Centennial Coal

STATEMENT OF ENVIRONMENTAL EFFECTS

Springvale Mine Extension Project

State Significant Development 5594

Modification 2

Main Report and Appendices

December 2016

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Centennial Coal
Springvale

Springvale Mine

SSD 5594 – Modification 2

STATEMENT OF ENVIRONMENTAL EFFECTS

Prepared for:

Springvale Coal Pty Limited

By:

Centennial Coal Company Limited

Level 18, BT Tower
1 Market St
Sydney NSW 2000

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STATEMENT OF VALIDITY

Submission of *Statement of Environmental Effects*
Under Section 96(2) of the *Environmental Planning and Assessment Act 1979*

Development Application

Applicant Name	Springvale Coal Pty Limited
Applicant Address	Level 18, BT Tower, 1 Market St, Sydney NSW 2000
Development	Springvale Mine Extension Project
Development Description	Modification 2 to Springvale Mine's Consent SSD 5594 for activities described in **Section 1.3** and **Chapter 4.0** of this document.
Land to be Developed	Refer to Schedule of Land (**Appendix B**)
Environmental Impact Assessment	*Statement of Environmental Effects*

Document Preparation

Name	Nagindar Singh
Qualifications	BSc, MSc, PhD
Company	Centennial Coal Company Limited
Address	Level 18, BT Tower, 1 Market St, Sydney NSW 2000

Declaration

I certify I have prepared the *Statement of Environmental Effects*, and to the best of my knowledge:

- It contains all available information that is relevant to the environmental impact assessment of the development to which this statement relates.
- It is true in all material particulars and does not, by its presentation or omission of information, materially mislead.

16 December 2016

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EXECUTIVE SUMMARY

Background

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

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

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

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

Proposed Modification

Springvale Coal is seeking to modify development consent SSD 5594 to amend Schedule 4 Condition 12 of SSD 5594:

- To remove the requirement to *Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017*
- To defer to 30 June 2019 the requirement *to Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group*.

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

All activities on the surface (pit top and Newnes Plateau infrastructure areas) will continue to be undertaken as described in the SVMEP *Environmental Impact Statement* (EIS) (Golder Associates, 2014). No change in rehabilitation activities is proposed. Progressive and life of mine rehabilitation will be undertaken as described in Golder Associates (2014).

There is no proposal to change the approved longwall mining technique or the approved mine plan. ROM coal will continue to be transported off site as approved in SSD 5594.

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

Environmental Impact Assessment

A *Statement of Environmental Effects* (SEE) has been prepared to support the modification, submitted under Section 96(2) of the EP&A Act. The SEE describes the proposed modification, and assesses the potential environmental impacts on the surface water resources due to the proposed removal of the 30 June 2017 interim water quality criteria.

The SEE has been prepared to meet the requirements of Part 1 Clause 2(4) of Schedule 1 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), and contains information required under Clause 115 of the EP&A Regulation.

A Surface Water Assessment (Jacobs, 2016a) was undertaken to assess the impact of the proposed modification on surface water resources within the Coxs River catchment and Lake Burragorang. Mine water currently discharges from the Springvale Delta Water Transfer Scheme (SDWTS) at historical water quality levels via licensed discharge point LDP009 on Springvale Mine's Environment Protection Licence 3607 to Swayers Swamp Creek which flows to Coxs River. The modification is proposing to continue discharging mine water at LDP009 at historical water quality levels to up to 30 June 2019.

Regional Water Quality Impact Assessment

Jacobs (2016a) assessed the impact of the proposed removal of the 30 June 2017 interim water quality criteria and only meeting the 30 June 2019 water quality criteria within Coxs River catchment and Lake Burragorang. This was undertaken through a regional water quality impact assessment modelling (RWQIAM). A comparison of the outputs (water quality and water flows and levels) from the RWQIAM for the proposed scenario, the Proposed Simulation, is then made against the Approved Simulation which represents the scenario where Springvale Mine meets the water quality performance measures as stipulated in Schedule 4 Condition 12 of SSD 5594. This comparison provides the magnitude of the impact of the modification on the environment. Both the water quality (salinity) and water quantity (flows, levels) at nominated modelling points of interest or nodes in the Coxs River catchment were modelled in the RWQIAM and the full set of results are provided in Jacobs (2016a) included as **Appendix C,** and summarized in Chapter 7.0 of the SEE.

Water Quality

A summary of the water quality impacts on the Coxs River catchment at the modelled locations for the proposed removal of the 30 June 2017 water quality criteria is provided in **Table ES1** and **Table ES2**. The median (50th percentile), the 90th percentile and the maximum salinity results (in mg/L) from the prediction distribution plots for the Approved and the Proposed Simulations from the RWQIAM are presented. It is noted that for both the Approved and the Proposed Simulations the water quality data were modelled to represent two interpretations of the 2017 and the 2019 water quality criteria, namely, the Linear Fit and the Stepped Fit. These water quality assumptions are described in detail in Jacobs (2016b) and summarized in **Section 7.4.3.1** of the SEE.

Table ES1 – Summary of Salinity from the Modelled Approved and the Proposed Simulations

Modelled Location	Percentile	Salinity (mg/L) – Linear Water Quality Criteria		Salinity (mg/L) – Stepped Water Quality Criteria		% Change Approved *vs* Proposed – Linear Water Quality Criteria	% Change Approved *vs* Proposed – Stepped Water Quality Criteria	Assessed Impact
		Approved	Proposed	Approved	Proposed			
Kangaroo Creek and Coxs River above Wangcol Creek								
Kangaroo Creek, downstream of point of discharge from Angus Place Colliery's LDP001 (Node #011)	50%	652	652	652	652	0	0	No impact due to modification
	90%	742	742	742	742	0	0	
	Maximum	801	801	801	801	0	0	
Coxs River above Wangcol Creek (Node #056)	50%	476	476	476	476	0	0	No impact due to modification
	90%	667	667	667	667	0	0	
	Maximum	797	797	797	797	0	0	
Swayers Swamp Creek								
Sawyers Swamp Creek downstream of LDP009 (Node #166)	50%	292	293	334	334	<1	0	Impact not significant due to modification
	90%	732	754	764	775	3	1	
	Maximum	803	803	804	804	0	0	
Lake Wallace and above Lake Wallace								
Coxs River above Lake Wallace (Node #047)	50%	359	360	396	397	<1	<1	Minor impact due to modification
	90%	614	670	656	694	9	6	
	Maximum	793	793	791	791	0	0	
Lake Wallace (Node #074)	50%	305	306	340	342	<1	1	Minor impact due to modification
	90%	426	480	443	482	13	9	
	Maximum	561	600	561	600	7	7	

Table ES2 – Summary of Salinity from the Modelled Approved and the Proposed Simulations

Modelled Location	Percentile	Salinity (mg/L) – Linear Water Quality Criteria		Salinity (mg/L) – Stepped Water Quality Criteria		% Change - Linear Water Quality Criteria	% Change - Stepped Water Quality Criteria	Assessed Impact
		Approved	Proposed	Approved	Proposed			
Lake Lyell and above Lake Lyell								
Coxs River above Lake Lyell (Node #035)	50%	282	284	312	315	1	1	Minor impact due to modification
	90%	383	429	410	432	12	5	
	Maximum	546	593	546	593	9	9	
Lake Lyell (Node #174)	50%	293	299	305	313	2	3	Insignificant impact due to modification
	90%	322	334	348	353	4	1	
	Maximum	400	400	400	400	0	0	
Thompsons Creek Reservoir								
Thompsons Creek Reservoir (Node #272)	50%	307	317	317	323	3	2	Minor impact (magnitude and consequence) due to modification
	90%	337	340	344	350	1	2	
	Maximum	366	366	366	366	0	0	
Lake Burragorang and above Lake Burragorang								
Coxs River above Lake Burragorang (Node #225)	50%	143	144	145	145	1	0	Minor to negligible impact due to modification
	90%	197	203	206	211	3	2	
	Maximum	290	301	312	321	4	3	
Lake Burragorang (Node #280)	50%	100	100	100	100	0	0	Negligible impact due to modification
	90%	102	103	103	103	1	0	
	Maximum	104	104	105	105	0	0	

Water quality modelling results presented in **Table ES1** and **Table ES2** indicate that the removal of the interim 30 June 2017 water quality performance criteria, with respect to salinity, does not lead to a significant difference in predicted salinity within the Coxs River catchment (Proposed Simulation) over the prediction period, compared to that currently approved in SSD 5594 (Approved Simulation). Assessed impacts range from minor to negligible at the modelled nodes in the catchment. Modelling indicates no change to modelled median salinity in Lake Burragorang over the prediction period, compared to that currently approved.

The proposed modification has been assessed to result in a neutral effect to water quality, both at the local and the catchment level, with respect to the Neutral or Beneficial Effect (NorBE) water quality effect test (WaterNSW, 2015) when compared to the 'base case' defined by DPE (2015) as the Electrical Conductivity (EC) limit of 1,200 µS/cm for LDP009 discharges existing at the time of the SSD 5594 development application. The modification will therefore allow Springvale Mine to continue to discharge mine water at the current water quality criteria (governed by EPL 3607) for a further two years as proposed.

Water Quantity

The modification does not propose to increase the rate of mine water discharges at LDP009 to Sawyers Swamp Creek. The results from the RWQIAM shows there will be negligible to no change in flows (Kangaroo Creek, Coxs River above Wangcol Creek, Sawyers Swamp Creek downstream of LDP009, Coxs River above Lake Wallace, Coxs River above Lake Lyell, Coxs River above Lake Burragorang), and levels (Lake Wallace, Lake Lyell, Thompsons Creek Reservoir, Lake Burragorang), at the modelled locations in the Coxs River catchment and Lake Burragorang.

Environmental Consequences

As a result of the salinity modelling results there will be no change to environmental consequences with respect to aquatic ecology (macroinvertebrates) in Sawyers Swamp Creek and Coxs River presented in the SVMEP EIS. However, the observed chronic toxicity in the mine water discharges at LDP009 discharges will remain until the mine water is treated as part of the proposed Springvale Water Treatment Project (State Significant Development 7592 (under assessment currently) discussed below.

Given there is no proposal to increase the rate of mine water discharge to Sawyers Swamp Creek associated with the modification, there will be no change to the potential for scour within Sawyers Swamp Creek nor will there be any change to flooding and drainage to Sawyers Swamp Creek as a result of the modification.

The minor to negligible impacts predicted for water quality (salinity) and negligible change predicted in flows and levels in the Coxs River catchment and Lake Burragorang indicates there will be negligible impacts on the surface water users downstream of LDP009.

Interactions between the Modification and Springvale Water Treatment Project

The Springvale Water Treatment Project (Springvale WTP) (SSD 7592) has been developed to meet the water quality performance measures specified in Schedule 4 Condition 12 of SSD 5594. Specifically, the Springvale WTP will treat mine water to 500 µS/cm (90th percentile) EC water quality by 30 June 2019.

The Springvale WTP provides significant environmental benefits. It will permit beneficial industrial reuse of mine water at Mount Piper Power Station and has been designed to improve the water quality in the Coxs River catchment through cessation of mine water discharges at LDP009. The Springvale WTP has recently been amended to incorporate a transfer of treated water to Thompsons Creek

Reservoir to allow storage and subsequent reuse, and the project will therefore operate as a zero discharge system. This will provide significant benefits to the catchment beyond the requirements of the performance measures included in the Springvale Mine's consent.

Water and salt balance (GHD, 2016a) modelling undertaken for the Springvale WTP at nominated modelling locations of interest within the Coxs River catchment has yielded the following results. The 'do nothing' scenario modelled assumes that untreated mine water will continue to be discharged at LDP009 at Sawyers Swamp Creek and Coxs River catchment.

- The salt balance modelling for mine water discharges for the proposed condition in 2031 (when the mine inflows will be maximum) shows 10,067 tonne/year of salt will be discharged at LDP009 under the modelled 'do nothing scenario'. This salt load contribution from LDP009 discharges will be eliminated when the Springvale WTP becomes operational and LDP009 discharges cease.
- On a catchment level the salt load contribution to the catchment will reduce from 21,583 tonne/year ('do nothing scenario') to 12,219 tonne/year for a modelled operational scenario of 50% power generation (correlates to recent historical trends and corresponds to the approximate volume of water available from the SDWTS).
- The change in salinity at the modelled locations downstream of LDP009 in the catchment shows consistent reduction in salinity (when compared to the 'do nothing scenario') due to the operation of the Springvale WTP as follows:
    - Coxs River flow to Lake Wallace: –52%
    - Coxs River flow to Lake Lyell: –52%
    - Coxs River flow to Lake Burragorang: –26%

    However, there is an increase in salinity of 16% at Wangcol Creek at the confluence of Coxs River due to the transfer of residuals stream from the Springvale WTP to the Springvale Coal Services Site (Western Coal Services Project, SSD 5579). This impact is ameliorated downstream of the confluence due to catchment flows.

Given the reduction in salinity in the Coxs River catchment downstream of LDP009, GHD (2016a) considers the Springvale WTP achieves an overall beneficial effect against the NorBE test (WaterNSW, 2015).

Environmental Management System

Springvale Mine has a well-established Environmental Management System (EMS) developed in accordance with the Centennial Coal's EMS Framework to manage its operations in a sustainable manner. The EMS ensures the effective management of environmental issues and compliance with all regulatory requirements. The EMS incorporates a large number of Environmental Management Plans (EMPs) designed to assist in meeting community expectations and regulatory conditions, including the conditions of the Environment Protection Licence for Springvale Mine.

Following approval of the modification, the existing EMPs will be reviewed and updated, as appropriate to align with the modification and the revised consent conditions in SSD 5594.

Stakeholder Consultation

Springvale Coal maintains an open two-way communication with the local community, consent authority and other government agencies. A dedicated Stakeholder Engagement Plan was established for the modification. Consultation with the relevant stakeholders was undertaken during the preparation of the SEE. Consultation with the local community will be ongoing.

The broader community will be notified of the proposed modification through an advertisement placed in the local newspaper following lodgment of the modification application. The community will also have the opportunity to take part in the modification assessment process through the public exhibition process, whereby the community will be invited to make formal submissions on the modification.

The Springvale Mine website will provide updates on the modification for all stakeholders while the internal stakeholders (Springvale Coal and other Centennial Coal employees) will be given information on the modification via information sessions and meetings.

Justification and Conclusion

Springvale Mine is a well-established underground coal mine with well-defined surface and mining environments. The Springvale Mine Extension Project (SSD 5594) was approved on 21 September 2015. The mine is seeking to modify its consent (MOD 2) to remove the interim water quality criteria included in SSD 5594 (Schedule 4 Condition 12). The modification is being sought because the Springvale WTP, developed to meet the SSD 5594 water quality performance criteria will not be operational by 30 June 2017 due to the time-consuming processes involved in project design, development consent, procurement, construction and commissioning, and will therefore not be able to meet the interim water quality criteria. However, once the Springvale WTP is operational it will achieve the 30 June 2019 water quality criterion of 500 µS/cm (90th percentile) EC EC and provide significant environmental benefits. The Springvale WTP permits beneficial reuse of mine water and improves the water quality in the Coxs River catchment through the cessation of mine water discharges with minimal environmental impacts (GHD, 2016b).

The proposed modification will allow Springvale Mine to remain compliant with its consent conditions after 30 June 2017. A Surface Water Assessment (Jacobs, 2016a) undertaken to assess the impacts of the proposed removal of the interim water quality criteria indicates there will not be a significant difference in the predicted salinity within the Coxs River over the prediction period, compared to that currently approved in SSD 5594. Minor to negligible impacts in salinity have been predicted in the catchment. Regional water quality modelling also indicates no change to modelled median salinity in Lake Burragorang, over the prediction period, compared to that currently approved. Negligible to no change to flow and level has been predicted in the catchment and Lake Burragorang.

Given that the modification is a continuation of mine water discharge at current and historical water quality, there is no change to environmental consequences with respect to macroinvertebrate ecology in Sawyers Swamp Creek and Coxs River as presented in the SVMEP EIS. There will be no change to potential impact for scour, flooding and drainage within Sawyers Swamp Creek over that provided in SVMEP EIS.

The proposed modification has been assessed to result in a neutral impact to water quality in the Coxs River catchment with respect to the Neutral or Beneficial Effect test (NorBE) (WaterNSW, 2015) when compared to the ‘base case’ defined by DPE (2015) as the LDP009 EPL 3607 limit of 1,200 µS/cm existing at the time of the SSD 5594 development application. The modification will therefore allow the Springvale Mine to continue to discharge mine water at the current water quality criteria (governed by EPL 3607) until the Springvale WTP assessment and construction has been completed, and the project is operational.

This SEE has demonstrated that the proposed modification will result in minor to negligible impacts in the water quality in the Coxs River catchment. These impacts are not considered significant, and there will be little or no risk of adverse water quality impacts or environmental harm within the Coxs River catchment. The modification does not require any additional water management or monitoring to be implemented. The Springvale Mine Extension Project as modified can be considered as remaining substantially the same development that was originally approved as SSD 5594.

Overall, the minor to negligible impacts predicted due to the proposed modification is insignificant compared to the significant benefit in water quality improvements in the Coxs River catchment that will be achieved by the operation of the Springvale WTP and the subsequent cessation of mine water discharges.

The proposed modification meets the relevant objects of the EP&A Act and is consistent with the four principles of the ecologically sustainable development. It meets all relevant government guidelines and policies. On these bases, the modification will meet environmental performance and socio-economic benefit requirements to be considered for approval.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION

1.1 Overview

This *Statement of Environmental Effects* (SEE) relates to an application by Springvale Coal Pty Limited (Springvale Coal), operator of Springvale Mine, to modify the State Significant Development (SSD) 5594 consent, which granted approval for the Springvale Mine Extension Project (the Project). The consent was granted on 21 September 2015 by the Planning Assessment Commission of NSW, under delegation from the Minister of Planning. SSD 5594 was granted under Section 89E of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and allows Springvale Mine to carry out mining operations until 31 December 2028 (**Appendix A**).

The Project is a controlled action (EPBC 2013/6881) under the *Environment Protection and Biodiversity Act 1999* (EPBC Act). The approval under the EPBC Act was granted on 13 October 2015 and has effect until 8 October 2035 (**Appendix A**).

Springvale Coal is seeking to modify the development consent SSD 5594 (the modification) to amend Schedule 4 Condition 12 of SSD 5594:

- To remove the requirement to *Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1000 (100th percentile) µS/cm EC by 30 June 2017*
- To defer to 30 June 2019 the requirement *to Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group.*

These proposed modification elements are described in further detail in Section 1.3 and Chapter 4.0.

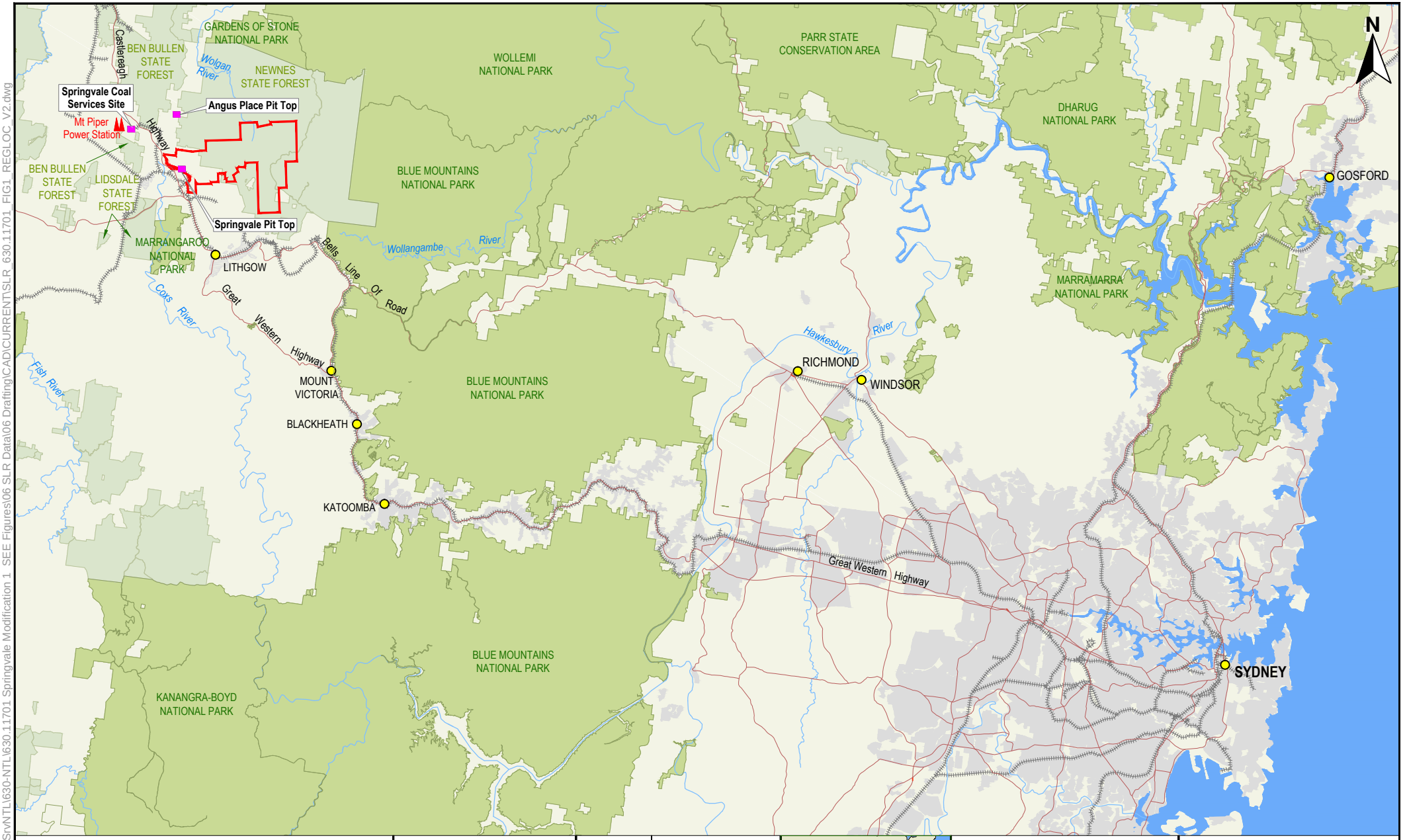
This SEE has been prepared to support the application to modify development consent SSD 5594 pursuant to Section 96(2) of the EP&A Act. The SEE assesses the impacts of the proposed modification elements to a level of detail commensurate with the scale of the modification, industry standards and the legislative framework under which it is permissible.

1.2 Background

Springvale Mine is an existing underground coal mine producing high quality thermal coal. The Springvale pit top is located to the west of the Blue Mountains (**Figure 1**) in the Western Coalfield of NSW, approximately 15 km northwest of Lithgow and 120 km west-northwest of Sydney, NSW. Springvale Coal is the operator of Springvale Mine.

Underground mining commenced at Springvale Mine in 1995 following the granting of development consent DA 11/92 on 27 July 1992, pursuant to Section 101 under Part 4 of the EP&A Act. The consent DA 11/92 expired on 30 September 2015. Springvale Mine was granted SSD 5594 on 21 September 2015 under the provisions of Part 4 Division 4.1 of the EP&A Act, and the Federal approval EPBC 2013/6881 under the EPBC Act on 15 October 2015. SSD 5594 allows continuation of mining at Springvale Mine for a further 13 years from the date of SSD 5594 consent with an expiry date of 31 December 2028. The Project Application Area for SSD 5594 is shown in **Figure 2**.

The main components of Springvale Mine's existing operations are an underground longwall mine, accessed via the Springvale pit top, and supporting surface infrastructure within the pit top area and on Newnes Plateau within the Newnes State Forest.



LEGEND:

- Project Application Area
- Major Roads
- Watercourse
- Railway
- Built-up areas
- Town / City
- State Forest
- National Park

DATE	26.05.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11701_FIG1_REGLOC_V2.dwg
SCALE	1 : 500000

Figure 1
Regional Location Map

0.0 10 20 KM

Centennial Coal
Springvale

Prepared by: SLR

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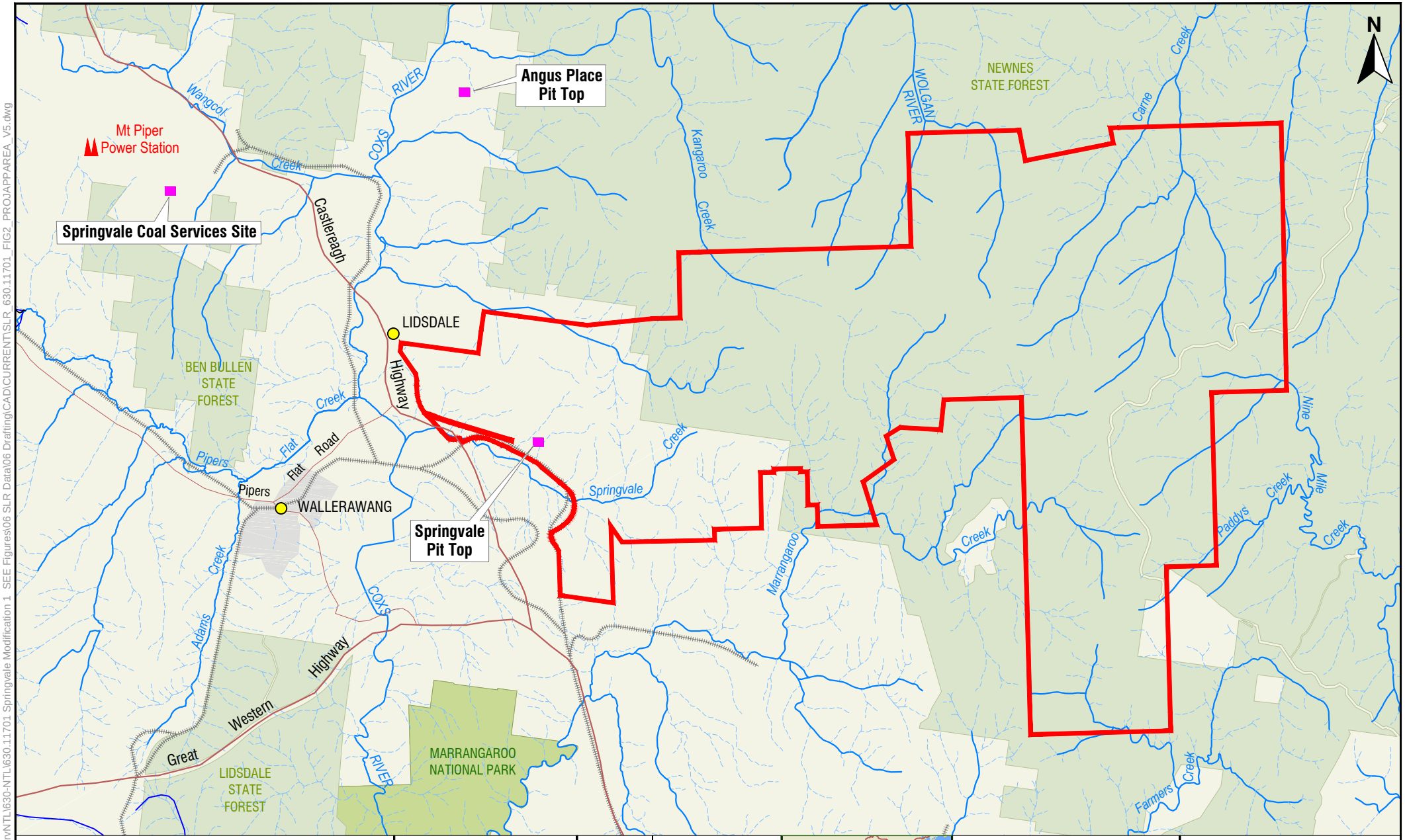

LEGEND:

- Project Application Area
- Major Roads
- Watercourse
- Railway
- Built-up areas
- Town / City
- State Forest
- National Park

DATE	13.07.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11701_FIG2_ PROJAPPAREA_V2.dwg
SCALE	1:75000

Figure 2
Project Application Area

0.0 1.5 3.0 KM

Centennial Coal
Springvale

Prepared by: SLR

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Springvale Mine is approved to extract run of mine (ROM) coal up to 4.5 million tonnes per annum (Mtpa). Limited coal processing occurs at the pit top. Sized ROM coal is transferred to Springvale Coal Services Site (Western Coal Services Project, SSD 5579) via a dedicated overland conveyor system. This conveyor system connects the Springvale pit top to the Springvale Coal Services Site, Wallerawang Power Station (being decommissioned), Mount Piper Power Station (MPPS) and Lidsdale Siding Rail Loading Facility.

Springvale Mine is also approved to transport up to 50,000 tonnes per annum of ROM coal to local domestic market customers by road haulage from the pit top. The operational management of this truck haulage of ROM coal to local domestic markets is undertaken by Springvale Mine.

The operational management of ROM coal transport from the Springvale pit top to Springvale Coal Services Site via the overland conveyor system and the transfer of ROM coal to MPPS is authorised by the Western Coal Services Project's consent SSD 5579. Coal stockpiling and beneficiation (washing) of ROM coal occurs at the Springvale Coal Services Site. Beneficiated coal is subsequently transferred to the Lidsdale Siding Rail Loading Facility for export, the latter authorised by that facility's project approval (PA 08_0223).

Springvale is approved to employ a full time workforce of 310 employees, including contractors, under SSD 5594.

A proposed modification to SSD 5594 consent (MOD 1) is currently being assessed by the Department. That modification proposes to increase the ROM coal production limit at Springvale Mine to 5.5 Mtpa, increase workforce to 450 full time equivalent employees, and increase the ROM coal stockpile capacity at the pit top to 200,000 tonnes.

1.3 Proposed Modification

This modification (MOD 2) to SSD 5594 has been prepared and is submitted under Section 96(2) of the EP&A Act to seek amendment to Schedule 4 Condition 12 of SSD 5594:

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

to defer to 30 June 2019 the requirement to *Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group.*

The removal of the consent condition for Springvale Mine to meet the above noted water quality criteria (expressed as electrical conductivity (EC)) by 30 June 2017 will allow mine to remain compliant with its consent conditions until the proposed Springvale Water Treatment Project (SSD 7592) becomes operational (**Section 1.6**). This project has been developed to meet the 500 (90th percentile) µS/cm EC water by 30 June 2019, also required to be met by Springvale Mine in accordance with Schedule 4 Condition 12 of SSD 5594. The proposed changes are summarised in **Table 1**.

Table 1 – Proposed changes to SSD 5594 Conditions of Consent (Adapted from Table 6: Water Management Performance Measures)

Feature	Performance Measure
Mine water discharges	• Discharge all groundwater inflow mine water (except from the Renoun workings) through the Springvale Delta Water Transfer Scheme. • ~~Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1,000 (100th percentile) µS/cm EC by 30 June 2017.~~ • Meet a limit for salinity of 500 (90th percentile) µS/cm EC by 30 June 2019. • Eliminate acute toxicity from LDP009 discharges to aquatic species by 30 June 2017 and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2019, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group.

The SSD 5594 consent boundary for the Springvale Mine Extension Project (SVMEP) remains unchanged (**Figure 2**). There are no changes proposed to the surface infrastructure. No changes are proposed on the current surface operations, including the existing site water management regime.

All activities on the surface (pit top and Newnes Plateau infrastructure areas) will continue to be undertaken as described in the Springvale Mine Extension Project EIS (Golder Associates, 2014). No change in rehabilitation activities is proposed. Progressive and life of mine rehabilitation will be undertaken as described in Golder Associates (2014).

There is no proposal to change the approved longwall mining technique or the approved mine plan. ROM coal will continue to be transported off site as approved in SSD 5594.

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

1.4 The Applicant

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

Springvale Coal is the Applicant for the proposed modification. The relevant postal address of Springvale Coal is:

Springvale Coal Pty Limited
Level 18
BT Tower, 1 Market St
Sydney NSW 2000

1.5 Modification Approval Pathway

The Springvale Mine Extension Project was approved as a State Significant Development (SSD 5594) under Section 89E of the EP&A Act on 21 September 2015, and under Sections 130(1) and 133 of the EPBC Act (EPBC 2013/6881) on 15 October 2015.

SSD consents may be modified under Section 96 of the EP&A Act provided that the information stipulated in Clause 115 of the *Environmental and Planning Regulation 2000* (EP&A Regulation) is contained within the application, and that the development as modified will be substantially the same development as the development for which consent was originally granted.

The proposed modification (MOD 2) will be submitted and assessed under Section 96(2) of the EP&A Act. This approval pathway was confirmed with the Department of Planning and Environment (DPE) in an email from the Department on 29 November 2016.

When assessing an application under Section 96 for modification to consent, the consent authority is required to take into consideration the relevant matters outlined in Section 79C of the EP&A Act, which include the provisions of any relevant environmental planning instruments. The proposed modification meets the relevant provisions of a number of planning instruments discussed in **Chapter 5.0**, including:

- *State Environmental Planning Policy (State and Regional Development) 2011* (**Section 5.4.1**)
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007* (**Section 5.4.2**)
- *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* (**Section 5.4.3**)
- *Lithgow Local Environmental Plan 2014* (**Section 5.5**).

Consideration has been given to other State and Commonwealth legislation relevant to the proposed modification and is discussed in **Chapter 5.0**.

1.6 Modification Need

Springvale Mine's Environment Protection Licence (EPL) 3607 authorises mine water discharges from the Springvale Delta Water Transfer Scheme of up to 30 ML/day with an EC of 1200 µS/cm via LDP009 into Sawyers Swamp Creek, however, Schedule 4 Condition 12 of SSD 5594 requires Springvale Coal to:

- Meet limits for salinity of 700 (50th percentile), 900 (90th percentile) and 1,000 (100th percentile) µS/cm EC by 30 June 2017
- Meet a limit for salinity of 500 (90th percentile) µS/cm EC by 30 June 2019.
- Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group.

To satisfy the water quality performance measures specified in Schedule 4 Condition 12 of SSD 5594, Springvale Coal, in partnership with Energy Australia NSW Pty Limited, has developed the Springvale Water Treatment Project (Springvale WTP). The Springvale WTP is proposing to construct and operate a pipeline system and a water treatment plant to transfer mine water from the existing and future Angus Place Colliery and Springvale Mine dewatering facilities on Newnes Plateau for treatment

and reuse within the cooling towers of MPPS. The mine water will be treated to meet the salinity target of 500 µS/cm EC (90th percentile), being the 30 June 2019 water quality criterion as per Schedule 4, Condition 12 of SSD 5594. Excess treated water not required to meet the MPPS operational needs is proposed to be transferred to the Thompsons Creek Reservoir for storage and subsequent reuse at MPPS.

The Springvale WTP allows Springvale Coal to meet its consent conditions. It permits beneficial reuse of mine water and improves the water quality in the Coxs River catchment through cessation of mine water discharges, and it will achieve these goals with minimal environmental impacts (GHD, 2016b). The project will ensure the ongoing viability and continued employment to >663 full time equivalent (fte) personnel at Springvale Mine, Western Coal Services and MPPS, and will create additional 50 fte employment opportunities during the construction phase. The Springvale WTP meets the relevant objects of the EP&A Act, is consistent with the principle of ecologically sustainable development, and is therefore justified on the basis of environmental performance and socio-economic benefits.

For the Springvale WTP to be implemented, a number of tasks including development consent, design procurement, construction and commissioning are required to be completed. In order to minimise the implementation time for the Springvale WTP the development consent, design and procurement processes have been run in parallel and shown considerable rapid progress.

The Springvale WTP is required to meet the SSD 5594 consent conditions and the proposed new infrastructure triggers the need for a new development application process. A State Significant Development application (SSD 7592) and a supporting *Environmental Impact Statement* (EIS) for the Springvale WTP have been submitted by Springvale Coal (Applicant) to the DPE and is currently under assessment. The ongoing determination process for the Springvale WTP is anticipated to include referral to the NSW Planning Assessment Commission as a result of the number of submissions received during public exhibition process, which is likely to be undertaken in early 2017.

Development of the concept design for the project has been undertaken concurrently with the preparation of the EIS, and has been undertaken in order to develop a solution to meet the long term water quality performance measures specified in the Springvale Mine's consent SSD 5594. The concept design has been subject to ongoing development following the submission of the EIS and has recently been amended to incorporate a water transfer system to Thompsons Creek Reservoir for storage and reuse of excess treated water. The transfer system was developed as a result of initial stakeholder feedback on the Springvale WTP, and will result in a zero discharge solution for the management of mine water. The amendment to the project will provide considerable long-term environmental benefits when compared to the salinity target of 500 µS/cm EC (90th percentile) by 30 June 2019 included within SSD 5594.

The procurement process has advanced through a market sounding exercise, and the Expressions of Interest process has shortlisted the preferred suppliers and submissions are imminent.

The development consent, design and procurement phases are not anticipated to be completed until early to mid-2017 and it is estimated the project will require 18 months to two years for construction and commissioning. There are considered to be no other feasible options to the development of a treatment system to achieve the interim 2017 salinity reduction targets.

As a result of the additional time required to complete the Springvale WTP assessment and construction activities, Springvale Coal is accordingly seeking a modification to SSD 5594 to:

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

- to defer to 30 June 2019 the requirement to *Eliminate acute and chronic toxicity from LDP009 discharges to aquatic species by 30 June 2017, with acute toxicity defined as >10% effect relative to the control group and chronic toxicity defined as >20% effect relative to the control group.*

to ensure Springvale Mine will be compliant with its consent conditions.

1.7 Environmental Assessment Considerations

No Secretary's Environmental Assessment Requirements were issued for the modification. A letter was sent to DPE on 22 November 2016 with a description of the modification elements of the proposed SVMEP MOD 2, the proposed approval pathway for the modification and strategy for the water resources impact assessment to be included in the SEE supporting modification application. DPE provided a response in an email on 29 November 2016, noting the Department (i) considers the proposal falls under Section 96(2) of the EP&A Act, and (ii) does not object to the assessment approach detailed in the letter.

1.8 Document Purpose

This SEE has been prepared on behalf of Springvale Coal to support an application to modify Springvale Mine's consent under Section 96(2) of the EP&A Act.

The proposed modification elements are noted in **Section 1.3** and **Section 4.2**. The SEE has been prepared to meet the requirements of Part 1 Clause 2(4) of Schedule 1 of EP&A Act and contains information required under Clause 115 of the EP&A Regulation (**Section 5.3.1**).

The SEE document sets out the proposed modification in the context of the existing and approved environment, planning considerations, potential impacts on water resources, mitigation measures and residual impacts.

The information provided in the SEE will be used by DPE and relevant government agencies to assess the merits of the proposed modification, and make recommendations to the determining authority on whether the proposed modification should be approved.

1.9 Document Structure

The SEE is provided in one volume comprising the main report plus the appendices. The layout of the SEE is as follows.

Chapter 1.0 – provides an overview of the proposed modification.

Chapter 2.0 – provides a brief site description.

Chapter 3.0 –provides brief discussions of the approved operations under SSD 5594.

Chapter 4.0 – provides details of the modification elements for which approval is sought, and compares the current approved operations with the proposed operations as modified.

Chapter 5.0 – describes the regulatory framework relevant to the modification.

Chapter 6.0 – describes the stakeholder consultation undertaken in respect of the modification.

Chapter 7.0 – assesses potential environmental impacts on water resources and outlines management and mitigation measures as necessary to minimise impacts from the modification.

Chapter 8.0 – provides the Statement of Commitments.

Chapter 9.0 – provides modification justification and conclusion.

Chapter 10.0 – presents the relevant references.

Chapter 11.0 – presents the acronyms, units and abbreviations used in the SEE.

2.0 SITE DESCRIPTION

2.1 Site Location

Springvale Mine is an existing underground longwall mining operation located in the Western Coalfield of New South Wales, approximately 15 km northwest of the city of Lithgow and 120 km west-northwest of Sydney. Springvale pit top is accessed via the Castlereagh Highway and is located 3 km east of the township of Wallerawang.

Springvale Mine is bordered by Angus Place Colliery to the north, the closed Lithgow State Mine to the south, grazing land to the west, MPPS to the northwest, and Newnes State Forest to the east (**Figure 2**).

2.2 The Project Application Area

The Springvale Mine Extension Project Application Area (**Figure 2**) comprises an area of 5,811 ha and is defined by the Mining Lease and Exploration Licence boundaries of Springvale Mine (**Figure 3**). A new Mining Lease ML1727 over southern portion of EL6974 was granted on 04 February 2016 under the *Mining Act 1992*, following the grant of SSD 5594.

The Project Application Area is located within the Lithgow Local Government Area and the Parishes of Cox, Clwydd, Cook, Marrangaroo and Lidsdale within the County of Cook.

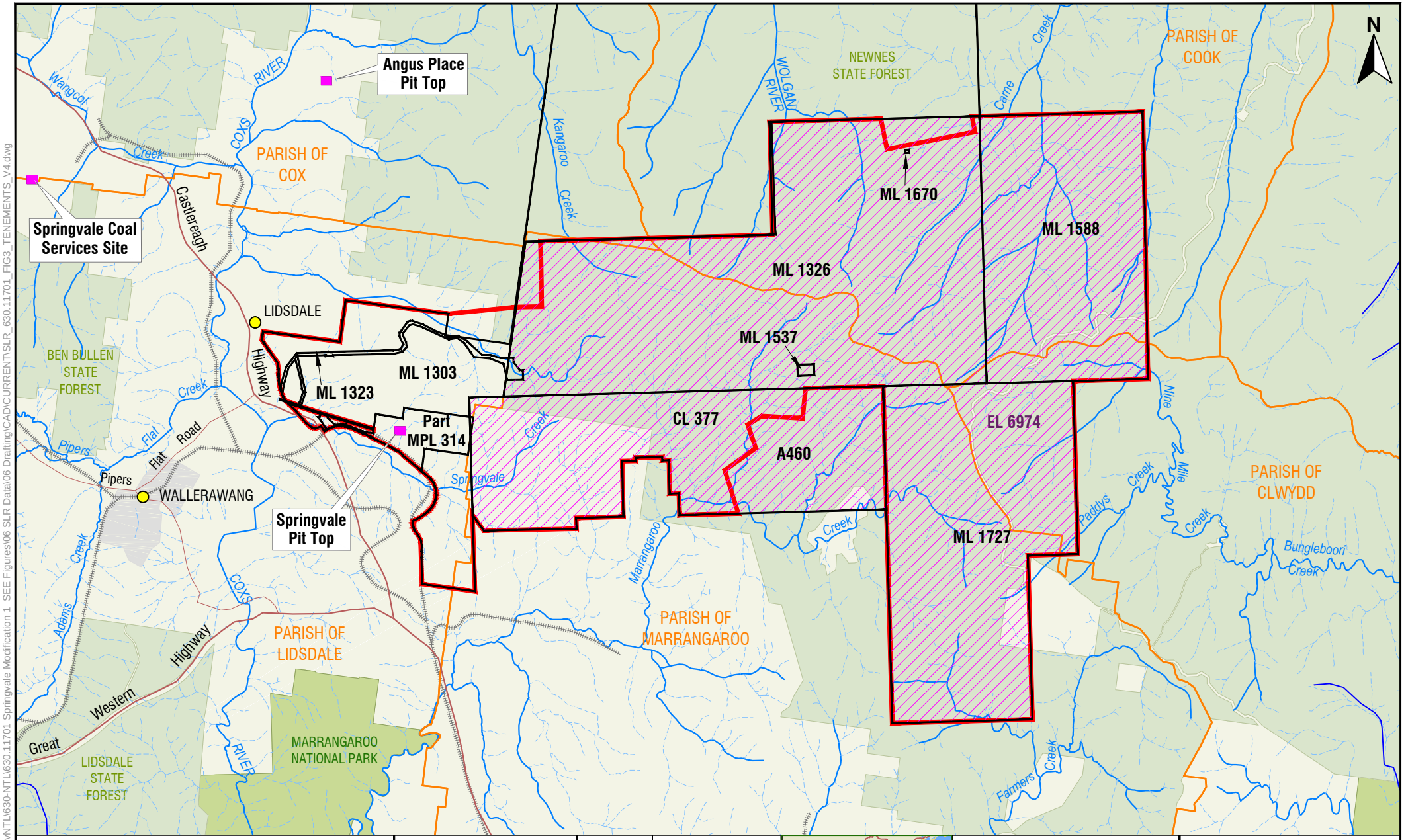
The characteristics of the Project Application Area and surrounds include rural land, Newnes State Forest, coal handling transport and infrastructure, power stations and natural areas. The area is characterised by environmental features such as pagodas, cliff lines, swamps, creeks, deep valleys, flora and fauna.

Marrangaroo Creek, the Wolgan River, Carne River, Lambs Creek, Paddys Creek and Kangaroo Creek overlie the Project Application Area. These swamps comprise both shrubs swamps that occur in valley floors and hanging swamps that occur on hillsides, and both are relatively common and widespread on the Newnes Plateau.

2.3 Land Zoning

The Project Application Area falls under the *Lithgow Local Environmental Plan 2014* (Lithgow LEP). The Lithgow LEP commenced on 19 December 2014 and is the principal planning instrument affecting land use in the Lithgow Local Government Area. Under the Lithgow LEP the Project Application Area encompasses the following zones, shown in **Figure 4**.

- RU1 Primary Production
- RU2 Rural Landscape
- RU3 Forestry
- R1 General Residential
- SP2 Infrastructure



LEGEND:

- Project Application Area
- Major Roads
- Watercourse
- Railway
- Built-up areas
- Town / City
- State Forest
- National Park
- Parish boundary
- Exploration Lease
- Mining Lease

DATE	13.07.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11701_FIG3_TENEMENTS_V2.dwg
SCALE	1:75000

Figure 3
Existing Mining Tenements

0.0 1.5 3.0 KM

Centennial Coal
Springvale

Prepared by: SLR

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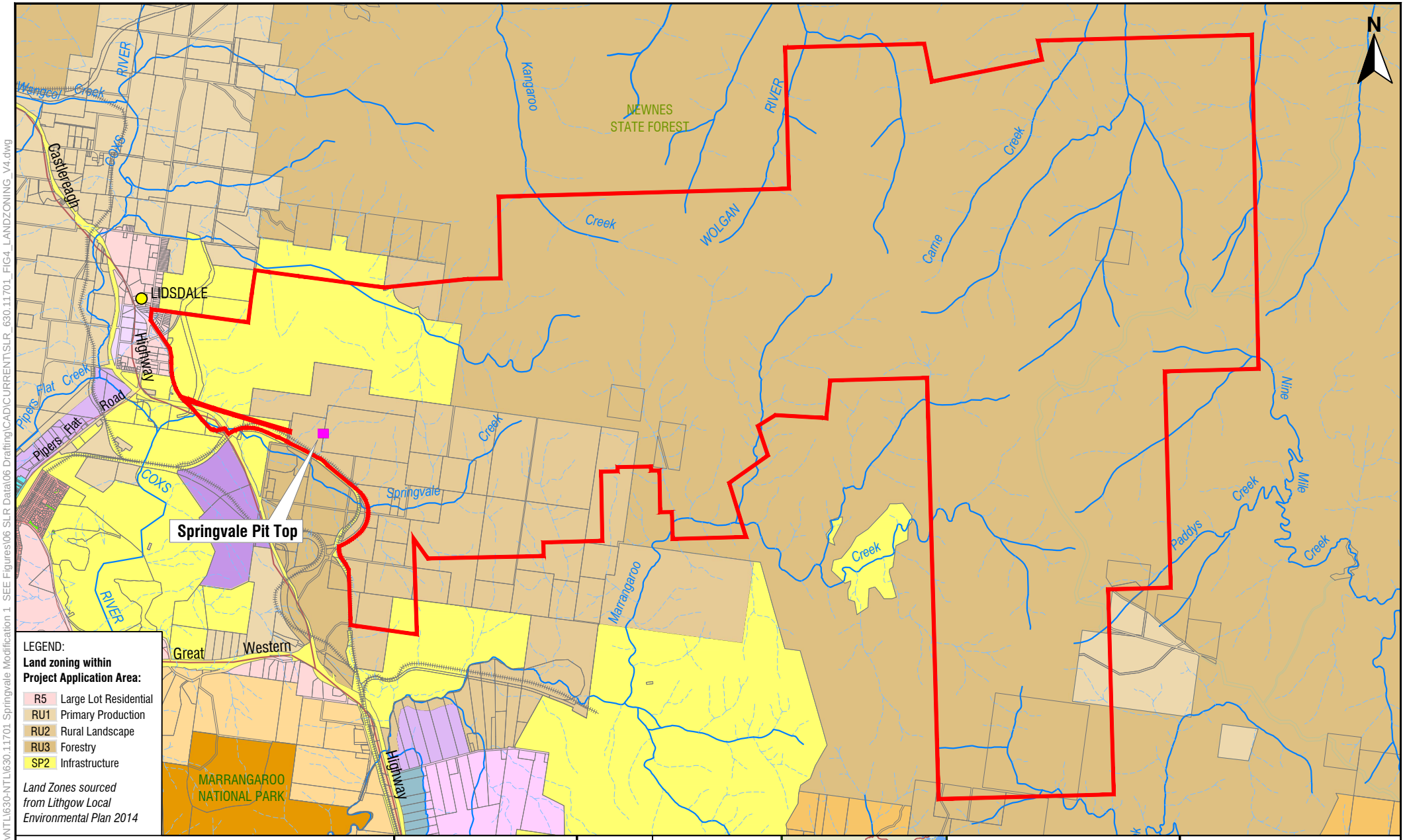

DATE	13.07.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11701_FIG4_ LANDZONING_V2.dwg
SCALE	1:60000

Figure 4
Land Zoning

Centennial Coal
Springvale

Prepared by: SLR

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2.4 Land Ownership

Land ownership within and surrounding the Project Application Area consists of Crown Land, privately owned land including land owned by Energy Australia NSW Pty Ltd, and land owned and managed by the Forestry Corporation of NSW (**Figure 5**). Parcels of freehold land are located within the western boundaries of the Project Application Area and in the vicinity of Springvale pit top.

A schedule of lands relevant to the Project Application Area is provided in **Appendix B**.

2.5 Land Uses

Land use in the vicinity of the Project Application Area consists of residential uses, agriculture, open cut and underground coal mining, coal handling infrastructure, transport infrastructure, commercial forestry and power generation (**Figure 5**). Mount Piper Power Station, owned and operated by Energy Australia NSW Pty Ltd (formerly Delta Electricity), is located to the northwest of the Springvale pit top, while the non-operational Wallerawang Power Station (being decommissioned) is located west of the pit top. Angus Place Colliery (on care and maintenance since March 2015) is located on the north from the Springvale pit top (**Figure 2**).

Centennial Coal's Lidsdale Siding Rail Loading Facility, located to the west from the Springvale pit top at Wallerawang, has been used as a coal storage and rail loading facility since 1974 to distribute coal by rail from Centennial Coal's western region mines to ports on the NSW coast.

Wallerawang is the closest retail and commercial centre, located approximately 3 kilometres west of the pit top. Lidsdale village is located to the west of the Project Application Area and provides a rural fire service, park amenities and a church.

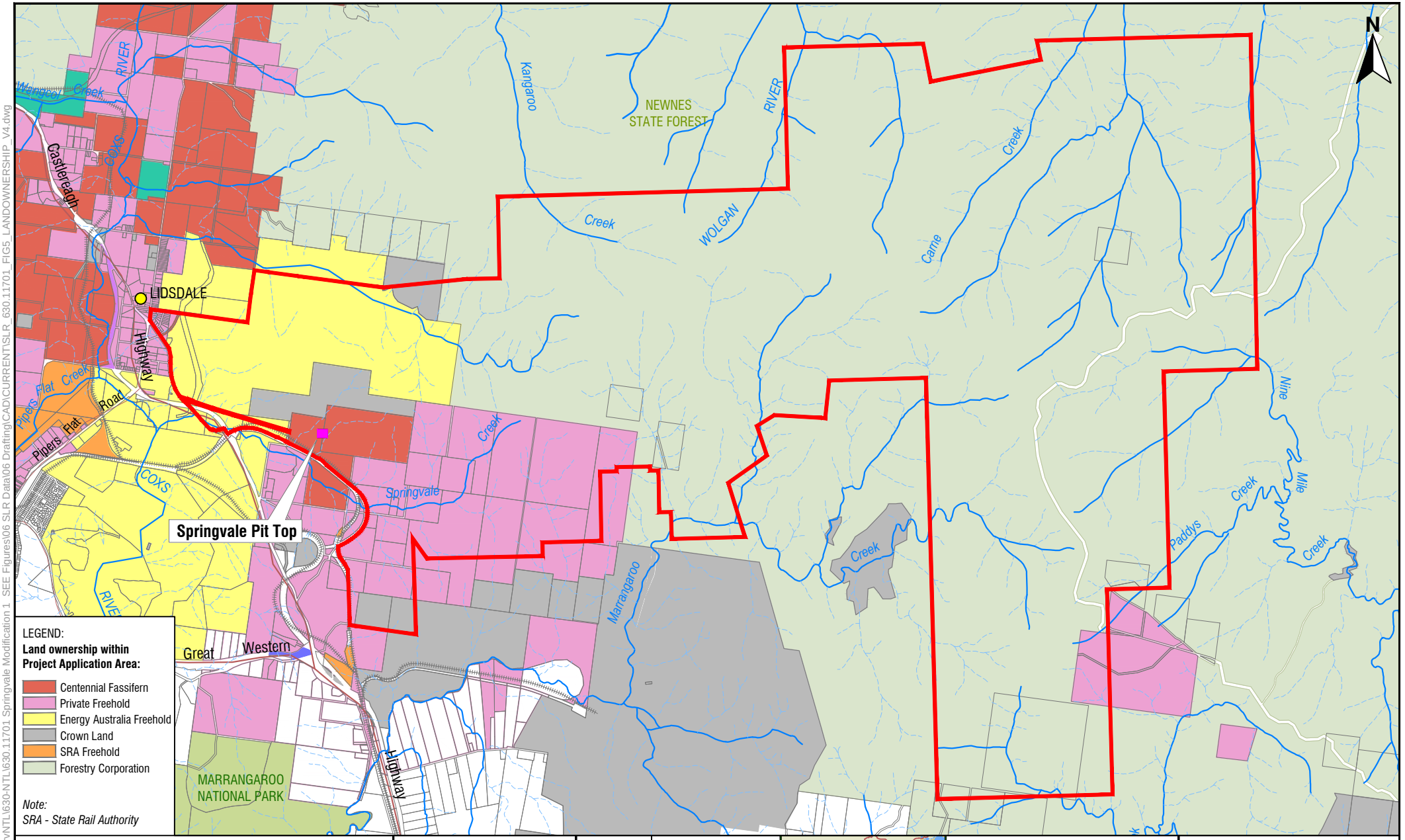
The nearest large urban centre is Lithgow with a population of 21,000. Lithgow is recognised as a tourist destination and meets the higher order retail, commercial and professional service needs of the area. Lithgow was established on the coal mining industry, however, steel manufacturing and other industrial enterprises have been carried out in the region. Agriculture accounts for 31% of land use of the area within the Lithgow Local Government Area.

The area around Springvale Mine has been subject to extensive mining operations in the past, with a number of active or completed mines in its vicinity, including Centennial Coal's existing operations.

Land use within the Project Application Area predominantly consists of historical and existing mining operations and commercial forestry in the Newnes State Forest. Newnes State Forest comprises approximately 25,000 ha of pine plantation and native hardwood forest that is selectively logged under the Forestry Corporation of NSW tenure and management. In addition to the timber industry, the Newnes State Forest supports a number of recreational land uses.

Public access is permitted in the Newnes State Forest with common recreation activities consisting of motorcycle riding, four wheel driving, bushwalking, camping, mountain bike riding, canyoning, photography, bird watching and other recreational and adventure activities.

A small portion of land along the western boundary of the Project Application Area is cleared and is used for agriculture. There is no intensive cropping in the area.



DATE	13.07.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11701_FIG5_ LANDOWNERSHIP_V2.dwg
SCALE	1:60000

Figure 5
Land Ownership

Centennial Coal
Springvale

Prepared by: SLR

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2.6 Topography

Springvale is located in an area of significant topographical variation. Most of the land surface within the Project Application Area and its environs lies within the Newnes Plateau at elevations from 1100 m to 1200 m Australian Height Datum (AHD). Topography within the Newnes Plateau comprises narrow gorges with high undulating ridgelines and steep sided slopes of sandstone cliffs, which range between 10 m and 40 m in height. The cliffs rise above incised valleys, and hilly areas with relatively flat crests and some spurs with moderately sloped ephemeral drainage lines occur within the valleys.

To the north of the Springvale Mine is the Wolgan Valley, a steeply incised valley with sandstone cliffs. Elevation in the Wolgan Valley is 500 to 600 m AHD. To the southwest of Springvale Mine is the Coxs River, with an elevation of approximately 870 m AHD. The Coxs River resides within an open and relatively flat valley. The Springvale pit top is located on the footslopes of the Newnes Plateau. The elevation at the pit top is approximately 920 m AHD.

2.7 Soils

The major soil type/order present in the Project Application Area is Kandosols covering 4,036 ha (69.7%) of the Project Application Area. It represents the Soil Landscape Units of Warragamba, Medlow Bath, Newnes Plateau, Deanes Creek and the majority of Cullen Bullen. Other minor soil orders include Tenosols covering 1,064 ha (18.3%) and Rudosols covering 532 ha (9.2%). Other soil types, excluding disturbed terrain, covering the remainder of the Project Application Area are Organosol, Vertosol and Chromosol.

The major soil types within the surface infrastructure areas at Springvale Mine are Kandosols. Other minor soil types include Tenosols, Organosols and Rudosols.

2.8 Hydrology

The majority of the land surface above Springvale Mine's operations lies within the Newnes Plateau, which forms part of the divide between the Wolgan and Coxs River catchments. The catchment divide between these surface water catchments runs in a northwest – southeast direction above Springvale Mine's operations. Shrub swamps occur on the Newnes Plateau within the headwaters of narrow gorges. As presented in Golder Associates (2014), these swamps occur coincident with presence of low permeability aquitard plies of the uppermost geological unit (Burralow Formation) on the Newnes Plateau.

The Wolgan River, of which Carne Creek is a tributary, eventually feeds into the Colo River and then the Hawkesbury River. The Coxs River is one of the tributaries of Lake Burrogorang. Lake Burrogorang discharges into the Nepean River and then the Hawkesbury River. Lake Burrogorang is the main drinking water supply catchment for Sydney.

Carne Creek is located in the northwest of the Project Application Area and flows northwards into Wolgan River. The upper catchment of the Wolgan River is within the northern section of the Project Application Area and flows north via Wolgan Falls into the Wolgan Valley and eventually into the Colo River System, that flows into the Hawkesbury River.

The surface water catchments within the Project Application Area are the Coxs River in the west, Marrangaroo Creek in the centre, Wolgan River East and West in the northeast, Nine Mile and Bungleboori to the east and a small part of Farmers Creek catchment to the southeast.

Marrangaroo and Farmers Creek both join the Coxs River that flows generally south past Lithgow skirting the western flanks of the Blue Mountains before entering Lake Burragorang and eventually the Nepean River.

2.9 Geology

Springvale Mine is located in the southwest corner of the NSW Western Coalfields. The Illawarra Coal Measures are relatively thin in this area, with an average thickness of 110 m from the Katoomba to the Lithgow Seam. Above the coal measures, the Narrabeen Group is the only member of the Triassic sequence present in the area, having a maximum thickness of 340 m. Depth of cover to the Lithgow Seam generally ranges between 350 m and 420 m, hence, the upper Narrabeen Group comprises the surface strata above the existing and future workings at Springvale Mine.

The sedimentary strata (Illawarra Coal Measures and Narrabeen Group) lie above older Silurian and Devonian Proterozoic rocks of the Lachlan Fold Belt. The Lithgow Coal Seam at Angus Place Colliery and Springvale Mine is stratigraphically the lowest economic seam, with the depth to the older basement strata beneath this seam being shallow, up to 100 m, compared to other parts of the Sydney Basin, which can be many hundreds of metres. The Lithgow Seam ranges in thickness from less than one metre (where only the lower ply of the Lithgow Seam is present) to up to 9 m (where it coalesces with the overlying Lidsdale Seam) with some thin carbonaceous or tuffaceous claystone layers present in the upper half of the seam. The Lithgow Seam generally dips at 1 – 2 degrees to the east northeast. The Katoomba and other seams at Springvale Mine (and Angus Place Colliery) are too thin to be viably extracted.

Non coal-bearing Triassic strata directly overlie the Illawarra Coal Measures. These strata comprise the Narrabeen Group of rocks which have the following sequence of rock formations in descending order:

- Burralow Formation
- Banks Wall Sandstone
- Mount York Claystone
- Burra-Moko Head Sandstone
- Caley Formation.

These formations comprise interbedded siltstone, sandstone and conglomeratic sandstone, with occasional claystone bands, as observed in the characteristic cliffs that occur throughout the area.

Within the Narrabeen Group of rocks, the Burralow Formation and the Mount York Claystone are key stratigraphic horizons in terms of their hydrogeological significance.

2.10 Climate

2.10.1 Temperature

The climate in the region surrounding Springvale Mine is typical of a cool temperate mountain climate, characterised by cold winters and warm summers. Temperature data from Lithgow (Braidwood Street) Bureau of Meteorology Station (BOM) 063224 is provided in **Table 2**. The annual mean maximum and minimum temperature experienced at Lithgow are 18.2°C and 6.4°C respectively. On average January is the hottest month, with a mean maximum temperature of 25.5°C. July is the coldest month, with a mean minimum temperature of 0.7°C.

Table 2 – Distribution of Temperature (°C) at Lithgow (Braidwood Station, BOM Station 063224)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean maximum temperature (°C)	25.5	24.7	22.4	18.4	14.3	11.1	10.4	12.0	15.4	18.7	21.5	24.5	18.2
Mean minimum temperature (°C)	11.9	12.1	10.1	6.7	3.9	1.8	0.7	1.3	3.4	6.0	8.1	10.4	6.4

2.10.2 Rainfall

Rainfall throughout the year is relatively uniform, however, rainfall is higher during the months of October through to March. Summer months are generally the wettest months. It is noted that the intensity of the rainfall is locally affected by the orographic influence of the Great Dividing Range.

A number of Bureau of Meteorology (BoM) weather stations are located in the vicinity of Springvale Mine. BOM Station No. 063062 (Lithgow (Newnes Forest Centre)) represents the most complete historical rainfall dataset with respect to the Newnes Plateau (elevation above 1000 m AHD). Monitoring at this station ceased in 1999.

The distribution of the average monthly rainfalls through the year is shown in **Table 3**.

Table 3 – Distribution of Average Monthly Rainfall at the Newnes Plateau (mm/month)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
BOM Station No. 063132 (Lidsdale (Maddox Lane)) (1959 to present)													
Mean	85.1	78.7	64.2	42.4	51.1	48.8	51.6	65.5	53.7	68.4	73.4	72.9	766
Lowest	8.6	5.6	3.8	1.2	2.6	2.6	2.7	1.8	3.4	2.4	7.6	0.0	330
Highest	214	270	270	203	131	229	214	364	123	228	165	217	1260
BOM Station No. 063062 (Lithgow (Newnes Forest Centre)) (1938 to 1999)													
Mean	121	114	102	79.9	81.3	83.0	68.3	83.5	67.9	91.5	89.0	90.4	1070
Lowest	18.8	5.6	5.1	6.2	11.0	0.0	2.0	4.6	0.0	6.4	4.7	2.6	496
Highest	281	339	519	299	287	320	241	412	207	267	209	303	1890
Springvale (New Prison Farm) (2004 to present)													
Mean	89.8	140.0	88.0	70.0	42.4	82.2	46.1	55.2	52.0	68.5	111.5	101	986
Lowest	19.5	36.5	29.5	10.5	14.6	21.5	18.0	19.0	12.5	13.0	33.5	37.5	572
Highest	153	273	196	202	105	254	100	107	92.2	144	196	207	1290

2.10.3 Evapotranspiration

Daily Pan A evaporation has been recorded at the Bathurst Agricultural Station (BOM) 63005 from 1966 to current. The average monthly evaporation rate is presented in **Table 4**. The annual average daily Pan A evaporation rate is 3.7 mm/day. The Bathurst Agricultural Station is the closest monitoring station to Springvale Mine and is 47 km to the west.

Pan A evaporation is usually used for estimating evaporation losses from open water surfaces of sediment ponds and dams. In forested areas, evaporation tends to be low compared to Pan A evaporation, but this is offset by increased transpiration. Analysis of flow gauging at Sunnyside Swamp on the Newnes Plateau suggest actual evaporation may be 35% of Pan A evaporation.

Table 4 – Average Daily Pan A Evaporation (BOM Station 063005, Bathurst Agricultural Station) (mm/day)

Statistic	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean	6.8	5.8	4.5	2.9	1.7	1.1	1.2	1.8	2.8	4.0	5.2	6.5	3.7

2.11 Sensitive Receptors

The following surface water receptors have been identified for the modification:

- Temperate Highland Peat Swamps on Sandstone ecosystems
- Aquatic ecology maintained in local water bodies
- Waterways of Sawyers Swamp Creek and Cox River flowing into the Coxs River catchment
- Sydney's drinking water catchment for Warragamba Dam, which receives inflows from a number of waterways including Cox River
- Users of surface water downstream of Springvale Mine's LDP009, including licensed water users and basic landholder rights.

3.0 APPROVED OPERATIONS

3.1 Overview of Approved Operations

Springvale Mine currently operates under State significant development consent SSD 5594, granted to the Springvale Mine Extension Project under Part 4 Division 4.1 of the EP&A Act. The supporting document for SSD 5594 is the Springvale Mine Extension Project *Environmental Impact Statement* (SVMEP EIS) (Golder Associates (2014)), which describes in detail the operations approved under the consent. SSD 5594 incorporates the operations approved under the DA 11/92 as modified. In summary, SSD 5594 allows:

- Extraction of up to 4.5 Mtpa of ROM coal from the Lithgow Seam underlying the Project Application Area
- Mining to continue for 13 years from the date of consent (until 31 December 2028) with rehabilitation to be undertaken after this period
- Operations 24 hours per day, seven days per week
- Employment to a full time workforce of up to 310 full time employees
- Development of underground access headings and roadways to the east to allow access to the proposed mining areas
- Secondary extraction by retreat longwall mining technique for the proposed longwalls LW416 to LW432 and LW501 to LW503
- Management and the handling of ROM coal through a crusher and screening plant at the Springvale pit top, and the subsequent loading of the coal onto the overland conveyor system (part of the Western Coal Services Project (SSD 5579) for despatch to SCSS
- The transport of up to 50,000 tonnes per annum of coal to local domestic customers by road haulage.
- Operation and maintenance of the existing ancillary surface infrastructure for ventilation, electricity, water, materials supply, and communications at the Springvale pit top and on Newnes Plateau
- Installation and operation of Bores 9 and 10 dewatering bore facilities on Newnes Plateau as extensions to the SDWTS
- Management of mine inflows using the SDWTS and subsequent discharge into Coxs River via LDP009
- Construction of a downcast ventilation borehole within the Bore 10 facility compound
- Establishment of a mine services borehole area on Newnes Plateau
- Exploration activities, predominantly borehole drilling to further refine the existing geological model
- Rehabilitation of disturbed areas at infrastructure sites progressively, when no longer required for operations
- Life-of-mine rehabilitation at the Springvale pit top and the Newnes Plateau infrastructure disturbance areas to create final landforms commensurate with the surrounding areas and the relevant zonings of the respective areas.

It is noted that Springvale Coal has submitted an application to modify SSD 5594 (MOD 1) under Section 96(2) of the EP&A Act to permit:

- An increase in the workforce from the approved 310 full time equivalent (fte) personnel, including contractors, to 450 fte personnel
- An increase in run-of-mine (ROM) coal production from the approved 4.5 million tonnes per annum (Mtpa) to 5.5 Mtpa
- An increase in the existing ROM coal stockpile at the pit top from the approved 85,000 tonnes capacity to 200,000 tonnes capacity and an increase in the coal stockpile footprint by 0.3 ha northeast of the existing stockpile area.

The MOD 1 application is currently under assessment.

3.2 Existing Approvals

3.2.1 Development Consents and EPBC Act Approvals

Table 5 provides a summary of the development consents and EPBC Act approvals held by Springvale Mine.

Table 5 – Existing Development Consents and EPBC Act Approvals

Reference	Description	Issued by	Issue Date	Expiry Date

SSD 5594	State significant development consent permitting:
	• Annual coal extraction limit of 4.5 Mtpa from Lithgow Seam using retreat longwall mining for LW416 – LW423 and LW501 – LW503
	• Consent life of 13 years from date of consent (21/10/2015 – 31/12/2028)
	• Operations 24 hours per day, 7 days per week
	• Employment of up to 310 fte personnel
	• Operation of Springvale pit top and Newnes Plateau infrastructure for:
	  ○ Coal handling, stockpiling and processing
	  ○ Water management
	  ○ Underground mine access
	  ○ Mine ventilation
	• Pit top facilities for administration buildings , workshops, electrical distribution network and telecommunications
	• Construction of new infrastructure on Newnes Plateau
	• ROM coal transport off site via overland conveyor system and road haulage
	• Pit top access via Mine Access Road off Castlereagh Highway in Wallerawang
	• Progressive rehabilitation and mine of life rehabilitation
	• Exploration activities.
		NSW Planning Assessment Commission	21/10/2015	31/12/2028

Reference	Description	Issued by	Issue Date	Expiry Date
DA 326/02	Construction and operation of a coal conveyor from Castlereagh Highway to Wallerawang Power Station.	Lithgow City Council	20/09/2002	N/A
DA 461/02	Construction and operation of Ventilation Shaft 3 Facility on the Newnes Plateau.	Lithgow City Council	23/01/2003	N/A
DA 461/02 Mod 1	Upgrade of Ventilation Shaft 3 Facility.	Lithgow City Council	30 May 2012	N/A
EPBC 2013/6881	Expansion of underground mining at Springvale Mine	DoE	13/09/2015 01/04/2016 (variation)	08/10/2035
EPBC 2011/5949	Mining of longwalls 415, 416 and 417 at Springvale Mine.	SEWPAC	14/03/2012	19/03/2032
EPBC 2012/6517	Remediation and restoration of East Wolgan Swamp	SEWPAC	21/09/2012	N/A
EPBC 2011/6017	Installation of piezometers for surface and groundwater monitoring on Newnes Plateau	SEWPAC	22/07/2011	N/A

3.2.2 Other Regulatory Requirements

Springvale Mine has a number of other regulatory requirements for operation. These consist of approvals, licences, permits and certificates as listed in **Table 6**.

Table 6 – Other Regulatory Approvals

Type	Approval Number	Regulatory Authority	Issue Date	Details
Mining Operations Plan (1 November 2015 – 31 October 2022)	OUT16/1425 MCV15/777-2	DTIRIS	25/02/2016	Springvale Mine's *Mining Operations Plan* (Springvale Coal (2015)) is a working reference for the activities of the mine in accordance with the DTIRIS guidelines for the period 01 November 2015 – 31 October 2022, inclusive. It is consistent with approved SMP commitments, EPL 3607 and the SSD 5594 consent. The objectives of the MOP are to meet statutory guidelines for reporting on Springvale Mine operations.
Environment Protection Licence	EPL 3607	NSW EPA	17 May 2000	Springvale Coal Pty. Ltd is the licensee of Springvale Mine EPL 3607 which authorises the mining of coal up to 3.5 Mtpa, and coal services works up to a scale of 5 Mtpa at the Springvale Coal Services site. Monitoring is undertaken in accordance with the licence and results reported on an annual basis to the EPA via the EPA Annual Return.

Type	Approval Number	Regulatory Authority	Issue Date	Details
Occupation Permit (*Forestry Act 2012*)	Level 2- Exploration Level 3 - Infrastructure	Forestry Corporation NSW	26/11/2009 17/12/2012	Permit to occupy Newnes State Forest for activities associated with mineral exploration and construction of surface infrastructure.
Radiation Gauge	29346	NSW EPA	12/02/2004	Licence to sell/possess.
Dangerous Goods Licence	35/027897	WorkCover NSW	-	Licence to store / handle dangerous goods on premises.
Groundwater Licences	10BL603519 / WAL36383 10BL602017/ WAL 36443 10BL601863 / WAL 36446 10BL605395	DPI Water	25/02/2010 & 05/08/2013 / 01/10/2014 04/09/2007 / 02/04/2014 04/09/2007 / 21/05/ 2014 17/06/2013	Springvale Mine has three extractive water licences. • Dewatering Bores 6 and 8 licensed at 5958 ML/year extraction limit (WAL 36383). • Pit top collection system licensed at 585 ML/year (WAL 36443). • Dewatering borehole at Ventilation Shaft 3 compound licensed at 3300 ML/year (WAL 36446).

3.2.3 Mining Tenements

Springvale Mine operates under a variety of mining authorities (**Table 7**) consisting of mining leases, coal leases, authorisations and exploration licences. These tenements are shown in **Figure 3**.

Table 7 – Mining Tenements

Reference	Title	Grant Date	Expiry Date	Area (ha)		
				Surface	Underground	Total
CL377	Coal Lease 377	24/02/1992	09/04/2025	0	1105	1105
ML1303	Mining Lease 1303	15/12/1992	15/12/2034	0	713	713
ML1323	Mining Lease 1323	03/08/1993	03/08/2035	30.24	0	30.24
ML1326	Mining Lease 1326	20/09/1993	18 /08/2024	0	2157	2157
ML1537	Mining Lease 1537 (Vent Shaft 3)	16/06/2003	16/06/ 2024	4.125	0	4.125
ML1588	Mining Lease 1588	19/06/2006	19/06/2027	0	976	976
ML1670	Mining Lease 1670 (Bore 6 Infrastructure)	17/02/2012	17/022033	0.3	0	0.3
ML1727	Mining Lease 1727	04/02/2016	04/02/2037	0	1256	1256
Part MPL314	Mining Purposes Lease 314 (Springvale pit top)	03/08/1993	03/08/2035	96	0	96
MLA445	Mining Lease Application (Bore 8 Dewatering Facility)	Submitted		18.97	0	18.97

Reference	Title	Grant Date	Expiry Date	Area (ha)		
				Surface	Underground	Total
MLA497	Mining Purposes	Submitted		89.87	0	89.87
EL6974	Exploration Licence 6974	11/12/2007	13/12/2017	4381	0	4381
A460	Authorisation 460	07/07/1992	06/06/2020	1104	0	1104

3.3 Existing Operations

3.3.1 Hours of Operation and Workforce

Springvale Mine operates 24 hours a day, seven days a week.

The mine is approved to employ a workforce of up to 310 full-time equivalent employees. However, this workforce number is subject to SVMEP MOD 1 application, currently under assessment, which proposes an increase to 450 full-time equivalent employees.

3.3.2 Site Access

Springvale pit top is accessed via Mine Access Road which joins the Castlereagh Highway near Wallerawang. From the Castlereagh Highway, access is readily available to the sub-regional and regional road network.

Access for light vehicles to the Newnes Plateau infrastructure sites is via State Mine Gully Road northeast of Lithgow and then along Glowworm Tunnel Road and Mayingu Marragu Trail. Access for heavy vehicles is restricted to a route via Chifley Road and Old Bells Line of Road at Clarence, and then along a route including Glowworm Tunnel Road and Mayingyu Marragu Trail. Light vehicles may use the heavy vehicle access route.

3.3.3 Coal Production Rate

Springvale Mine is approved to extract coal from the Lithgow Seam at the ROM extraction rate of 4.5 Mtpa. However, this workforce number is subject to SVMEP MOD 1 application, currently under assessment, which proposes to increase the production limit to 5.5 Mtpa.

3.3.4 Mining Method and Sequence

Springvale Mine is approved to extract the Lithgow coal seam using the longwall method of mining, comprising development (first workings) using continuous miner units and extraction (secondary workings) using longwall mining equipment. Springvale Mine utilises the retreat mining configuration whereby the longwall face equipment is established at the end of the panel that is remote from the main headings and coal is extracted within the panel as the longwall equipment moves towards the main headings.

Springvale Mine is approved to extract 20 longwalls under SSD 5594, comprising LW416 – LW423 (part of northern longwall block), LW424 – LW432 (southern longwall block) and LW501 – LW503 (southwest longwalls). On completion of the northern longwall block, the southern longwall block will be extracted. The southwest longwalls will be extracted last.

LEGEND:

Coal Stockpile Extension Area (Subject to MOD 1 application)

DATE	09.12.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11495_FIG6_SVPITTOPINFRA_V3.dwg
SCALE	1 : 4000

Figure 6

Springvale Pit Top Surface Infrastructure

0 75 150 M

Centennial Coal
Springvale

Prepared by: SLR

A4

H:\Projects-SLR\630-SrvNTL\630-NTL\630.11495 Centennial Drafting Support\06 SLR Data\01 Drafting\SV MOD 2 SEE\CAD\CURRENT\SLR_630.11495_FIG6_SVPITTOPINFRA_SVMOD2_V1.dwg

3.3.5 Coal Handling, Processing and Stockpiling

Coal is transported from the underground workings by the drift conveyor onto the temporary ROM coal stockpile area at the pit top via the Rill Tower (**Figure 6**). The current stockpile capacity is 85,000 tonne capacity, however this capacity is subject to SVMEP MOD 1 application, currently under assessment, which proposes an increase in the capacity to 200,000 tonnes and an increase in the footprint by 0.3 ha to the northeast of the existing stockpile footprint.

ROM coal is reclaimed from the coal stockpile area by two activators and two vibratory feeders. The feeders use vibration to feed the coal material onto the reclaim conveyor. The coal from the reclaim conveyor is transferred to a fully clad crusher and screening plant. Processing within the crusher and screening plant occurs to form 50 mm sized product coal prior to transfer to the overland conveyor system for despatch off site.

All crushed coal is transported off site on an overland conveyor system extending from the pit top to Mount Piper Power Station via the Springvale Coal Services Site (Western Coal Services Project) on the Western Coal Services Project's consent (SSD 5579).

3.3.6 Coal Transport

ROM coal from the Springvale pit top is transported to either Mount Piper Power Station, or the Springvale Coal Services site via the overland conveyor system for stockpiling and further processing (beneficiation). Beneficiated and ROM coal from the Springvale Coal Services site is transferred to the Lidsdale Siding Rail Loading Facility, using the return belt of the overland conveyor system, for the export market.

As noted above, all ROM coal is transported from the Springvale pit top via the overland conveyor system, however, with the exception of a nominal 50,000 tonne of ROM coal, which Springvale Mine is permitted to transport to local domestic market customers by road haulage from the pit top. The 50,000 tonnes per annum includes transport of inert coal waste comprising ballast and coal reject from underground road maintenance to Springvale Coal Services Site.

The road haulage of ROM coal is implemented in exceptional circumstances only, such as a time when the overland conveyor system is undergoing maintenance or repair and is unavailable for extended periods.

3.3.7 Plant and Equipment

Springvale Mine utilises four continuous miners for development and one longwall shearer for coal extraction. Other underground equipment comprise: shuttle cars, an armoured face conveyor, auxiliary fans, roof bolting rigs, equipment handlers, equipment transporters and loaders, underground personnel transporters and associated pumping and electrical reticulation equipment.

A network of pipelines, valves and pumps are used to manage water and compressed air underground.

3.3.8 Mine Support Facilities, Surface Infrastructure and Water Management

3.3.8.1 Mine Support Facilities

The mine support facilities and mining related infrastructure which support the underground operations at Springvale Mine (both pit top and Newnes Plateau infrastructure sites) consist of the following.

- Site access road and car park
- Underground mine access and associated infrastructure
- Coal handling, stockpiling and transport infrastructure
- Bath house facilities
- Incoming water supply (potable water) from Lithgow City Council
- Connection of sewerage system to Lithgow City Council sewer system at Duncan Street pump station in Lidsdale
- Workshop, services and administration infrastructure, telecommunications systems
- Ventilation facilities – ventilation shafts 1 and 2 (downcast), ventilation shaft 3 (upcast) on Newnes Plateau, additional upcast shaft in bore 10 compound (approved, not constructed)
- Electrical network: Substations 0 – 3 at the pit top, Substations 4, 5 and Borehole Substation on Newnes Plateau
- Underground water management – uses a series of pipelines and storage tanks to transfer mine water to the surface
- Surface water management systems including separation of dirty and clean water flow paths:
    - water storage dams
    - diversion drains
    - licensed discharge points
- Pollution control infrastructure comprising:
    - diversion bunds and drains, grit traps, oil/water separators and settling ponds
    - dust suppression of the stockpile area
    - wheelwash
    - diesel, solcenic and oil storage facilities.
- Mine services borehole (Ventilation Shaft 3 location) plus an additional approved mine services borehole within the Bore 10 compound (not constructed)
- Springvale Delta Water Transfer Scheme (SDWTS) comprising a network of trenched pipelines for the management of mine inflows.
- Dewatering bore sites connected to the SDWTS to draw water from the underground:
    - Bore 6 (Newnes Plateau)
    - Bore 8 (Newnes Plateau)
    - Bores 9 and 10 on Newnes Plateau (approved, not constructed)
    - Pit Top Collection System (pit top) for drawing water from the Renown Workings for use as process water (underground use and surface operations) via the Fire Service Pipeline.
- Non-mine owned infrastructure comprising overhead powerlines (11 kV and 66 kV), telecommunications towers, and the external road network.

The Springvale pit top surface infrastructure is shown in **Figure 6**.

3.3.8.2 Surface Water Management and Pollution Control Infrastructure

The surface water management systems at the pit top rely on the separation of clean and dirty water and the effective management of water through collection, treatment and discharge. This is managed through a number of separate water systems including surface water dams and/or settling ponds, and clean water diversion channels, as described below.

- **Fire Dam** (8 ML capacity): Receives mine water from the Renown Colliery workings and existing Springvale Mine workings using the Fire Service Pipeline and the Pit Top Collection System for storage and use as process water, with excess water discharged through LDP001:
  - underground for continuous miners and longwall equipment and dust suppression
  - for surface facilities including the crusher and screening plant, vehicle washdown bay, maintenance and service workshop and for dust suppression.
- **Settling Ponds:** Three settling ponds, referred to as the Primary, Secondary and the Duck Ponds, exist at the pit top and perform the following functions.
  - The Primary Pond (7 ML) receives dirty water run-off from the crusher and screening plant and run-off from the contributing dirty water catchment. The Primary Pond overflows into the Secondary Pond. The Primary Pond is designed to handle a 1 in 100 year, 24 hour storm event. The pond volume is normally maintained at a low level to ensure maximum capacity is available to capture runoff in a storm event.
  - The Secondary Pond (7 ML) receives dirty water overflows from the ROM coal stockpile area, the oil/water separator and the run-off from the contributing dirty water catchment. Excess water from the Secondary Pond is pumped underground into Renown Colliery workings for purification via percolation through the workings for subsequent use as process water. The Secondary Pond is designed to handle a 1 in 100 year, 24 hour storm event.
  - Duck Pond (2 ML) receives dirty water run-off from the car park, administration and bathhouse areas. Duck Pond transfers to the Secondary Pond.
- **Oil/Water Separator:** Excess water from the Grit Trap, wastewater from the machinery wash-down bay, hardstand areas, oil storage areas, and workshop, and run-off from the contributing dirty water catchment is collected in a common wastewater collection drain, which gravity feeds to an oil/water separator unit. Water from the oil/water separator is transferred to the Secondary Pond. The oil/water separator is designed to accommodate a 1 in 5 year storm event, based on the first flush principle, without overflow. Oil and grease from the separator is disposed off–site by a licensed contractor.
- **Emergency Holding Dam**: (3.6 ML), located within the Ventilation Shaft 3 Facility compound on the **Newnes** Plateau for the storage of mine water for subsequent use by bushfire fighting helicopters as required.

A minor alteration to the clean/dirty water management has been proposed in SVMEP MOD 1 application, currently under assessment. This alteration, in response to the proposed increase in the coal stockpile extension area in MOD 1, will result in the removal of approximately 0.3 ha from the existing clean water drain catchment and an increase in the dirty water catchment draining to the Primary Pond by the same area. A dirty water diversion drain will be constructed around the expanded coal stockpile in the future (and when the coal stockpile area has been extended to the northeast (**Section 3.3.5**)) to divert the surface run-off from the coal extension area to the dirty water catchment of Primary Pond, subject to SVMEP MOD 1 application being approved.