDP006. 	Section 3.1.3
	<ul style="list-style-type: none"> Appendix B, Page 169 - Water Resources Impact Assessment (WRIA) reports that Wangcol Creek discharges at LDP006 are expected to increase by 0.43ML/day. This figure is inconsistent with all other figures throughout the EIS, including the difference between discharges at LDP006 from the do nothing Scenario and Scenario 3 in the annual water transfers diagrams (Figures 6-7 and 6-8), which indicates a 0.2ML/day increase. This inconsistency needs clarification and correction. Given the salt and water balances indicate increased discharges and salt loads from LDP006, WaterNSW considers Wangcol Creek would be negatively impacted by the project. WaterNSW recommends a proposal be developed to offset this 	Section 3.1.5

Government agency	Comment/issue	Section reference
	negative impact on the water quality of Wangcol Creek. This should also be incorporated in the updated draft Upper Coxs River Action and Monitoring Plan (UCRAMP).	
	<ul style="list-style-type: none"> The brine concentration process is estimated to increase total dissolved solids (TDS) from 180,000 mg/L to 500,000 mg/L. The increases are proposed to be managed as part of the existing ash emplacement management strategy in place at MPPS and the EIS claims the SWTP would not increase the potential for impact to the groundwater environment from the current ash placement conditions. There is no justification for this claim and it is a particular concern for WaterNSW, considering there has been a continued increase in chloride levels at various groundwater monitoring sites within the MPPS site including at Neubecks Creek (Wangcol Creek upstream of LDP006) in recent years, the source of which is still yet to be determined. 	Section 3.1.12
	<ul style="list-style-type: none"> The indicative metal loads from the residual materials stream are outlined on page 222 of the WRIA (Appendix B). Arsenic, boron, nickel, zinc and iron are identified as primary issues, with iron particularly due to use of ferric chloride as a coagulant in the treatment plant. The expected iron output of 968 kg/day for the residual waste is a concern for WaterNSW given the existing water quality issues in Wangcol Creek via LDP006, specifically with regard to significant iron precipitate observed in the creek, and the low riparian, channel and environmental inventory and low diversity of macroinvertebrates outlined in the Aquatic Ecology Impact Assessment. It is expected that the disposal of residual materials at the REA would compound the existing issues. WaterNSW considers that further assessment of the impacts of these metals including arsenic, boron, nickel, zinc and iron on Wangcol Creek from discharges at LDP006 should be undertaken. 	Section 3.1.5
	<p>Other comments</p> <ul style="list-style-type: none"> Given the late change in directing SWTP discharges to Thompsons Creek Reservoir instead of Wangcol Creek via a new LDP, it is not clear whether upgrades to the existing discharge point LDP006 and channel within Wangcol Creek are still proposed. This should be clarified and included in the amended EIS and the Soil and Water Management Plans for the Project. 	Section 3.1.5
	<ul style="list-style-type: none"> Appendix B - WRIA, Pages 241-242 and Table 9-3 proposes additional surface water monitoring locations. These will need to be updated in light of the change in proposed discharges to Thompsons Creek Reservoir and should also consider additional groundwater monitoring downstream of the salt slurry ponds within the MPPS. 	Noted
	<ul style="list-style-type: none"> There are no details of the likely chemicals to be used through the reverse osmosis treatment process, the resultant quality of backwash water, and their potential environmental impacts. Pages 6-11 of the EIS briefly discusses storage of hazardous chemicals but no detail of how they will be managed and stored on site and the appropriate transportation and disposal of chemicals. WaterNSW had required this detail in our recommendations for the SEARs. This should be addressed in the amended EIS. 	Section 3.1.6
	<ul style="list-style-type: none"> Given the proximity of the proposed salt slurry ponds to identified areas of groundwater contamination within the MPPS site, WaterNSW considers that stringent design, construction and management measures should be required for these ponds to ensure no additional impacts on groundwater in this location, and potentially on Neubecks (Wangcol) Creek. This should include appropriate lining of the ponds, and appropriate monitoring and management of storage levels, surface water and groundwater quality. 	Section 3.1.7
	<ul style="list-style-type: none"> There are discrepancies between water and salt balance figures in the draft UCRAMP compared to the WRIA (Appendix B) for the existing conditions indicating that the impacts from Upper Coxs River catchment to Lake Burragorang were underestimated in the draft UCRAMP, which should be updated accordingly. 	Section 3.1.8
	<ul style="list-style-type: none"> It is noted on Page 82 of the WRIA (Appendix B) that the LDP009 sedimentation ponds are dredged twice annually and materials are 	Section 3.1.9

Government agency	Comment/issue	Section reference
	placed in the REA at SCSS. Given discharges from LDP009 will cease as a result of the project, there is no indication as to whether these ponds would be decommissioned. This should be addressed.	
	<ul style="list-style-type: none"> It is noted on Page 217 of the WRIA (Appendix B) that the nature of discharges cannot be established until the WTP is constructed. WaterNSW would like to be consulted once the quality of treated water and discharges, and ecotoxicology testing from the project are known. 	Section 3.1.10
	<ul style="list-style-type: none"> The proposal assumes salinity of treated mine water of 450 μSiem will be achieved and assessment predictions are based on this salinity, however Table 10.13 and Page 232 of Appendix B proposes limits of 901 μSiem in the new EPL. WaterNSW considers this limit unsuitable. Considering treated mine water is proposed to be directed to Thompsons Creek Reservoir, a new LOP will not be required. 	Section 3.1.11
Forestry Corporation of NSW	FCNSW is pleased that Centennial Coal has considered a broad range of issues, however there are a number of matters that require further consideration:	Noted
	1) All constructed access tracks are the responsibility of Centennial Coal must be rehabilitated fully once no longer required, and will remain the responsibility of Centennial Coal, under the Forest Permit, until they are closed and rehabilitated. The only exception to this would be if FCNSW requested a track be left open.	Section 3.1.13
	2) With regard to traffic, FCNSW support the proposed traffic access routes, and I note that the heavy vehicle route restrictions within the EIS are consistent with those applied by FCNSW. However, the introduction and chapter 14.3 both make statements that there is sufficient road network capacity to support these activities. It is the view of FCNSW that the impact on roads from this activity should not be considered in isolation of the wider mining traffic movements across Newnes State Forest. FCNSW believe there is a higher risk of failure of the road network, particularly natural surface roads, than is expressed in the EIS. It is likely that Centennial Coal will need to contribute to the upkeep of all roads identified for use in the EIS, and more broadly for maintenance of existing operations.	Section 3.1.13
	3) Any vegetation clearing in relation to fire mitigation surrounding ancillary infrastructure must be considered within the EIS (if outside the 20 m corridor).	Section 3.1.13
	4) With regard to Chapter 15.8.3 Mitigation Measures, FCNSW would like to review the bushfire management plan prior to approval. FCNSW would also like an additional mitigation measure during the construction phase, of works to comply with FCNSW fire restrictions, which require all vehicles to carry certain fire-fighting equipment depending on daily fire risk. The restrictions also stipulate ceasing particular types of work at certain times of the day, depending on fire risk. This can be facilitated through our system of daily colour code notification.	Noted
Lithgow City Council	Council considers the Environmental Assessment adequately highlights the relevant issues, and has no objection to the project subject to the following conditions being considered to be attached in the consent:	Noted
	Planning Agreement 1. Council would like the opportunity to enter into a Voluntary Planning Agreement for the project. Council has a Section 94A Contributions Plan which imposes a 1% Contribution on all development over \$200,000. Should the proponent not enter into a Voluntary Planning Agreement for the proposal then a condition should be placed on the consent requiring payment of a contribution in accordance with Council's Section 94A Contributions Plan.	Section 3.1.14
EPA	The Environment Protection Authority (EPA) is supportive of any project that improves water quality in the natural system of the Upper Coxs River Catchment and is pleased to see this initiative from Energy Australia and Centennial Coal.	Noted
	Western Coal Services and Licensed Discharge Point (LDP006) The EPA raised the need for the assessment of the current discharge at LDP006 as the Project will involve the discharge of both excess treated	Noted

Government agency	Comment/issue	Section reference
	<p>mine water through LDP006 with the current combination of groundwater seepage into Cooks Dam and rainfall runoff which is presently discharged through LDP006. Having discussed the investigation and source of the current groundwater discharge at LDP006 the EPA accepts that this discharge can't be addressed by the Project and that options to address the current discharge at LDP006 will be addressed by the licensee as a separate matter to the Project.</p> <p>Springvale coal will be required to apply for a new LDP for the discharge of excess treated mine water associated with the Project at Western Coal Services.</p>	
	<p>Brine Management and Disposal</p> <p>With regards to the existing MPPS ash placement project approval (PA09_0186), the EPA believes that a modification to PA09_0186 may be needed for the co-disposal of brine with a different chemical composition to that currently disposed at MPPS, as well as for disposal of sediment from the crystallised salt ponds.</p>	Section 3.1.12
	<p>Use of Thompsons Creek Dam</p> <p>The EPA notes that the proposed amendment to the application will result in the transfer of excess treated water into Thompsons Creek Reservoir. The EPA is supportive of this option as it will remove the need to discharge water into Wangcol/Neubecks Creek. The EPA will review the detail of this change when it is provided.</p>	Noted
OEH	<p>Geographic features that were not selected in the BioBanking Calculator should be included in Table 10 of the BAR and noted as not selected.</p> <p>Further information on survey methodology and effort for the threatened species detailed in Section 3.2 of the BAR is required.</p> <p>A more complete assessment of the potential to impact the Bathurst Copper Butterfly and Broad-headed Snake, based on adequate survey effort, is required.</p> <p>All efforts should be made to avoid impacts to <i>Persoonia hindii</i> and <i>Eucalyptus cannonii</i>.</p> <p>Preliminary offsetting requirements for the project should include all potential impacts.</p> <p>Final offsetting requirements to be confirmed once pre-construction surveys have been completed.</p> <p>All efforts should be made to avoid impact to <i>Caesia parviflora var. minor</i>.</p>	Section 3.1.15
	<p>Pre-construction surveys for <i>C. parviflora var. minor</i> be conducted in all areas of suitable habitat to determine the size and extent of the local population and determine the number of individuals that may potentially be impacted.</p> <p>The definition of local population should be redefined to reflect the potential contact of <i>C. parviflora var. minor</i> within the Study Area with other populations.</p> <p>Restrict vehicle access along the pipeline during construction and operation to prevent public access.</p> <p>The proponent demonstrate that they have exhausted all reasonable steps for securing like for like offsets prior to applying the FBA variation rules.</p> <p>Validate offsetting opportunities at Western Region Biodiversity Offset Package (WRBOP) to determine if it contains suitable offsets for the Springvale Water Treatment Project. OEH won't be in a position to assess the adequacy of offset package until the information is assessed.</p>	
	<p>Targeted test excavation should be undertaken of places likely to contain undisturbed deposits or, if such areas are not present, then close monitoring should be undertaken of locations where the proposed easement approaches and intersects with creek lines.</p>	Section 3.1.16
DPI	<p>The proponent should provide details on all watercourse crossings associated with the Project</p>	Section 3.1.17
	<p>All works should be undertaken in accordance with DPI Water Guidelines for Controlled Activities</p>	Section 3.1.17
	<p>A number of unformed Crown roads located within the pathway of the proposed pipeline, are currently being assessed for road closures. It is</p>	Section 3.1.18

Government agency	Comment/issue	Section reference
	<p>also noted, an easement for a 'brine pipeline' has been recorded over affected Lots of freehold land, however, it does not appear to be recorded for the unformed Crown roads.</p> <p>Further consultation is required with DoI –Lands to determine the most appropriate pathway on agreement for access and use of the unformed roads until such time the roads are closed</p>	

2.2.2 Submissions from special interest groups and organisations

Four special interest groups (BMCS, Ryde Hunters Hill Flora and Fauna Preservation Society, Lithgow Environment Group and 4Nature) object to parts of the Project. Table 2-2 provides a summary of issues raised by these special interest groups. Table 2-2 also notes sections in the Response to Submissions report where the issues raised are addressed.

Table 2-2 Summary of comments and issues in submissions from special interest groups and organisations

Special interest group	Comment/issue	Section reference
Blue Mountains Conservations Society (BMCS)	Overarching comments	
	BMCS recognises the benefits of transferring mine-water to the MPPS; indeed, along with the Colong Foundation and others within the Gardens of Stone Alliance, BMCS has strongly advocated this action.	Noted
	The SWTTP states (Executive Summary piii) that the key objectives are to (i) "improve environmental outcomes for the receiving waters of the Upper Cocks River catchment", and (ii) "meet the water quality performance measures for mine-water discharges required under the Springvale Mine Extension Project". Objective (i) is admirable, but objective (ii) entrenches performance measures that were a compromise devised to accommodate discharges through LDP009 and various other discharge points; the SWTTP renders the compromise redundant.	Section 3.2.1
	The SWTTP emphasises compliance with SSD_5594 Schedule 4 Condition 12 in relation to mine-water discharges (Executive Summary piii), but seemingly disregards Condition 13 (Upper Cocks River Action & Monitoring Plan) items (c) and (e).	Section 3.2.1
	BMCS strongly opposes parts of SSD 16_7592 because they fail to more comprehensively use the transfer option and insufficiently avoid adverse environmental consequences; these deficiencies can and must be rectified.	Section 3.2.2
	Key detailed comments/conclusions	
	C1. The performance measures relating to mine-water discharges in SSD_5594 Schedule 4 Condition 12 are rendered inapplicable by Option 2 in the EIS; any consent related to the SWTTP must include new performance measures and have an appropriately amended Upper Cocks River Action & Monitoring Plan; and, any SWTTP consent must contain penalties for failing to meet the planning, construction and commissioning deadlines determined for Option 2.	Section 3.2.1
	C2. No significant argument has been presented in favour of the northern easement and that, from an environmental viewpoint, the southern easement must be followed.	Section 3.2.6
	C3. Treatment to a salinity of 500 µS/cm EC inadequately meets the long-term target of 350 µS/cm EC for the Cocks River catchment and definitely does not restore the pre-mining water quality of ~30 µS/cm EC.	Section 3.2.1
	C4. SWTTP (SSD 16_7592) inadequately addresses the consequences of: shutting down (temporarily or otherwise) the MPPS; transferring excess treated water to Wangcol Ck; and failing to fully comply with SSD_5594 Schedule 4 Condition 13 items (c) and (e), and MPPS's Water Access Licence #27428 Condition 4.	Section 3.2.5
	C5. Irrespective of which option, or variant of an option, in EIS Table 4.1 p4-4 is ultimately chosen, the existing southern easement should be used.	Section 3.2.6
	C6. As advocated in the EIS, Option 2 is the best of the five options proposed, but it is deficient in the context of conclusions C1, C3 and C4, and must be modified.	Section 3.1.13 and 3.2.6
	C7. If the treatment plant shuts down, the raw mine-water should be diverted to Thompsons Ck Reservoir for dilution and future availability - this issue must be addressed and a solution identified in any approval of a modified SSD 16_7592.	Section 3.2.3
	C8. Excess treated water should be transferred to the Thompsons Ck Reservoir, rather than sending it, via the proposed new discharge point, to the already polluted Wangcol Ck - this should be addressed and an outcome justified in any approval of a modified SSD 16_7592.	Section 3.2.2

Special interest group	Comment/Issue	Section reference
	C9. The treatment plant could continue to operate after the permanent shut down of MPPS. The treated water could discharge principally to Wangcol Ck and the treatment should achieve a salinity of less than 350 $\mu\text{S/cm}$ EC, but as close to 30 $\mu\text{S/cm}$ EC as is practicable – these aspects should be considered in any approval of a modified SSD 16_7592.	Section 3.2.4
	C10. With due reference to conclusions C6, C8 and C9, the raw mine-water supply could and should be boosted by supply from other LDPs and Clarence Colliery, and treated water in excess of MPPS's needs should be sent to Thompsons Ck Reservoir, and/or the treatment plant's salinity target should be lowered.	Section 3.2.5
	C11. The proposed closure of LDP009 and the transfer of the raw mine-water to a treatment plant at MPPS, together with returning excess treated water to the Wangcol Ck catchment, would yield positive outcomes. Nevertheless, there are simple modifications which could and should be made; they would increase the effectiveness of the treatment plant and have better environmental outcomes.	Section 3.2.2
	C12. Wangcol Ck contributed salinity and other contaminants to the Coxs R pre-LDP006. The toxic discharges from LDP006 have greatly magnified the problem, and discharging treated water (~500 $\mu\text{S/cm}$ EC) to Wangcol Ck from the proposed new discharge point will further detract from water-quality of the Coxs R. To the extent that an important aim of the whole exercise is to greatly improve the water-quality, there has been a lowering of the salinity but this has in many cases been accompanied by increased water volumes and larger salt loads. There is room for improvement.	Section 3.2.2
Ryde Hunters Hill Flora and Fauna Preservation Society	The supply of clean drinking water to Sydney's quickly expanding population must be the priority in the drinking water catchment. This is the most effective and in the longer term cheapest option to supply quality drinking water to millions of people.	Section 3.2.2
	The Springvale water treatment proposal must be greatly improved if it is to adequately protect the Coxs River catchment, the Greater Blue Mountains World Heritage Area and Sydney's drinking water resources. Mine water must not be simply treated to a minimum standard then released into the catchment.	
	Wangcol Creek is already contaminated. Discharges from the proposed treatment plant would worsen this situation and send a plume of salt down the Coxs River that is part of Sydney's drinking water catchment.	
	The treatment proposal must maximise mine water use by storing it for future periods of high demand by the Mt Piper Power Plant. Water treatment must be decoupled from the power plant's coal consumption to prevent an outcome where a reduction in coal-fired electricity generation would cause an increase in mine water pollution.	
	The water treatment plant must not be built for discharge into the environment. It can be designed as a closed system with treated mine water stored in Thompsons Creek Reservoir which has sufficient capacity to accommodate mine water from both Springvale and Clarence mines for future power plant use.	Section 3.2.5
	To take advantage of future mine water transfer upgrades, the proposed pipeline from Springvale to Mt Piper power plant should have sufficient capacity to accommodate mine water from Clarence Colliery.	
	Runoff from the Springvale Coal Services and fly ash emplacement areas also must be collected and treated for use in the power plant.	Section 3.2.5
Lithgow Environment Group Inc	Any additional pipeline construction on Newnes Plateau for the mine water transfers must follow the existing pipeline alignment to minimise further damage to endangered ecological communities and pagoda landscapes.	Section 3.2.6
	The Lithgow Environment Group Inc. (LEG) welcomes this Proposal to re-use Springvale Colliery's minewater for cooling purposes in Mount Piper Power Station.	Noted
	LEG does however have serious reservations about whether this Proposal in its current form can meet the stated objectives, and urges the DP&E to revise the following: 1. Wangcol Creek is not a suitable receiving environment for emergency minewater discharges;	Section 3.2.2

Special interest group	Comment/issue	Section reference
	2. LDP006 is a highly polluted and unstable environment;	Section 3.2.2
	3. The proposal fails to address all of Springvale's minewater discharge points;	Section 3.2.5
	4. Unnecessary duplication of the existing Springvale – Delta Electricity Water Transfer Scheme (SDWTS) pipeline alignment will cause unnecessary damage to the scenic Clerestory Spurs;	Section 3.2.6
	5. Appears to be designed more to dilute extremely high salinity (5190 uS/cm in April 2016) in Springvale's LDP006, rather than for reuse as cooling water in Mt Piper Power Station;	Section 3.2.2
	6. Toxicity of the LDP009 discharge – has it been addressed?	The Project removes the requirement to discharge mine water at LDP009
	7. Temporary storage of Minewater underground at Angus Place Colliery	Section 3.2.9
4Nature	<p>In broad terms, 4Nature supports the intent of the project to re-use Springvale mine water and cease the discharge of mine water at Licensed Discharge Point (LPD 09) into Sawyers Swamp. 4Nature supports this project because these outcomes have the potential to improve water quality in the Coxs River catchment.</p> <p>However, as currently described the proposal will increase salinity in the Coxs River catchment which forms part of Sydney's drinking water supply. We have identified three major issues with this project:</p> <p>(i) the discharge of low quality treated water and the proposed use of Wangcol Creek as a new discharge point</p> <ul style="list-style-type: none"> Salinity levels of discharge water are too high <ul style="list-style-type: none"> When compared with the naturally occurring levels of salinity in the catchment waters the treated water discharges with this level of salinity are too high and would increase the salinity levels in the Coxs River catchment. Increased salinity in Warragamba Dam is of also of concern because it is the major source of Sydney's drinking water. By increasing the level of salinity above levels occurring in the relatively undisturbed headwaters of the Coxs River the project does not meet the criterion of a neutral or beneficial effect on water quality. The use of Wangcol Creek as a discharge point will result in additional pollution in the Coxs River because Wangcol Creek has a historical load of salt and other contaminants from past use. Another discharge point needs to be located so that discharges from that point do not mobilise pre-existing salts and contaminants from prior industrial uses. Lack of detail about other contaminants <ul style="list-style-type: none"> the levels for the full range of potential contaminants should be documented and measured. The levels of these contaminants in discharged treated water should be equal to or less than those found in the relatively undisturbed headwaters of Coxs River Full range of water quality indicators are needed <ul style="list-style-type: none"> water quality indicators must include measurements of temperature, turbidity, pH and dissolved oxygen. The EIS does not address these indicators of water quality in detail. the discharged mine water should have values for these water quality indicators that are in the same range as water quality indicators for the relatively undisturbed headwaters of the Coxs River These water quality indicators should be monitored and regular reports on these indicators should be available to the public. <p>(ii) lack of detail about increasing flows into the Coxs River</p>	<p>Noted</p> <p>Section 3.2.2</p> <p>Noted.</p>

Special interest group	Comment/issue	Section reference
	<p>The re-use of water from the Springvale mine should allow additional water to be released into the Cocks River from current storages which rely on surface water collections. However, the EIS does not provide sufficient detail on how much additional water could be released into the Cocks River. Furthermore, if a higher standard of water quality could be achieved then there could be additional flows from the treated mine water discharge point.</p> <p>Also it is not clear why Springvale mine water could not be used when the MPPS was operating at less than 50% capacity. The proponent should model the potential beneficial effects and explain why more of the Springvale mine water could not be re-used when the MPPS is operating at less than 50% capacity.</p>	Water demand is directly related to power generation requirements.
	<p>(iii) the proposed new easement for the pipeline rather than use the existing easement</p> <p>The alignment of the new pipeline does not utilise the easement (southern alignment) of the current pipeline. The EIS does not adequately explain why a new easement is needed.</p> <p>The environmental impacts of the land clearing in the two options are not adequately compared. A new easement will destroy native vegetation and disturb animal and plant communities. A new easement (northern alignment) shows an alignment which traverses more relatively undisturbed land than the existing easement and would appear to create unnecessary environmental impacts which could be avoided if the existing easement were utilised.</p> <p>It is also not clear why water discharges need to continue from Licensed Discharge Point 06 (LDP 06) when LDP 06 is shown to be adjacent to the proposed pipeline.</p> <p>Consideration should also be given to ensuring that the pipeline design specifications include the capacity to take additional mine water from other mines in the area, such as Angus Place if they are re-commissioned.</p>	<p>Section 3.2.6</p> <p>Section 3.2.6</p> <p>Section 3.2.2</p> <p>Section 3.2.5</p>
Colong Foundation	<p>The Colong Foundation welcomes the decision to eliminate mine water by its reuse in the Mount Piper Power Plant. The Foundation believes that this proposal should have been part of the Springvale mine extension, and if it were it would have saved time and money.</p> <p>The current proposal must be revised though as it:</p> <ol style="list-style-type: none"> 1. Cuts through an Endangered Ecological Community (EEC) 2. Duplicates Springvale's existing pipeline and therefore the environmental impact on Newnes Plateau and its escarpment <ul style="list-style-type: none"> • The proposed new pipeline should be required to follow the existing SDWTS pipeline. 3. Fails to examine the benefits of mine water reuse replacing untreated, 'raw' drinking water <ul style="list-style-type: none"> • The benefit of making surface water available for drinking, by the reuse of mine water, is not considered by the EIS, which as a result grossly underestimates the value of the proposal. • Thompsons Creek reservoir should be used to store all treated mine water and achieve compliance with condition 4 of the power plant's water licence. 4. Does not remove all mine water, including nearby LDP006 which continues to discharge from the Cooks Dam <ul style="list-style-type: none"> • The failure to divert waste water in the Cooks Dam storage above LDP006 into the mine water treatment plant is a design weakness in the proposal • The proposed increased discharges from LDP006 are unacceptable. The highly saline discharges from LDP006 must be removed from the Cocks River catchment by reuse after water treatment in the power plant. • An expansion of the Springvale mine water transfer proposal should include capacity for Clarence Colliery mine water transfer. Such an enlarged pipeline would enable Centennial to meet upgraded EPL renewal requirements for Clarence colliery. The pipeline should have capacity for an additional 15 ML/day of mine water from Clarence Colliery to clean up the Wollangambe River. 	<p>Noted</p> <p>Section 3.2.6</p> <p>Noted</p> <p>Section 3.2.2</p> <p>Section 3.2.5</p>

Special interest group	Comment/issue	Section reference
	<p>5. Seeks approval for an unnecessary new treated mine water discharge point and does not adequately consider treated mine water storage options</p> <ul style="list-style-type: none"> The mine water is only 37% of the daily water licence allocation and could be comfortably doubled by the addition of say mine water from the Clarence Colliery, as long as the proposed mine water treatment system incorporated storage at Thompsons Creek Reservoir The proposal must be redesigned to store any temporary excess mine water in Thompson Creek reservoir as required by Water Access Licence #27428 The Colong Foundation does not support the release of trout upstream of the Greater Blue Mountains World Heritage Area into either storage. Trout are a feral fish and do not belong in national parks. 	Section 3.2.2
	<p>6. Adopts discharge standards that create perverse incentives to encourage the discharge of treated mine water, rather than its reuse in the Mt Piper power plant – the discharge standards in the Springvale mine extension consent should not apply to this consent</p> <ul style="list-style-type: none"> 6a Discharge standards in the Springvale mine extension 2015 consent must be reviewed to prevent perverse incentives encouraging treated mine water discharge rather than its reuse in Mt Piper power plant 6b Springvale mine water discharge standard not relevant to a mine water reuse project. 	Section 3.2.1
	<p>7. Fails to identify Wangcol Creek as an unsuitable receiving water for mine water discharge</p> <ul style="list-style-type: none"> The Colong Foundation is totally opposed to any discharges to Wangcol Creek and these discharges will push a plume of salt down the Cops River 	Section 3.2.2
	<p>8. Proposes temporary mine water storage in Angus Place mine, which should not be part of this transfer project</p> <ul style="list-style-type: none"> The Colong Foundation opposes use of this underground storage as part of the Springvale Water Treatment project. The spring that surfaces at Lambs Creek is suspect and probably contaminated with untreated mine water. The use of this storage may see untreated additional mine water discharged to Lake Burragorang via Lambs Creek. 	Section 3.2.9
University of Sydney advanced engineering students	<p>The current proposal design based on 50% capacity of operation of MPPS is not valid and is undersized.</p> <p>There is inconsistency in the water requirements in the EIS (30 ML/d transfer) and the water access licence (85 ML/d) of MPPS.</p> <p>The mine water transfer scheme can be expanded an additional 24-55 ML/d.</p> <p>Five options for expansion of the proposal were presented which incorporated the inclusion of flows from Clarence Colliery LDP002, Springvale Mine LDP001 and/or Springvale Mine LDP006 or combinations of these.</p>	Section 3.2.5

2.2.3 Submissions from members of the community

Submissions from members of the community are provided in Table 2-3 (form letter submissions) and Table 2-4 (individual contributions). These tables also provide section references where the responses to submissions have been provided.

Table 2-3 Summary of comments and issues in submissions from members of the community – form letters

ID (refer Appendix A)	Comment/issue	Section reference
2-5, 8-16, 18, 20, 22- 29, 31-37-50, 52-80, 83-99 101-126, 128-134, 136, 138-157, 159-165, 167-202, 204-249,	<p>The Springvale water treatment proposal must be greatly improved if it is to adequately protect the Cops River catchment, the Greater Blue Mountains World Heritage Area and Sydney's drinking water resources. Mine water must not be simply treated to a minimum standard then released into the catchment.</p> <p>Wangcol Creek is already contaminated. Discharges from the proposed treatment plant would worsen this situation and send a plume of salt down the Cops River that is part of Sydney's drinking water catchment.</p>	<p>Section 3.2.2</p> <p>Section 3.2.2</p>

251-278, 280-289, 291-295, 297-309-313, 315-324, 325-374, 376-413, 415-421, 423	The treatment proposal must maximise mine water use by storing it for future periods of high demand by the Mt Piper Power Plant. Water treatment must be decoupled from the power plant's coal consumption to prevent an outcome where a reduction in coal-fired electricity generation would cause an increase in mine water pollution.	Section 3.2.2
	The water treatment plant must not be built for discharge into the environment. It can be designed as a closed system with treated mine water stored in Thompsons Creek Reservoir which has sufficient capacity to accommodate mine water from both Springvale and Clarence mines for future power plant use.	Section 3.2.2
	To take advantage of future mine water transfer upgrades, the proposed pipeline from Springvale to Mt Piper power plant should have sufficient capacity to accommodate mine water from Clarence Colliery.	Section 3.2.5
	Runoff from the Springvale Coal Services and fly ash emplacement areas also must be collected and treated for use in the power plant.	Section 3.2.5
	Any additional pipeline construction on Newnes Plateau for the mine water transfers must follow the existing pipeline alignment to minimise further damage to endangered ecological communities and pagoda landscapes.	Section 3.2.6
<i>The submitters used the form letter for submission but included the additional issues below:</i>		
7, 30, 82, 127, 166, 314, 422	The Springvale mine must not be allowed to release treated or untreated mine water into the Coxs River which is part of Sydney's drinking water supply.	Section 3.2.2
7, 51, 127, 166, 314, 422	The river must be restored to health, because it flows through our Blue Mountains World Heritage Area.	Section 3.2.2
7, 32, 51, 127, 166, 134, 422	The release of treated mine water will increase the nutrient status of the Coxs River and possibly lead to massive outbreaks in aquatic weeds or algal blooms downstream	Section 3.2.2
19	Stop the continuing expansion of coal mining and start thinking creatively of alternative and non-nature invasive energy sources The coal industry is yesterday's industry. The future is clean green and environmentally sustainable for earth's sake	Section 3.2.7
21	The company simply wishes to transfer the clean-up costs to the public purse, so they can maximise their private profit. This is simply unacceptable. They are making the mess: they must keep their mess within their boundaries. They must not pass it on to the public.	Noted
81	To pollute the drinking water is criminal and you should resign for even contemplating it when we have only recently suffered significant droughts and have had concerns over the dam levels. In such times all salts etc will be concentrated or did you not think about that?	Section 3.2.2
135	I recently directed and produced a short film towards raising awareness of this extraordinary part of our country. https://www.youtube.com/watch?v=4XY4kEESC6E We need to save it, as well as prevent possible contamination of our precious water supply, at all costs. These landscapes and their waterways will become popular tourist destinations. it is already happening - even the Lithgow planers are beginning to promote the transition, after generations of refusal to consider a future separate from mining. I urge you to join with the growing movement for protection and change along the western edge of the Blue Mountains.	Section 3.2.2 and Section 3.2.7
250	The best thing for our environment is to stop coal mining altogether.	Section 3.2.7
290	It is imperative we ensure the preservation of this beautiful area, for future generations to enjoy, and to maintain the water quality that is essential to our lives.	Section 3.2.7
324	Or another option is have the same set of rules for all discharges to desalinate before leaving pit area, having a neutral and beneficial outcome. Why should we have to be left with this waterway that flows through natural areas where people swim, fish and drink this water. Who will be watching those discharges? I have little faith in the self reporting system that is current.	Section 3.2.2 Section 3.2.8
375	Drinking water and catchments must be protected, coal production is waning and is not worth damaging our long term future for small profits over a short period of time.	Section 3.2.2

414	<p>Stop the toxic pollution of our water resources and the death of our bushland and wildlife.</p> <p>Coal mining should be the very last resource for the use of energy consumption!</p> <p>Our country should be developing clean, green renewable energy! ie solar and wind and water. We are peopled with intelligent, educated people who should not be governed by a few greedy short sighted, ignorant Politicians governed by companies who are only interested in lining their own pockets without considering the long term toxic effects of what they are doing to our natural environment!</p> <p>Why cant these companies be given the incentive to redirect their interests and resources into developing clean renewable, sustainable energy like many other countries blessed with the intelligence and foresight in the care of the legacy they will leave for future generations</p> <p>Leave a legacy of renewable, sustainable energy and an unpolluted environment for future generations.</p>	<p>Section 3.2.2</p> <p>Section 3.2.7</p>
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Table 2-4 Summary of comments and issues in submissions from members of the community – individual contributions

ID (refer Appendix A)	Comment/issue	Section reference
1	<p>These coal mining companies have been getting away with dumping polluted mine water for decades into our waterways, some of which flow into water supply dams. They have not voluntarily done the right thing, which would be to treat the water to a standard that will have a neutral or beneficial affect on the waterways. It is time for these companies to be forced by regulation to do what is best for the environment, not just what is best for their company profits.</p> <p>Springvale should treat the water to a much higher level of purity without the usual metals and salts (including exceedances in arsenic in the past year) that they have until now been disposing of in our rivers. Water temperature and PH are also an issue.</p> <p>Springvale is not the only mine doing this in that area, as Angus Place Colliery, Clarence Colliery, Baal Bone Colliery, (and probably others) are disposing of mine discharge water into waterways, with similarly poor standards of water quality.</p> <p>The current Springvale proposal is the time to finally raise the standards for discharged coal mine water, for now and the future. This is even more important now as there are proposals by Springvale and Angus Place to extend the mining areas and to increase the annual production, which will lead to an increase in the combined amount of water discharged.</p>	Section 3.1.4 and Section 3.2.2
6	<p>I am writing to you to express my very real and scientifically backed concerns over the Springvale operations and associated treatment works. The time has come locally and worldwide to realise what you and I are doing to the environment is in essence the start of the end. Climate is the key and coal burning is only adding to the horrible predicament we are in.</p> <p>I urge you to cease polluting our rivers and creeks.</p> <p>You cannot rip up the floorboards and burn them for fuel tonight and walk on the bearers and joists for evermore...as a government you have a duty to protect the community.</p>	Section 3.2.2
137	<p>As a resident of Sydney I object to this proposal on three grounds:</p> <ul style="list-style-type: none"> • It would contaminate part of the water supply that all Sydneysiders drink • It would damage Cocks River; its ecology and tourist amenity • Further damage to the Newness Plateau, its endangered ecosystems and the pagodas is possible <p>The Springvale water treatment proposal is absolutely inadequate to protect the Cocks River Catchment, the Blue Mountains World Heritage Area and Sydney's drinking water supply.</p> <p>Surely it is possible to store water for future use and to adequately treat it before mine water is discharged. Only water treated to a standard that ensures adequate protection of river ecology and tourist amenity should be discharged into the environment. To save on costs of water treatment and transfer, surely several mines could cooperate with transfer and treatment.</p>	<p>Section 3.2.2</p> <p>Section 3.1.15</p>

	<p>Any runoff from local areas, such as the fly ash emplacement areas should be collected and treated for use.</p> <p>I am also concerned about the possibility of more pipeline construction on the Newnes Plateau. This is one of my favourite bush walking locations and it is already a mish-mash of management and services. No more damage to the plateau, its endangered ecosystems, the pagodas and the landscape amenity is acceptable</p>	
428	I support this project as it will have a positive effect on the catchment	Noted

3. Response to submissions

3.1 Responses to government agency submissions

3.1.1 Mining lease CCL733

Issue

Mining leases are shown in Figure 2.3 of the EIS. A total of 4 leases are identified: MPL314, ML1448, ML1352 and ML1323. However, CCL733 which includes surface areas is also within the project boundary and is not identified in this section of the EIS as being relevant to the project. The Division notes that a section of the Treated Water Transfer pipeline passes across a surface area of CCL733. This appears to be an oversight by the proponent in preparing the EIS.

Response

It is confirmed that CCL733 embraces the surface in the vicinity of the originally proposed LDP to Wangcol Creek. The DA has been amended with the addition of a transfer system to TCR and the Project Application Area no longer traverses the mining lease. The amended Project application area is presented in Figure 1-1.

3.1.2 Rehabilitation Management Plan/Mining Operations Plan

Issue

A condition of the Development Consent requires that activities within a Mining Title area must be covered in an approved Rehabilitation Management Plan/Mining Operations Plan (RMP/MOP) to be prepared to the satisfaction of the Division. A standard Rehabilitation Management Plan condition (in place for the Springvale Mine and Western Coal Services) would be appropriate.

This requirement may be addressed by modification to the existing RMP/MOP documents for

- Springvale Colliery (part MPL314, ML1323 and, if applicable, ML1326 – which is a subsurface only lease),
- Western Coal Services (part MPL314, CCL733, ML1448, ML1352 and any lease granted in respect of MLA497), and;
- Angus Place Colliery (if applicable).

The RMP/MOP, or modification to the existing MOP/RMP documents, is to be approved prior to commencement of the applicable surface disturbing activities.

It is recommended that rehabilitation of areas not within a mining title should be in to the satisfaction of the landowner.

The Division will hold a security bond to cover rehabilitation liabilities associated with the project in areas where mining titles are in place. Rehabilitation Cost Estimates will need to be submitted with MOP/RMP documents. As such, it should be clear in the Development Consent that the Division responsibility for rehabilitation is only applicable for these areas.

Response

A separate Rehabilitation Management Plan for the Project will be prepared. Springvale Coal confirms that the plan will be prepared within the timeframe stipulated within the consent conditions.

Springvale Coal also confirms that security bond to cover rehabilitation liabilities associated with the four mining leases (MPL314, ML1448, ML1352 and ML1323) within the Project Application Area boundary is already held by DRE. Rehabilitation of areas within the Project Application Area boundary not within a mining title will be undertaken in consultation with and to the satisfaction of the landowner.

3.1.3 Water treatment plant capacity

Issue

Capacity of the treatment plant for future integration of mine water for other current and future mine operations.

Response

The Project has been developed to improve the water quality in the Upper Cocks River Catchment and to address Schedule 4 Condition 12 of Springvale Mine Extension Project (Springvale MEP) consent SSD 5594 relating to water management performance measures.

The Project is designed to provide a solution for water transferred through the existing Springvale Delta Water Transfer Scheme (SDWTS) which received water from dewatering facilities for Springvale Mine and Angus Place Colliery. The SDWTS currently discharges through LDP009 to Sawyers Swamp Creek in the Upper Cocks River catchment and contributes more than 30% of the total salt load to the catchment.

The Project will make a major contribution to improving water quality in the Cocks River catchment, but cannot be seen as providing a single standalone solution for management of all water quality issues in the Western Coalfields.

The Project can be considered as a "building block" or part of a package of works which contributes to meeting the outcomes of the Upper Cocks River Action and Monitoring Plan, which has been prepared to address Schedule 4 Condition 13 of the Springvale MEP consent SSD 5594.

The Project 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 capacity of the WTP cannot be significantly increased without a major overhaul to the existing MPPS operations and development of further solutions for brine and residuals management.

Management of mine water from other current and future mining operations in the Western Coalfields therefore does not currently form part of the Project. The WTP will be of modular construction capable of expansion subject to the operational constraints identified above.

3.1.4 NorBE Assessment

Assessment of additional water quality parameters

Issue

Detailed discussion of other water quality parameters (such as metals etc) during operations.

Response

A baseline water quality assessment was undertaken for the receiving environment as well as existing discharge locations. The treated water quality to be created by the project is likely to be an ion stripped version of LDP009 water quality.

The predicted water quality of the treated water specified by the technical specifications for the water treatment plant are to be less than thresholds for environmental harm and the treatment process is expected to achieve a 90% removal efficiency for metals. The final treated water quality will be confirmed as part of the commissioning process for the water treatment plant following the completion of construction.

The predicted treated water quality was used to predict the total annual loads for a variety of water quality parameters and discharge volume scenarios as reported in Section 6.6 of the Water Resources Impact Assessment in Appendix B of the EIS. The Project resulted in a load reduction of between 17% and 90% when compared to discharges from LDP 009, demonstrating a substantial beneficial effect on the receiving water catchment.

The transfer of treated water to Thompsons Creek Reservoir for storage and subsequent reuse will remove the need to discharge of excess water to the environment, further enhancing the beneficial effect of the Project.

Consideration of NorBE for the Project was undertaken primarily using the water and salt budgets with salinity (EC) was used a typical indicator parameter for mine water impacts as part of the assessment. There was no one specific parameter that was likely to create a different impact to that of the indicator.

A detailed assessment of water quality parameters associated with the transfer of residual feed to Springvale Coal Services site is provided in Modification 1 to Western Coal Services Project.

Construction and decommissioning

Issue

How the SWTP will have a neutral or beneficial effect on water quality during construction and decommissioning.

Response

The SWTP will include as part of all construction and decommissioning phases a construction environment management plan (CEMP) which will include within it erosion and sediment control plans. Where the project is within an operational lease for Centennial, the existing water management plans of operations come into effect to specifically require that all disturbance activities are to have management controls implemented. Effective construction management will ensure there is a neutral effect during construction and decommissioning.

3.1.5 Western Coal Services and impacts on existing LDP006

Effect of increased discharges at LDP006 as a result of residual disposal at the REA

Issue

...deterioration in water quality at Wangcol Creek compared to existing conditions through increased discharges at LDP006 as a result of disposal of residue material from the treatment plant at the reject emplacement area REA. This is considered to be a detrimental impact, not a beneficial impact as stated in the EIS.

Response

The water treatment process includes a clarifier within the pre-treatment process which is required to remove suspended solids from the raw water stream prior to desalination. The residual stream is anticipated to be a maximum of 0.43 ML/day for treatment of peak raw water volumes from the underground workings and will have similar water quality characteristics to the raw mine water as it is generated by the pre-treatment process.

There would also be minor quantities of back flush material from the water treatment plant generated during quarterly maintenance activities. The cleaning would use around 0.01 ML of treated water from the RO process with the addition of acids and bases to backflush the membranes. The water is then neutralised and gradually blended back to the residuals stream for disposal to the REA.

The residuals transfer will result in minor impacts (flow, water quality) on Wangcol Creek, which are mitigated further downstream from LDP006 through the cessation of discharges from Springvale Mine's LDP009 proposed in the Springvale WTP.

The EIS considered the discharge of excess treated water to Wangcol Creek would result in a diluting effect as a result of the higher quality of treated water in comparison to existing water quality in Wangcol Creek. The diluting effect would be beneficial in terms of pollutant concentrations, whilst it is acknowledged that any release of water will increase the overall pollutant loads to the system.

The Project has been amended to remove the proposed discharge treated water to Wangcol Creek and there are expected to be minor increases to flow and EC as a result of the disposal of residual materials to the REA. The environmental consequences on receiving waters is considered negligible and will only be realised upstream of the confluence of the Coxs River and Sawyers Swamp Creek.

Management of the residuals stream from the WTP is required as part of the implementation of the treatment system to achieve the overall improvement to the catchment and will result in a minor deterioration in the immediate receiving waters of Wangcol Creek.

The effect of residual disposal at the Springvale Coal Services Site has been assessed in detail as part of Modification 1 of the Western Coal Services Project.

Clarification of discharge volumes from SCSS at LDP006

Issue

The discharge volumes from the SCSS at LDP006 are reported on average to be 1.29 ML/day, with historical ranges between 0-14 ML/day. WaterNSW understands that current discharges at LDP006 are close to 4-5ML/day.

Response

During 2016 there was a period where SCSS required elevated discharges to remove excess water from their water management system. This excess water volume was leading to elevated groundwater conditions around Cooks Dam and DML Dam. With excess water volume managed down, the average annual discharge has returned to the predicted range. Moving forward the separation of clean water and mine water will improve clarity to what water is actually being contributed to Wangcol Creek by the operations at SCSS and what is contribution from the Lamberts Gully catchment.

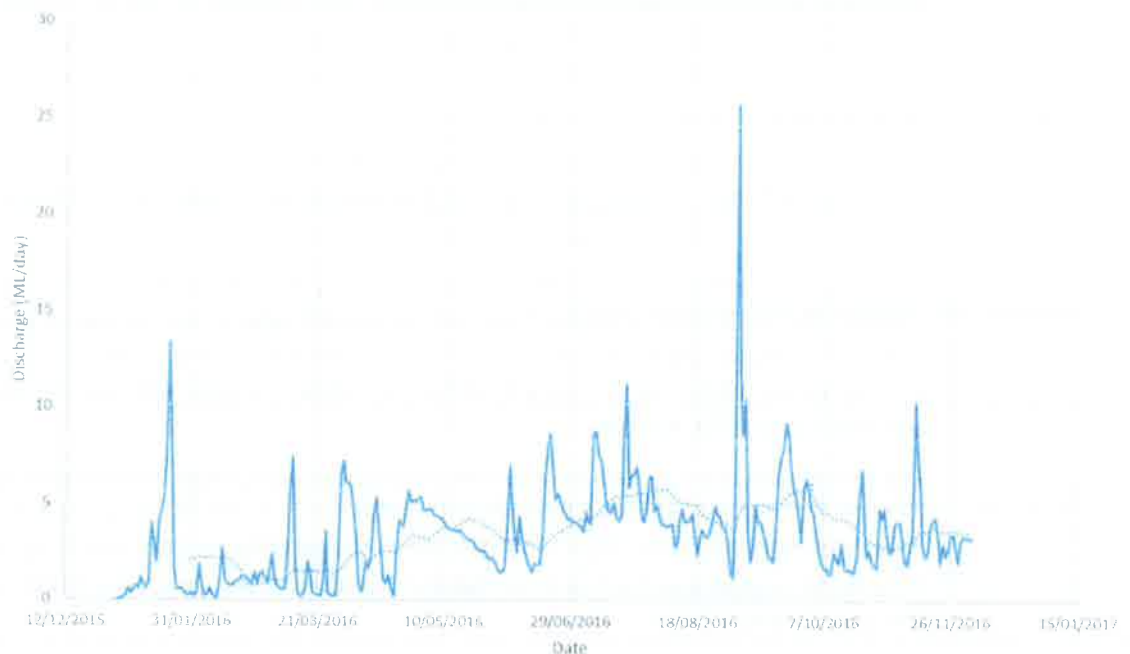


Figure 3-1 2016 daily discharge volumes from LDP006

It is clear from Figure 3-1 that flow via LDP006 has temporarily risen to approximately 5 ML/day in July, in addition to short term responses to rainfall. Since this time however, groundwater volumes have recovered to approximately 2 ML/day. Discharges from LDP006 are dynamic and it is incorrect to indicate that they average 4-5 ML/day annually. The water and salt balance assessment, provided as part of the Modification 1 to the Western Coal Services Project, further confirms the factors that influence LDP006 discharges and the calibration/validation works undertaken as part of the regional modelling undertaken for the SWTP.

Assessment of potential surface water and groundwater quality impacts from disposal of residuals at the REA

Issue

LDP006 discharge salinity is currently more than 3000 $\mu\text{S}/\text{cm}$. It is likely that the salinity of existing discharges from LDP006 may increase due to disposal of SWTP solids at the REA at the SCSS. There may also be other potential water quality impacts from residue materials being deposited at the REA which have not been addressed in the EIS.

Response

The transfer of residuals to the REA at SCSS will result in an increased water volume load on the water management system at the site. This increased water volume will result in increased discharges from Cooks Dam. The water quality within Cooks Dam has been identified as being representative of groundwater with elevated parameters representative of the mined coal seam. Works undertaken by the Modification 1 to the Western Coal Services Project, considered the mixing of residuals with the water quality already present on site. This indicated a general dilution of the pollutant concentrations already present on site, as the residual source has parameters at a less concentration than that of the water present in the mine water system at SCSS already.

Clarification on Wangcol Creek discharges at LDP006 and requirement for a proposal to offset negative impacts to be incorporated in the updated UCRAMP

Issue

Inconsistency noted in the expected additional discharge volumes from LDP006 ranging from 0.2 ML/day increase to 0.43 ML/day.

Response

The Project will create up to 0.43 ML/day of residuals which is transferred to the REA. This volume of water is either decanted from the REA, or infiltrates into groundwater. This volume is reduced by evaporation effects and is modelled to result in an increase of flow to Cooks Dam of less than 0.43 ML/day. The interpretation that the 0.43 ML/day is a uniform increase in discharges is incorrect and maybe a point of confusion in the text. The modelling predictions undertaken for the Project and the results provided in annual water transfer diagrams are correct.

The Modification 1 for Western Coal Services Project improved the model predictions related to the residuals transfers which have subsequently formed updates to the modelling undertaken for the amended Project.

Need for further assessment of metals on Wangcol Creek from discharges at LDP006

Issue

Metal loads within the residuals stream impacting upon receiving waters in Wangcol Creek.

Response

Options to address the current (and any future) discharge at LDP006 will be addressed as a separate matter to the Project as part of the Western Coal Services Project. The impact of metals within the residuals stream on the quality of discharges from LDP006 has been considered in the Western Coal Services Project Modification 1.

Clarification on whether upgrades to existing discharge point LDP006 and channel within Wangcol Creek are still proposed

Issue

It not clear whether upgrades to the existing discharge point LDP006 and channel within Wangcol Creek are still proposed.

Response

The proposed treated water pipeline and discharge infrastructure is no longer proposed to undertaken as part of the Project. Upgrade to the discharge channel from LDP006 beneath the Castlereagh Highway to Wangcol Creek will therefore no longer form part of the Project.

RMS have however been consulted with respect to improving the condition of their drainage assets directly downstream of LDP006 and maintenance works are planned to be undertaken in conjunction with the Springvale Coal Services site operations.

3.1.6 Water treatment plant chemicals

Issue

There are no details of the likely chemicals to be used through the reverse osmosis treatment process, the resultant quality of backwash water, and their potential environmental impacts.

Response

As the residuals are proposed to be transferred to the REA at WCS the assessment of potential impacts from 'back wash' water is provided within the Modification 1 to Western Coal Services Project. The residuals will contain the clean-in-place (CIP) waste from membrane cleaning. The CIP will be transferred with the residuals to the REA once every three months. The volume of these residuals is predicted to be approximately 10 kL, which is minor in comparison to the standard residual volumes.

The CIP solution will consist of treated water, acids and bases as the main cleaning agents. Typically, hydro-chloric acid is used as is the common industry practice. Prior to the CIP solution being discharged into the residual stream, the solution will be neutralised and stored. Appropriate blending of the CIP solution will occur into the residual stream to achieve a consistent overall quality target. Additional treatment chemicals may be introduced to the CIP solution, which may include surfactants and chelating agents depending upon the final water treatment plant design and operation, however all chemicals are proposed to be biodegradable and compatible with the receiving environment. Further clarification of the specific CIP solution compounds, including material safety data sheets, are to be provided as part of the WTP commissioning period.

3.1.7 Design of salt slurry ponds

Issue

Given the proximity of the proposed salt slurry ponds to identified areas of groundwater contamination within the MPPS site, WaterNSW considers that stringent design, construction and management measures should be required for these ponds to ensure no additional impacts on groundwater in this location, and potentially on Wangcol Creek.

Response

Noted. Surface storages holding potentially contaminated water are to be constructed with a liner with minimum permeability standard of 1×10^{-9} m/s.

3.1.8 Water and salt balance figures in UCRAMP

Issue

There are discrepancies between water and salt balance figures in the draft UCRAMP compared to the WRIA (Appendix B) for the existing conditions indicating that the impacts from Upper Cocks River catchment to Lake Burragorang were underestimated in the draft UCRAMP

Response

The Draft UCRAMP and the results held within it is a live document currently undergoing revision. The UCRAMP document will be updated following the approval of this Project, Western Coal Services MOD1 (under assessment) and Springvale MEP MOD 2 (submitted). The Project generally considers a conservative outcome with respect to management of groundwater volumes from Springvale Mine and Angus Place Colliery through the maintenance of discharge activities at LDP001 Springvale and LDP001 Angus Place.

3.1.9 Decommissioning of sedimentation ponds at LDP009

Issue

Decommissioning of sediment ponds at LDP 009.

Response

LDP 009 will no longer be required for use following the commissioning of the Project. The decommissioning and rehabilitation of the ponds will be undertaken in accordance with the Springvale Mines approved rehabilitation practices.

3.1.10 Consultation with WaterNSW once water treatment plant is constructed

Issue

It is noted on Page 217 of the WRIA (Appendix B) that the nature of discharges cannot be established until the WTP is constructed. WaterNSW would like to be consulted once the quality of treated water and discharges, and ecotoxicology testing from the project are known.

Response

A commissioning report is to be prepared following commissioning of the Plant. WaterNSW will be part of a group of regulators that will be consulted on the outcomes of this commissioning phase.

3.1.11 Salinity limits in new EPL

Issue

The proposal assumes salinity of treated mine water of 450 $\mu\text{S}/\text{cm}$ will be achieved and assessment predictions are based on this salinity, however Table 10.13 and Page 232 of Appendix B proposes limits of 901 $\mu\text{S}/\text{cm}$ in the new EPL. WaterNSW considers this limit unsuitable.

Response

The proposed limit defines a point at which beyond, environmental harm is expected. This limit was based on investigations and studies undertaken within literature. The Project requires a 90th percentile of 500 $\mu\text{S}/\text{cm}$ to be achieved at discharge points. If this is not achieved, then a non-conformance will be applied however there is no certainty as to the potential environment harm caused by such an event. The likely EPL conditions will state the requirement to notify EPA of environmental harm and hence a 100 percentile limit proposed is what we believe to be appropriate.

This issue is likely superseded with the amended Project, as indicated by WaterNSW, however the management of water quality produced/released by the WTP will still require management to ensure compliance.

3.1.12 Mount Piper Ash Placement

Increased concentration of brine for disposal and consideration of a need for a modification

Issue

A crystalliser is proposed as part of the Project to reduce overall volume of brine by around 60% and will result in a more concentrated salt slurry with a likely salinity level of around 500,000 mg/L. Concerns have been raised that the increased concentration in the brine will result in an increase in the potential for impacts associated with existing ash placement operations.

Submissions also queried whether the disposal of ash with a different chemical composition to that currently utilised at MPPS and disposal of sediment from the crystallised salt ponds may

require a modification to the existing project approval (PA09_0186) which provides consent for the Mount Piper Ash Placement Project.

Response

Brine and ash disposal from the MPPS operations is currently undertaken under the both the original development consent for MPPS (File No: S90/01696) and the recent project approval (PA09_0186) for the Mount Piper Ash Placement Project which includes the Lamberts North and Lamberts South emplacement areas.

The existing consents were granted on the basis that ash placement would be designed to ensure the brine to be essentially immobilised within the ash deposit. Brine conditioned ash is only placed above a level of 946 m AHD which is approximately 35 to 40 metres above the usual groundwater level. Compaction to 98 -99% of ash material within each 0.5 m lift minimises rainfall infiltration from promoting migration of water through the ash deposit and any water eventually reaching the water table would be a combination of brine and water conditioned ash.

The use of the brine generated by the Water Treatment Project for continued treatment of ash from the power station operations prior to placement in the ash storage areas is considered consistent with the terms and conditions of the respective consents and modification would therefore not be required.

The technical assessments to support the existing approvals were based around extensive monitoring data of the surface and groundwater resources surrounding the ash placements, which are known to be complex and influenced by the historical mining operations that have previously occurred in the area. The monitoring data was supported by predictive modelling of the potential impacts for the use of brine in ash conditioning and the extension of the ash emplacement areas.

The developments were considered to pose an acceptable risk to the environment subject to the implementation of the strict management and monitoring requirements included with the conditions of consent. This included a requirement to prepare detailed water management plans in consultation with relevant government agencies and adoption of an adaptive management approach to identify and respond to any emerging issues.

Procurement for the Water Treatment Project is currently the function of a competitive process and final brine composition may vary somewhat between proponents. It is noted that alternate process may result in alternate chemical composition in relation to sodium, calcium and sulphate concentrations and alternate physical characteristics in regards to the proportion of liquid and solids.

Implementation of the requirements of the water management plans in accordance with the existing consents is considered an appropriate mechanism to identify any emerging issues associated with the continued operation of the ash placements.

The management and operation of the emplacement areas following the implementation of the Water Treatment Project is considered to be consistent with the existing approvals. The incorporation of a crystalliser as part of the Project is itself meeting the requirements of the consent conditions to reduce the volume of brine produced at the MPPS. Reducing the overall volume of the brine will by its nature result in a more concentrated brine stream requiring management within the emplacement area.

3.1.13 Transfer pipeline and access tracks on the Newnes Plateau

Impacts to rock formations on the Newnes Plateau

Issue

A section of the raw water pipeline passes between a number of rock pagoda formations known as the Clerestory Spurs. Concern has been raised in regards to potential stability issues for the rock formations and suitability of the proposed northern alignment.

Response

The Clerestory Spurs are rock formations comprising 12 pagoda studded ridge spurs trending roughly north north-east from the main creek system of Sawyers Swamp towards the Beecroft fire trail. They were named on a Bush Club walk in 2011, as representing a clerestory or the upper part of the nave of a Gothic Church (Bushexplorers, 2016).

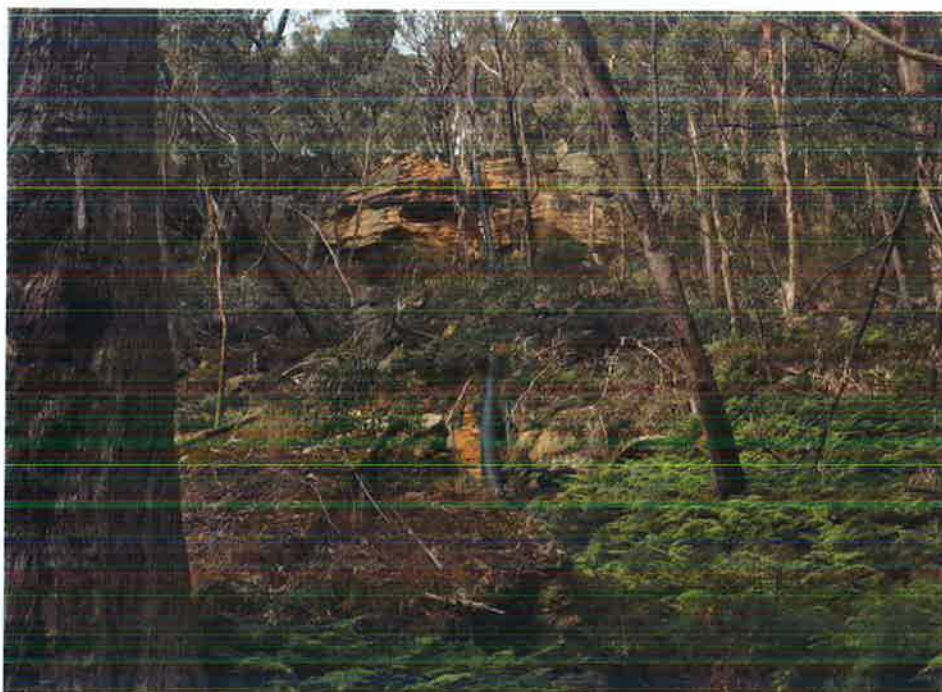
The transfer pipeline follows the alignment of a former logging trail which passes through a gully which runs between the spur lines labelled Clerestory Spur 8 and 9. The logging trail has largely regenerated and currently comprises a rough walking track of moderate grade from the ridge of the Newnes Plateau to Sawyers Swamp Creek.

The pipeline is anticipated to be buried in the section and will be installed by either trenching or using directional drilling / trenchless techniques. The pipeline will follow the gully and will have a relative small disturbance footprint ensuring there is no direct impact upon the rock formations on the adjacent spur lines.

Trenching or directional drilling activities are not anticipated to result in excessive vibration with potential to impact upon the structural stability of the adjacent rock faces. Adopting a vibration screening criteria for damage to residential structures of 5 mm/s as included in Table 3-6 of the Noise and Vibration Assessment included in Appendix E of the EIS is considered suitable to ensure minimal potential risk to near-by rock formations. Maintaining a buffer distance of 5 metres from the adjacent pagodas for excavator or backhoe operations will minimise the potential for structural damage.

The preferred northern alignment is considered to pose considerably less constraints in terms of constructability, impacts to pagoda formations and biodiversity constraints. The route provides a more consistent moderate grade in comparison to the existing pipeline alignment resulting in considerable less potential for environmental impacts during access for construction and maintenance activities. The existing pipeline traverses an extremely steep section of the escarpment and would result in a higher potential for impacts to local rock formations as shown on Photograph 3-1.

The preferred northern alignment option is also expected to result in the removal approximately 3.6 ha less native vegetation and is considered to pose less biodiversity constraints than the southern alignment option.



Photograph 3-1 Existing pipeline over the escarpment – view 2

Responsibility for all constructed access tracks until closure and rehabilitation

Issue

Responsibility for maintenance and rehabilitation of access tracks.

Response

Springvale Coal confirms that the constructed access tracks are its responsibility as per the conditions of the Forest Permit from FCNSW. Springvale Coal also confirms that the rehabilitation of the constructed access tracks will be undertaken under the conditions of the Forest Permit, and in consultation with FCNSW.

Contribution to upkeep of roads used for heavy vehicle routes

Issue

Costs of upkeep and maintenance of the road network within State Forests.

Response

Springvale Coal confirms that the maintenance of access tracks in Newnes State Forest will be undertaken in accordance with the conditions of the Forest Permit from FCNSW. Forest permit conditions include requirements to remedy any damage caused to the area by the Applicant and remedy any erosion or other environmental damage or deterioration of the area a result of activities.

Vegetation clearing in relation to fire mitigation surrounding ancillary infrastructure

Issue

Any vegetation clearing in relation to fire mitigation surrounding ancillary infrastructure must be considered within the EIS (if outside the 20 m corridor).

Response

No vegetation clearing outside the 20 m pipeline corridor will be undertaken. No fire mitigation zone is required for the pipeline corridor as only the pipelines will be installed in that corridor. . As part of Springvale Mine operations the Gravity Tank compound on Newnes Plateau will be installed with a 11 kV power supply for booster pumps. The electrical cable leading to the Gravity Tank from the Borehole Substation will be fully trenched (along existing tracks) and will terminate in an enclosed switchroom located within the compound, at least 5 m from the perimeter fence. No vegetation clearing will be required for the installation of the power supply.

Fire restrictions during construction and review of bushfire management plan by FCNSW

Issue

FCNSW to review bushfire management plan and fire restrictions during construction.

Response

Centennial Coal confirms that FCNSW will be provided with the bushfire management plan for review prior to approval.

The construction Mitigation Measures will be updated to include a requirement for works to comply with FCNSW fire restrictions, which require all vehicles to carry certain fire-fighting equipment depending on daily fire risk.

3.1.14 Voluntary Planning Agreement

Issue

Consideration of a voluntary planning agreement with Lithgow City Council.

Response

Springvale Coal was advised after meeting with Lithgow City Council on 22 November 2016 that a Voluntary Planning Agreement for the Springvale Water Treatment Project was not required and Council would advise DPE of this outcome.

3.1.15 Biodiversity assessment and offsets

Detailed consideration of issues raised in regards to the biodiversity assessment and offset requirements have been undertaken by RPS who undertook the biodiversity assessment for the EIS.

Issue

Geographic features that were not selected in the BioBanking Calculator should be included in Table 10 of the BAR and noted as not selected.

Response

Table 10 of the BAR (inserted below) has been updated to contain all geographic and habitat features generated by the BioBanking Calculator. The complete list of selected geographic / habitat features in Table 3-1. None of the species were unselected in the submitted online tool.

Table 3-1 Geographic and habitat features

Geographic and Habitat Feature	Species	
	Common name	Scientific name
land within 250 m of termite mounds or rock outcrops	Rosenbergs Goanna	<i>Varanus rosenbergi</i>
land containing escarpments, cliffs, caves, deep crevices, old mine shafts or tunnels	Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>
land within 500 m of sandstone escarpments with hollow-bearing trees, rock crevices or flat sandstone rocks on exposed cliff edges and sandstone outcropping	Broad-headed Snake	<i>Hoplocephalus bungaroides</i>
land within 40 m of heath, woodland or forest	Giant Burrowing Frog	<i>Heleioporus australiacus</i>
land containing <i>Bursaria spinosa</i>	Bathurst Copper Butterfly	<i>Paralucia spinifera</i>
land within 100 m of stream or creek banks	Booroolong Frog	<i>Litoria booroolongensis</i>
heath or eucalypt forest on sandstone with a build-up of litter or other debris and containing, or within 40 m of, ephemeral or intermittent drainage lines	Red-crowned Toadlet	<i>Pseudophryne australis</i>
land within 100 m of emergent aquatic or riparian vegetation	Green and Golden Bell Frog	<i>Litoria aurea</i>

Issue

Further information on survey methodology and effort for the threatened species detailed in Section 3.2 of the BAR is required.

Response

Detailed survey methods for species listed in Section 3.2 of the BAR are contained within Appendix 2 of the BAR (i.e. the Biodiversity Inventory and EPBC Act Assessment). Survey methods used to identify threatened species outlined in Section 3.2 of the BAR is updated in Table 3-2:

Table 3-2 Survey methods

Common Name	Scientific Name	Recommended Survey Period	Targeted survey Y/N	Methodology Type
Bathurst Copper Butterfly	<i>Paralucia spinifera</i>	All year round	Y	Searches for host plant (<i>Bursaria spinosa</i> subsp. <i>lasiophylla</i>)
Black Gum	<i>Eucalyptus aggregata</i>	February-December	Y	Targeted searches for this species of Eucalypt
Booroolong Frog	<i>Litoria booroolongensis</i>	November - February	Y	Herpetofauna searches and habitat assessments
Broad-headed Snake	<i>Hoplocephalus bungaroides</i>	March - November	Y	Herpetofauna searches and habitat assessments
Capertee Stringybark	<i>Eucalyptus cannonii</i>	All year round	Y	Targeted searches for this species of Eucalypt

Clandulla Geebung	<i>Persoonia marginata</i>	All year round	Y	Targeted searches for this species of Eucalypt
Veronica blakelyi	<i>Veronica blakelyi</i>	All year round	Y	Targeted searches for this species
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	None specified	None specified	Arboreal and terrestrial Elliot trapping, spotlighting and infrared camera traps targeted this species.
Giant Burrowing Frog	<i>Heleioporus australiacus</i>	September - May	Y	Herpetofauna searches and habitat assessments
Green and Golden Bell Frog	<i>Litoria aurea</i>	August - March	Y	Herpetofauna searches and habitat assessments
Grevillea divaricata	<i>Grevillea divaricata</i>	All year round	Y	Targeted searches for this species.
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	September - April	Y	Anabat echolocation recordings and habitat assessments
Red-crowned Toadlet	<i>Pseudophryne australis</i>	All year round	Y	Herpetofauna searches and habitat assessments
Regent Honeyeater	<i>Anthochaera phrygia</i>	All year round	Y	Diurnal bird census's
Rosenbergs Goanna	<i>Varanus rosenbergi</i>	November - February	Y	Targeted searches, camera trapping and habitat assessments (termite mounds)
Silver-leafed Gum	<i>Eucalyptus pulverulenta</i>	All year round	Y	Targeted searches for this species of Eucalypt
Squirrel Glider	<i>Petaurus norfolcensis</i>	All year round	Y	Arboreal Elliot trapping, spotlighting and infrared camera traps targeted this species.
Thick-leaf Star-hair	<i>Astrotricha crassifolia</i>	All year round	Y	Targeted searches for this species

Issue

A more complete assessment of the potential to impact the Bathurst Copper Butterfly and Broad-headed Snake, based on adequate survey effort, is required.

Response

Bathurst Copper Butterfly

Table 15 of the Biodiversity Inventory and EPBC Act Assessment states that no *Bursaria spinosa* subsp. *lasiophylla* was recorded, and this is consistent with the flora species list contained in Appendix 2 of the assessment. The likelihood of occurrence table contained within Appendix 1 of the assessment states:

"Suitable habitat occurs on the flats where *B. spinosa* subsp. *lasiophylla* has been recorded."

This statement refers to the available habitat for the Bathurst Copper Butterfly on a landscape scale (i.e. 'suitable habitat occurs on the flats'), where *B. spinosa subsp. lasiophylla* has previously been detected. It does not specifically relate to the presence of *B. spinosa subsp. lasiophylla* within the Project study area. A precautionary approach was adopted during the likelihood of occurrence assessment due to the available habitats for the Bathurst Copper Butterfly within the landscape, and the number of records within 10 km of the study area.

Given that patches of *B. spinosa subsp. lasiophylla* were known to occur on the flats surrounding the study area, the potential for movement by this species through and over the study area could not be ruled out. This was the justification for further assessing the Bathurst Copper Butterfly. Subsequently, an EPBC Act Assessment of Significance was applied to this species which is contained in Appendix 5 of the assessment. The assessment of significance states:

"This species was not detected within the Study Area during current surveys, and B. spinosa subsp. lasiophylla was also not recorded."

The assessment of significance conclusion is underpinned by the absence of *Bursaria spinosa subsp. lasiophylla* from the study area. Although movement of this species may traverse the study area, there is no suitable habitat within the study area for this species to permanently occupy, breed and forage.

Broad-headed Snake

Section 4.1.3 of the Biodiversity Inventory and EPBC Act Assessment states:

"The Study Area does not include expansive areas of particularly rocky habitats, such as large rock platforms or cliffs, however it will pass through some areas considered suitable for the Broad-headed Snake."

Although the available habitats were not considered to be ideal habitat for the Broad-headed Snake, the presence of some rock features adjacent to trees prevented this species from being excluded from further assessment. On this basis, potential habitat was considered to occur and a subsequent EPBC Act Assessment of Significance was performed for this species.

Table 14 of the BAR assumed the Broad-headed Snake not to be present based on the justification leading to this outcome as explained in Step 3 of Section 6.5 within the FBA (OEH 2014). It was not concluded that the Broad-headed Snake was present within the study area, nor was it considered **likely** to be using potential habitat. The consideration was that the Broad-headed Snake **may** occur, which does not warrant further assessment under the FBA. Therefore, species credits were not generated for the Broad-headed Snake.

In respect to the survey effort performed to detect this species, surveys were conducted in accordance with DECC (2004) Threatened Biodiversity Survey and Assessment Guidelines (as required in Section 6.6 of the FBA, despite the fact that this species did not carry through to Section 6.6 as no species credits were required). Nocturnal searches of trees and diurnal searches of rocky habitats did not detect the Broad-headed Snake. Sixteen hours of nocturnal surveys were undertaken within the survey period, in addition to herpetofauna habitat searches that involved rock crevice inspections and turning over of loose rocks. This survey effort is consistent with Table 5.4 Suggested survey methods and effort for reptiles within DECC (2004)

Issue

All efforts should be made to avoid impacts to *Persoonia hindii* and *Eucalyptus cannonii*.

Response

Efforts have been made to minimise impacts upon *Persoonia hindii* and *Eucalyptus cannonii* through the initial design phase and through minimisation and mitigation measures as outlined in section 4.0 of the BAR.

Impact minimisation will be possible through careful observation and guidance on construction techniques during construction activities. The benefit of this impact minimisation strategy is not currently known as site specific construction constraints are likely to have an important role in determining the efficacy of this strategy. As such, it is not possible to conclusively say that all impacts on *P. hindii* and *E. cannonii* would be avoided. Impact assumptions adopted on this basis are listed below:

- Zero loss of *P. hindii* (averting the loss of seven observed individuals); and
- Assumed loss of three individuals of *E. cannonii*. The precautionary principle has been adopted and a conservative number of *E. cannonii* have been assumed to be impacted on the basis that there may be some juvenile specimens which did not contain reproductive material which is necessary to distinguish this species from the common *E. macrorhyncha*.

Mitigation measures implemented where impact minimisation was unsuccessful for these species involve pre-clearance surveys where a qualified ecologist will identify key areas of impact avoidance with the construction manager. Every effort will be made to realign the pipeline, if possible, within the impact footprint in order to avoid *Persoonia hindii* stems and *Eucalyptus cannonii* individuals.

If after the pre-clearance survey, avoidance of *P. hindii* and *E. cannonii* cannot be achieved, all removed individuals will be appropriately offset as a last resort.

Issue

Preliminary offsetting requirements for the project should include all potential impacts

Response

For the purposes of calculating maximum offset liability, *Persoonia hindii*, *Eucalyptus aggregata*, *Veronica blakelyi* and *Caesia parviflora* var. *minor* have been assumed as present and impacted by the Project. The number assumed present/ impacted and the associated species credit liability is provided below. The threatened species (TS) multiplier is also listed should the calculation require revision.

Table 3-3 Offset calculations

Common Name	Scientific Name	TS Offset Multiplier	Number assumed present	Species credits required
Black Gum	<i>Eucalyptus aggregata</i>	7.7	2	154
Capertee Stringybark	<i>Eucalyptus cannonii</i>	1.3	3	39
<i>Persoonia hindii</i>	<i>Persoonia hindii</i>	7.7	7	539
Small Pale Grass-lily	<i>Caesia parviflora</i> var. <i>minor</i>	1.4	3	42
<i>Veronica blakelyi</i>	<i>Veronica blakelyi</i>	2.1	1	21

Issue

Final offsetting requirements to be confirmed once pre-construction surveys have been completed.

Response

As stated by OEH, the requirements for offsetting will be reassessed following the completion of pre-construction surveys.

Issue

All efforts should be made to avoid impact to *Caesia parviflora* var. *minor*.

Response

All efforts will be made to avoid impacts to *Caesia parviflora* var. *minor*. This species occurs in both the northern and southern routes and as a result could not be avoided merely by route selection. Impact minimisation and mitigation measures have been recommended to avoid/reduce impacts on this species. Where not possible, an offset liability will be triggered.

Issue

Pre-construction surveys for *C. parviflora* var. *minor* be conducted in all areas of suitable habitat to determine the size and extent of the local population and determine the number of individuals that may potentially be impacted.

Response

Surveys for *Caesia parviflora* var. *minor* were conducted within the flowering period as shown in Table 8 of the Biodiversity Inventory Report. During this survey period, three individuals were detected. Further pre-construction surveys will be undertaken to determine the least impact pathway with the priority being the delivery of an impact avoidance outcome. Every effort will be made to realign the pipeline, if possible, within the impact footprint in order to avoid the three individuals recorded within the study area. If after the pre-clearance survey, avoidance of *Caesia parviflora* var. *minor* cannot be achieved, all removed individuals will be appropriately offset as a last resort. If the *Caesia parviflora* var. *minor* cannot be avoided then the size of the local population will be estimated as an adjunct to the pre-construction surveys.

It is noted that mapping of the *Caesia parviflora* var. *minor* extent on Newnes Plateau has already commenced in spring of 2015 and 2016 as part of pre-clearance surveys for other Springvale Mine infrastructure projects.

Issue

The definition of local population should be redefined to reflect the potential contact of *C. parviflora* var. *minor* within the Study Area with other populations.

Response

A greater appreciation of the local population of *Caesia parviflora* var. *minor* is expected as a consequence of performing pre-construction surveys specified in the BAR. A revised definition of the local population can be provided at that point.

Issue

Restrict vehicle access along the pipeline during construction and operation to prevent public access.

Response

Access prevention measures will be implemented during construction to ensure no unauthorised access by the public occurs. Temporary gates in addition to flagging tape and appropriate signage will be installed prior to the commencement of construction activities.

Issue

The proponent demonstrate that they have exhausted all reasonable steps for securing like for like offsets prior to applying the FBA variation rules.

Response

The Project is located across two IBRA subregions (i.e. Capertee and Wollemi IBRA subregions) within the Sydney Basin Bioregion. Major landholdings within these two IBRA subregions include the NSW NPWS (conservation reserve network), Forests NSW and Centennial Coal. Under FBA, offsetting for the Project must be procured within the IBRA subregion(s) comprising the impact and the adjoining IBRA subregion(s)

Of these large landholdings, only Centennial Coal lands are 'available' for offsetting purposes. In recognition of this, and prior to the introduction of the FBA, Centennial Coal performed a detailed investigation of their landholdings in 2012 to identify potential biodiversity offset sites for future projects. The findings produced from this investigation formed the basis for the Western Regional Biodiversity Offset Package.

Notwithstanding the approach taken by Centennial, it is important to reiterate the limited opportunities available for finding an offset outcome consistent with the FBA rules without resorting to the variation rules. 'Like for like' offsets need to be found in the same IBRA subregion and/ or adjacent subregion. To maintain compliance with Commonwealth listings, adjacent subregion need to be found within the same IBRA region (i.e. Sydney Basin Bioregion).

Within the above context, only one potential BioBank site located within the applicable offsetting area is listed in the BioBank site expressions of interest for consideration (i.e. site #66). In the summary provided below, it is noted that plant community types available for offsetting at site #66 are either not impacted by Centennial operations and/ or are in surplus in the WRBOP.

EOI #66 Plant Community types	Comment
HN506/Blakely's Red Gum - Yellow Box - Rough-barked Apple grassy woodland of the Capertee Valley, Sydney Basin Bioregion	Not in impact area. Surplus in WYRBOP (HN614)
HN530/Grey Box - grass tree - spinifex woodland on limestone hills of the western Hunter and Capertee Valleys, Sydney Basin Bioregion	Not in impact area
HN534/Grey Gum - Narrow-leaved Stringybark - Inland Scribbly Gum shrubby open forest of the western Capertee Valley, Sydney Basin Bioregion	Not in impact area. Surplus in WYRBOP
HN537/Grey Myrtle - Lilly Pilly dry rainforest in dry gullies of the Sydney Basin Bioregion and South East Corner Bioregion	Not in impact area
HN544/Inland Scribbly Gum - Grey Gum - Narrow-leaved Ironbark shrubby open forest on hills of western Capertee Valley, Sydney Basin Bioregion	Not in impact area. Surplus in WYRBOP
HN569/Red Box - Grey Gum - stringybark woodland on talus slopes of the western Blue Mountains, Sydney Basin Bioregion	Not in impact area
HN574/River Oak open forest of major streams, Sydney Basin Bioregion and South East Corner Bioregion	Not in impact area. Surplus in WYRBOP
HN610/White Box - Narrow-leaved Ironbark grassy woodland of the Capertee Valley, Sydney Basin Bioregion	Not in impact area

Issue

Validate offsetting opportunities at Western Region Biodiversity Offset Package (WRBOP) to determine if it contains suitable offsets for the Springvale Water Treatment Project. OEH won't be in a position to assess the adequacy of offset package until the information is assessed.

Response

The WRBOP was re-submitted to OEH following the feedback received at the meeting held with them on 02 November 2016. The offset calculations for the offset sites, as requested at that meeting, were submitted to OEH through the online biobanking submission tool on 10 November 2016.

Section 1.5.1 of the WRBOP states *"This regional offset package provides offset areas that exhibit connectivity with conservation areas, areas of ecological significance, and selection of high value ecological lands. A strategic regional approach to the land management and targeted actions of the offsets will create a higher value of flora and habitat. The package includes elements of 'like for like' offsets and other conservation related outcomes to meet the offsetting requirements of the western region."* The approach to offsetting by Centennial Coal in the Western Region has been discussed with OEH.

Notwithstanding, the WRBOP is currently being updated to provide a clear project by project allocation of offsets, including the Springvale Water Treatment Project, and will be re-submitted to OEH before 31 December 2016.

3.1.16 Targeted test excavation or monitoring of easement intersection with creek lines

Issue

Targeted test excavation should be undertaken of places likely to contain undisturbed deposits or, if such areas are not present, then close monitoring should be undertaken of locations where the proposed easement approaches and intersects with creek lines.

Response

Through both desktop assessment and field surveys, the heritage assessments for the Project have concluded that the likelihood of items of Non-Aboriginal and Aboriginal cultural heritage significance is low. Therefore, test excavations are not considered to be warranted.

A number of mitigation measures are proposed including unexpected finds procedures. All care would be taken during construction activities and procedures would be followed in the event that there is an unexpected find.

3.1.17 Waterway crossings

Issue

Details of waterway crossings and undertaking watercourse crossings and works to be undertaken in accordance with DPI Water Guidelines for Controlled Activities

Response

Key waterway crossings include the Coxs River in the vicinity of the Castlereagh Highway and rail line and Sawyers Swamp Creek upstream from the Sawyers Swamp Creek Ash Dam. Trenchless technology will be adopted to avoid impacts to the Coxs River.

Progressive erosion and sediment control plans will be prepared with reference to the DPI Water Guidelines for controlled activities on waterfront land.

3.1.18 Crown roads

Issue

A number of unformed Crown roads located within the pathway of the proposed pipeline, are currently being assessed for road closures. It is also noted, an easement for a 'brine pipeline' has been recorded over affected Lots of freehold land, however, it does not appear to be recorded for the unformed Crown roads.

Further consultation is required with DoI –Lands to determine the most appropriate pathway on agreement for access and use of the unformed roads until such time the roads are closed

Response

The pipeline predominantly follows the alignment of existing infrastructure. Further consultation will be undertaken with Lands to determine appropriate access for use of the alignment.

3.2 Responses to community and special interest group submissions

Key issues raised in the community and special interest group submissions related to:

- Applicability of the SSD 5594 Condition 12 discharges and the need for inclusion of new performance measures, amended Upper Cocks River Action and Monitoring Plan and penalties for failing to meet deadlines in any consent
- Does not address Condition 13 of SSD 5594 regarding the Upper Cocks River Action and Monitoring Plan
- Potential water quality impacts (salts, metals, water temperature, pH, nutrients) and therefore the need to avoid discharge to Wangcol Creek, Cocks River and the drinking water catchment
- Water treatment plant treatment performance and a long term target of 350 µS/cm EC for the Cocks River catchment or pre-mining water quality of 30 µS/cm EC
- Preference for storage of treated water for reuse at Thompsons Creek Reservoir (transfer of treated water for storage) and transfer of raw mine water to Thompsons Creek Reservoir in the event of water treatment plant shutdown
- Ongoing operation of the water treatment plant after the permanent shut down of MPPS
- Capacity of the transfer pipeline and water treatment plant to also accommodate mine water from other LDPs and Clarence Colliery
- Collection and treatment of runoff from Springvale Coal Services/LDP006/Cooks Dam for use at MPPS
- Alignment of additional pipeline construction on Newnes Plateau and potential for damage (further justification for selection of northern easement) to ecological communities, pagoda landscapes and/or Clerestory Spurs
- Cessation of coal mining / coal industry / coal fired power including climate change
- Monitoring and reporting of discharges / water quality
- Temporary storage of minewater underground at Angus Place Colliery and impacts on Lambs Creek
- Benefits of mine water reuse replacing untreated 'raw' drinking water

3.2.1 Applicability of the SSD 5594 discharge limits and the Upper Cocks River Action and Monitoring Program

Issue

Submissions have questioned the applicability of the performance measures in SSD 5594 Schedule 4 Condition 12 to the Project and suggested the consent must include new performance measures and an appropriately amended Upper Cocks River Action & Monitoring Plan.

Submissions have also indicated that the Project adopts discharge standards that create incentives to encourage the discharge of treated mine water, rather than its reuse in the Mt Piper power plant and suggest the discharge standards in the Springvale mine extension consent should not apply to this consent.

Response

Condition 12 of Schedule 4 of SSD 5594 sets out salinity limits for discharge of groundwater inflow mine water from the Springvale MEP including timeframes for meeting these limits. The Project has been developed in direct response to the performance standards in this condition and the limits are considered applicable to the Project.

Condition 13 of Schedule 4 of SSD 5594 requires the preparation of an Upper Cocks River Action & Monitoring Plan which identifies measures to achieve the mine water discharge criteria required by Condition 12 and a monitoring program.

The Project forms one component of the plan to address water quality in the Upper Cocks River with the cessation of discharges at LDP009 and reuse of treated Springvale Mine water at MPPS. It has been designed to address mine water discharge quality from the Springvale Mine and Angus Place Colliery through the SDWTS. Other discharge points within the Upper Cocks River catchment will be addressed through other projects in the region and outlined in the Upper Cocks River Action & Monitoring Plan.

It is noted that Springvale Coal has proposed a minor amendment to the SSD 16_7592 (refer Section 1.3.1) to include the transfer of excess treated mine water to Thompsons Creek Reservoir and remove the treated water discharge pipeline and associated infrastructure to Wangcol Creek. This will remove the need for a discharge to Wangcol Creek and therefore the Cocks River and drinking water catchment.

All treated mine water will either be beneficially reused at MPPS for cooling water or excess will be transferred to Thompsons Creek Reservoir for storage and subsequent reuse at MPPS during periods of high demand.

3.2.2 Discharges to Wangcol Creek

Issue

Potential impacts associated with the discharge of excess treated water to Wangcol Creek and Sydney's drinking water catchment

Response

Springvale Coal has proposed a minor amendment to the SSD 16_7592 (refer Section 1.3.1) to include the transfer of excess treated mine water to Thompsons Creek Reservoir and remove the treated water discharge pipeline and associated infrastructure to Wangcol Creek. This will remove the need for a discharge to Wangcol Creek and therefore the Cocks River and drinking water catchment.

3.2.3 Water treatment plant shutdown

Issue

Management of raw water in the case of water treatment plant shutdown.

Response

The Project has been designed to accommodate the storage of water within the Angus Place 900 storage area in the event of a total water treatment plant shut down. It is estimated that approximately 10 days underground storage is available which is considered to provide sufficient redundancy for emergency breakdown situations.

Springvale Coal is also proposing a minor amendment to SSD 16_7592 to increase the capacity of the water treatment plant from 36 ML/day to 42 ML/day (refer Section 1.3.3). The amendment is required to ensure sufficient redundancy is incorporated into the treatment system to provide treatment of all incoming flows prior to the transfer to Thompsons Creek Reservoir and will provide for:

- Management of any short-term fluctuations in mine water make
- Provision for maintenance of individual modules within the water treatment plant, whilst maintaining treatment capacity in the remainder of the water treatment plant
- Flexibility to temporarily increase flows to allow catch-up following water treatment plant maintenance or shut down periods.

3.2.4 MPPS shut down

Issue

Ongoing operation of the water treatment plant in the event of a permanent shut down of MPPS.

Response

The operation of Springvale Mine, Angus Place Colliery and the MPPS are considered to be intrinsically linked with the operation of the mining operations required to provide a fuel supply for the power station operations.

The Water Treatment Project has been developed on the assumption that the Springvale Mine and Angus Place Colliery would operate in sequence and will continue to supply coal to the MPPS operations together with the export market.

The Water Treatment Project has been developed to allow the reuse of mine water within the MPPS operations and the Project is therefore reliant upon the continued power station operations. The Project has been amended to remove the treated water discharge to Wangcol Creek and will be operated as a zero discharge solution.

If Springvale Mine or Angus Place Colliery continued to operate in the unlikely event of a closure to MPPS, then an alternate water management solution would need to be developed. This would be subject to either a modification to SSD 16_7592 or a new development application dependent upon the nature of the final solution and would be designed to achieve compliance with the performance specifications in Condition 12 of Schedule 4 of the SSD 5594 consent.

3.2.5 Capacity of the Project

Issue

Capacity of the transfer pipeline and water treatment plant to also accommodate mine water from other LDPs and Clarence Colliery

Response

The Project is designed to provide a solution for water transferred through the existing Springvale Delta Water Transfer Scheme (SDWTS) which received water from dewatering facilities for Springvale Mine and Angus Place Colliery. The SDWTS currently discharges through LDP009 to Sawyers Swamp Creek in the Upper Cocks River catchment and contributes more than 30% of the total salt load to the catchment.

The Project will make a major contribution to improving water quality in the Cocks River catchment, but cannot be seen as providing a single standalone solution for management of all water quality issues in the Western Coalfields.

The Project can be considered as a "building block" or part of a package of works which contributes to meeting the outcomes of the Upper Cocks River Action and Monitoring Plan, which has been prepared to address Schedule 4 Condition 13 of the Springvale MEP consent SSD 5594.

The Project 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 capacity of the WTP cannot be significantly increased without a major overhaul to the existing MPPS operations and development of further solutions for brine and residuals management.

Management of mine water from other current and future mining operations in the Western Coalfields therefore does not currently form part of the Project. Clarence Colliery is located in a separate catchment and water transfers are not currently contemplated to form part of the Project. The WTP will be of modular construction capable of expansion subject to the operational constraints identified above.

3.2.6 Pipeline construction on the Newnes Plateau

Issue

Alignment of additional pipeline construction on Newnes Plateau and potential for damage (further justification for selection of northern easement) to ecological communities, pagoda landscapes and/or Clerestory Spurs

Response

As discussed in Section 3.1.13, the pipeline route from Newnes Plateau to MPPS was selected based on outcomes of ecological, archaeological and geomorphological assessments of two alternate routes, being the existing route and a new pipeline alignment. The best system practice system of environmental management using the hierarchy of avoiding, minimising / mitigating and finally offsetting environmental impacts was adopted in the selection process and the new shorter pipeline alignment was selected to reduce potential environmental impacts. It should be noted that the Ecological Assessment and the Biodiversity Assessment Report undertaken by RPS considered both alignments and determined the northern alignment would result in around 3.6 ha less disturbance to native vegetation than the southern alignment.

3.2.7 Cessation of coal industry

Issue

Community submissions that continued expansion of coal mining needs to stop and alternatives to coal fired power are required (renewable energy) to address climate change and damage to the natural environment.

Response

There are many factors which will influence the potential growth of the renewable energy sector in NSW and Australia more widely. The conversion of the electricity supply in NSW from a predominantly coal fired power based supply to a predominantly renewable based supply is something that is likely to take a significant amount of time and beyond the scope of this Project.

The continued operation of Springvale Mine and MPPS is required to supply around 15 percent of the state's current electricity demand.

While the Project is directly related to the operation of the Springvale Mine and indirectly to the continued operation of MPPS, its implementation will have overarching environmental benefits. The Project will improve water quality in the Coxs River catchment and maximise direct reuse of mine water for industrial purposes (within the MPPS cooling water system). This in turn would reduce reliance on extraction of water from the catchment to meet demand for make-up water in the MPPS operations.

3.2.8 Monitoring and reporting of discharges / water quality

Centennial Coal will undertake all monitoring and reporting requirement in accordance with Conditions of Approval for the Project and any applicable Environmental Protection Licence.

3.2.9 Temporary storage at Angus Place Colliery

Issue

Submissions oppose use of this underground storage at Angus Place as part of the Springvale Water Treatment project. The spring that surfaces at Lambs Creek is suspect and probably contaminated with untreated mine water. The use of this storage may see untreated additional mine water discharged to Lake Burragorang via Lambs Creek.

Response

It is noted analysis data to support their assertion that "*The spring that surfaces at Lambs Creek is suspect and probably contaminated with untreated mine water*" was not provided with the submission. Without any analyses data it is difficult to ascertain that Lambs Creek water is contaminated, and if it is contaminated with mine water from Angus Place 900 Underground Storage Area.

The Angus Place 900 Underground Storage Area below Lambs Creek has a depth of cover of at least 150 m. It is not possible for the stored mine water in the workings to rise to the surface from this depth to discharge into Lambs Creek. Lambs Creek flows from the east to the west. It is not possible for the water to emerge further downstream of Lambs Creek on the west and discharge into it as the coal seam / existing workings, where water is stored dips to the east, and mine water flows in that direction.

4. Updated Statement of Commitments

Issue	Mitigation measures
General	<p>A construction environmental management plan (CEMP) will be prepared prior to the commencement of construction activities. The CEMP will include the following elements, with further details below:</p> <ul style="list-style-type: none"> • Erosion and sediment control plans (ESCPs) • A construction traffic management plan • A water treatment plant commissioning plan to manage algae growth and ensure water quality specifications are met • A weed management plan • A procedure to ensure that the vegetation to be removed is clearly marked with temporary fencing (flagging tape or similar) to delineate boundaries • A procedure to ensure that due-diligence field inspections of clearance areas are undertaken by a qualified ecologist prior to commencement of works • A procedure to ensure AHIMS sites within 30 m of the Project application area are clearly marked with temporary fencing (flagging tape or similar) as a NO GO ZONE • Air quality, noise and vibration mitigation measures • A waste management strategy • A rehabilitation strategy.
Water resources	<ul style="list-style-type: none"> • ESCPs will be prepared for both the Water Treatment Plant site and for the installation of the transfer pipelines in accordance with Managing Urban Stormwater: Soils and Construction' 4th Ed. 'The Blue Book' (Landcom 2004). • ESCPs for the transfer pipelines will be progressive and prepared and implemented in advance of the pipeline installation • Scour protection and general rehabilitation methods focussed on stabilising disturbed surfaces will be implemented progressively. • A surface water monitoring program will be developed for the Project to ensure water management measures implemented function as designed. The program may utilise existing monitoring points for the MPPS and the Springvale Coal Services site operations where appropriate and will include: <ul style="list-style-type: none"> – Monitoring waterway and diversion stability. – Monitoring of surface water quality. – Monitoring of groundwater levels and quality – Management of water quality treatment devices. – Monitoring erosion and sediment control structures.
Biodiversity	<ul style="list-style-type: none"> • The Western Region Biodiversity Offset Package will be updated to provide a suitable offset for the Project. The offsets will be developed in accordance with the NSW Biodiversity Offset Policy for Major Projects. • Pre-clearance surveys will be undertaken during construction to identify opportunities where possible to avoid threatened plants and hollow-bearing trees in the vicinity of the Project application area through minor route adjustment. • The clearing of native vegetation will be minimised as far as is practicable. Unnecessary vegetation clearing will be minimised by fencing (flagging tape or similar) to delineate boundaries. • Every effort will be made to realign the pipeline, if possible, within the impact footprint in order to avoid <i>Persoonia hindii</i> stems and <i>Caesia parviflora</i> var. <i>minor</i> and <i>Eucalyptus cannonii</i> individuals • If after the pre-clearance survey, avoidance of <i>P. hindii</i>, <i>E. cannonii</i> and or <i>Caesia parviflora</i> var. <i>minor</i> cannot be achieved, all removed individuals will be appropriately offset as a last resort.

Issue	Mitigation measures
	<ul style="list-style-type: none"> • All contractors will be specifically advised of the designated work area. All construction activity will be undertaken within the designated work area to minimise the impact on surrounding native vegetation • All construction and operational vehicles/machinery will use designated access tracks. Plant and machinery will be cleaned of any foreign soil and propagative material prior to being transported to the Project application area to prevent the spread of weeds and potential importation of <i>Phytophthora</i> • To minimise potential impacts on adjoining vegetation all liquids (fuel, oil, cleaning agents, drilling liquids etc.) will be stored appropriately and disposed of at suitably licensed facilities. Spill management procedures will be implemented as required. Rubbish will be collected and removed from the Project application area • Weed management procedures will be implemented to prevent the spread of weeds both inside the Project application area and the surrounding areas. • Weed monitoring will be implemented and potential weed infestations appropriately managed to minimise the spread of weeds in the Project application area. Management of noxious weeds will be undertaken in accordance with the <i>Noxious Weeds Act 1993</i>. • Where possible, clearing activities will be timed to avoid removal of hollow-bearing trees during breeding season of threatened species (avoiding winter and spring) • An ecologist will be present to supervise hollow-bearing tree clearing within the Project application area and that vegetation clearing is undertaken in an appropriate manner.
Non-Aboriginal heritage	<ul style="list-style-type: none"> • Management will be in accordance with Centennial's Heritage Management Plan
Aboriginal heritage	<ul style="list-style-type: none"> • If suspected Aboriginal or skeletal material is identified during works then procedures outlined in Centennial Coal's Western Holdings Aboriginal Cultural Heritage Management Plan 2014 will be followed. • Protective flagging tape will be placed around all Aboriginal sites identified within 30 m of the Project application area prior to works and marked as a NO GO ZONE to prevent access during construction.
Noise	<ul style="list-style-type: none"> • Noise generating construction activities will be undertaken during the recommended standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday) outlined in the 'Interim Construction Noise Guideline' (DECC, 2009). • Residences predicted or measured to exceed the construction noise management levels will be notified as to the timing and duration of the construction works and provided with a contact phone number for any complaints or concerns during the construction period. • The distance between plant and equipment and any sensitive receiver will be maximised where practicable during construction activities. • Vehicles, plant and equipment will be regularly maintained and kept in good operating condition. • Machines found to produce excessive noise will be removed from site or stood down until repairs or modifications can be made. • Should any buildings be identified that are located within the structural damage vibration buffer distances, a property condition report will be prepared for the premises before and after undertaking the work.
Traffic	<ul style="list-style-type: none"> • A construction traffic management plan will be developed to address the following: <ul style="list-style-type: none"> – Management and timing of heavy vehicles on Main Street and Mort Street – Speed limits for Project vehicles – Designated access routes for heavy vehicles to be clearly highlighted and adhered

Issue	Mitigation measures
	<ul style="list-style-type: none"> – Compliance with the safety, signage and access requirements – Timing of trucks accessing the work sites to ensure there is sufficient room – Clear guidelines for the event of adverse weather conditions • Constructed access tracks will be maintained and or rehabilitated in accordance with the conditions of the Forest Permit from FCNSW • Consultation would be undertaken with the Coerwull Public School, Lithgow Public School and St Patricks School to inform them of the construction program and proposed access routes (via Main Street). • The contractor will be required to restrict heavy vehicle movements to and from the Project work sites within the schools' drop off and pick up times (8 am – 9:30 am and 2:30 pm – 4 pm).
Aquatic ecology	<ul style="list-style-type: none"> • Toxicity based protection limits will be established for the Project and incorporated into the relevant EPL. These limits will be monitored through the Surface Water Monitoring Program. • Macroinvertebrate monitoring will be conducted in Wangcol Creek and Coks River biannually (autumn and spring) for two years following commencement of initial discharge into Wangcol Creek. The requirement for ongoing macroinvertebrate monitoring beyond this point will be determined based on a review of the aquatic ecology and water quality monitoring.
Air quality	<p>Dust emissions during construction will be managed via the CEMP. Measures will include:</p> <ul style="list-style-type: none"> • Cessation of dust generating activities during adverse weather conditions (e.g. strong winds) • Limiting vehicles to specified routes to construction sites and ensuring speed limits are adhered to • Use of dust suppression techniques if required such as watering to maintain moist conditions of exposed areas • Maintenance of any excavated soil stockpiles and handling areas in a condition which minimises windblown or traffic generated dust • Removal of silt behind filter fences and other erosion control structures on a regular basis, so that silt does not become a source of dust • Monitoring and cleaning of roads as required by street sweepers • Maintenance of construction equipment to ensure exhaust emissions comply with relevant legislation • Minimising disturbed areas as much as possible • Disturbed areas will be rehabilitated progressively, that is, as soon as reasonably practicable following disturbance. • All reasonable and feasible measures will be implemented to minimise the total area exposed for dust generation at any one time.
Visual amenity	<ul style="list-style-type: none"> • Transfer pipelines will be designed to incorporate non-reflective material to help them blend into the existing environment. • Construction works will be completed in the shortest possible timeframe • All waste generated by the proposed works will be removed from site as soon as it is practicable and disposed of appropriately. • Trenched sections of pipeline on the Newnes Plateau will be rehabilitated as soon as practicable following pipeline installation. • All surfaces and / or property disturbed or damaged by the proposed works will be replaced, repaired, re-instated, or otherwise restored to a pre-existing or better condition. • On completion of works all vehicles, construction equipment, material and refuse relating to the works will be removed. • The work sites will be kept in an orderly manner, tidy and rubbish free. • Finishes and colours for water treatment plant will be similar to existing buildings at the facilities at MPPS
Bushfire	<ul style="list-style-type: none"> • A bushfire management plan will be developed for the construction of the Project in consultation with the NSW Rural Fire Service.

Issue	Mitigation measures
	<ul style="list-style-type: none"> • Construction works will be undertaken in accordance with FCNSW fire restrictions, which require all vehicles to carry certain fire-fighting equipment depending and restrictions on particular types of work on daily fire risk.



Appendices

Appendix A – List of Community Members Who Made Submissions

Table A1 – List of members of community who made Submissions

Reference ID	Name	Reference ID	Name	Reference ID	Name	Reference ID	Name
1	Andrew Valja	26	David Smith	51	John Rimmer	76	David Hay
2	Robert Sterry	27	mir norman	52	Sonja Ebzery	77	Duncan Burnet
3	David ---	28	Geoff Dowsett	53	Eryl Brady	78	Jayne Whitehouse
4	Jasmyn Ellis	29	Rae Bolotin	54	Ben Keyzer	79	Beryl Swan
5	Peter Drinkall	30	Yuri Bolotin	55	Laurie Bimson	80	Margaret Ashburn
6	Bruce Cameron	31	Bob Salijevic	56	shef kane	81	Bronwen Carr
7	Tommy Wiedmann	32	Marion Davies	57	Lorraine Higgins	82	Katrina Trafford-Walker
8	Beverley Thompson	33	Emanuel Conomos	58	Simone Young	83	R Caldwell
9	Sean Corrigan	34	Gabriella Eakins	59	Kerith Power	84	linda venter
10	Dorann & David Ackery	35	scott marshall	60	penny osterhaus	85	Susan Aird
11	Peter Green	36	Ross Ellis	61	Jason Hay	86	Shelley Studdert
12	Jenny Fox	37	Remko ten Bruggencate	62	Kelly Owen	87	Dusanka Matic
13	geraldine vaughan	38	Ochre Lawson	63	Jeanette Brackstone	88	Pamela Hawkins
14	Alice Wood	39	Reremoana Rongo	64	Karen Hull	89	Cameron Walton
15	Karen Neubauer	40	Caterina Leone	65	Sandra Shergill	90	Margaret Beal
16	Daniel Bolotin	41	Emily Visnjic	66	James Ryrie	91	Amanda Lambert
17	John Pettit	42	Charmaine Maguire	67	michelle Bothe	92	Gerry Mccoy
18	jan westlake	43	Milica Stojic	68	Jane Ryrie	93	Kathryn Barlow
19	Leeanne Frostick	44	Mick Haynes	69	Colleen Turnbull	94	Tiffany Bolton
20	DEREK FINTER	45	Tamara Radic	70	Rebecca Sykes	95	Connie Larsen
21	Roger caffin	46	Jan Spencer	71	Elizabeth Mifsud	96	Sarah Scott
22	Jacqueline Drinkall	47	Denis Duchesne	72	Jeannie Muller	97	Helen Reynolds
23	Gerhard Hassler	48	Ben Evans	73	Jufith Hart	98	Valerie Oliver
24	Marie Morris	49	Sally Curry	74	Paul Kaczorek	99	Maria Jawor
25	Bruce Thurtell	50	kate Tysoe	75	Michael Callanan	100	Sally Gray

Reference ID	Name	Reference ID	Name	Reference ID	Name	Reference ID	Name	Reference ID	Name
101	Jane Gordon	126	Grant McDonald	151	Kirsten Anker	176	Bernard Curran		
102	peter pearson	127	Kaili Leadbeater	152	Leona Hay	177	Lee Kemp		
103	Fiona Dimas-Herd	128	Maria Fitzgerald	153	Adriana Petkov	178	Mark Queenan		
104	Lyn Mews	129	James Bretherton	154	Debbie Arnold	179	Lynette Sinclair		
105	Brigid Cook	130	Meredith Brownhill	155	Pawel Hanasz	180	ALEX Birkner		
106	janine stranger	131	Linda Starkey	156	sarah howell	181	Danielle Stewart		
107	Penny Johnson	132	Lesley Gentles	157	Jodie Rogers	182	Elizabeth Mackie		
108	Cathy Aston	133	Trevor brown	158	Robert Simons	183	Elizabeth Oates		
109	Kate Burns	134	Helen Zhao	159	Howard Starkey	184	Elizabeth Rosewall		
110	Rosanna Perillo-Boutin	135	Joel Robinson	160	Greg Nash	185	Candy Disch		
111	Chris Edmond	136	Soheyla Gholamshahi	161	Wayne Reynoldd	186	helen taplin		
112	Paul Angwin	137	Robin Hanson	162	Mitchell Coffison	187	Carolyn Harbevsk		
113	Pat McLoughlin	138	ANTHONY MARSH	163	Ben Compton	188	Diana Wilde		
114	Lesley Bahr	139	Magaret Hilder	164	Rachel Raymond	189	Jennifer Cross		
115	Tracey Ester	140	Lachlan Smith	165	Jamie Williams	190	richard statham		
116	Andrea Vaughan	141	David Ormsby	166	Michael Smigielski	191	Simone Furtkamp		
117	Honor McGregor	142	andy horsfall	167	Gemma Matteson	192	brian stevenson		
118	Melissa Galland	143	Colin Walters	168	Zoe Bedford	193	Elwin Cross		
119	Hayley Edwards	144	James Cartwright	169	Angela Treherne	194	Adrian Brown		
120	Matthew Cafe	145	Bodil Conroy	170	Penelope Lake	195	Shandra Pattinson		
121	Simon Poole	146	Slavisa Stojic	171	Sonya Muhsimmer	196	Eleanor Mann		
122	John Kich	147	Meg Stratti	172	Angelique Porter	197	Brian Garret		
123	Rob Barrie	148	Jasmina Matic	173	Brigitte Ringe	198	Jennifer Sykes		
124	Lynne McDonald	149	Vanessa Batar	174	Georgine Clarsen	199	Bob Biddle		
125	Glenys Watt	150	Richard Stone	175	Bastian Weber	200	D H		

Reference ID	Name	Reference ID	Name	Reference ID	Name	Reference ID	Name
201	BRANDY WRIGHT	226	Mark Coleman	251	Jefferson Laurie	276	Nicola Farrington
202	Peter Hughes	227	Janine Perry	252	Nola Potter	277	Neil Pedley
203	Judith Hitchcock	228	Mitzi Saunders	253	Shauna Flenady	278	Pamela Tait
204	Jennifer Tan Sing	229	Danny Redford	254	Dianne Higgins	279	Jill Wallace
205	Kerry Anderson	230	Hilary Sadler	255	Meg Ivory	280	Kirstie Stewart
206	Diane n Blackmore	231	Kerry McCarthy	256	Rhean Bates	281	Cheryl McAlpine
207	Susy Diaz	232	Janellej Hosking	257	Paul Pulkunen	282	Leonie Hitchenor
208	Cheryl Ferguson	233	Jennifer Pearson	258	Jerry Johnson	283	Gary Garcia
209	Rhonda Johnsen	234	Paul Baker	259	Robert Kremer	284	John Petteford
210	Am Lee	235	Helen Thomas	260	Matt Cadusch	285	Gaye Johnson
211	MONIKA Riley	236	lisa thornton	261	Lachlan McDonald	286	Lisa Jones
212	Michaela Burt	237	William Spencer	262	Petrea Stuart	287	Bruce M'crystal
213	Carl Heydon	238	jeff Rigby	263	Nea Gyorffy	288	Dianne Corthorne
214	Amanda Tan	239	Paul Smith	264	Kaye Berry	289	Trevor Randall
215	Kelly Furner	240	Rita Oldridge	265	paul davies	290	Moya Jackson
216	Linda Groom <>	241	Christopher Edmond	266	Lise Graber	291	Debbie Sinclair
217	Mark King	242	Susan Ross	267	Maggie Lee	292	Kristen Davey
218	Beryl Caslick	243	Charlie Borg	268	Theresa Taylor	293	Nat Ward
219	Christopher Bailey	244	Lyndell Whiteford	269	Paul Williams	294	Brett Williams
220	Suzanne McLellan	245	Trish Doyle	270	Ian Humkin	295	Peter Dowson
221	David and jane McBride	246	Anita Weinberg	271	Sharon Wallent	296	Noel Clark
222	Lynette Singleton	247	Jennifer Davis	272	Tony Hatch	297	Garry Davies
223	Annet van Kesteren	248	John Pittard	273	Brigid Wilkinson	298	graham meiers
224	Janette Angelo	249	Jocelyn Lawry	274	Alanna Bell	299	Lizabelle DYM
225	Anna Stone	250	Katherine Gaul	275	Judith Gillespie	300	Shannon Dunbar

Reference ID	Name	Reference ID	Name	Reference ID	Name	Reference ID	Name
301	Robin Varian	326	Michele Alberth	351	Ellie Hinder	376	Lucy Chubb
302	Jeanne Harper	327	Jutta Linneweber	352	Elizabeth Vesely	377	Dijana Zabic
303	mariea whittle	328	Adam Daniel	353	Kay Bushnell	378	Myra Burgess
304	dianne giovine	329	Lara Wiseman-Daniel	354	Josee Vesely-manning	379	Nina Ambrose
305	Andrea Sweeney	330	Katie Newkirk	355	Carol Henry	380	Juleann McGovern
306	Narelle Jury	331	Ruth Meaney	356	Matthew Hawtin	381	Trevor Anderson
307	Catharine Lampson	332	Kim Draguns	357	David Garland	382	Rory Gallagher
308	Helen Kvelde	333	Ishil Sterling-Levis	358	Tracey de Wet	383	Astrid Johanson
309	Alba Penninger	334	Peter Jenner	359	Dominick Reynitiens	384	Raelene Porter
310	Judith Lawson	335	Claire Strong	360	Joanne Burrough	385	Sylvia Rapley
311	Rainbow Shiva	336	Clare power	361	Dorothy Jakab	386	Ann Anderson
312	monica brindle	337	Alison Stubbings	362	Sarah Radvanyi	387	Anne Devine
313	Toby Sterling	338	Dimity Kennedy	363	Malcolm Rutherford	388	Saijyoti Lydford
314	Karen Collyer	339	Karen McLaughlin	364	Kristen Meville	389	Chris Jonkers
315	trevor rhodes	340	Chris McMahon	365	Elizabeth Walton	390	Sephen McGlew
316	Annette McPhail	341	Jeremy Lawrence	366	Nicholas Barnsley	391	Russell Vidulich
317	Kathleen O'Neill	342	Barney Solomon	367	Katherine Steele	392	Michael Phillips
318	MARCELLE HABIB	343	Michael Chan	368	Amanda Lockton	393	Val Barron
319	David Nicholson	344	Amy Jones	369	Nurmia Jack	394	Gillian Fitzgerald
320	Penny MCCULLOCH	345	Sally Neaves	370	Shelly DeRenzy	395	Terri Frazer
321	Darrin Fogarty	346	Kara Gunn	371	Christina Wiseman	396	Debra Parks
322	Daniel Watkins	347	Eliane Hakvoort	372	Fiona Loeb	397	Marti Daviez
323	Ian Starkey	348	Hannah Hall	373	Margaret Lawrence	398	Jonathan Thomsen
324	Julie Favell	349	Margaret McPherson	374	Jenny Pollak	399	Carolyn Cotter
325	Ian Thorpe	350	Lynne Walter	375	Ian Richardson	400	Ralph Stern

GHD

133 Castlereagh St Sydney NSW 2000





T: +61 2 9239 7100 F: +61 2 9239 7199 E: sydmal@ghd.com.au

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Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	A Montgomery	K Rosen		K Rosen		23/12/16
1	A Montgomery	K Rosen		K Rosen		14/02/16



Cover photos: Rock Formations on Newnes Plateau and Cocks River

Springvale Coal Pty Limited
Level 18
BT Tower, 1 Market St
Sydney NSW 2000
www.centennialcoal.com.au