APPENDIX B PROJECT DESCRIPTION

Project Description

The Angus Place Mine Extension Project (APMEP) as amended includes all existing and approved operations, facilities and infrastructure of the Angus Place Colliery authorised by project approval PA 06_0021 (as modified) except as otherwise indicated below:

- Extend the life of the mine to 31 December 2053;
- Increase in full time equivalent (FTE) personnel from 300 to 450;
- Increase the extraction rate up to 4.5 million tonnes per annum of ROM coal from the Lithgow Seam underlying the Project Application Area;
- Continue the development of new roadways to enable access to the proposed 1000 panel longwall mining area;
- Extraction of existing approved longwall 910;
- Development and extraction of 15 longwalls (LW1001-1015) with void widths of 360m;
- Development of underground roadway connections between the Angus Place Colliery underground mine workings and the Springvale Mine underground mine workings;
- Transfer up to 4 Mtpa of run-of-mine (ROM) coal to the Angus Place pit top for processing and handling before being transported off site in accordance with the Western Coal Services Project development consent (SSD 5579)
- Transfer up to 4.5 Mtpa of ROM coal by underground conveyor to the Springvale Mine pit top via proposed new underground connection roadways for handling and processing in accordance with the Springvale Mine Extension Project development consent (SSD 5594);
- Enlargement of the ROM coal stockpile at the Angus Place Colliery pit top from 90,000 t to 110,000 t capacity
- Construction of the approved but not yet constructed 4.5 m shaft at the Angus Place Ventilation Facility (APC-VS2) on the Newnes Plateau.
- Installation and operation of the ventilation fan at the Angus Place Ventilation Facility (APC-VS2) on the Newnes Plateau.
- Construction and operation of one additional downcast shaft and mine services boreholes within the proposed Angus Place Ventilation Facility (APC-VS3) on the Newnes Plateau to support mining in the 1000 panel area;
- Construction and operation of additional dewatering facilities and associated infrastructure on the Newnes Plateau to support mining in the 1000 panel area to facilitate the transfer of mine water into the Springvale Delta Water Transfer Scheme (SDWTS);
- Transfer of mine inflows from the existing and proposed workings at Angus Place Colliery to the Springvale Water Treatment Project (SSD 7972) for treatment and beneficial reuse at the Mount Piper Power Station
- Operation of the Angus Place Colliery 930 Bore and associated infrastructure for raw mine water transfer from the SDWTS to the underground mining area; and
- Connection to the Lithgow City Council main sewer line prior to the commencement of longwall extraction (subject to a separate development application through Lithgow City Council).

Details of the APMEP as proposed are provided below.

Mine Life

The existing project approval (PA 06_0021) expires 18 August 2024. The APMEP proposes to undertake mining operations up to 31 December 2053 with rehabilitation activities to continue beyond this date. This aligns mining operations at the Angus Place Colliery to the current projected life of the Mount Piper Power Station.

Hours of Operation

The APMEP seeks approval to continue to operate 24 hours a day, seven days a week, 52 weeks per year as is currently authorised by project approval PA 06_0021.

Employment

The APMEP seeks approval for up to 450 FTE personnel. These personnel will include staff, underground mining operators, coal handling operators, contractors and apprentices. The personnel will be spread across the range of shifts Monday to Sunday.

Although the project will seek approval for all 450 FTE personnel to operate from the Angus Place Colliery pit top, it is likely a portion of the 450 FTE personnel will access the APMEP area from, and utilise the infrastructure at, the Springvale Mine pit top.

The utilisation of the Springvale Mine pit top will be in accordance with the Springvale Mine Extension Project (SSD 5594). SSD 5594 authorises up to 450 FTE personnel to operate from the Springvale Mine pit top. Any employees operating from the Springvale Mine under the APMEP will remain within the assessed and approved 450 FTE personnel as already approved by the Springvale Mine Extension Project. As such, there will be no cumulative impact on the local road network servicing the Springvale Mine.

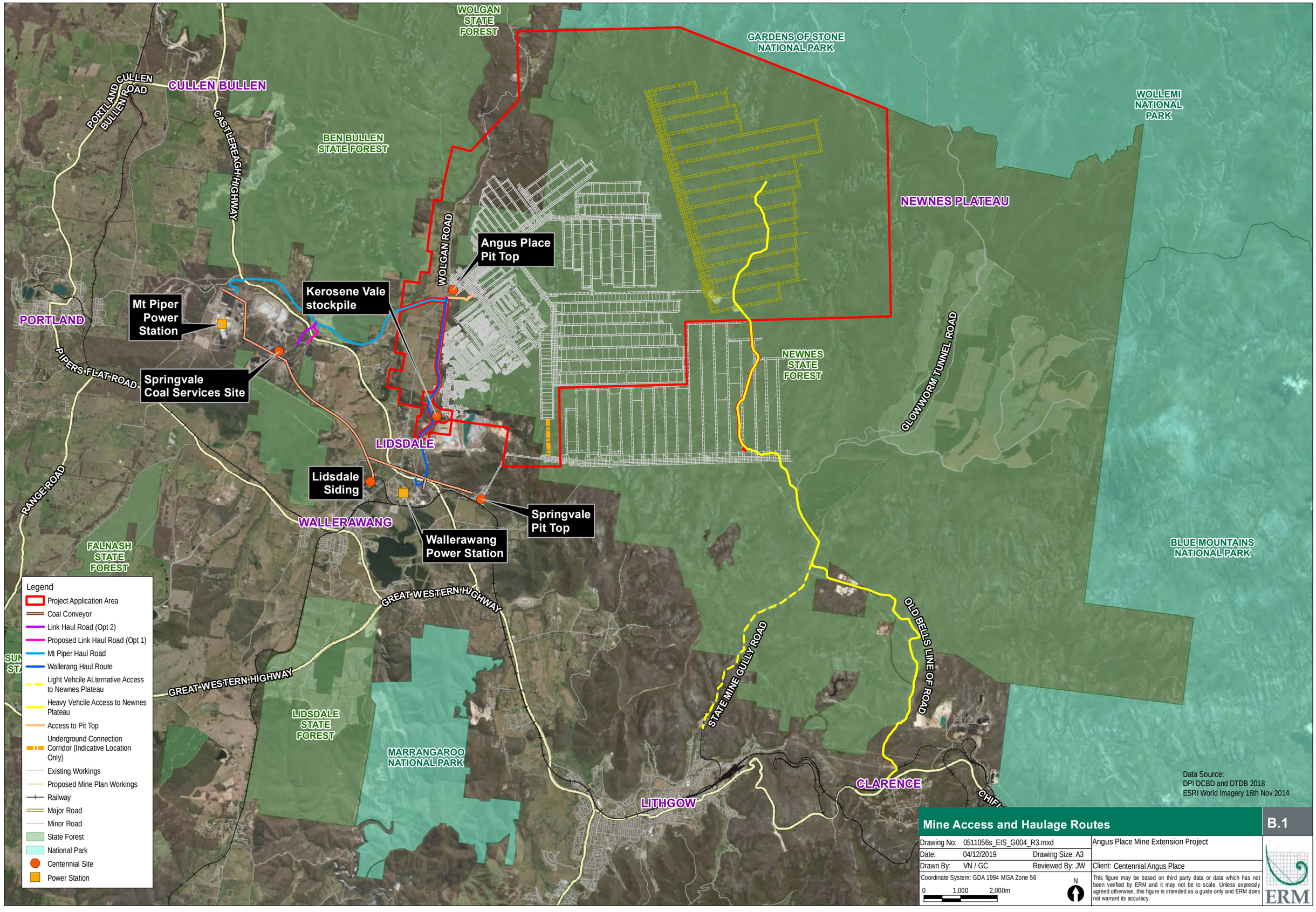
Site Access

The Angus Place Colliery pit top is, and will continue to be, accessed via Wolgan Road. Access to Wolgan Road from the sub-regional road network is provided via the intersection of Castlereagh Highway and Wolgan Road and Main Street or via the intersection of Castlereagh Highway and Ian Holt Drive.

Access to existing and proposed infrastructure in the Newnes State Forest was to be via a designated access route at the intersection of Chifley Road and Old Bells Line of Road (for heavy or light vehicles) or via the State Mine Gully Road (light vehicles only). Site access is shown on Figure B.1.

Coal Production

The APMEP seeks an increase in the current annual extraction limit from 4 Mtpa of ROM coal to 4.5 Mtpa of ROM coal.



Mine Access and Haulage Routes

B.1

Drawing No:	0511056s_EIS_G004_R3.mxd		Angus Place Mine Extension Project
Date:	04/12/2019	Drawing Size: A3	
Drawn By:	VN / GC	Reviewed By: JW	Client: Centennial Angus Place

Coordinate System: GDA 1994 MGA Zone 56

0 1,000 2,000m

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Mining Method and Mine Design

Mining will continue to be carried out using a combination of continuous miners and longwall mining equipment. The APMEP proposes to continue the required underground roadway development to enable access the proposed 1000 panel longwall mining area. The 1000 panel longwall mining area includes 15 longwalls with a consistent 360 m wide longwall void width.

The proposed longwall dimensions for the APMEP are presented in Table B-1

Table B-1 APMEP Longwall Dimensions

Longwall (length)	Void width	Chain pillar width
LW1001 (2158 m)	360 m	55 m
LW1002 (1701 m)	360 m	
LW1003 (2351 m)	360 m	
LW1004 (2475 m)	360 m	
LW1005 (2585 m)	360 m	
LW1006 (2696 m)	360 m	
LW1007 (2807 m)	360 m	
LW1008 (3028 m)	360m	

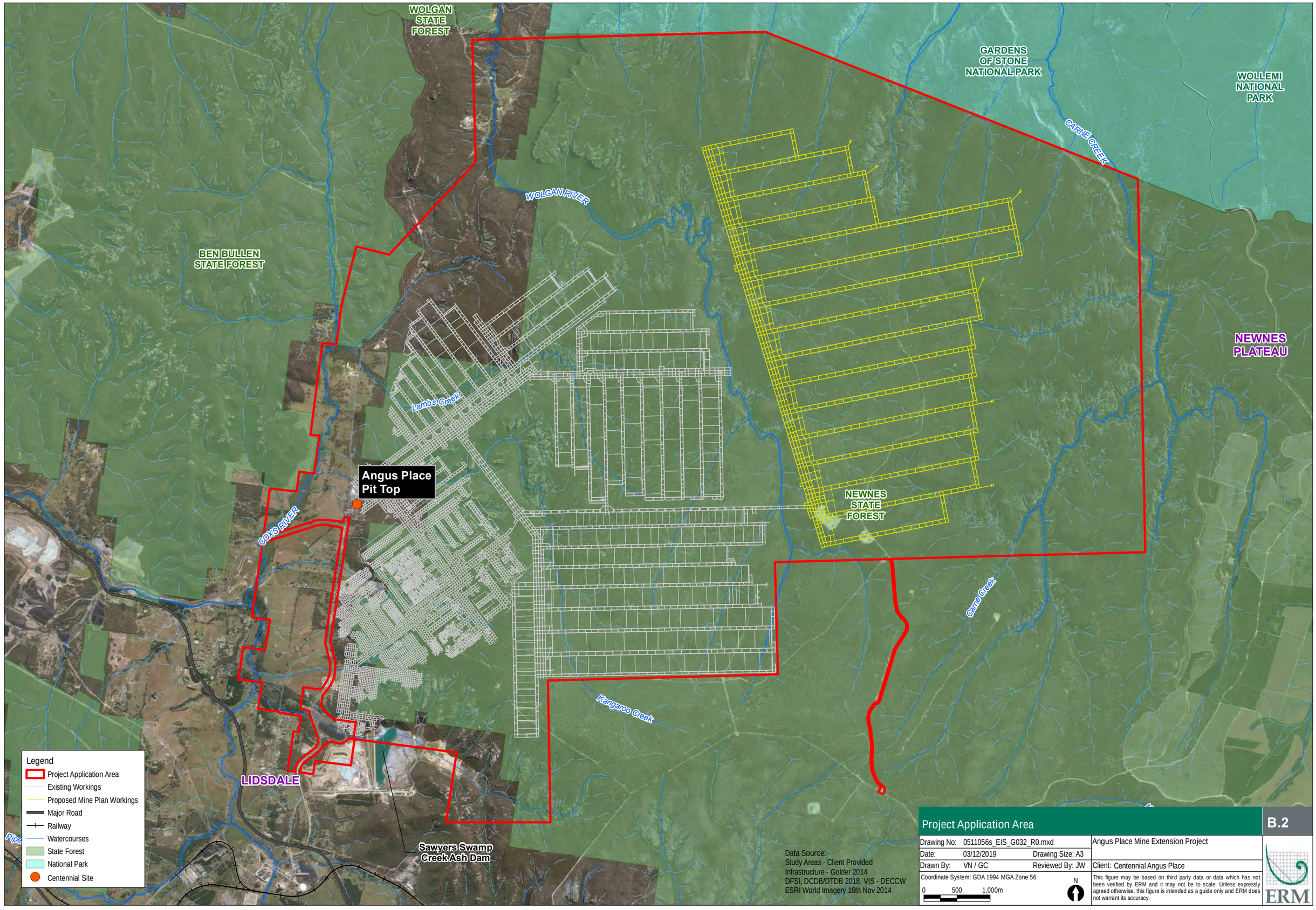
Longwall (length)	Void width	Chain pillar width
LW1009 (3068 m)	360 m	55 m
LW1010 (3883 m)	360 m	
LW1011 (3922 m)	360 m	
LW1012 (1930 m)	360 m	
LW1013 (1927 m)	360 m	
LW1014 (1785 m)	360 m	
LW1015 (1058 m)	360 m	

The APMEP proposes to extract the previously approved but not yet extracted LW910.

In addition to the above, the APMEP proposes to establish additional underground roadway connections between the Angus Place Colliery underground mine workings and the Springvale Mine underground mine workings to facilitate the transfer of coal from the Angus Place Colliery to the Springvale Mine pit top for processing and transportation offsite. The APMEP Mine Plan is shown in Figure B.2.

Mining Sequence

On approval, longwall mining at Angus Place Colliery would commence in LW1001 and move southward towards LW1002 before progressing generally northwards from LW1003 to LW1015.


WOLGAN STATE FOREST
GARDENS OF STONE NATIONAL PARK
WOLLEMI NATIONAL PARK
CARNE CREEK
WOLGAN RIVER
BEN BULLEN STATE FOREST
NEWNES PLATEAU
Lambs Creek
Angus Place Pit Top
NEWNES STATE FOREST
COXS RIVER
Carne Creek
Kangaroo Creek
LIDSDALE
Sawyers Swamp Creek Ash Dam
Legend
Project Application Area
Existing Workings
Proposed Mine Plan Workings
Major Road
Railway
Watercourses
State Forest
National Park
Centennial Site
Data Source:
Study Areas - Client Provided
Infrastructure - Golder 2014
DFSI, DCDB/DTDB 2018, VIS - DECCW
ESRI World Imagery 16th Nov 2014
Project Application Area
B.2
Drawing No: 0511056s_EIS_G032_R0.mxd
Angus Place Mine Extension Project
Date: 03/12/2019
Drawing Size: A3
Drawn By: VN / GC
Reviewed By: JW
Client: Centennial Angus Place
Coordinate System: GDA 1994 MGA Zone 56
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Coal Handling

The APMEP proposes to continue to transport coal to the Angus Place Colliery Pit top at a rate of up to 4 Mtpa with an alternative option to transfer up to 4.5 Mtpa of ROM coal to the Springvale Mine pit top via a series of underground roadway connections.

Coal will be transported to the Angus Place Colliery pit top via the drift conveyor and stockpiled within the ROM coal stockpile. From the ROM coal stockpile, coal is conveyed to the coal processing plant (CPP) where it is crushed and sized. After sizing, coal is then fed onto the product coal conveyor and sent to the product coal bin to be loaded into road trucks.

For coal transferred to the Springvale Mine pit top, the coal would be handled and processed in accordance with the already approved Springvale Mine Extension Project development consent (SSD 5594).

Once the underground roadway connections between the Angus Place Colliery and the Springvale Mine are completed, the transfer of coal to the Springvale Mine pit top would take precedence over coal being transferred to the Angus Place Colliery pit top with coal transfers to the Angus Place pit top only occurring during emergency situations. The underground roadway connections to enable coal transfers to the Springvale Mine pit top will be established prior to the commencement of longwall extraction in the 1000 panel longwall mining area.

The volume of coal transferred to the Springvale Mine pit top will remain within the previously assessed and approved coal handling limit of 5.5 Mtpa considered as part of the Springvale Mine Extension Project.

Coal Transport

Coal transferred to the Angus Place Colliery pit top will continue to be transported offsite by truck in accordance with the Western Coal Services Project (SSD 5579).

Coal transferred to the Springvale Mine pit top will be handled and transported offsite in accordance with either the Springvale Mine Extension Project (SSD 5594) or the Western Coal Services Project (SSD 5579).

Coal transport routes are shown in Figure B.1.

Mine Support Infrastructure

The APMEP will continue to rely on all existing and approved infrastructure at the Angus Place Colliery pit top and on the Newnes Plateau including the approved but not yet constructed ventilation shafts, service boreholes and associated infrastructure at the Angus Place ventilation facility (APC-VS2).

The infrastructure at the Angus Place Colliery pit top includes the following infrastructure components:

- three mine portals, for access and egress to the underground mining areas for men and materials;
- administration buildings with amenities, office and training areas;
- a bathhouse;
- workshops, hardstand areas, vehicle and equipment wash down areas;
- diesel, solcenic hydraulic fluid and oil storage facilities;
- mining supplies and conveyor equipment storage areas;
- sewage treatment plant;
- coal stockpile area, coal processing plant and truck loading facility;

- air compressor and electrical switchyard;
- a dirty and clean water management systems in addition to potable and waste water services;
- licensed discharge points; and
- mine ventilation infrastructure

The existing approved infrastructure at the Angus Place Colliery pit top is shown on Figure B.3.

The existing and approved Angus Place Colliery infrastructure on the Newnes Plateau comprises the following:

- 930 Bore Facility and associated infrastructure;
- 940 Bore Facility and associated infrastructure;
- Springvale Delta Water Transfer Scheme; and
- Ventilation facility APC-VS2 comprising:
  - upcast and downcast ventilation shafts and fans;
  - a 66/11 kV electrical substation and switchyard facility (with buried feed cables);
  - diesel storage;
  - hardstand area;
  - water tanks;
  - demountable office block and a maintenance shed;
  - Pollution control infrastructure; and
  - mine services boreholes.

The existing approved infrastructure on the Newnes Plateau is shown on Figure B.4. Additional infrastructure to support the APMEP will be required to be constructed and operated which includes:

- dewatering bore facilities;
- access track upgrades;
- establishment of new access tracks;
- easement corridors for power;
- water connection pipelines;
- booster stations;
- downcast ventilation shaft facility (APC-VS3); and
- service boreholes.

Further Information on the mine ventilation and water management infrastructure is provided in the below sections.

Mine Ventilation

The existing mine ventilation system consists of three intake drifts and one upcast shaft equipped with a fan, located within, and in the vicinity of, the Angus Place Colliery pit top. Angus Place Colliery has additional ventilation facilities (APC-VS2) approved for within the Newnes State Forest which comprises an upcast and downcast shaft. Ventilation fans are approved to be installed on the upcast shaft. A 3.5 m diameter shaft has already been constructed at the ventilation facility site however the 4.5 m diameter shaft has not been constructed and no ventilation fans have been installed to date.

The APMEP will seek approval to construct and operate a new additional downcast ventilation shaft within the 1000 panel area (APC-VS3) as was proposed in the 2014 EIS.

APC-VS3 will have a surface footprint of approximately 14 ha. It will be constructed using a blind boring technique and lined with concrete. The cuttings will be brought to the surface and temporarily stored in rehabilitated mounds at the APC-VS3 site and used to backfill the shaft when decommissioned. Once constructed, AP-VS3 will not require any supporting infrastructure such as electrical power. Water during the drilling process will be managed in onsite pollution control dams. All waste water from the drilling process will be either transported offsite to an appropriate facility or transferred back underground into the Angus Place underground water storage areas.

Water Management

The primary objectives of water management at Angus Place Colliery are the separation of clean and dirty water; and the effective collection, treatment and discharge of water. There are a number of separate water management systems including:

- underground water management;
- surface water infrastructure and management at the Angus Place Colliery pit top; and
- surface water infrastructure and management on the Newnes Plateau.

Underground Water Management

Mine inflows, encountered during mining operations, will continue to be either:

- Transferred to the 1 ML fire tank at the Angus Place Colliery pit top for reuse or transfer to the Springvale Water Treatment Project (SSD 7592) via the Angus Place Haul Road Pipeline; or
- Transferred to the Springvale Delta Water Transfer Scheme (SDWTS) via existing and proposed additional dewatering bore facilities and associated infrastructure.

The APMEP will continue to seek approval to construct and operate additional dewatering bore facilities, including associated electrical easements, booster stations and pipeline connections, on the Newnes Plateau to enable the transfer of water from the 1000 panel longwall mining area into the SDWTS. A concept plan for a typical dewatering bore facility is illustrated in Figure B.5. The construction footprint of each dewatering bore facility is approximately 1 ha inclusive of a 20 m asset protection zone. Each facility contains a number of boreholes and equipment with submersible pumps that extend from the surface to the Lithgow Coal Seam. During construction each site has erosion and sediment controls installed with sumps to manage water during the drilling process. Following construction, the sumps are decommissioned and removed. Wastewater from the drilling process is transported offsite and transferred to a licenced waste facility for disposal. Each facility is fenced with a lockable gate for public safety and security.

The dewatering facility bore pumps require power which is provided from existing power supplies via easement corridors which will be established for each dewatering bore facility. Connection pipelines are established to transfer water from the dewatering bore facility to the SDWTS.

Bore 930 will continue to be used as a reinjection borehole for raw water from the SDWTS in the event that the Springvale Water Treatment Project is unable to operate.

Angus Place Colliery Pit Top Infrastructure

B.3

Drawing No:	0511056s_EIS_G002_R2.mxd		Angus Place Mine Extension Project
Date:	28/11/2019	Drawing Size: A3	
Drawn By:	VN	Reviewed By: JW	Client: Centennial Angus Place

Coordinate System: GDA 1994 MGA Zone 56

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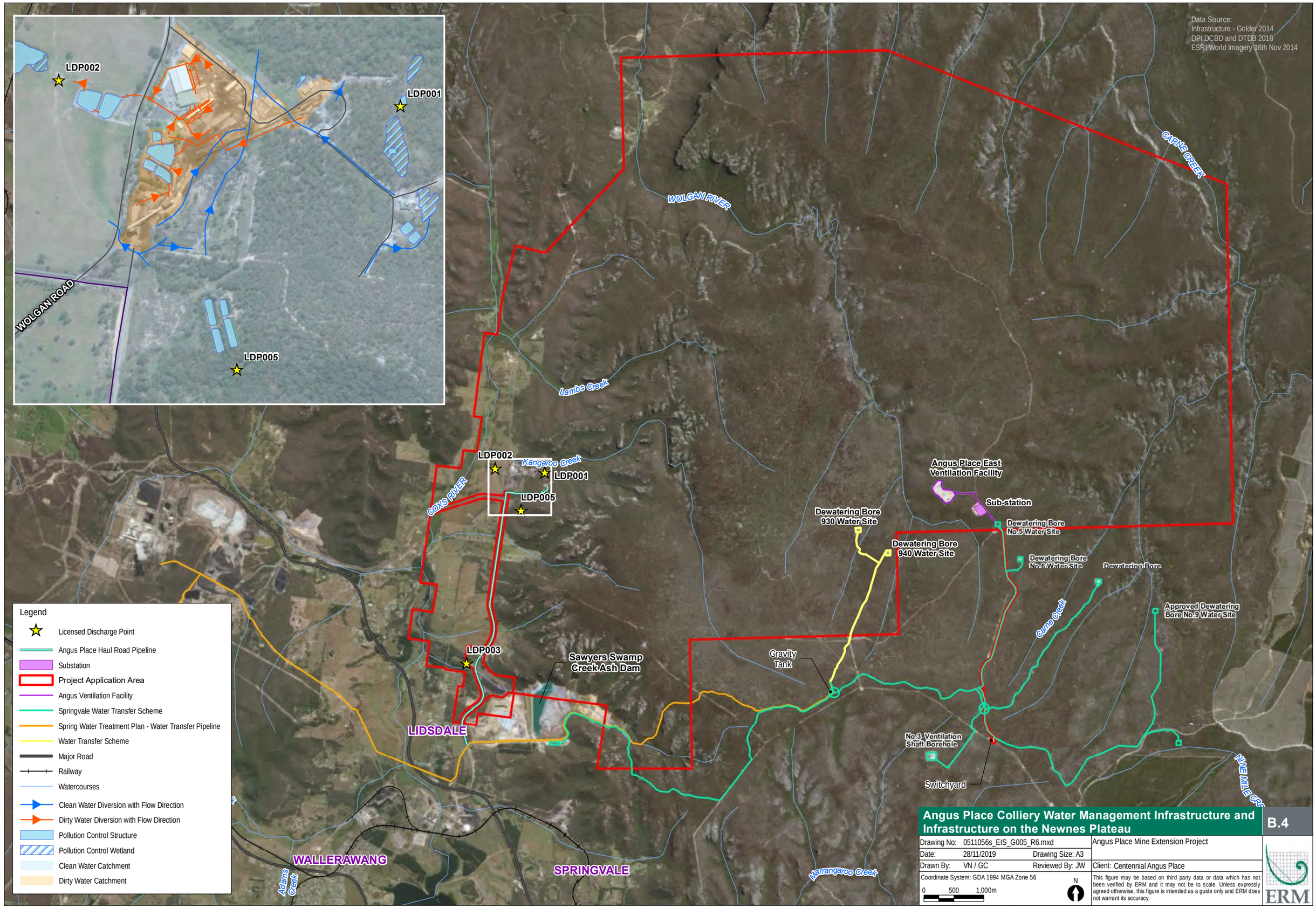

Angus Place Colliery Water Management Infrastructure and Infrastructure on the Newnes Plateau

B.4

Drawing No:	0511056s_EIS_G005_R6.mxd		Angus Place Mine Extension Project
Date:	28/11/2019	Drawing Size: A3	
Drawn By:	VN / GC	Reviewed By: JW	Client: Centennial Angus Place

Coordinate System: GDA 1994 MGA Zone 56

0 500 1,000m

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Angus Place Colliery Pit Top Surface Water Management

The surface water management at the Angus Place Colliery pit top comprises separation of clean and dirty water. The clean water management system consists of a series of diversion bunds and drains around the pit top that intercept clean surface runoff prior to it entering disturbed areas. This water is directed offsite into Kangaroo Creek.

The dirty water management system for the Angus Place Colliery pit top compromises a series of on-site storages including:

- 1 ML fire-fighting tank that receives water from the underground mining area
- pollution ponds:
  - primary pond, which receives contaminated runoff from the coal handling plant, the stockpile area and its own disturbed catchment;
  - secondary pollution pond, which receives overflow from the primary pollution pond and drainage from its own disturbed catchment;
  - the filter pond, which receives overflow from the secondary pollution pond and drainage from its own disturbed catchment;
- settling ponds, two settling ponds which receive treated runoff from pit top catchments and discharge to the Coxs River via LDP002;
- maturation ponds, which receive wastewater from the offices and bathhouse and discharge to the sewage treatment works before being recycled on-site through land application irrigators via LDP005;
- grit trap, which receive overflows from washdown with grit removed by a contractor with the overflow reporting to an oil water separator;
- rainwater tanks that receives water from the workshop roofs; and
- oil water separator, which receives overflows from the grit trap and rainwater tanks

Mine water from the 1 ML fire-fighting tank is used to meet operational requirements with any excess water discharged through LDP001. The Angus Place Colliery has installed and is currently operating a temporary reverse osmosis water treatment system to treat underground mine water prior to being discharged offsite. The current Angus Place Colliery project approval authorises up to 10 ML/day of treated mine water to be discharged through LDP001. The temporary reverse osmosis water treatment system is approved to operate up to 31 December 2019. From 1 January 2020, any excess groundwater not used for onsite operational requirements will be transferred to the Springvale Water Treatment Project (SSD 7592) via the Angus Place Haul Road Pipeline with LDP001 being decommissioned.

Angus Place Colliery Pit Top Surface Water Management

The overall configuration of water management at the Angus Place Colliery pit top will not be modified by the APMEP.

Licenced Discharge Point LDP001 will be decommissioned following cessation of discharges in December 2019 and LDP002 will continue to operate as a rainfall based discharge point.

Water discharged off site will continue to be done so in accordance with the Angus Place Colliery Environmental Protection Licence (EPL 467).

Newnes Plateau Surface Water Management

Sediment dams and sumps are located at the Angus Place ventilation facility (APC-VS2) which are designed to capture dirty water runoff from site for treatment prior to being transferred underground to the Springvale Mine via a pipeline. The sediment dams and sumps located at the Angus Place ventilation facility (APC-VS2) will continue to operate with captured water transferred underground to the Springvale Mine via existing pipelines.

Wastewater

Sewage and grey water from the bathhouse and administration buildings is treated through a series of oxidation ponds and thence into a maturation pond prior to spray irrigation over a utilisation area at LDP005. This facility is licensed by the EPA under EPL 467. Should the APMEP be approved, a pipeline to transfer wastewater will be constructed to transfer wastewater to the Lithgow City Council main sewerage line. Once the transfer of wastewater from the Angus Place Colliery pit top to the Lithgow City Council main sewerage line is completed, LDP005 will no longer operate. The construction of the wastewater transfer line will be the subject of a separate development application through Lithgow City Council. The sewerage treatment line will be constructed and operational prior to the commencement of longwall extraction at the Angus Place Colliery.

Utilities and Services

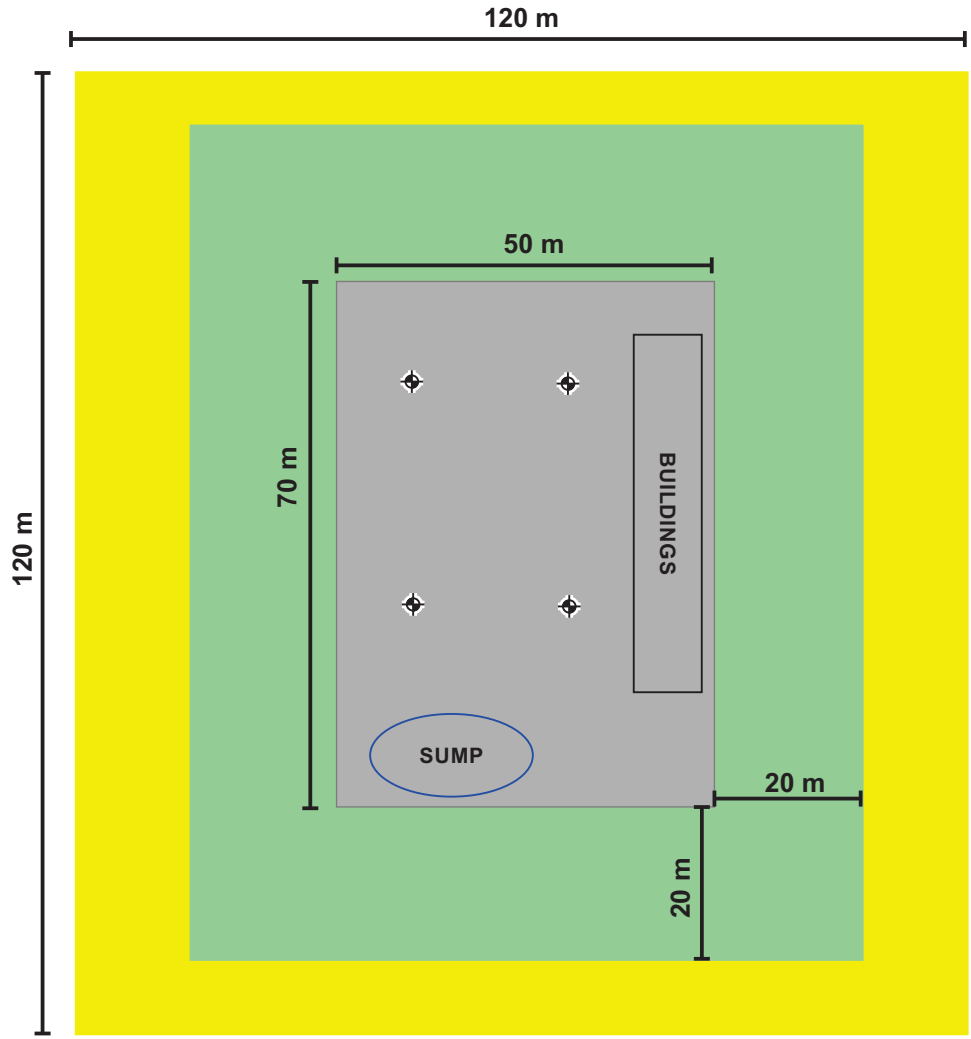
The operations at the Angus Place Colliery rely on additional non-mine infrastructure. This infrastructure comprises overhead powerlines (11 kV and 66 kV), telecommunications towers, the external road network and access track networks within Newnes State Forest.

Potable water is supplied to Angus Place Colliery from Lithgow City Council. This water is primarily used in the bathhouse and administration building. The APMEP will continue to rely on non-mine infrastructure within and surrounding the Project Application Area including overhead powerlines, telecommunications towers, the external road network and access track networks within Newnes State Forest.

Potable Water will continue to be supplied to Angus Place Colliery from Lithgow City Council for use within the administration buildings and bathhouse.

Exploration

Approval to carry out exploration activities throughout the life of the APMEP within the Project Application Area in order to refine the site's existing geological model used for detailed mine planning is proposed as part of the APMEP. Angus Place Colliery will continue to implement area-based assessment procedures for the management of exploration activities to ensure that they are conducted in an environmentally responsible manner and with due consideration to the community. This included a risk-based process for the selection, assessment and environmental management of proposed drill pad sites and access tracks based on environmental, geological, logistical and other operational constraints.



Legend

- Construction Footprint
- Asset Protection Zone
- Final Footprint
- Dewatering Borehole

Dewatering Facility Concept Plan

B.5

Drawing No:	0511056s_EIS_C001_R2.cdr		Angus Place Mine Extension Project
Date:	28/11/2019	Drawing size: A4	
Drawn by:	DR / GC	Reviewed by: JW	Client: Centennial Angus Place

0 10 20m

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Rehabilitation and Final Landform

Current rehabilitation activities at the Angus Place Colliery are detailed within the approved Angus Place Colliery Mining Operations Plan (MOP).

Rehabilitation objectives and performance criteria for the APMEP will be detailed within a new MOP that would be developed if the project is approved. The Amended Project will implement progressive rehabilitation of infrastructure on the Newnes Plateau. The success of existing and future rehabilitation will be monitored against the appropriate performance indicators detailed within the MOP.

Following mine closure all disturbed areas associated with the Angus Place Colliery pit top and the Newnes Plateau infrastructure areas will be rehabilitated to create stable and self-sustaining landforms with a nominated end land uses of woodland for the Newnes Plateau and grassland for the Angus Place Colliery pit top. Regular monitoring of the rehabilitated areas will occur during the initial vegetation establishment period and beyond, to ensure the objectives of the MOP are being achieved. remain as was proposed

Surface Disturbance for Infrastructure and Access

As the location of surface infrastructure required to support the project is dependent on the approved mine plan, and due to the potential changes to the mine plan throughout the life of the project, flexibility as to where surface infrastructure is approved to be located is required. The infrastructure required to support the APMEP includes:

- dewatering bore facilities;
- access track upgrades;
- establishment of new access tracks;
- easement corridors for power;
- water connection pipelines;
- booster stations;
- downcast ventilation shaft facility (APC-VS3); and
- service boreholes.

To provide flexibility for the location of infrastructure throughout the life of the project, the amended APMEP will seek approval to undertake all surface disturbance activities required to establish infrastructure for the project within an Impact Envelope.

Waste Management

No coal reject material is generated by the Angus Place Colliery. Any coal washing is undertaken at the Springvale Coal Services Site in accordance with the Western Coal Services Project (SSD 5579).

General waste is disposed of to landfill by licensed waste contractors. Recyclable materials, for example, plastic, paper and cardboard products, 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 and oily water is disposed of by licensed waste transporters to a licensed waste treatment plant.

Where possible, all quantities of waste or recyclable material are quantified and recorded for benchmarking and continuous improvement purposes.

Project Application Area

The Project Application Area takes into consideration the mine plan and has been designed to encompass the proposed new underground roadway connections between the Angus Place Colliery and the Springvale Mine. The Amended Project Application Area encompasses 10,551 ha.

Environmental Management

Angus Place Colliery will continue to undertake environmental management and monitoring in accordance with the Angus Place Colliery Environmental Management System (EMS) and associated environmental management plans. Should the APMEP be approved, a review of the Angus Place EMS and all associated environmental management plans will be undertaken with updates made as necessary.