Currently Springvale Mine's EPL 3607 (dated 26 February 2016) has eight licensed discharge points (LDPs) listed (**Figure 7**). The LDPs (and their volumetric limits) consist of the following.

- LDP001 (volumetric limit 10 ML/day) – Main discharge point of Springvale pit top facilities, collecting the overflows from the Fire Dam, the Primary (or Stockpile) and the Secondary Ponds.
- LDP002 – Irrigation area on the northwest extent of the site for the discharge of treated waste water effluent.

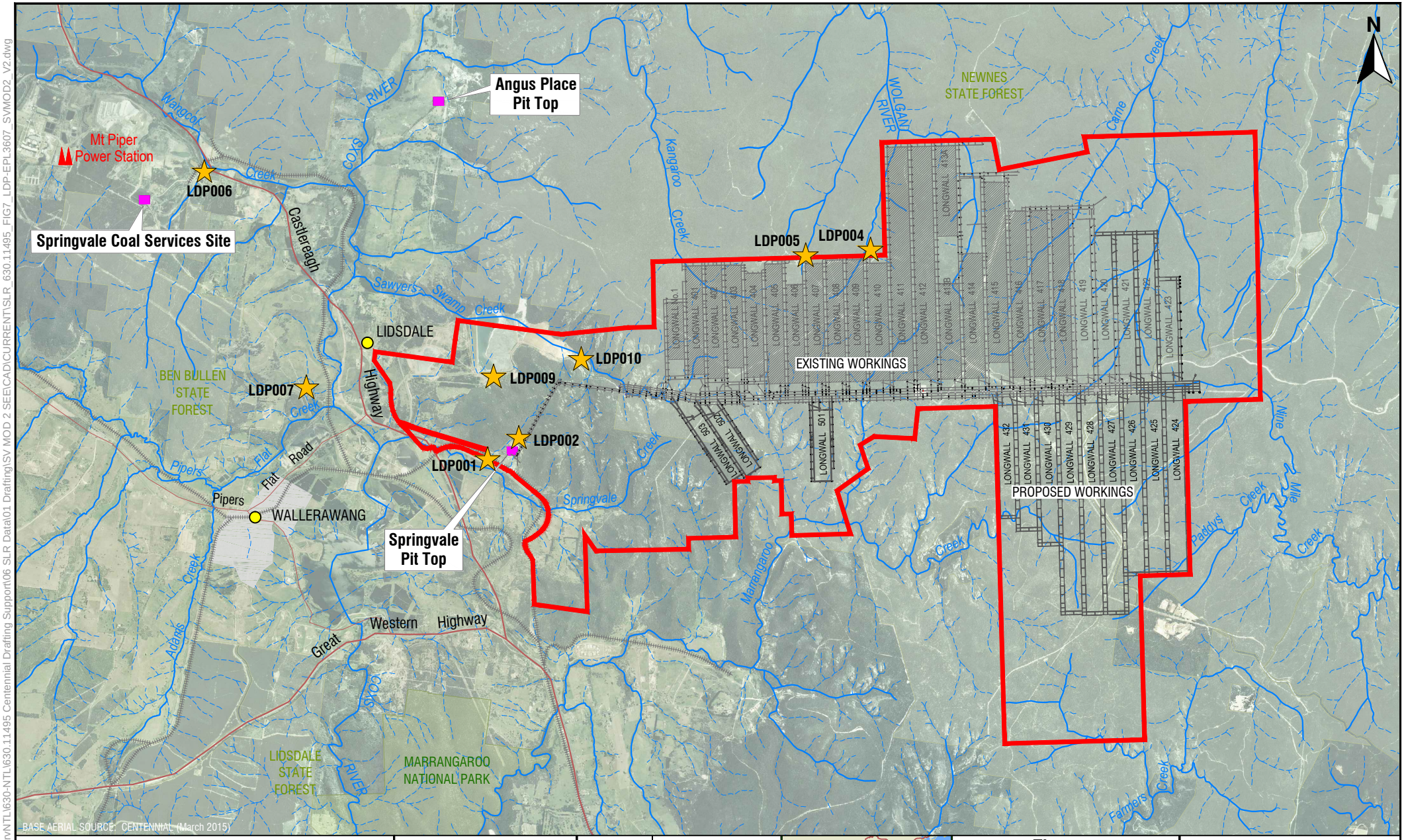
  LDP002 was previously used for discharge of treated sewage effluent via a spray irrigation network to a designated utilisation area within the Springvale pit top area. LDP002 is in the process of being decommissioned and rehabilitated.
- LDP004 (volumetric limit 15 ML/day) – Emergency discharge point situated on the Newnes Plateau into an unnamed tributary of the Wolgan River.
- LDP005 (volumetric limit 15 ML/day) – Emergency discharge point from dewatering bores to unnamed creek leading to Wolgan River.

  Emergency discharges via LDP004 and LDP005 have not occurred since April 2010.
- LDP006 (volumetric limit 10 ML/day) – discharge of runoff into Wangcol Creek through final filter lagoon located at the Springvale Coal Services Site.
- LDP007 – discharge of runoff from the overland conveyor system, including coal fines, located at Brays Lane discharges into Coxs River.
- LDP009 (volumetric limit 30 ML/day) – discharge from the SDWTS bypass point east of Kerosene Vale Ash Dam for discharge into Coxs River.
- LDP010 – emergency/maintenance discharge from the SDWTS, upstream of settling ponds near LDP009 for discharge into Coxs River.

EPL 3607 (condition P1.3) will be subsequently updated to remove licensed discharge points LDP006 and LDP007, which will effectively be "transferred" to the new EPL of the Western Coal Services Project.

3.3.8.3 Surface Water Management within Newnes Plateau Infrastructure Sites

Each operational Newnes Plateau infrastructure site (Ventilation Shaft 3 Facility, Bore 6 and Bore 8 Dewatering Facilities, Substation 4, Borehole Substation) has its own surface water management system to ensure no dirty water discharges off site. Each site has clean water diversion bunds and level spreaders which divert clean storm water away from the disturbed areas. Sediment dams in the case of the Ventilation Shaft Facility 3 and the sump in the case of the dewatering bore facilities capture dirty water run-off from the respective sites for treatment prior to discharge of clean water off site.



LEGEND:

- Project Application Area
- Major Roads
- Railway
- Built-up areas
- Town / City
- State Forest
- National Park
- Watercourse - Non Perennial
- Watercourse - Perennial
- Licensed Discharge Point

DATE	13.12.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11495_FIG7_LDPEPL3607_SVMOD2_V2.dwg
SCALE	1:75000

Figure 7
Licensed Discharge Points - EPL 3607

0.0 1.5 3.0 KM

Centennial Coal
Springvale

Prepared by: SLR

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3.3.8.5 Underground Mine Inflow Water Management

Mine inflows, encountered during mining operations, require to be managed so that water levels can be kept at safe levels underground, and therefore operational risks can be reduced. Both clean and dirty water are generated underground. The dirty water is collected into portable staging tanks and pumped into the existing workings for the sediment to settle out before being diverted to the clean water system for transfer to the surface.

Clean water from the existing workings runs under gravity to the submersible pumps to allow transfer of water to the surface at three bore dewatering facilities currently, namely, Bore 6 and Bore 8 dewatering facilities and the Ventilation Shaft 3 borehole. Two additional dewatering bore sites, Bore 9 and Bore10, are approved under SSD 5594, however have not been constructed to date. Each dewatering facility comprises typically two to four submersible pumps used to manage the mine inflows and associated surface infrastructure of electrical control systems and amenity facility. Each borehole, equipped with the pump, is cased to below the Lithgow Coal Seam, and pumps clean water to the surface.

The SDWTS network, comprising Springvale Mine's dewatering facilities (existing and approved) and Angus Place Colliery's 930 Bore and 940 Bore dewatering facilities, is shown in **Figure 8**.

Dewatered mine inflows from the bore sites are fed directly into the SDWTS for discharge into the Coxs River catchment via LDP009 located on Swayers Swamp Creek in accordance with EPL 3607 volumetric limit of 30 ML/day. Water from the SDWTS is also discharged through the emergency/maintenance discharge point LDP010, also located on Swayers Swamp Creek, when LDP009 is undergoing maintenance and is not available.

Mine water is currently discharged at LDP009 and LDP010 with no treatment for salinity. The EC limit for discharges at these LDPs on EPL3607 is 1200 µS/cm. Schedule 4 Condition 12 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.

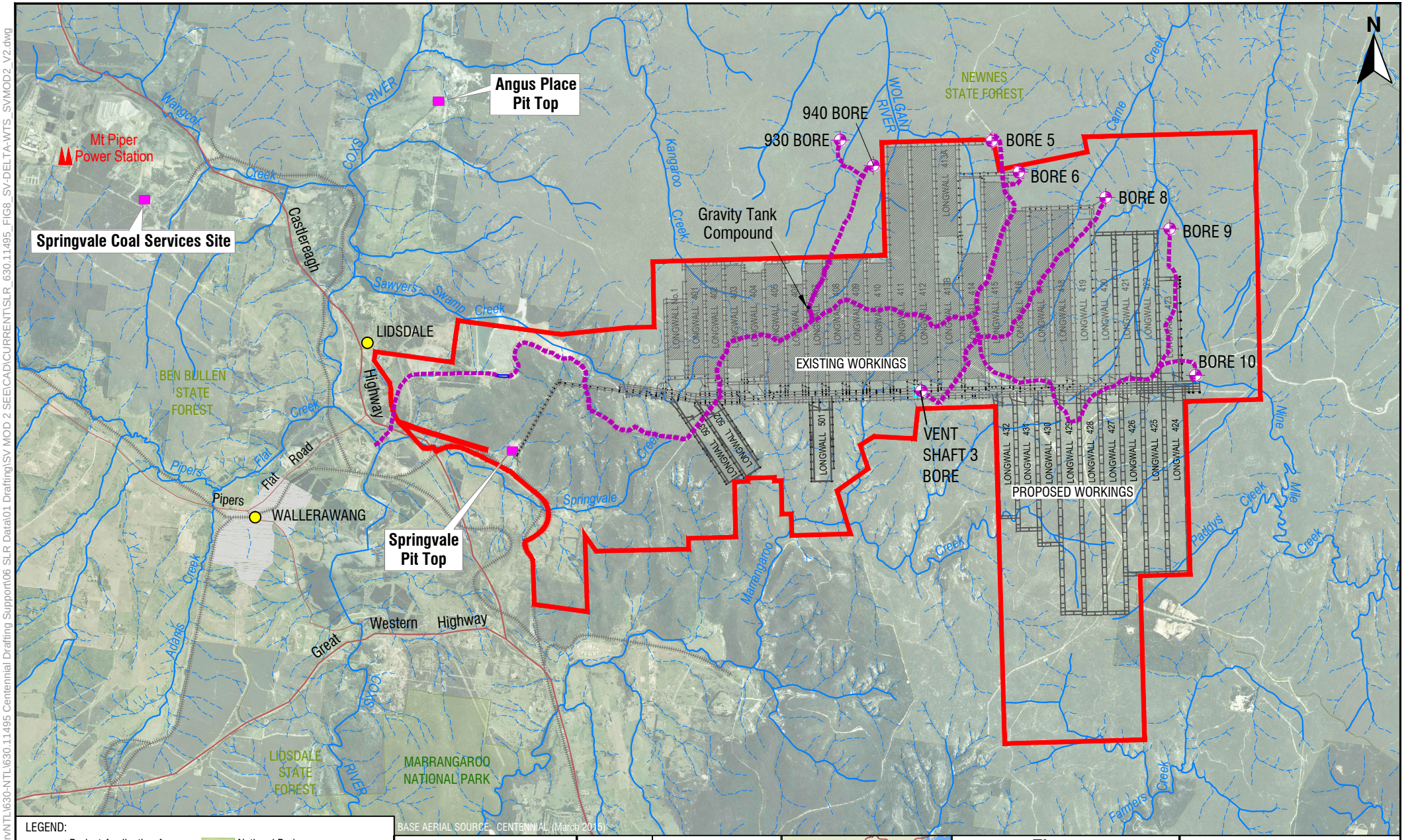
Underground water from the Renown Colliery workings is also pumped to the surface via the Pit Top Collection System and stored in the Fire Dam to meet operational requirements, both for underground operations and surface facilities. Excess mine water is discharged to Springvale Creek via LDP001.

3.3.8.6 Potable Water

Potable water is supplied to Springvale Mine from Lithgow City Council for use in the bathhouse and administration building. Additional drinking water for employees is sourced from a local commercial drinking water supplier.

3.3.8.7 Wastewater

Sewage and grey water from the pit top are transferred to the Lithgow City Council sewer system.



LEGEND:

- Project Application Area
- Major Roads
- Railway
- Built-up areas
- Town / City
- State Forest
- National Park
- Watercourse - Non Perennial
- Watercourse - Perennial
- Existing and Approved SDWTS
- Dewatering Facility

BASE AERIAL SOURCE: CENTENNIAL (March 2015)

DATE	13.12.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11495_FIG7_LDPEPL3607_SVMOD2_V2.dwg
SCALE	1:75000

Figure 8

Springvale Delta Water Transfer Scheme

0.0 1.5 3.0 KM

Centennial Coal
Springvale

Prepared by: SLR

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3.3.9 Waste Management

3.3.9.1 Production Waste

No production waste comprising reject materials from ROM coal beneficiation is generated at Springvale Mine. Volumes of coal waste comprising ballast and coal reject from underground road maintenance activities is disposed at the REAs within the Springvale Coal Services Site. The materials are transported from the Springvale pit top to the Springvale Coal Services Site using road haulage, and falls within the approved transport of up to 50,000 tonnes per annum of coal to local domestic customers by road haulage from the pit top.

3.3.9.2 Non-Production Waste

Waste management at Springvale Mine is managed in accordance with the MOP with all potentially hazardous material stored and/or bunded appropriately in accordance with relevant standards.

General waste is disposed of to landfill by licensed waste contractors. Recyclable materials, are recycled whenever possible at the site. Oil drums and filters are recycled with other waste metals, and are removed from site by a metal recycling company. Waste oil collected in the workshop is stored in an underground collection sump before being removed off site by a licensed contractor for recycling.

3.4 Environmental Management

Springvale Mine has an established Environmental Management System (EMS) that has been developed in accordance with Centennial Environmental Policy that sets out Centennial Coal's aims and values applicable to all employees and contractors. The Springvale EMS provides an environmental management framework for all activities and areas managed at Springvale Mine. This 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. The EMPs are reviewed and updated as required.

3.5 Rehabilitation and Final Landform

The rehabilitation activities undertaken at Springvale Mine are described in the site's MOP approved from 1 November 2015 to 31 October 2022. Springvale Mine has a progressive approach to rehabilitation to reduce and mitigate potential environmental impacts. All reasonable and feasible measures are implemented to minimise the total area exposed for dust generation at any time. Facilities no longer required, for example, ventilation and dewatering facilities, are rehabilitated soon after decommissioning, to return disturbed land to the original landform. The former sewage treatment works is currently in the process of being decommissioned and will be rehabilitated.

Minor rehabilitation activities are carried out at the pit top regularly, for example, seeding of the area surrounding the carpark. Given that Springvale Mine is well established with no ongoing construction requiring the implementation of additional erosion and sediment controls, there is no requirement for the regular progressive rehabilitation at the pit top.

The life of mine rehabilitation will be undertaken in accordance with the *Decommissioning and Rehabilitation Strategy* (SLR, 2014) included in the SVMEP EIS (Golder Associates, 2014). On cessation of all mining activities the disturbance areas will be fully rehabilitated to create stable and self-sustaining landform for the nominated end land uses of woodland (Newnes Plateau) and

grassland (Springvale pit top). The creation of the proposed final landforms will ensure they are commensurate with the surrounding topography and the relevant zoning requirements of the time.

The MOP for the period 1 November 2015 – 31 October 2022 has been updated to include the requirements of the *Springvale Mine Extension Project: Decommissioning and Rehabilitation Strategy* (SLR, 2014), and also fulfils the requirement for the preparation of a *Rehabilitation Management Plan* required by Schedule 4 Condition 32 of SSD 5594.

In accordance with the *Decommissioning and Rehabilitation Strategy* (SLR,2014) and the *Strategic Framework for Mine Closure* (Minerals Council of Australia, 2004) Springvale Mine will commence the detailed mine closure planning process at least five years prior to the anticipated mine closure date (i.e. the planned cessation of mining). The detailed mine closure plan will be developed at least two years prior to the anticipated mine closure date. Based on the expiry date of SSD 5594 mining operations at Springvale Mine will cease in 2028.

4.0 PROPOSED MODIFICATION

4.1 Overview

Springvale Coal is seeking to modify consent SSD 5594 under the provisions of Section 96(2) of the EP&A Act. The modification is seeking 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.*
- 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 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. Sized ROM coal will continue to be transferred to the Springvale Coal Services Site (Western Coal Services Project) via the overland conveyor system, except for the 50,000 tonnes per annum that is approved to be transported to local domestic market customers by road haulage.

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.

4.2 Proposed Modification

Table 8 summarises the major components of the operations approved under SSD 5594. The proposed modification proposes to remove or defer the water performance measures required to be achieved for mine water discharges at LDP009 in accordance with Schedule 4 Condition 12 of SSD 5594 within stipulated timeframes.

Table 8 – Key Features of the Proposed Modification and Comparison with Approved Operations

Key Feature	Approved Operation	Modification
Mine Life	• Mining operations to be undertaken until 31 December 2028. Rehabilitation activities to be undertaken after this expiry date.	• No change
Hours of Operation	• Mine operates 24 hours per day, 7 days per week.	• No change
Employment	• Approved 310 full time equivalent personnel (fte). • Increase workforce to 450 fte personnel subject to Modification 1 to SSD 5594, under assessment currently.	• No change
ROM Coal Production	• Annual extraction limit of 4.5 Mtpa of ROM coal. • Increase ROM coal production limit to 5.5 Mtpa subject to Modification 1 to SSD 5594, under assessment currently.	• No change
Mining Method	• Retreat longwall mining	• No change
Mining Area	• SSD 5594 approved longwalls: LW416 to LW432 and LW501 to LW503.	• No change
Pit Top Infrastructure and Access	• Access via the Castlereagh Highway for employee, visitor and contractor parking areas. • Portal access to underground workings for personnel and materials. • Portal entrance providing for the coal conveyor drift to transport coal from underground workings. • Administration buildings with amenities, office and training areas. • Bathhouse. • Workshops, hardstand areas, vehicle and equipment wash down areas. • Diesel, solcenic hydraulic fluid and oil storage. • Mining supplies and conveyor equipment storage areas. • Dirty and clean water management systems in addition to provision of potable and waste water services. • ROM coal stockpile area. • Coal preparation (crushing and screening plant) and handling (conveyor systems and Rill Tower) facilities.	• No change

Key Feature	Approved Operation	Modification
	• Overland conveyor system connecting pit top to Wallerawang and Mount Piper Power Stations, Springvale Coal Services site and Lidsdale Siding. • Telecommunications facilities. • Electrical distribution network including substations 1 – 3 connecting to Substation 0 at Lidsdale. • Sewer connects to the Lithgow City Council's main sewer system via Duncan Street pump station in Lidsdale. • Ancillary infrastructure.	
Underground Mine Access	• Access to the underground mine through the main mine portal. • Access to the mine extraction areas via existing headings and roadways. • Extension of mains headings to the east. • Development of roadways to access proposed longwall extraction areas	• No change
ROM Coal Handling	• Drift conveyor for transfer of coal from underground to the ROM coal stockpile area via Rill Tower. • Reclaim conveyor for transfer of coal from the stockpile area to the crushing and screening plant. • Overland conveyor system for transport of coal off site. • Provisions of handling of 50,000 tonnes per annum of ROM coal to domestic markets by truck haulage.	• No change
ROM Coal Transport	• Sized ROM coal transported, using an overland conveyor system (part of the Western Coal Services Project (SSD5579) to Springvale Coal Services Site for stockpiling and further processing (beneficiation) or directly transported to Mount Piper Power Station. • Transport of up to 50,000 tonnes per annum of ROM coal to local domestic market customers by road haulage from the pit top.	• No change
Coal Processing and Handling	• ROM coal crushed and sized in the screening and crusher plant at the pit top to nominal 50 mm coal product prior to transfer to the overland conveyor system, or transported off site using road haulage, to offsite locations being Springvale Coal Services Site, other domestic markets and Mount Piper Power Station.	• No change

Key Feature	Approved Operation	Modification
Mine Ventilation	• Air intake via the two surface portals at the pit top and two separate air intake shafts (Ventilation Shaft No.1 and Ventilation Shaft No.2) located off the pit top site. • One upcast shaft (Ventilation Shaft No.3) located in the Newnes State Forest. • Downcast ventilation shaft within the Bore 10 dewatering facility (to be established).	• No change
SDWTS and Bore Dewatering Facilities	• The SDWTS, comprising a network of predominantly trenched pipelines and power cables, used for the transfer of mine inflows from the dewatering facilities at the rate of up to 30 ML/day for discharge into Coxs River via LDP009 (EPL 3607). • Mine inflows currently managed by the Bore 6, Bore 8 and Vent Shaft 3 borehole dewatering facilities. Mine water is directly fed into the SDWTS from these bore facilities. • Bore 9 and Bore 10 dewatering facilities approved but not constructed.	• No change
Newnes Plateau Infrastructure and Access	• Ventilation Shaft 3 Facility with Substation 5 and existing mine services borehole area. • Substation 4 and Borehole Substation. • Operational Bores 6 and 8 dewatering facilities, being part of the SDWTS. • Approved Bores 9 and 10 dewatering facilities. • Mine Services Borehole Area • Bores 6 and 8 dewatering facilities • Access to infrastructure areas via either the Old Bells Line of Road from the town of Clarence (light and heavy vehicles) or via State Mine Gully Road (light vehicles only).	• No change

Water Management and Pollution Control	• Underground water management system for both clean and dirty water as follows:
	  ○ Clean water from goaf areas runs under gravity to collection points for the dewatering bores, for transfer to the surface into the SDWTS using submersible pumps.
	  ○ Dirty water from roadways (dust suppression, development and extraction) is collected into portable staging tanks and pumped into the existing workings for the sediment to settle out before being diverted to the clean water system (as above) for transfer to the SDWTS.
	  ○ Discharge all mine inflows (except from the Renown workings) through SDWTS; excess mine water from Renown working to be discharged to Springvale Creek	

Key Feature	Approved Operation	Modification

	via LDP001.
	• Surface water storages exists for both dirty water and clean water at the pit top and Newnes Plateau infrastructure areas, and include:
	  ○ Fire Dam (8 ML)
	  ○ The Primary Pond (7 ML)
	  ○ The Secondary Pond (7 ML)
	  ○ Duck Pond (2 ML)
	  ○ Oil/Water Separator
	  ○ Emergency Holding Dam: (3.6 ML).
	• Eight Licensed Discharge Points on Springvale Mine's EPL 3607, LDP001, LDP002, LDP004 – LDP007, LDP009, LDP010.
	• Mine water discharged to the Coxs River catchment via LDP009 at Sawyers Swamp Creek 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.
	in accordance with Schedule 4 Condition 12 of SSD 5594.
	• Dirty water diversion drain around the northern section of the coal stockpile extension area to divert water to the existing dirty water catchment at the pit top, subject to SVMEP MOD1 to SSD 5594, under assessment currently.
		• 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*.
		• 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.*

Rehabilitation and Final Landform	• Progressive rehabilitation of infrastructure and exploration sites at the pit top and Newnes Plateau infrastructure areas, undertaken as required. • Life of mine rehabilitation of all disturbed areas associated with the pit top and Newnes Plateau infrastructure areas on completion of mining operations.	• No change
Exploration Activities	• Exploration activities within EL6974 and A460 boundaries.	• No change

4.2.1 Hours of Operation and Workforce

No change is proposed to the approved hours of operation.

This modification is not proposing to increase workforce from the 450 full time equivalent personnel proposed in the SVMEP MOD 1 application, currently under assessment.

4.2.2 Site Access

No change to site access is proposed.

4.2.3 Coal Production Rate

This modification is not proposing to increase ROM coal production limit from the 5.5 Mtpa proposed in in the SVMEP MOD 1 application, currently under assessment.

4.2.4 Mining Method and Sequence

There is no proposal to change the approved mine plan or the mine footprint. No physical works or any changes to the existing mine operations (underground and surface) are proposed.

4.2.5 Coal Handling, Processing and Stockpiling

There is no proposal to change the coal handling and processing practices currently undertaken at the pit top. There is no proposal to increase the pit top coal stockpiling capacity from the 200,000 tonnes proposed in the SVMEP MOD 1 application, currently under assessment.

4.2.6 Coal Transport

No change is proposed in the approved coal transport modes for transfer of coal to offsite locations.

4.2.7 Plant and Equipment

No change to the current plant and equipment fleet underground or plant and fleet on the surface is proposed.

4.2.8 Mine Support Facilities and Surface Infrastructure

4.2.8.1 Mine Support Facilities

No changes to the existing mine support facilities and surface infrastructure are proposed.

4.2.8.2 Surface Water Management and Pollution Control Infrastructure

There is no proposal to change the surface water management or pollution control infrastructure at the pit top or the Newnes Plateau infrastructure areas due to the modification.

4.2.8.3 Underground Mine Inflow Water Management

Mine inflows underground, the transfer to the surface to dewatering sites and into the SDWTS pipeline network, and the pit top will continue to be managed as described in **Section 3.3.8.3**.

Underground water from the Renown Colliery workings will continue to be pumped to the surface via the Pit Top Collection System and stored in the Fire Dam to meet operational requirements, both for underground operations and surface facilities. Excess mine water will continue to be discharged to Springvale Creek via LDP001.

Mine water will continue to be discharged to the Coxs River catchment (untreated for salinity) via LDP009 (and LDP010 as required) at Sawyers Swamp Creek until 30 June 2019. After this date mine water from the SDWTS will be transferred to the water treatment plant at MPPS, proposed in the Springvale WTP (SSD 7592). This transfer will be subject to a modification to SSD 5594 in the future. An overview of the Springvale WTP is provided in **Figure 9**.

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 the 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%ile), 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 will be transferred to the Thompsons Creek Reservoir for subsequent reuse at MPPS.

4.2.8.4 Potable Water

No change is proposed to the provision of potable water supply to Springvale Mine by Lithgow City Council for use in the administration buildings and bathhouse.

4.2.8.5 Wastewater

No change is proposed for the management of sewage and grey water from the pit top, which will continue to be transferred to the Lithgow City Council sewer system.

4.2.9 Waste Management

No changes are proposed to Springvale Mine's current waste management. Both the production waste and non-production waste streams will continue to be undertaken as described in Section 3.3.9.

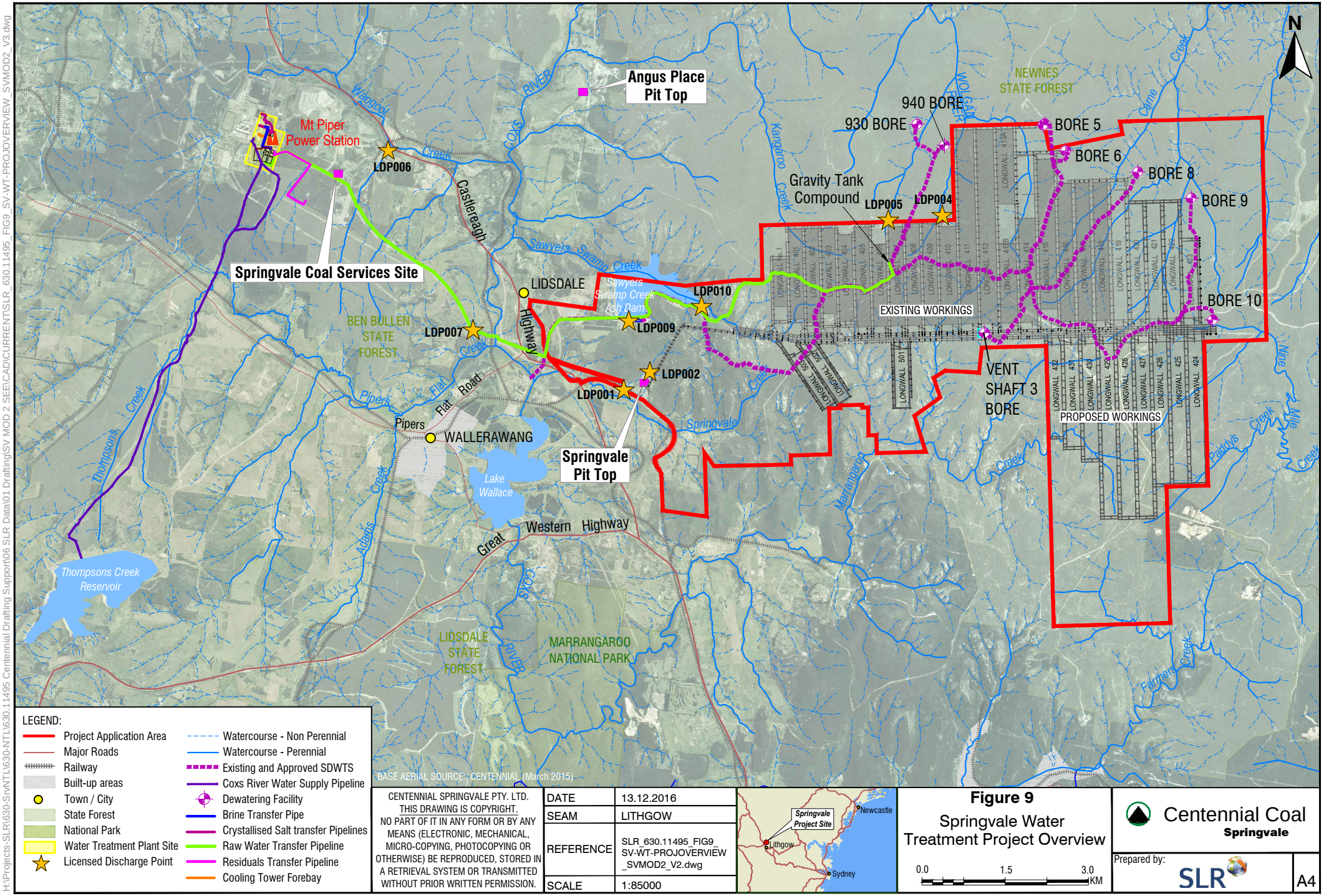
4.3 Environmental Management

Springvale Mine will continue to undertake monitoring and reporting in accordance with the existing EMS as described in **Section 3.4**. The management plans will continue to be reviewed regularly and updated as required. Monitoring results will continue to be reported in accordance with the EPL 3607 requirements, and on an annual basis in an Annual Review.

4.4 Rehabilitation and Final Landform

Progressive and life-of-mine rehabilitation within the Springvale Mine consent area will be undertaken as summarised in **Section 3.5,** and described in detail in the Springvale Mine's MOP (01 November 2015 – 31 October 2022).

As the proposed modification does not entail changes to the surface infrastructure there will be no impact on mine rehabilitation described in the MOP.



DATE	13.12.2016
SEAM	LITHGOW
REFERENCE	SLR_630.11495_FIG9_SV-WT-PROJOVERVIEW_SVMOD2_V2.dwg
SCALE	1:85000

Figure 9
Springvale Water Treatment Project Overview

0.0 1.5 3.0 KM

Centennial Coal
Springvale

Prepared by: SLR

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5.0 REGULATORY FRAMEWORK

5.1 Introduction

This chapter describes the applicable State and Commonwealth legislation under which the proposed modification has been assessed and will be determined. Full consideration of the environmental planning instruments has also been provided. The regulatory framework under which Springvale Mine Extension Project was approved is described in Chapter 5 of the SVMEP EIS (Golder Associates (2014)) and discussed below as relevant.

5.2 Approval Pathway and Permissibility

State Significant development consent SSD 5594 was granted to Springvale Mine for the Springvale Mine Extension Project under Part 4 Division 4.1 of the EP&A Act. The Project is classified as SSD pursuant to Section 89C of the EP&A Act and declared as such by the State and Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). Schedule 1 of the SRD SEPP identifies development for the purpose of coal mining as SSD. Development consent SSD 5594, was granted to the Springvale Mine Extension Project on 21 September 2015 by the Planning Assessment Commission of NSW, as delegate of the Minister of Planning. The SSD 5594 consent allows Springvale Coal to carry out mining operations from the Lithgow Seam at Springvale Mine until 31 December 2028 (Appendix A).

Springvale Mine is now proposing to modify its consent SSD 5594 (MOD 2). SSD consents may be modified under Section 96 of the EP&A Act provided that the information stipulated in Clause 115 of the EP&A Regulation is contained within the modification application, and that the development as modified will be substantially the same development as the development for which consent was originally granted. This approval pathway is further discussed in **Section 5.3.1**. 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 environmental planning instruments relevant to the modification are discussed in **Section 5.4** and **Section 5.5**.

5.3 NSW State Legislation

5.3.1 Environmental Planning and Assessment Act 1979

Section 96 of the EP&A Act applies to modifications to Part 4 development consents generally, and includes provisions for modifications involving minor error, misdescription or miscalculation (Section 96(1) of EP&A Act)), and modifications involving minimal environmental impacts (Section 96(A) and other modifications (Section 96(2)).

Section 96(2) other modifications includes the following provisions:

> *A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if:*
>
> *(a) it is satisfied that the development to which the consent as modified relates is substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and*
>
> *(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 5) in respect of a condition imposed as a requirement of a concurrence to the*

consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and

(c) it has notified the application in accordance with:

(i) the regulations, if the regulations so require, or

(ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and

(d) it has considered any submissions made concerning the proposed modification within the period prescribed by the regulations or provided by the development control plan, as the case may be.

The proposed modification for SSD 5594 described in this SEE is being made under Section 96(2) other modifications. Negligible to minimal predicted environmental impacts and consequences, described in **Chapter 7.0**, result from the proposed modification elements. The approval pathway is appropriate as the proposed modification elements will necessitate only minor changes to the currently approved activities, and the modified development would be substantially the same development for which the consent was originally granted (**Section 9.2**).

An application for modification of development consent under Section 96 of the EP&A Act must contain information stipulated in Clause 115 of the EP&A Regulation. **Table 9** provides the relevant information for the proposed modification and notes where the information has been addressed in the SEE.

Table 9 – Clause 115 Requirements for Section 96 Applications

Requirement	Where Addressed in SEE
(a) The name and address of the applicant.	**Section 1.4**
(b) A description of the development to be carried out under the consent.	**Chapter 3.0**
(c) The address, and formal particulars of title, of the land on which the development is to be carried out.	**Section 2.4** and **Appendix B**
(d) A description of the proposed modification to the development consent.	**Chapter 4.0, Table 8**
(e) A statement that indicates either: (i) that the modification is merely intended to correct a minor error, misdescription or miscalculation, or (ii) that the modification is intended to have some other effect, as specified in the statement.	 N/A **Chapter 7.0** The modification will have minimal environmental impacts.
(f) A description of the expected impacts of the modification.	**Chapter 7.0**
(g) An undertaking to the effect that the development (as to be modified) will remain substantially the same as the development that was originally approved.	**Section 9.2** The development as modified will remain substantially the same as the development (Springvale Mine Extension Project) that was originally approved in consent SSD 5594.
(h) If the applicant is not the owner of the land, a statement signed by the owner of the land to the effect that the owner consents to the making of the application (except where	Landowner's consent is not required for SSD projects. Landowners will be notified of the application to modify consent SSD 5594 through an

Requirement	Where Addressed in SEE
the application for the consent the subject of the modification was made, or could have been made, without the consent of the owner),	advertisement placed in the local newspaper following lodgement of modification application.
(i) A statement as to whether the application is being made to the Court (under Section 96) or to the consent authority (under Section 96AA), and, if the consent authority so requires, must be in the form approved by that authority.	The application is not being made to the Court (under Section 96) or to the consent authority (under Section 96AA).

Objects of the EP&A Act

The EP&A Act is the principal piece of legislation overseeing the assessment and determination of development proposals in NSW. It aims to encourage the proper management, development and conservation of resources, environmental protection and ecologically sustainable development.

The objects of the EP&A Act generally seek to promote management and conservation of natural and artificial resources, while also permitting appropriate development to occur. The principles of ecologically sustainable development and public participation are also objects of the EP&A Act. The consistency of the modification with the relevant objects is summarised in **Table 10**.

Table 10 – Objects of the EP&A Act

Object	Consistency of the Modification
(a) to encourage: *(i) the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, water, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment,*	Jacobs was engaged to assess and report on the potential for the modification to impact upon the water resources. The Surface Water Assessment (Jacobs, 2016a) is attached as **Appendix C** and is discussed in **Chapter 7.0** of the SEE. This assessment assesses the impact of the modification on the natural resources and provides information on the proper management of the resources.
(ii) the promotion and co-ordination of the orderly and economic use and development of land,	The orderly and economic use of land is served by development which is permissible under the relevant planning regime and predominantly in accordance with the prevailing planning controls. The modification comprises a permissible development which is consistent with the statutory and strategic planning controls. As detailed in SVMEP EIS, continued operations of Springvale Mine will result in positive economic impacts. The modification proposes a minor alteration to an approved coal mine which represents an orderly and economic use of a resource (coal) approved for extraction for supply to domestic power generation. The proposed modification will not impact on land uses within and surrounding Springvale Mine.
(iii) the protection, provision and co-ordination of communication and utility services,	The modification will not affect public communication networks or utilities.
(iv) the provision of land for public purposes,	Not applicable to the proposal.
(v) the provision and co-ordination of community services and facilities, and	Not applicable to the proposal.
(vi) the protection of the environment,	The proposed modification will not impact on threatened

Object	Consistency of the Modification
including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats, and	species, populations and ecological communities, and their habitats.
(vii) ecologically sustainable development, and	The Springvale Mine Extension Project is consistent with the principles of ecological sustainable development (ESD), as outlined in Chapter 12 of Golder Associates (2014). The proposed modification is also consistent with the principles of ESD, discussed in detail in **Section 9.5**. The discussions included in **Section 9.5** address both this object of the EP&A Act and clause 7(1)f in Schedule 2 of the EP&A Regulation.
(viii) the provision and maintenance of affordable housing, and	Not applicable to the proposal.
(b) to promote the sharing of the responsibility for environmental planning between the different levels of government in the State, and	As outlined in Section 5.1 of Golder Associates (2014) Springvale Mine Extension Project is an SSD and its assessment and approval was subject to the provisions of Part 4 of the EP&A Act. Extensive consultation with many different levels of government (Federal, State, local) was undertaken during the preparation of the SVMEP EIS. The assessment process and determination again included consultation with different levels of government, including local government. Consultation on MOD 1 and MOD 2 applications have also been undertaken as described in the Stakeholder Consultation chapters in the SEEs supporting the respective modifications. This modification (MOD 2) will be assessed and approved under Section 96(2) of the EP&A Act and the assessment process will be undertaken by the DPE in consultation with other relevant government agencies. The preparation of this SEE in support of the proposed modification has involved engagement with NSW State (DPE and EPA).
(c) to provide increased opportunity for public involvement and participation in environmental planning and assessment.	Extensive consultation with a wide range of stakeholder was undertaken during the preparation of the SVMEP EIS (Golder Associates, 2014). The consultation with the stakeholders has been ongoing since the grant of SSD 5594. Consultation with the community will continue through the Western Region CCC and other Springvale Mine's community engagement tools. The community will have the opportunity to comment on the modification application during the public exhibition of the SEE.

Section 79C Evaluation

Section 79C of the EP&A Act applies to the determination of development applications for SSD. In determining an application for modification, the consent authority is required to consider the matters listed in Section 79C(1) of the EP&A Act as are of relevance to the development. Each of the relevant matters has been addressed in the SEE (**Section 5.4**, **Section 5.5**, **Chapter 7.0**) and will need to be considered by the consent authority during the assessment of the modification application.

Other Approvals

Pursuant to Section 89J of the EP&A Act, the following authorisations are not required for approved SSD proposals:

- The concurrence under Part 3 of the *Coastal Protection Act 1979* of the Minister administering that Part of the Act
- A permit under Section 201, 205 or 219 of the *Fisheries Management Act 1994*
- An approval under Part 4, or an excavation permit under Section 139, of the *Heritage Act 1977*
- An Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974*
- An authorisation referred to in Section 12 of the *Native Vegetation Act 2003* (or under any Act to be repealed by that Act) to clear native vegetation or State protected land
- A bush fire safety authority under Section 100B of the *Rural Fires Act 1997*
- A water use approval under Section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the *Water Management Act 2000*
- An order under Division 8 of Part 6 of the *Heritage Act 1977* restricting harm to buildings, works or relics that are not protected by a heritage listing.

Pursuant to Clause 89K of the EP&A Act, an authorisation of the following kind cannot be refused if it is necessary for carrying out an approved SSD proposal, and must be granted "substantially consistent" with the SSD consent:

- An aquaculture permit under Section 144 of the *Fisheries Management Act 1994*
- An approval under Section 15 of the *Mine Subsidence Compensation Act 1961*
- A mining lease under the *Mining Act 1992*
- A production lease under the *Petroleum (Onshore) Act 1991*
- An environment protection licence under Chapter 3 of the *Protection of the Environment Operations Act 1997* (for any of the purposes referred to in Section 43 of that Act);
- A consent under Section 138 of the *Roads Act 1993*
- A licence under the *Pipelines Act 1967*.

5.3.2 Other Key NSW State Legislation

The existing approvals relevant for Springvale Mine operations are described in **Section 3.2**. **Table 11** lists the key relevant pieces of NSW State legislation and indicates the implications, if any, for the modification.

Table 11 – Other Key NSW State Legislation

Relevant State Legislative Act	Project Implications (approvals, licences and/or authorities)
Protection of the Environment Operations Act 1997	The POEO Act is the principal environmental protection legislation in NSW and is administered by the EPA. Springvale Mine is a premises-based "scheduled activity" under Schedule 1 of the POEO Act and currently operates under the provisions of Environment Protection Licence EPL 3607, issued on 17 May 2000 and renewed annually on 1 January. The EPL allows for eight Licensed Discharge Points and five air quality monitoring points, for both Springvale Mine and Western Coal Services Project (SSD 5579). EPL 3607 (condition P1.3) will be subsequently updated to remove licensed

Relevant State Legislative Act	Project Implications (approvals, licences and/or authorities)
	discharge points LDP006 and LDP007, which will effectively be "transferred" to a new EPL for the Western Coal Services Project. Condition A1.1 of EPL 3607 currently authorises extraction and handling of up to 5 Mtpa of ROM coal. The proposed modification (MOD 2) will not require a variation to EPL 3607. However, a variation to EPL 3607 will be required following the approval of MOD 1 (under assessment) to allow for the increased extraction and handling of ROM coal at Springvale Mine. In addition, condition A2.1 will be updated to include all existing Springvale mining tenements as provided in **Table 7** and **Figure 3**.
Mining Act 1992	A new mining lease under the *Mining Act 1992* was applied (MLA451) for the longwalls LW424 – LW432, and was granted (ML1727) in February 2016 (**Table 7**) to facilitate mining operations approved in SSD 5594. No new mining lease is required as a result of the proposed modification. Springvale Mine has a currently approved Subsidence Management Plan (SMP) prepared and approved under the *Mining Act 1992,* and authorised the extraction of LW411 – LW418. No other SMPs will be prepared, as the extraction of the remainder of the approved longwalls (LW419 – LW432, LW501 – LW503), requires the preparation of an Extraction Plans in accordance with Schedule 3 Condition 10 of SSD 5594. LW419 Extraction Plan was approved in June 2016. A Mining Operations Plan (MOP), for the period 1 November 2015 to 31 October 2022, has been prepared to outline proposed operations and rehabilitation approved under development consent SSD 5594. The MOP has been prepared in accordance with the Department of Industry – Division of Resources and Energy (DRE) publication titled *ESG3: Mining Operations Plan (MOP) Guidelines* (DRE 2013). The MOP was approved on 25 February 2016. The MOP has also been prepared to satisfy the requirements of a *Rehabilitation Management Plan*, required by Schedule 4, Condition 32 of SSD 5594.
Water Act 1912	The *Water Act 1912* (Water Act) governs access, trading and allocation of licences associated with surface water and groundwater sources where a Water Sharing Plan is not in place. As a Water Sharing Plan has been developed for the Project Application Area, the Water Act no longer applies. Springvale Mine was granted three groundwater licences for dewatering bores initially granted under the Water Act. Springvale Mine also holds groundwater monitoring licences approved under the Water Act for a series of shallow and deep groundwater monitoring piezometers. The dewatering bore licences have been converted to Water Access Licences (WALs) under the *Water Management Act 2000*, as provided in **Table 6**, and discussed below.
Water Management Act 2000	The *Water Management Act 2000* (WM Act) is intended to ensure that water resources are conserved and properly managed for sustainable use benefitting both present and future generations. Water sharing plans prepared in accordance with the WM Act include rules for protecting the environment and administrating water licensing and trading. Springvale Mine holds water access licences (groundwater) for its dewatering bores under the WM Act. The Springvale Mine Extension Project Application Area is within an area covered by two water sharing plans: • *Water Sharing Plan for the Greater Metropolitan Region Groundwater Source 2011* • *Water Sharing Plan for Greater Metropolitan Region Unregulated River Water Sources 2011.* In accordance with Clause 4 of the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Source 2011* the Project Area falls within the boundary of the Sydney Basin Coxs River Groundwater Source and the Sydney Basin Richmond Groundwater Source. Springvale Mine holds water access licences (WAL) for its dewatering bores (**Table 6**) comprising the pit top collection system (WAL36443), Vent Shaft 3 Borehole (WAL36446) and Bores 6 and 8 (WAL36383).

Relevant State Legislative Act	Project Implications (approvals, licences and/or authorities)
	In accordance with Clause 4 of the *Water Sharing Plan for Greater Metropolitan Region Unregulated River Water Sources 2011* the Project Area lies on the boundary of the Upper Nepean and Upstream Warragamba Water Source (Wywandy Management Zone) and the Hawkesbury and Lower Nepean Rivers Water Source (Colo River Management Zone). Currently Springvale Mine does not hold any surface water access licences. Mine inflows will not change due to the proposed coal extraction rate and the WALs (groundwater) held by Springvale Mine are sufficient to cover the requirements of the Project as modified (MOD 1).. However, additional water access licences (surface water) will be required in the Wywandy Management Zone of the Upper Nepean and Upstream Warragamba Water Source. Springvale Mine will continue to hold all relevant licences, share component and allocation required to comply with the WM Act (and Water Act) at all times water is taken, whether during or after the life of the Springvale Mine Extension Project, as modified. By the operation of Section 89J of the EP&A Act, the Project as modified will not require water use approvals under Section 89 of the WM Act, water management approvals under Section 90 or a controlled activity approval under Section 91 of the WM Act.
Work Health and Safety (Mines and Petroleum Sites) Act 2013	*Work Health and Safety (Mines and Petroleum Sites) Act 2013* aims to securing and promoting the health and safety of persons at work at mines, petroleum sites or related places, and to protect workers at mines and petroleum sites and other persons against harm to their health and safety through the elimination or minimisation of risks arising from work. Springvale Coal currently holds all necessary approvals under the *Work Health and Safety (Mines and Petroleum Sites) Act 2013*.
Mine Subsidence Compensation Act 1961	The Project Application Area is not located within a Mine Subsidence District. The modification will not require approval by the Mine Subsidence Board given no significant surface improvements are proposed.
Dams Safety Act 1978	Springvale Mine does not propose any underground mining or surface disturbance on or in the vicinity of any dams prescribed under the *Dam Safety Act 1978*.
Crown Lands Act 1989	There is Crown land within the Project Application Area. No licence is required for the modification to use Crown Land under the provisions of the *Crown Lands Act 1989*.
Roads Act 1993	Section 138 of the *Roads Act 1993* requires consent be obtained prior to disturbing or undertaking work in, on or over a public road. No consent will be required for the modification given that no disturbance or works on public roads with the Project Application Area are proposed.
Threatened Species Conservation Act 1995	The *Threatened Species and Conservation Act* (TSC Act) provides protection for threatened plants and animals native to NSW (excluding fish and marine vegetation) and integrates the conservation of threatened species into development control processes under the EP&A Act. The modification will not impact on threatened species, endangered populations, ecological communities and other matters listed under the TSC Act.
National Parks and Wildlife Act 1974	The *National Parks and Wildlife Act 1974* (NPW Act) contains provisions for the protection and management of national parks, historic sites, nature reserves and Aboriginal heritage. By operation of Section 89J of the EP&A Act, the Project does not require any additional approvals under the NPW Act. The proposed modification will not impact any heritage items protected under the NPW Act.
Aboriginal Land Rights Act 1983	The *Aboriginal Land Rights Act 1983* provides for the constitution of local, regional and State Aboriginal Land Councils and a mechanism for Land Councils to claim Crown land. There are no known granted claims over Crown land in the

Relevant State Legislative Act	Project Implications (approvals, licences and/or authorities)
	Project Application Area.
Heritage Act 1977	Historical archaeological relics, buildings, structures, archaeological deposits and features are protected under the *Heritage Act 1977*. There are no heritage items in the Project Application Area within the World Heritage List, NSW Heritage Register, Australian Heritage Database or the relevant Local Environmental Plans (RPS (2014a)). In any event, approval is not required under Part 4 of the *Heritage Act 1977* due to the operation of Section 89J of the EP&A Act. The proposed modification will not impact any heritage items protected under the Heritage Act
Contaminated Land Management Act 1997	The relevance of this legislation to modification is outlined in **Section 5.4.5**.
Forestry Act 2012	Springvale Coal currently holds Access permits (**Table 4**) to allow access to surface infrastructure sites in the Newnes State Forest. The occupation permits will not require to be updated following approval of the modification.

5.4 State Environmental Planning Policies

State Environmental Planning Policies (SEPPs) are Environmental Planning Instruments (EPIs) prepared by the Minister to address issues significant to NSW. The SEPPs outlined in the below sub-sections contain provisions that are relevant to the proposed modification, and therefore are matters to be taken into consideration by the consent authority.

5.4.1 SEPP (State and Regional Development) 2011

State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) came into effect upon the repeal of Part 3A of the EP&A Act and identifies development to which the SSD assessment and determination process under Division 4.1 in Part 4 of the EP&A Act applies. The Springvale Mine Extension Project is classified as SSD pursuant to Section 89C of the EP&A Act and declared to be such by the SEPP (State and Regional Development) 2011 (SRD SEPP). Schedule 1 of the SRD SEPP identifies development for the purpose of coal mining as SSD.

5.4.2 SEPP (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) aims to provide for the proper management and development of mineral, petroleum and extractive material resources for the social and economic welfare of NSW**. Section 5.5** discusses the permissibility of the Project due to the application of sub-clauses 7(1)(a) and 5(3) of the Mining SEPP.

Part 3 of the Mining SEPP stipulates matters for consideration by the consent authority before determining an application for consent in respect of development for the purposes of mining. Specifically, Clauses 12 to 17 (inclusive) requires consideration to be given to the compatibility of projects with other surrounding land uses, including the existing and potential extraction of minerals, natural resource management and environmental management, resource recovery, transportation and rehabilitation.

The information presented in this SEE addresses relevant matters for consideration prescribed in the abovementioned clauses. The assessments undertaken have assessed the modification elements adequately, and in accordance with the government policies and guidelines. Emphasis has been

placed on anticipation and prevention of potential environmental and social impacts, with various mitigation measures, management strategies, and monitoring activities proposed to minimise adverse impacts.

5.4.3 SEPP (Sydney Drinking Water Catchment) 2011

State Environmental Planning Policy (*Sydney Drinking Water Catchment*) *2011* applies to land within the Sydney drinking water catchment. The Project Application Area is partly located within the Sydney drinking water catchment.

The aims of SEPP (Sydney Drinking Water Catchment) 2011 are:

> (a) to provide for healthy water catchments that will deliver high quality water while permitting development that is compatible with that goal
>
> (b) to provide that a consent authority must not grant consent to a proposed development unless it is satisfied that the proposed development will have a neutral or beneficial effect on water quality, and
>
> (c) to support the maintenance or achievement of the water quality objectives for the Sydney drinking water catchment.

Clause 9(1) of this SEPP provides that any development or activity proposed to be carried out on land within the Sydney drinking water catchment should incorporate the Water NSW's current recommended practices and standards. Clause 10(1) requires a development under Part 4 of the EP&A Act to demonstrate a neutral or beneficial effect on water quality. Springvale Mine's consent SSD 5594 Condition 12, Schedule 4 of SSD 5594 requires mine water discharges to be treated to meet specified salinity limits. The specified salinity limits have been developed to meet beneficial effect at Springvale Mine's LDP009.

The removal of the 30 June 2017 water quality criteria proposed in this modification will result in minor to negligible impacts on water quality in the Coxs River catchment. DPE (2015) define the 'base case' with respect to the Neutral or Beneficial Effect test (WaterNSW, 2015) for Springvale Mine as the EPL 3607 limit of 1,200 µS/cm existing at the time of the SSD 5594 development application. On the basis of that definition, the proposed modification, at both a local and catchment scale, is regarded as a neutral effect to the NorBE water quality effect test, since the modification will allow the Springvale Mine to continue to discharge mine water at the current water quality criteria (governed by EPL 3607) until the Springvale WTP (SSD 7592) is operational.

5.4.4 SEPP (Infrastructure) 2007

SEPP *(Infrastructure) 2007* (Infrastructure SEPP) aims to facilitate the effective delivery of infrastructure across NSW by improving regulatory certainty and efficiency through a consistent planning regime and greater flexibility in the location of infrastructure and service facilities.

Clause 45 of the Infrastructure SEPP provides that for a development application in respect of development carried out:

- Within or immediately adjacent to an easement for electricity purposes (whether or not the electricity infrastructure exists), or
- Immediately adjacent to an electricity substation, or

- Within 5 m of an exposed overhead electricity power line, and

- The consent authority must give written notice to the electricity supply authority for the area and invite comments about potential safety risks, and take into consideration any response to that notice received within 21 days after the notice is given.

Infrastructure SEPP was considered in the SVMEP EIS. The EIS assessed the Project's impact on the relevant electricity transmission lines in Newnes State Forest in a dedicated Subsidence Impact Assessment (MSEC (2013)). The EIS also describes the consultation that had been undertaken with respect to the potential impacts of subsidence on the electrical infrastructure over the approved mining area.

The mine design and the layout is not proposed to be changed in the proposed modification and as such the subsidence profiles described previously in MSEC (2013) and the SVMEP EIS (Golder Associates (2014)) will not change. There are no potential impacts on the existing electrical infrastructure overlying the mining area, described and assessed in the EIS and MSEC (2013), due to the modification. The subsidence performance measures stipulated in Condition 7 Schedule 3 of SSD 5594 will continue to apply following approval of the modification.

5.4.5 SEPP No. 55 – Remediation of Land

SEPP No. 55 – Remediation of Land (SEPP 55) provides for a state-wide planning approach to the remediation of contaminated land in order to reduce the risk to human health or any other aspect of the environment.

Clause 7(1) of SEPP 55 provides that a consent authority must not consent to the carrying out of any development on land unless:

- It has considered whether the land is contaminated

- If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and

- If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

Further, Clause 7(2) of SEPP 55 provides that before determining an application for consent to carry out development that would involve a "change of use" in respect of certain land specified in clause 7(4) of SEPP 55, the consent authority must consider a report specifying the findings of a preliminary investigation of the land concerned carried out in accordance with the contaminated land planning guidelines (being the 1998 publication *Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land*).

Centennial Coal undertook a contaminated site assessment across all its sites including Springvale Mine in accordance with the *Contaminated Land Management Act 1997* to determine whether any site triggered the Duty to Report criteria. A three phase approach was adopted as follows:

- Phase 1 desk top assessment completed in December 2010;

- Phase 2 intrusive sampling and analysis programme, completed in February 2012; and

- Phase 3 implementation of remediation plans.

In February 2012, Centennial Coal notified the then DECCW of the contamination status of Springvale Mine on the basis that there was visible evidence of limited soil contamination at the pit top but that some potential existed for contamination associated with an underground diesel storage tank, equipment washdown area and workshop. Based on the findings of the Phase 2 investigations Springvale Coal has implemented environmental management practices to address the identified issues. The updated Springvale Mine MOP (1 November 2015 – 31 October 2022) has committed to further studies on land contamination issues during the MOP term.

With the continued implementation of best management practices for hydrocarbons, as well as effective implementation of the approved environmental management plans and work health and safety management systems, the potential for contamination and associated issues remains low for Springvale Mine.

5.4.6 SEPP No. 44 – Koala Habitat Protection

SEPP No. 44 – Koala Habitat Protection provides for the protection of koala habitat by ensuring that areas subject to development proposals are considered for their value as habitat or potential habitat for koalas. The Greater Lithgow LGA is listed under Schedule 1 of SEPP No. 44 as an area to which the SEPP applies. The Springvale Mine Extension Project Application Area contains core koala habitat, however, no koala habitat will be impacted by the proposed modification.

5.4.7 SEPP No. 33 – Hazardous and Offensive Development

SEPP No. 33 - Hazardous and Offensive Development (SEPP 33) regulates, amongst other things, the determination of development applications to carry out what is defined in SEPP 33 as development for the purposes of a "potentially hazardous industry" or "potentially offensive industry". With the continued implementation of best management practices for hydrocarbons and explosives used at Springvale infrastructure sites as well as effective implementation of the approved EMS and occupation health and safety management systems, the proposed modification would not pose any significant risk, in relation to its locality, to human health, life or property or to the biophysical environment over and above the currently approved Springvale Mine Extension Project.

The proposed modification elements would not result in the emission of a polluting discharge in a manner which would have a significant adverse impact in its locality or on the existing or likely future development on other land.

On the above bases, the proposed modification is not considered to comprise a "potentially hazardous industry" or a "potentially offensive industry" within the meaning of these expressions in SEPP 33. Therefore a preliminary hazard analysis was not prepared as required by Clause 12 of SEPP 33 and nor does Clause 13 of SEPP 33 apply to the consent authority's determination of the modification.

5.5 Lithgow Local Environmental Plan 2014

Local Environmental Plans (LEPs) are instruments that guide planning decisions for Local Government Areas (LGAs) and allow Councils to manage the ways in which land is used through zoning and development consents. The *Lithgow Local Environmental Plan 2014* (Lithgow LEP 2014) was gazetted on 19 December 2014, after development application for SSD 5594 had been submitted on 20 November 2013.

The aim of the Lithgow LEP 2014 is to make local environmental planning provisions for land in Lithgow in accordance with the relevant standard environmental planning instrument under Section 33A of the EP&A Act. In particular, the aims of the Lithgow LEP 2014 include the encouragement of sustainable and planned development that complements the unique character and amenity of Lithgow, and to provide for a range of development opportunities that contribute to the social, economic and environmental resources of Lithgow through the implementation of the principles of ecologically sustainable development.

The land use zonings of the Project Application Area pursuant to the Lithgow LEP 2014, as illustrated on **Figure 4**, are:

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

The objectives of Zone RU1 Primary Production are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To encourage diversity in primary industry enterprises and systems appropriate for the area.
- To minimise the fragmentation and alienation of resource lands.
- To minimise conflict between land uses within this zone and land uses within adjoining zones.
- To minimise the environmental and visual impact of development on the rural landscape.
- To provide for recreational and tourist development and activities of an appropriate type and scale that do not detract from the economic resource, environmental or conservation value of the land.
- To maintain or improve the water quality of receiving water catchments.

The objectives of RU2 Rural Landscape are:

- To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.
- To maintain the rural landscape character of the land.
- To provide for a range of compatible land uses, including extensive agriculture.
- To ensure that the type and intensity of development is appropriate in relation to the rural capability and suitability of the land, the preservation of the agricultural, mineral and extractive production of the land, the rural environment (including scenic resources) and the costs of providing services and amenities.
- To facilitate tourism and recreational uses that are compatible with the capability and suitability of the land.
- To maintain or improve the water quality of receiving water catchments.

The objectives of Zone RU3 Forestry are:

- To enable development for forestry purposes.
- To enable other development that is compatible with forestry land uses.

The objectives of Zone R1 General Residential are:

- To provide for the housing needs of the community.
- To provide for a variety of housing types and densities.
- To enable other land uses that provide facilities or services to meet the day to day needs of residents.
- To maintain or improve the water quality of receiving water catchments.

The objectives of Zone SP2 Infrastructure are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To maintain or improve the water quality of receiving water catchments.

Development for the purposes of “open cut mining” is permissible with development consent under the Lithgow LEP 2014 within Zone RU1 Primary Production and Zone RU3 Forestry. Mining is prohibited within Zone RU2 Rural Landscape, Zone R1 General Residential and Zone SP2 Infrastructure. Development consent SSD 5594 has been granted, and was granted pursuant to land zoning objectives and permissibility in accordance with the now *repealed Lithgow City Local Environmental Plan 1994* (Lithgow LEP 1994). The land zoning within the Project Application Area in accordance with Lithgow LEP 1994 (Golder (2014)) comprised Zone 1(a) Rural (General), Zone No 1(f) Rural (Forestry) and Zone No 2(v) Village. Development for the purposes of "mining" was permissible with development consent under the Lithgow LEP 1994 within Zone No 1(f) Rural (Forestry). Mining was not prohibited within Zone 1(a) Rural (General) and Zone No 2(v) Village under the Lithgow LEP 1994.

Sub-clause 7(1)(a) of the Mining SEPP (**Section 5.4.2**) states that development for the purpose of underground mining may be carried out on any land with development consent. In relation to any inconsistency between the Mining SEPP and an LEP, Sub-clause 5(3) of Mining SEPP provides that the Mining SEPP prevails to the extent of the inconsistency. On this basis, any provision in the Lithgow LEP 2014 that would otherwise operate to prohibit the Springvale Mine Extension Project has no effect, and accordingly, the Springvale Mine Extension Project is permissible with development consent on the land in which the Project will be carried out that is within the Lithgow LGA.

5.6 Other Considerations

5.6.1 Lithgow Land Use Strategy 2010 – 2030

Lithgow City Council's *Lithgow Land Use Strategy 2010-2030* (LLUS) was adopted by Council on 31 October 2011 and endorsed by the NSW Department of Planning and Infrastructure on 24 May 2012.

The LLUS is a combined Land Use Issues Paper and Strategy. It explores the issues that currently face the Lithgow LGA and recommends a new planning approach to address these issues. The Strategy will be implemented through the planning system, primarily through the Lithgow LEP 2014 and Development Control Plan, as well as Council’s other policy, regulatory and governance functions.

This Strategy is significant to Council and the community because it will set directions and policy for the LGA's settlement and land use management for the next 20 years. The Strategy will be reviewed throughout this period every five years to ensure that its findings and recommendations remain relevant, are in keeping with sound planning principle and are continuing to meet the needs and expectations of the community.

5.6.2 Water Sharing Plans

Water Sharing Plans prepared in accordance with the *Water Management Act 2000* include rules for protecting the environment, extractions, managing licence holders' water accounts, and water trading within defined areas and specified water sources. The Water Sharing Plans provide the basis for equitable sharing of surface water and groundwater between water users, including the environment

Springvale Mine is regulated by the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Source 2011* established under Section 50 of the *Water Management Act 2000*. The Project Application Area straddles the boundary of the Sydney Basin Coxs River Groundwater Source (southwest) and the Sydney Basin Richmond Groundwater Source (northeast). The Sydney Basin Coxs River Groundwater Source is designated by DPI – Water to be a Less Productive Groundwater Source (Porous Rock) and the Sydney Basin Richmond Groundwater Source is designated as a Highly Productive Groundwater Source (Porous Rock).

The Project Application Area lies on the boundary of the Upper Nepean and Upstream Warragamba Water Source (Wywandy Management Zone) (southwest) and the Hawkesbury and Lower Nepean Rivers Water Source (Colo River Management Zone) (northeast) of *the Water Sharing Plan for Greater Metropolitan Region Unregulated River Water Sources 2011*.

There is no direct extraction from surface water sources at Springvale Mine and the modification, similarly, does not include direct surface water extraction.

Due to indirect change to groundwater contribution to surface watercourses (baseflow contrributions), as a result of mining activity, there is a requirement for water access licences from surface water sources in accordance with the NSW Aquifer Interference Policy. The proposed modification does not include proposed change to groundwater impact on surface watercourses.

5.6.3 Strategic Regional Land Use Policy

The NSW Government's *Strategic Regional Land Use Policy* (DP&I (2012)) was introduced in September 2012 and sets out a range of initiatives to better balance growth in the mining industry with the need to protect agricultural land and water resources. The Policy includes a package of measures including the following key elements:

- The preparation of Strategic Regional Land Use Plans (SRLUPs) for both the Upper Hunter and the New England North West regions of NSW which identify and map Strategic Agricultural Land (SAL) and Critical Industry Clusters (equine and viticulture land uses) within these areas
- The introduction of the NSW Aquifer Interference Policy (**Section 5.6.4**); and
- The requirement for Agricultural Impact Statements to accompany SSD applications for mining projects that have the potential to affect agricultural resources.

The proposed key policy response for resolving land use conflict between mining and coal seam gas proposals and agricultural land is a 'gateway process'. Under this process, a panel of independent

experts would assess proposals involving mining or coal seam gas development on mapped SAL at an early stage before the lodgement of a development application. The outcome of the 'gateway process' would be that the proposal either meets the gateway criteria relating to agricultural and water impacts, or the proposal does not meet the criteria and therefore stringent requirements will be imposed that must be addressed at the development application stage. The 'gateway process' has commenced.

The existing SRLUPs do not apply to the Project Application Area. Notwithstanding, matters relating to soil landscapes, land use impacts, land capability and agricultural suitability had been addressed within the SVMEP EIS (Golder Associates (2104)). There is no land defined as Biophysical Strategic Agricultural Land within the Project Application Area.

5.6.4 NSW Aquifer Interference Policy

The *NSW Aquifer Interference Policy* (AIP) (DPI (2012)) is a key component of the NSW Government's *Strategic Regional Land Use Policy*. The AIP clarifies the water licensing and approval requirements for aquifer interference activities, including the taking of water from an aquifer in the course of carrying out mining, and defines the considerations for assessing potential impacts to key water-dependent assets.

The AIP indicates that where mining results in the loss of water from an overlying source that is covered by a Water Sharing Plan, a water access licence is required under the *Water Management Act 2000* to account for this take of water. According to the AIP, proponents of a mining project seeking development consent under Part 4 of the EP&A Act must provide estimates of all quantities of water likely to be taken from any water source during and following cessation of the activity and all predicted impacts associated with the activity. A groundwater impact assessment, which included hydrogeological modelling for the Springvale Mine Extension Project EIS, was undertaken and the results are discussed in detail in Appendix E of Golder Associates (2014).

A further Groundwater Assessment (Jacobs, 2016b) undertaken for Springvale Modification 1 assessed the impact of the revised groundwater mine inflows (Adhikary and Wilkins (2015)) against the relevant Commonwealth and NSW legislation, including the AIP.

The AIP requires that potential impacts on groundwater sources, including their users and Groundwater Dependent Ecosystems (GDE), be assessed against minimal impact considerations. If the predicted impacts are less than the Level 1 minimal impact considerations, then these impacts will be considered as acceptable. Appendix E and Section 10.2.4 of Golder Associates (2014) considered groundwater impacts and aquifer interference requirements and clarified that the Project is compliant with Level 1 Minimum Harm Criteria of the NSW Aquifer Interference Policy for Porous Rock Water Sources. Any impacts on potential GDEs, basic landholder rights and existing registered bores were also addressed in Appendix E of Golder Associates (2014).

Assessments to assess any potential impacts on GDEs, basic landholder rights and existing registered bores and whether the Project as modified will be compliant with the Level 1 Minimum Harm Criteria was undertaken for the modification in Jacobs (2016a). The Project as modified will remain compliant with Level 1 Minimum Harm Criteria (**Section 7.6.2.5**).

5.7 Commonwealth Legislation

5.7.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of the Environment (DoE), and provides a legal framework to protect

and manage nationally important flora, fauna, ecological communities and heritage places defined as matters of 'national environmental significance' (NES). An action that "*has, will have or is likely to have a significant impact on a matter of National Environmental Significance*" may not be undertaken without prior approval from the Commonwealth Environment Minister, as provided under Part 9 of the EPBC Act. Approval under the EPBC Act is also required where actions are proposed on, or will affect, Commonwealth land and its environment.

Further to the submission of an EPBC Act referral (EPBC 2013/6881) to the Federal Minister of the Environment on 20 May 2013, the Springvale Mine Extension Project was determined to be a controlled action under the EPBC Act on 7 July 2013. EPBC 2013/6881 approval was granted on 15 October 2015 and has effect until 8 October 2035. EPBC 2013/6881 approved the following controlling provisions:

- Listed threatened species and communities
- Listed migratory species
- World heritage properties
- National heritage places
- A water resource, in relation to coal seam gas development and large coal mining development.

Potential impacts on any matters of NES are subject to assessments of significance pursuant to the EPBC Act *Significant Impact Guidelines 1.1* (DoE, 2013a). If a significant impact is considered likely, a referral under the EPBC Act must be submitted to the Commonwealth Environment Minister.

The *Significant Impact Guidelines 1.3* (DoE, 2013b) includes general criteria for whether an action is likely to have a significant impact on water resources, which are for the possibility for direct or indirect changes to:

- The hydrology of a water resource
- The water quality of a water resource.

According to the *Significant Impact Guidelines for Coal Seam Gas and Large Coal Mines 1.3* (DoE, 2013b), the value of the water resource needs to be confirmed such that impacts from actions can be evaluated on their significance. The guidelines indicate that key factors for evaluating a water resource's value include its utility for all third party users. Third party user categories specific to the proposed modification include:

- Provisioning services (e.g. use by other industries and use as drinking water)
- Cultural services (e.g. recreation and tourism, science and education)
- Supporting services (e.g. maintenance of ecosystem function).

If evidence can be provided that proposed actions would not materially affect the availability and quality for third party users, then the likelihood of an action having a significant impact would be reduced (DoE, 2013b).

The proposed modification has the potential to impact on a water resource and identified third party users, including downstream surface water users. A Surface Water Impact Assessment (Jacobs, 2016a), included as **Appendix C**, was prepared to assess the impact of the modification on the water resource in the Coxs River catchment. Jacobs (2016a) included an assessment of the proposed

modification against the *Significant Impact Guidelines for Coal Seam Gas and Large Coal Mines 1.3* (DoE, 2013b). This assessment concluded the modification is compliant with the guidelines. The modification will not, nor be likely to, have a significant impact on water resources in the catchment or the identified third part users. Therefore a referral under the EPBC Act is not required.

5.7.2 Native Title Act 1993

The *Native Title Act 1993* recognises that Aboriginal people may have rights and interests to certain land and waters which derive from their traditional laws and customs. Native title may be recognised in places where Indigenous people continue to follow their traditional laws and customs and have maintained a link with their traditional country. Most of the lands within the Project Application Area are subject to an Ancillary Deed which was entered into on the 31 January 2003 by the Gundungurra Native Title Claim Group, the Gundungurra Tribal Council Aboriginal Corporation and Centennial Springvale Pty Ltd, Springvale SK Kores Pty Ltd, Coalex Pty Ltd, Centennial Coal Company Ltd, Centennial Angus Place Pty Ltd and Ivanhoe Coal Pty Ltd. As such, these Centennial Companies are bound by the terms of this Deed.

The Deed is subject to a confidentiality clause and as such detailed commentary regarding the Deed is not provided in this document.

Any Native Title matters that are not dealt with within the existing Ancillary Deed are required to be resolved prior to the grant of a new mining lease required for the Project. No new mining leases will be required in relation to the proposed modification.

6.0 STAKEHOLDER ENGAGEMENT

6.1 Introduction

This chapter provides information on consultation undertaken with stakeholders with respect to the proposed modification.

6.2 Springvale Stakeholder Engagement Strategy

Springvale Coal has an ongoing consultation strategy with all stakeholders, identified in *Springvale Mine Stakeholder Management Plan* (Springvale SEP). The Springvale SEP provides a framework to identify and appropriately consult with stakeholders that may be influenced by or have an interest in Springvale Mine's operations. The Springvale SEP identifies the following groups as the mine's stakeholders:

- Local community
- Springvale Mine's Registered Aboriginal Parties
- Non-government organisations
- Government (Local, State, Commonwealth)
- Forestry Corporation of NSW
- Energy Australia
- Springvale workforce and workforce at other Centennial Coal operations.

The Springvale SEP is underpinned by Centennial Coal's Environment and Community Management Standards which set out the minimum requirements for effective consultation and engagement with all stakeholders.

Springvale Coal is committed to the timely, orderly, consistent and credible dissemination of appropriate information within the constraints of legal and regulatory requirements to all interested stakeholders. To date, no major complaints have been received on Springvale Mine from the community.

6.3 Consultation for the Modification

6.3.1 Consultation with Government Agencies

Department of Planning and Environment

A meeting was held with DPE on 17 June 2016 to discuss the progress of the Springvale WTP EIS preparation and the procurement process. At that meeting DPE were advised it was unlikely Springvale Coal would be able to meet the 30 June 2017 water quality criteria for mine water discharges (Schedule 4, Condition 12), and that it was the company's intention to seek a modification to Springvale Mine's consent to remove the condition.

A second meeting with DPE was held on 26 October 2016 to discuss Springvale Coal's proposal to adopt a 'zero discharge option' for Springvale WTP owing to transfer of treated water surplus to MPPS's operational demand to Thompsons Creek Reservoir. At that meeting the timing of the submission of the SVMEP MOD 2 application was discussed.

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.

Lithgow City Council

A meeting was held on 20 July 2016 with LCC to provide an update on the status of the Springvale WTP's EIS preparation, outcomes of environmental assessments and the overall progress on the delivery of the project. At that meeting LCC were advised that it was unlikely that the Springvale WTP would be operational by 30 June 2017 to meet the water quality criteria as per Schedule 4 Condition 12, and that Springvale Coal would seek a modification to consent SSD 5594 to remove the requirement to meet the criteria.

Environment Protection Authority

A meeting between senior personnel from Centennial Coal and EPA were held on 01 August 2016 to discuss EPA's recommendation that the Springvale WTP become a 'nil discharge development'. At that meeting Centennial Coal advised that, given the recommended change in the project description for the Springvale WTP and the additional assessments required combined with the lengthy procurement and construction process for the project, it will no longer be practical to meet the interim water quality criteria by 30 June 2017 as per Schedule 4 Condition 12 of SSD 5594. Centennial Coal additionally advised that a modification to Springvale Mine's consent would be sought to remove the requirement to meet the interim water quality criteria.

Office of Environment, Department of Primary Industries – Water, Environment Protection Authority, WaterNSW

A site visit was organized to visit MPPS and Thompsons Creek Reservoir on 17 November 2016 for the Springvale WTP. The site visit and a short meeting afterwards was convened by DPE to discuss the proposed amendment to the Springvale WTP's project description to transfer treated water surplus to MPPS's operational demand to Thompsons Creek Reservoir, instead of discharging the surplus treated water to Wangcol Creek as was proposed in the projects' EIS. Whilst the site visit and the meeting were mainly to discuss the Springvale WTP, the meeting discussed Springvale Coal's intention to modify SSD 5594 as proposed in this SEE, given that the Springvale WTP will not be constructed and operational by 30 June 2017 to meet the water quality criteria as per Schedule 4 Condition 12 of SSD 5594.

6.3.2 Consultation with EnergyAustralia

Centennial Coal has a well-established and long standing working relationship with EnergyAustralia. Regular meetings are held to discuss coal supply, property matters and transfers, water supply and project related matters.

Since September 2015 Centennial Coal and Energy Australia have been developing the Springvale WTP designed to meet Springvale Mine's consent condition relating to achieving specified water quality criteria. Consultation with EnergyAustralia on the Springvale WTP has been undertaken at all levels – project development, water treatment alternatives, EIS preparation, and procurement. Consultation with EnergyAustralia will be ongoing on matters relating to Springvale WTP, and approval and relevant operational matters relating to Centennial's operations which have interactions with the

Springvale WTP, including the proposed modification to Springvale Mine's consent SSD 5594 to remove the requirement to meet the 30 June 2017 interim water quality criteria for mine water discharges.

6.3.3 Consultation with Community

The broader community will be notified of the proposed modification through an advertisement placed in the local newspaper (Lithgow Mercury) following lodgment of the modification application. The local community will also be asked 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.

6.4 Future Consultation

Consultation with the community and other stakeholders will continue to ensure the community remains informed of the mine's progress and the outcomes of the modification application.

7.0 ASSESSMENT AND MANAGEMENT OF SURFACE WATER RESOURCES

7.1 Introduction

A Surface Water Assessment for the modification was prepared by Jacobs Australia Pty Limited, *Surface Water Assessment – SSD 5594 Modification 2* (Jacobs, 2016a), which is provided in full in **Appendix C**.

The purpose of the Surface Water Assessment (Jacobs, 2016a) report was to present an assessment of the proposed modification on the surface water environment at Springvale Mine and the receiving environment, specifically the expected impacts of the proposed modification on site water management, surface water environments, surface water users and surface water/groundwater interaction in the context of governing legislation and relevant guidelines and policies. Modelling prepared during environmental impact assessment of the SVMEP EIS (RPS, 2014ab; Jacobs, 2015ab) has been used to assess the impact of the proposed modification.

A toxicological assessment prepared by GHD Pty Ltd (GHD, 2016c) is summarised in Jacobs (2016a), and is appended as Appendix A to that report.

7.2 Study Area

The study area primarily encompasses the existing facilities and infrastructure at Springvale Mine and the receiving surface water environment that extends beyond the mine within the Coxs River catchment and Lake Burragorang. The sensitive receptors for the surface water assessment are discussed in **Section 2.11**.

7.3 Existing Hydrological Environment

7.3.1 Surface Water System

The Project Application Area encompasses two adjacent catchments, the Coxs River Catchment and the Colo River, of which the Wolgan River, Carne Creek, Nine Mile Creek and Bungleboori Creek are tributaries The catchment divide runs in a northwest to southeast direction through land surface on Newnes Plateau. The Wolgan River, of which Carne Creek is a tributary, eventually feeds into the Colo River and then the Hawkesbury River.

Surface water flow in the Coxs River is in a southerly direction, reflecting surface topographic gradient toward Lake Wallace and further downstream, Lake Lyell. Outflow from Lake Lyell eventually contributes to Lake Burragorang which is the primary drinking water reservoir for the City of Sydney.

The Coxs River Catchment and the Wolgan River Catchment are both under the jurisdiction of the Hawkesbury-Nepean Catchment Management Authority, although the Coxs River is listed within the boundary of the Sydney Drinking Water Catchment under the *State Environmental Planning Policy (Sydney Drinking Water Catchment 2011)*.

There is no direct extraction or discharge to surface watercourses on the Newnes Plateau by Springvale Mine or others. Rainfall/runoff on the Newnes Plateau discharges through the swamps, where present. Mine water make from Springvale Mine and Angus Place Colliery is currently discharged to the Coxs River via a licensed discharge point (LDP009) located in Sawyers Swamp

Creek (**Figure 7**), adjacent the Sawyers Swamp Creek Ash Dam. Sawyers Swamp Creek flows into Coxs River and then Lake Wallace.

Table 12 presents catchment characteristics in the Project Application Area. The watercourses are show in **Figure 7**. There is minimal development in the Wolgan River catchment in the vicinity of the Project Application Area, and comprises more rugged terrain than the Coxs River. The majority of the Wolgan River catchment is designated as State Forest or National Park.

In the Coxs River catchment, there has been historical disturbance due to past mining activity, including mining within the watercourse directly (such as within Wangcol Creek), as well as construction of several water supply reservoirs for power generation and waste disposal facilities (wet and dry ash deposition). Springvale Mine's pit top is located within the Coxs River Catchment. The Coxs River eventually discharges into Lake Burragorang, approximately 80 km downstream of the Springvale pit top.

Table 12 – Catchment Characteristics in the Project Application Area

Main Catchment	Sub-Catchment and Strahler Order	Associated Watercourses	Sub-Catchment Area (ha)	% (approximate) of Catchment Area within Project Area
Coxs River	Coxs River (5th and 6th)	Wangcol Creek (3rd), Springvale (2nd) and Sawyers Swamp Creek (3rd)	13,026	30
	Marrangaroo Creek (4th)	Unnamed watercourses south of Project Area	5,495	30
	Pipers Flat Creek (5th)	Unnamed watercourses south of Project Area	5,948	0
Colo River	Wolgan River Western Branch	Wolgan River (4th and 5th)	8,526	9
	Wolgan River Eastern Branch	Carne Creek (5th and 6th)	8,597	30
	Nine Mile Creek / Bungleboori Creek	Nine Mile Creek (3rd)	4,840	1

7.3.2 Water Sharing Plan

The Project is situated within the Water Sharing Plan for the *Greater Metropolitan Region Unregulated River Water Sources 2011.* The Project Application Area is bisected by the Upper Nepean and Upstream Warragamba Water Source in the southwest (Wywandy Management Zone) and in the northeast Hawkesbury and Lower Nepean Rivers Water Source (Colo River Management Zone).

There is no direct extraction from surface water sources at Springvale Mine and the modification, similarly, does not include direct surface water extraction. Due to indirect change to groundwater contribution (baseflow contribution) to surface watercourses, as a result of mining activity, there is a requirement for water access licences from surface water sources, in accordance with the requirements of the NSW Aquifer Interference Policy (DPI,2012). Details of these licensing requirements are summarised in **Section 7.6**.

7.3.3 Surface Water Users

Table 13 identifies surface water users in the Upper Nepean and Upstream Warragamba Water Source (Wywandy Management Zone) located downstream of the Project with the potential to be impacted.

Table 13 – Surface Water Users in the Upper Nepean and Upstream Warragamba Water Source (Wywandy Management Zone)

WAL No.	Licence Class and Entitlement (ML)	Works Approval No.	Lot/DP	Location	Comments
Downstream of the Project (current)					
25607	Unregulated River (10 ML)	10CA103248	8/2452472	Coxs River, 250 m downstream of junction with Sawyers Swamp Creek.	3.5 km downstream of Springvale LDP009
27428	Major Utility [Power Generation] (25,000 ML[a])	10CA117220	3/1181412	Lake Wallace	7.4 km downstream of Springvale LDP009
Downstream of the Project (far field)					
27428	Major Utility [Power Generation] (25,000 ML[a])	10CA117220	1181411	Lake Lyell	22.6 km downstream of Springvale LDP009
27431	Major Utility[Urban Water] (620,000 ML)	10CA117212	n/a	Lake Burragorang	~80 km downstream of Springvale LDP009

Note: [a] Entitlement split across Lake Wallace, Lake Lyell and Thompsons Creek Reservoir

7.3.4 Surface Water – Groundwater Interaction

The Coxs River is considered to be a losing watercourse, however, the rate of loss is minor, given the streambed of the Coxs River comprises exposed Permian Coal Measures (previously mined in parts, such as within Wangcol Creek) and interburden.

7.3.5 Surface Water Monitoring

The surface monitoring network at Springvale Mine comprises:

- Flow and quality monitoring in rivers and creeks
- Flow and quality monitoring within shrub swamps (flow and quality).

Further detail of the monitoring network at Springvale is presented in RPS (2014a) and SVMEP EIS (Golder Associates, 2014). Water monitoring is undertaken in accordance with the Water Management Plan prepared to address Schedule 3, Condition 10 (Extraction Plan) and Schedule 4, Condition 14 (whole of operations) of SSD 5594. Swamp monitoring is undertaken in accordance with the Swamp Monitoring Program prepared as part of the Extraction Plans.

7.4 Hydrological Analyses

7.4.1 Site Water Balance

There is no proposed change to the site water balance associated with the proposed modification. The proposed modification is a continuation of historical discharge at current and historical water quality, for a further period up till 30 June 2019, prior to commencement of the Springvale WTP (**Section 1.6**).

7.4.2 Erosion and Sediment Control

There is no proposed change to site water management as a result of the proposed modification. Assessment of continuation of mine water discharge on geomorphology is presented in **Section 7.4.4**.

7.4.3 Regional Water Flow and Quality Modelling

7.4.3.1 Approach to Analyses

In 2014, as part of the response to submissions on the SVMEP EIS, a daily water and salt balance model was developed for the Coxs River and Wollondilly River catchments The model was prepared in GoldSIM, Version 10.5.4 and was based on the Australian Water Balance Model (Boughton, 2010).

The Regional Water Quality Impact Assessment Model (RWQIAM) prepared (RPS, 2014b) encompasses all 280 contributing catchments to Lake Burragorang (Warragamba Dam). These catchments lie within the Upper Nepean and Upstream Warragamba Water Source of the Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011.

The RWQIAM (RPS (2014b) was used to predict the impact to flow and quality (salinity) of mine water discharge (untreated) associated with the Angus Place and Springvale Mine Extension Projects within the Coxs River catchment and water quality and volume in Lake Burragorang.

The model was subsequently modified two times in 2015 (Jacobs, 2015a,b) to incorporate the change in status at Angus Place Colliery to Care and Maintenance and a number of mine water treatment options. The RWQIAM has been updated during the current assessment of the proposed modification. During this update, the version of GoldSIM was updated from 10.5.4 (used for RPS (2014b) and Jacobs 2015a,b) to 11.1.6. A review indicated that the change in version of GoldSIM had negligible impact on previously presented results.

7.4.3.2 Model Calibration and Results

As presented in RPS (2014b) and Jacobs (2015a), the RWQIAM was calibrated to flow and water quality (salinity) at available monitoring locations with the Coxs River catchment, through to Lake Burragorang. The calibration period was 1 January 1979 to 30 June 2014, the same period as in RPS (2014b) and Jacobs (2015a).

Details of model calibration are provided in Section 4.4.2 of Jacobs (2016a). That section also presents the calibration model outputs for the following modelled nodes:

- Node #047, which is located at Coxs River immediately upstream of Lake Wallace, coincident with the location of DPI Water Station 212054
- Node #225, which is located at Coxs River immediately upstream of Lake Burragorang, coincident with the location of DPI Water Station 212250.

The locations of these nodes for calibration and for model predictions (**Section 7.4.3.3**) are shown in **Figure 15** and **Figure 16**.

7.4.3.3 Model Prediction

As presented in RPS (2014b) and Jacobs (2015a), the RWQIAM was used to predict flow and water quality (salinity) within the Coxs River, through to Lake Burragorang.

Mine Water Inflows

As per the approach adopted in RPS (2014b) and Jacobs (2015a), mine water discharge was assumed to dominate the local site water balance at Springvale Mine and Angus Place Colliery. Accordingly, the current revision of predicted inflows to underground workings was used in the prediction simulation, based on CSIRO (2016) predictions shown in **Figure 10**. It is noted that prior to 2025 (when Springvale Mine completes extraction) the mine inflows has contributions from both Springvale Mine (maximum approximately 19 ML/day in year 2022 for full extraction) and Angus Place Colliery (approximately 6 ML/day from existing workings) under the care and maintenance scenario. After 2025 the mine inflows are only from Angus Place Colliery's full extraction mining scenario, and a maximum mine inflow of approximately 36 ML/day is reached in 2031.

It is noted that CSIRO (2016) predictions are an update of the CSIRO (2015) groundwater assessment incorporating the full approved Springvale mine plan.

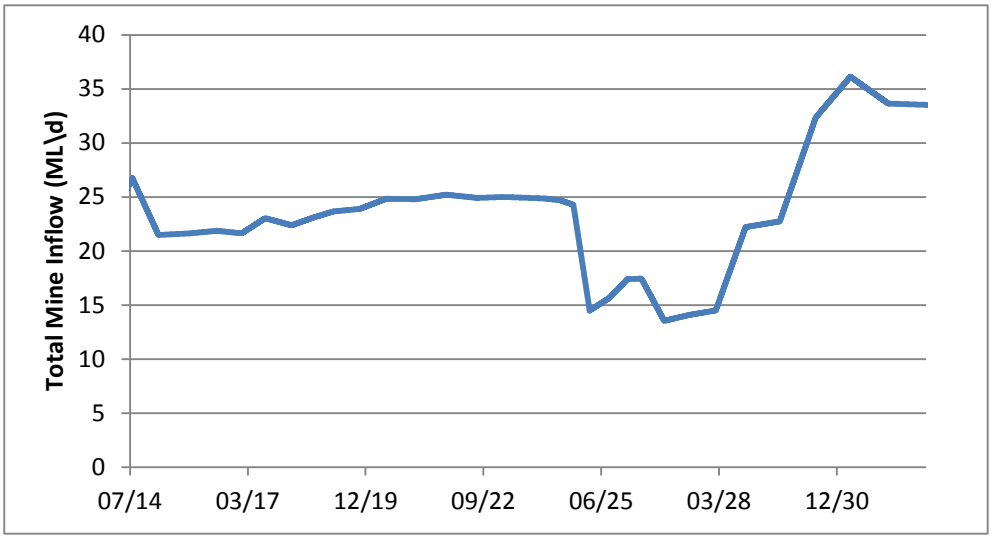


Figure 10 – Assumed Mine Inflow Distribution in ML/day (Adapted from CSIRO (2016))

The Water Strategy WS2b simulation from Jacobs (2015a) was adopted for prediction simulations in Jacobs (2016a) for the proposed modification. Water Strategy WS2b comprised an assumed discharge at Angus Place Colliery LDP001 of 2 ML/day, with the remainder discharged at Springvale Mine's LDP009. The simulations have been undertaken up till 31 December 2032 to ensure consistency with previous simulations in RPS (2014b) and Jacobs (2015a,b).

Water Quality Criteria

Schedule 4, Condition 12 of SSD 5594 stipulates several water quality criteria specified in *Table 6: Water Management Performance Measures* with respect to mine water discharges. The modification

proposes 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.*

Springvale Mine will however *Meet a limit for salinity of 500 (90th percentile) µS/cm EC by 30 June 2019,* through the operation of the Springvale WTP (SSD 7592), currently under assessment.

1 July 2017 to 30 June 2019

For the period 1 July 2017 to 30 June 2019, water quality (salinity, expressed as EC) must exhibit the following characteristics in accordance with Schedule 4, Condition 4 of SSD 5594:

- 700 µS/cm for 50th percentile
- 900 µS/cm for 90th percentile
- 1000 µS/cm for 100th percentile.

Two interpretations of the above criteria have been considered in the assessment:

- Linear Fit
- Stepped Fit

The Linear Fit assumption assumes a linear difference between the 0th percentile (set at 500 µS/cm) and the 50th percentile (700 µS/cm), a linear difference between the 50th and the 90th percentile (900 µS/cm) and a linear difference between the 90th percentile (900 µS/cm) and the 100th percentile (1000 µS/cm). The Linear Fit assumption is presented in **Figure 11**.

The Stepped Fit assumption assumes a constant value for salinity between the 0th percentile (set at 700 µS/cm) and the 50th percentile (700 µS/cm), and a constant value for salinity between 51st percentile (900 µS/cm) and the 90th percentile (900 µS/cm) and a constant value between 91st percentile (1000 µS/cm) and the 100th percentile (1000 µS/cm). The Stepped Fit assumption is shown in **Figure 12**.

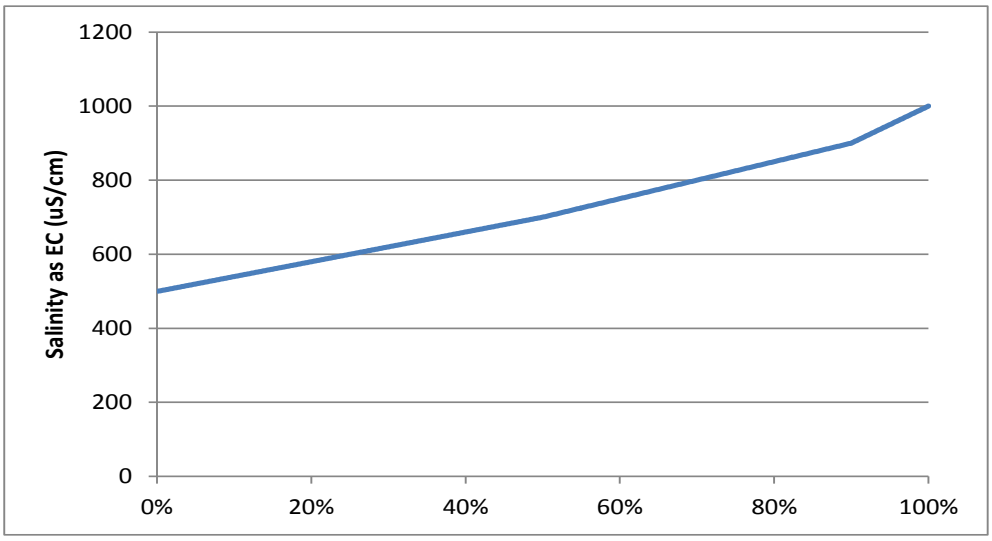


Figure 11 – Linear Fit assumption for the 2017 Water Quality Criteria

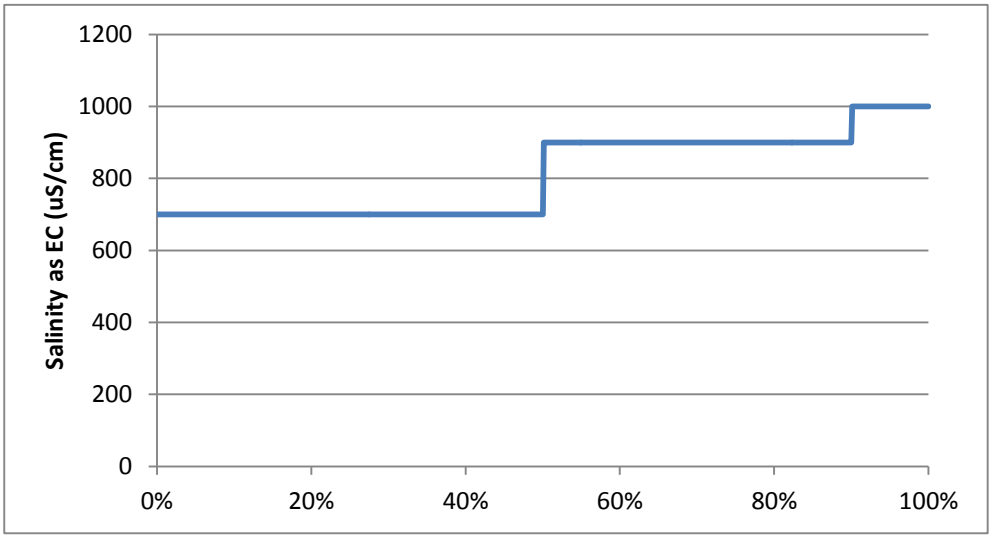


Figure 12 – Stepped Fit assumption for the 2017 Water Quality Criteria

1 July 2019 to 31 December 2032

For the period 1 July 2019 to 31 December 2032 water quality (salinity, expressed as EC) must exhibit the characteristic specified below:

- 500 µS/cm for 90th percentile

Again, as for the 2017 water quality criteria two interpretations, namely Linear Fit Stepped Fit, has been considered in this assessment for the 500 µS/cm (90th percentile) water quality criterion.

The Linear Fit assumption, as modelled, assumes a linear difference between 0th percentile (set at 350 µS/cm) and 50th percentile (set as 400 µS/cm), a linear difference between the 50th percentile and the 90th percentile (500 µS/cm) and a linear difference between the 90th percentile (500 µS/cm) and the 100th percentile (set at 1200 µS/cm, consistent with the salinity of current mine water discharge and the current EPL limit at LDP009). The Linear Fit assumption for the period 1 July 2019 to 31 December 2032 is presented in **Figure 13**.

The Stepped Fit interpretation assumes a constant value for salinity between the 0th percentile (set at 500 µS/cm) and the 90th percentile (500 µS/cm), and a constant value for salinity between 91st percentile (set at 1200 µS/cm, consistent with the salinity of current mine water discharge and the current EPL limit at LDP009) and the 100th percentile (set at 1200 µS/cm).The Stepped Fit assumption for the period 1 July 2019 to 31 December 2032 is presented in **Figure 14**.

Modelled Scenarios

Two scenarios were modelled in the RQWIAM to assess the impact of the proposed modification, comprising the Approved Simulation and the Proposed Simulation. As noted above, modelling in the RWQIAM has been undertaken for an assumed discharge at Angus Place Colliery LDP001 of 2 ML/day, with the remainder of modelled mine inflows shown in **Figure 10** discharged at Springvale LDP009. The simulations have been undertaken up till 31 December 2032.

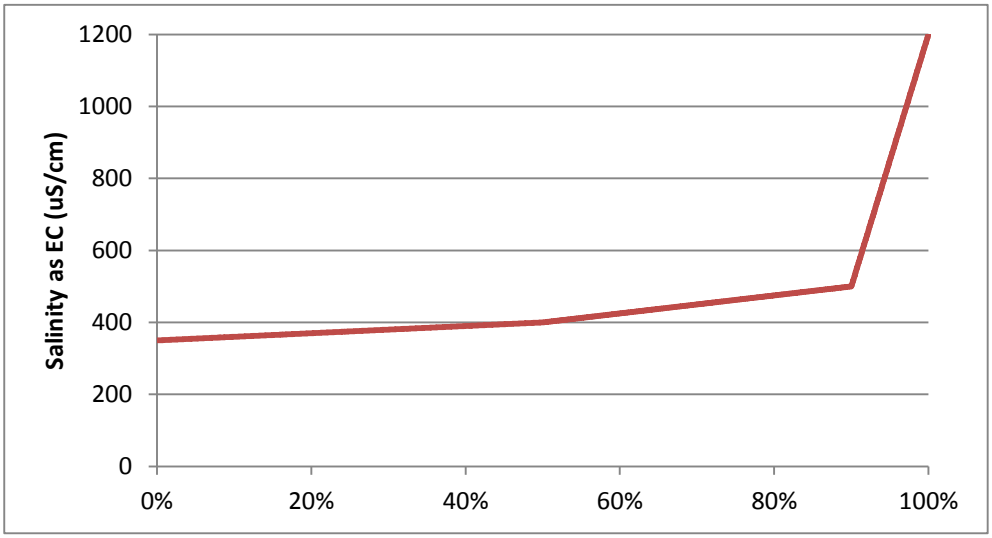


Figure 13 – Linear Fit assumption for the 2019 Water Quality Criterion

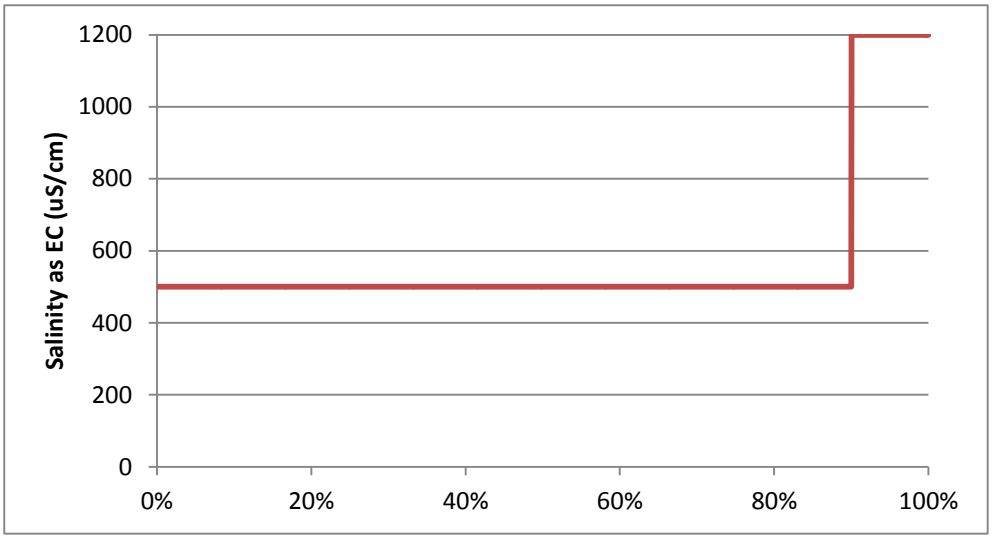


Figure 14 – Stepped Fit assumption for the 2019 Water Quality Criterion

To assess the impact of the proposed modification in the RWQIAM, several salinity time-series, for both the Linear Fit and the Stepped Fit discussed above were generated. In the current version of the RWQIAM the observed natural variability in the salinity of mine water discharge, as opposed to assuming a constant static value, was incorporated. Details of the salinity and modelling periods used for Angus Place LDP001 and Springvale LDP009 approved discharges for the modelling simulations and the associated time series charts are provided in Section 4.4.3 of Jacobs (2016a).

The Approved Simulation (null case) for Springvale Mine comprised a simulation complying with both the 2017 and the 2019 water quality criteria. The Proposed Simulation was the same as the Approved Simulation, except for the omission of the 2017 water quality criteria. It is highlighted that the Surface Water Assessment (Jacobs, 2016a) does not consider how the water quality criteria will be met. The analysis focussed solely on the impact of the proposed change to the water quality criteria.

The flow results are also presented for both the Approved Simulation and Proposed Simulation, noting Linear and Stepped Fits do not apply for flows.

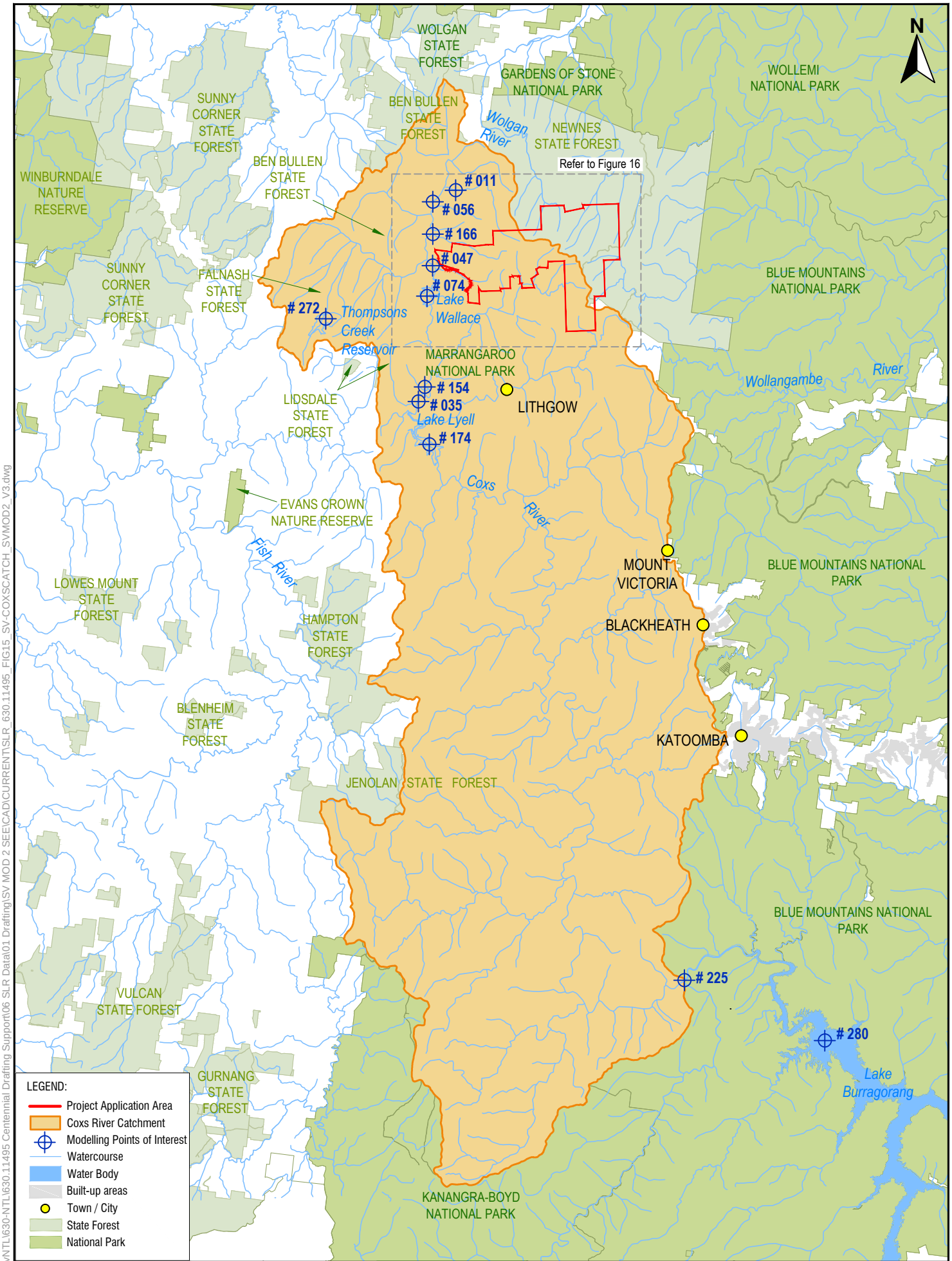
Modelled Locations

Five reservoirs, shown in **Figure 15** and **Figure 16,** have been included in the RWQIAM:

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

Model predictions are presented for the following modelled locations in the Coxs River catchment (refer **Figure 15**, **Figure 16**).

- *Kangaroo Creek and Coxs River above Wangcol Creek*:
  - Node #011 (Kangaroo Creek, downstream of point of discharge from Angus Place Colliery's LDP001)
  - Node #056 (Coxs River above Wangcol Creek)
- *Swayers Swamp Creek*:
  - Node #166 (Sawyers Swamp Creek above Coxs River)
- *Lake Wallace*:
  - Node #047 (Coxs River upstream of Lake Wallace (at location of DPI Water Station 212054))
  - Node #074 (Lake Wallace)
- *Lake Lyell and above Lake Lyell*
  - Node #154 (Coxs River above Lake Lyell (at location of DPI Water Station 212058)) – flow only
  - Node #035 (Coxs River above Lake Lyell (at EnergyAustralia monitoring location COX5) – for salinity only
  - Node #174 (Lake Lyell)
- *Thompsons Creek Reservoir*
  - Node #272 (Thompsons Creek Reservoir)
- *Lake Burragorang and above Lake Burragorang*
  - Node #225 (Coxs River immediately above Lake Burragorang)
  - Node #280 (Lake Burragorang).



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REFERENCE	SLR_WCS_630.11495_FIG12_COXSCATCH_V2.dwg
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Figure 15
Water Balance Modelling Locations in Coxs River Catchment

Centennial Coal
Western Coal Services

Prepared by: SLR

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