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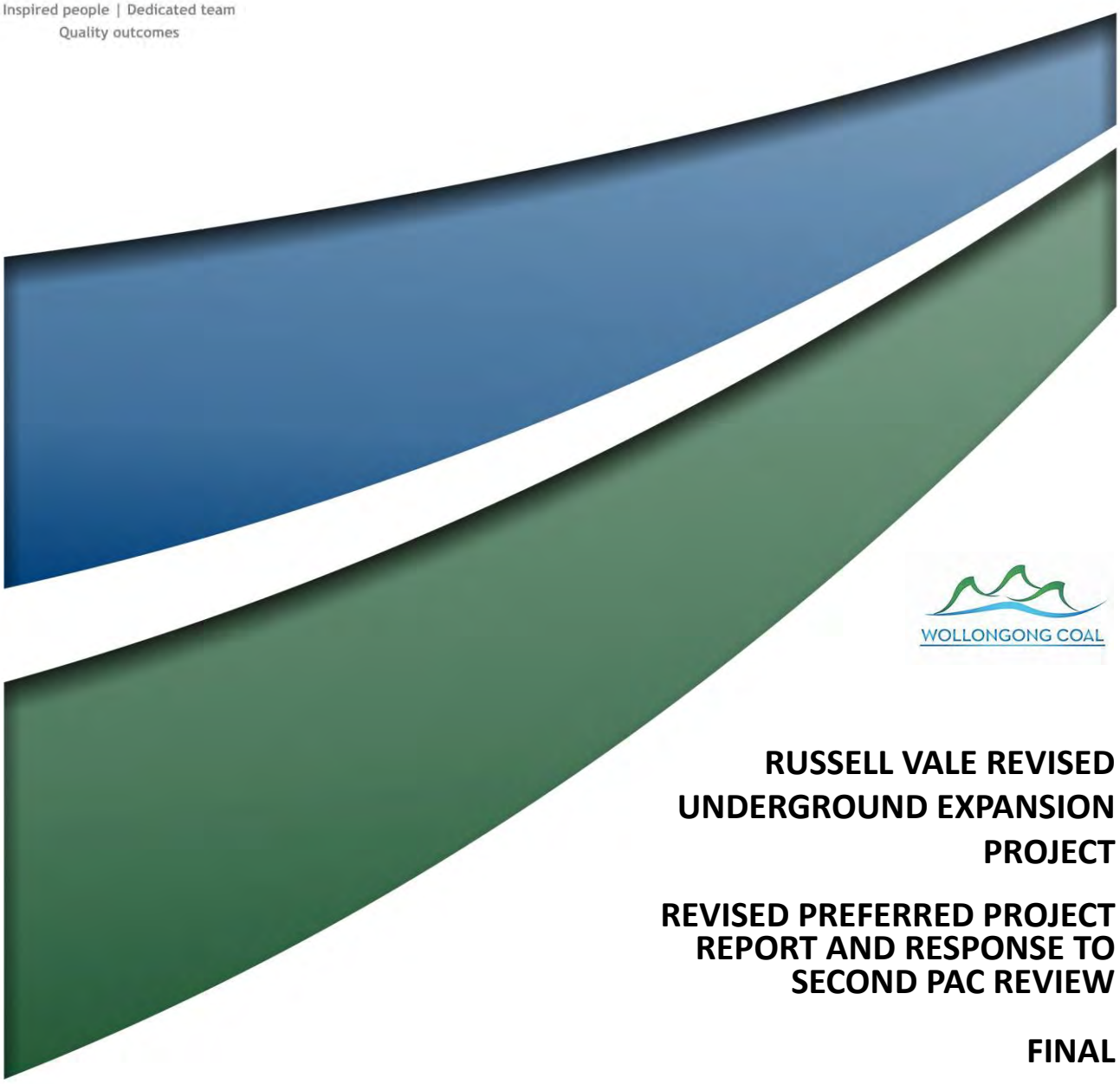

WOLLONGONG COAL

RUSSELL VALE REVISED UNDERGROUND EXPANSION PROJECT

REVISED PREFERRED PROJECT REPORT AND RESPONSE TO SECOND PAC REVIEW

FINAL

July 2019

RUSSELL VALE REVISED UNDERGROUND EXPANSION PROJECT

REVISED PREFERRED PROJECT REPORT AND RESPONSE TO SECOND PAC REVIEW

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
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Report No. 3687/R05
Date: July 2019

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Document Status

Rev No.	Reviewer		Approved for Issue	
	Name	Date	Name	Date
FINAL	Barbara Crossley	17 July 2019	Barbara Crossley	26 July 2019

Executive Summary

Wollongong Coal Limited (WCL) is seeking approval under the *Environmental Planning and Assessment Act 1979* to extend mining operations at the Russell Vale Colliery, referred to as the Underground Expansion Project (UEP).

The UEP application has been through several iterations to minimise its potential adverse impacts. The original UEP application involved a substantial expansion of longwall mining in the Wonga East and Wonga West areas to extract 31 Mt of ROM coal over 18 years. In 2014, a Preferred Project was exhibited based on a reduced mine plan of eight longwalls in the Wonga East area only. The Preferred Project has been reviewed by the Planning Assessment Commission (PAC) on two occasions, most recently in 2016. A key issue for the PAC in its consideration of the Preferred Project was the uncertainty associated with subsidence and groundwater impacts as a result of proposed longwall mining in the multi-seam mining environment present at Russell Vale.

To address the residual uncertainty regarding impacts of longwall mining, WCL has developed a revised mine design based on a non-caving first workings mining system that will result in imperceptible subsidence. Longwall mining is no longer proposed as part of the UEP. This revised mine plan is referred to as the Revised Preferred Project. The revised mine plan has been designed to be long term stable with negligible risk of pillar failure, significantly reducing the potential for subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment.

Detailed impact assessments undertaken for the Revised Preferred Project conclude that the proposed mining is not expected to result in perceptible surface subsidence, significant interaction with overlying seams or significant interaction with existing groundwater systems. Importantly, the revised mine plan is not considered to have any potential to perceptibly impact natural surface features including upland swamps, cliffs including the Illawarra Escarpment, steep slopes, drainage lines, creeks, Cataract Creek and Cataract Reservoir.

In a further response to concerns from the PAC and community regarding amenity impacts associated with the Russell Vale Pit Top, substantial improvements to the Pit Top layout and adoption of a range of additional feasible and reasonable noise control measures, including restricting hours of operation, have been proposed to reduce the noise impact of the Pit Top and trucks accessing the site. Proposed changes to the Pit Top have been assessed and found to be effective at reducing noise levels from the site to be within acceptable levels for the majority of the time the site is operational, with only negligible (1-2dB) exceedances predicted at surrounding residences during a small percentage (less than 10%) of Winter nights.

Existing management plans and monitoring programs will be reviewed and updated as required to reflect the Revised Preferred Project and ensure they are adequate to confirm the extent of predicted impacts associated with the Revised Preferred Project, as well as historical mining operations within the Colliery lease holding. The updated environmental assessment undertaken for the Revised Preferred Project demonstrates that with the implementation of existing and proposed monitoring, management and mitigation measures, the Revised Preferred Project can proceed within acceptable environmental standards.

Abbreviations and Glossary of Terms

Term	Definition
Adit	An entrance, or an almost horizontal passageway into a mine for the purposes of access or drainage.
AHD	Australian Height Datum
AIP	*Aquifer Interference Policy*
Application Area	The area to which this Project Application applies.
AWS	Automated Weather Station
BCUS	Bellambi Creek Upland Swamp
Bulli West	Area of first workings west of existing workings.
CCL	Consolidated Coal Lease
CCUS	Cataract Creek Upland Swamp
Coal Processing Plant	Coal sizing plant using crushing and cyclone methods to improve coal quality and remove waste rock.
Coking coal	Coal that can be used in the production of coke which in turn is used in the blast furnace in the production of pig iron. Ash content of less than 10% and volatile matter of 21-23%.
Day	A period of 24 hours, from twelve o'clock one night to twelve o'clock the next night
Daytime	The period from 7.00am to 6.00pm Monday to Saturday, and 8.00am to 6.00pm on Sundays and Public Holidays.
dB	Decibels
DoEE	Commonwealth Department of Environment of Energy (formerly Department of Environment and Energy)
DPIE	Department of Planning, Industry and Environment (formerly Department of Planning and Environment)
DRG	Department of Resources and Geosciences
Drivage	A horizontal or inclined heading or roadway in the process of construction. The roadway will be used to access a new mining area within the lease.
DSC	Dams Safety Committee
Dyke	A sheet like vertical intrusion of igneous rock cutting across the strata of older rocks.
Early morning shoulder	The period from 5.00am to 7.00am Monday to Saturday.
EEC	Endangered Ecological Communities
EMP	Environmental Management Plan
ENM	Environmental Noise Model
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPA	Environmental Protection Authority
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPL	Environment Protection Licence
ERM	ERM Australia Pacific
Evening	The period from 6.00pm to 10.00pm.
Feasible	Means what is possible and practical in the circumstances

Term	Definition
First workings	Involves the development headings or roadways which will provide access to the coal resource. They are developed using continuous miners with separate and integrated roof and rib bolting rigs. First workings leave the coal pillars intact and the overlying strata fully supported resulting in 'zero' subsidence.
GeoTerra	GeoTerra Pty Limited
GES	Groundwater Exploration Service Pty Limited
GHGEA	Greenhouse Gas and Energy Assessment
GJ	Gigajoule
GPS	Geographical Positioning System
Groundwater WSP	*Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources 2011*
Ha	Hectares
ICNG	*Interim Construction Noise Guidelines*
INP	*Industrial Noise Policy*
JORC	Joint Ore Reserves Committee
LDP	Licensed Discharge Point
LGA	Local Government Area
Longwall (LW)	A large continuous block of coal mined in a single slice.
m	Metres
Metropolitan Special Area	An area categorised as Restricted Access under Schedule 1 of the Sydney Water Catchment Management Act 1998. It is managed by the Sydney Catchment Authority.
Mining Lease	Title granted under the Mining Act 1992 that provides rights to mine a coal resource.
Mitigation	Activities associated with reducing the impacts of the project prior to or during those impacts occurring.
MJ	Megajoules
ML	Megalitre
MOP	Mining Operations Plan
Mt	Million tonnes
Mtpa	Million tonnes per annum
Negligible	Small and unimportant, such as to be not worth considering.
NGA	National Greenhouse Accounts
Night	The period from 10.00pm to 5.00am Monday to Saturday, 10.00pm to 8.00am on Sundays and Public Holidays.
NPfI	*Noise Policy for Industry 2017*
NTU	Nephelometric Turbidity Units
Original Application	The mine plan proposed in the EA (ERM, 2013). This mine plan included 11 longwall panels in the Wonga East domain and 8 LW panels in the Wonga West domain.
Planning Assessment Commission (PAC)	A statutory body established under section 23B (1) of the *Environmental Planning and Assessment Act 1979* (Act No.203, 1979) and as part of the New South Wales Government's planning reforms in November 2008.
PMF	Probable Maximum Flood
Preliminary Works Project (PWP)	The approved Stage 1 works which involves the development of the main headings in the Wonga East domain and the extraction of LWs 4, 5 and 6 (365 m to the west).

Term	Definition
Product coal	ROM coal that has undergone a process of beneficiation to improve the economic value of the coal.
Project Noise Trigger Levels	Target noise levels for a particular noise-generating facility.
PNTLs	Project Noise Trigger Levels
RBLs	Rating Background Levels
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements.
RMS	Roads and Maritime Services
RNP	*NSW Road Noise Policy 2011*
ROM coal	Coal delivered from the mine without any further processing
RTS	Response to Submissions
Run-of-mine (ROM)	Raw coal as mined that has not undergone any screening, crushing or washing.
Russell Vale Colliery (RVC)	The main surface facilities for the colliery; also referred to as the site.
RVEA	Russell Vale Emplacement Area
Russell Vale East	The area of the mining domain located to the east of Cataract Reservoir – previously known as Wonga East.
Russell Vale West	The area of the mining domain located to the west of Cataract Reservoir – previously known as Wonga West.
SIOA	Social Impact and Opportunities Assessment
SWCD	Stormwater Control Dam
TARP	Trigger Action Response Plan
TARP	Trigger Action Response Plan
TTIA	Traffic and Transport Impact Assessment
Underground Expansion Project (UEP)	The project. The subject of the current project application (09_0013).
VENM	Virgin Excavated Natural Material
VLAMP	Voluntary Land Acquisition and Mitigation Policy
WAL	Water Access Licence
WCC	Wollongong City Council
Wollongong Coal Limited (WCL)	The current owner and operator of the colliery, and the proponent for the UEP.
Wonga East	The area of the mining domain located to the east of Cataract Reservoir – also referred to as Russell Vale East.
Wonga West	The area of the mining domain located to the west of Cataract Reservoir – also referred to as Russell Vale West.
WSP	Water Sharing Plan

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1.0 Introduction

1.1 Project Background

Wollongong Coal Limited (WCL) owns and operates the Russell Vale Colliery (the Colliery), an existing underground coal mine located in Russell Vale, north of Wollongong in NSW (refer to **Figure 1.1**). The Colliery has been on 'care and maintenance' since 2015 and the current Project Approval applying to mining operations at the Colliery requires that no mining occur after 31 December 2015. WCL is seeking Project Approval under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to expand the mining operations at the Colliery; this ongoing application is referred to as the Underground Expansion Project (UEP).

Mining has been undertaken at Russell Vale Colliery since the 1880s. Mining has occurred in three seams, the Bulli Seam, Balgownie Seam and the Wongawilli Seam. The Balgownie seam is located approximately 10 metres (m) below the Bulli Seam and the Wongawilli Seam is located approximately 20 m below the Balgownie Seam. All three seams outcrop along the Illawarra Escarpment and the seams are accessed by adits[1] directly into the seams. There are two main mining areas within the Russell Vale Colliery lease area, which are referred to as Wonga East and Wonga West. The Cataract Reservoir broadly defines the boundary between the two areas (refer to **Figure 1.2**). In the Wonga East area, the Bulli Seam and Balgownie Seam have largely been fully extracted. Further detail regarding previous mining activity at Russell Vale is provided in **Section 2.1.1**.

The existing and proposed workings are contained within Consolidated Coal Lease 745 (CCL745) and Mining Lease 1575 (ML1575) (refer to **Figure 1.3**). The Colliery Pit Top is located at the base of the Illawarra Escarpment above the suburb of Russell Vale (refer to **Figure 1.4**). The Pit Top facilities occupy an area of approximately 100 hectares (ha) at the eastern extent of the Colliery holdings. The site is accessed via a private driveway from the Princes Highway at a signalised intersection with Bellambi Lane. Coal has historically been hauled from Russell Vale Colliery to Port Kembla Coal Terminal (PKCT) by truck, via Bellambi Lane and Memorial Drive.

The Russell Vale Emplacement Area (RVEA) is located immediately north of the Colliery Pit Top and is largely located outside the Colliery Holding (lease area) (refer to **Figure 1.3**). The RVEA operates under a development consent issued by Wollongong City Council (WCC) on the 11 April 1990. The area was used as part of earlier mining operations and was used to store oversize material during 2015-2016. The Department of Planning and Environment (DPE), now the Department of Planning, Industry and Environment (DPIE), issued WCL with a Development Control Order to remove approximately 200,000 tonnes of material stockpiled at the RVEA and transport it off site. Removal of this material commenced in early March 2019 and on completion of this process, the area will be subject to final rehabilitation in accordance with the relevant conditions of the order.

In December 2004, after a period of care and maintenance, the mine was sold to NRE by the former owners Bellpac Pty Ltd and the assets transferred to a company called Gujarat NRE Coking Coal Ltd. Mining recommenced in 2005, however the mine produced very little coal between 2004 and 2012 when mining recommenced in the Wongawilli Seam. Jindal Steel and Power Limited acquired a majority stake in Gujarat NRE Coking Coal Ltd in October 2013. The name of the company, Gujarat NRE Coking Coal Ltd, was changed to WCL following the change in ownership.

[1] An entrance into a mine for access or drainage.

The original UEP application submitted by Gujarat NRE Coking Coal Ltd in 2009 involved a substantial expansion of longwall mining in the Wongawilli Seam across the Wonga East area (a total of 11 longwall panels) and Wonga West area (a total of seven longwall panels) to extract 31 million tonnes (Mt) of run-of-mine (ROM) coal over a project life of 18 years (refer to **Figure 1.4**). In response to concerns from the public and government agencies, the original UEP application has been substantially revised over time to reduce the potential adverse impacts of the mine.

A summary of the UEP assessment process to date is provided in **Section 1.2**.

Image Source: Google Maps (2016)
Data Source:OEH (2016)

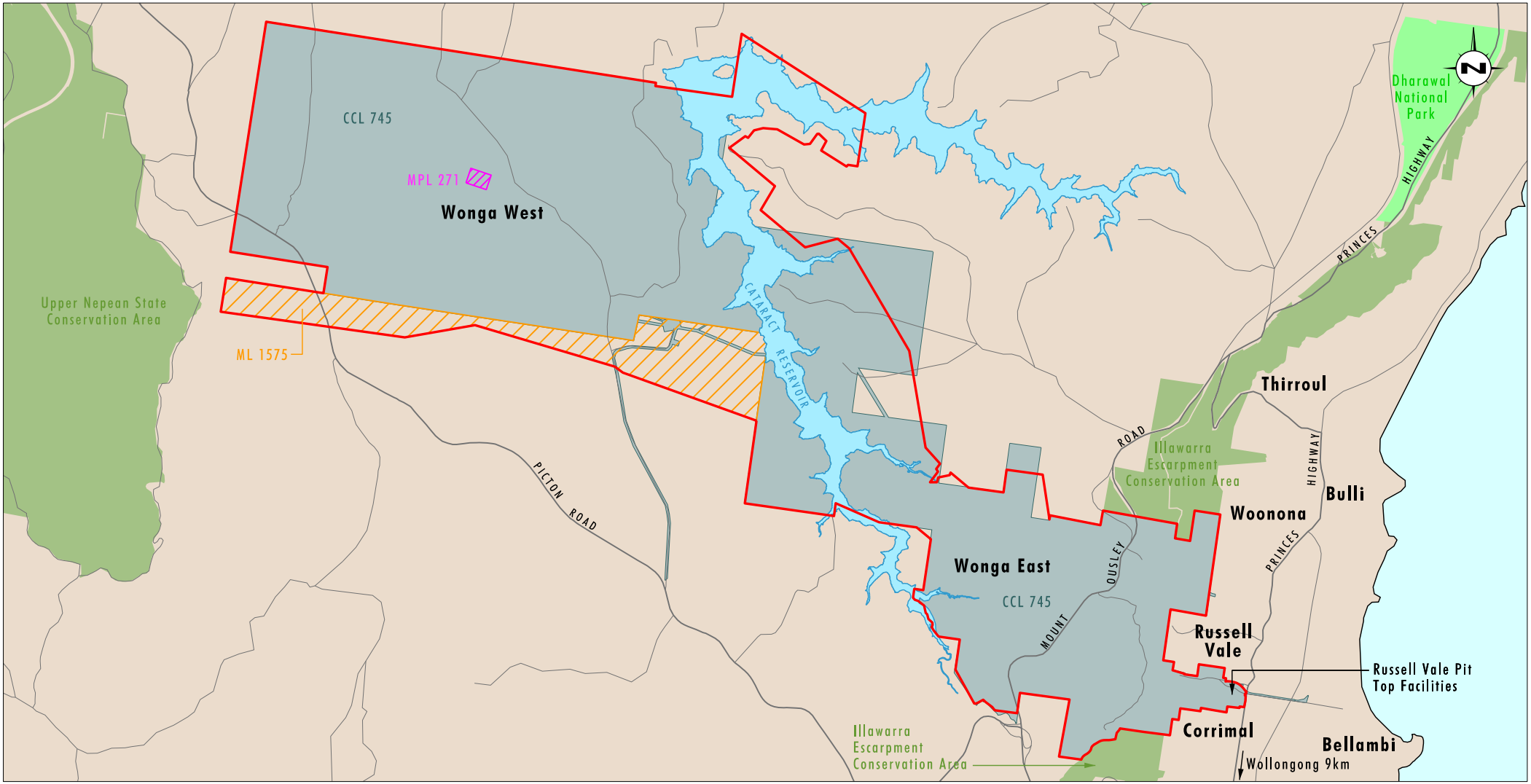
0 3.0 7.5 15.0km
1:300 000

Legend

UEP Project Application Area

FIGURE 1.1

Locality Plan



Data Source: Wollongong Coal (2016), OEH (2013)

0 1.0 2.0 4.0km
1:90 000

Legend
- UEP Project Application Area
- CCL 745
- ML 1575
- MPL 271

FIGURE 1.2

Russell Vale Colliery Mining Leases and UEP Application Area

File Name (A4): 3687_026.dgn
20190621 14.28

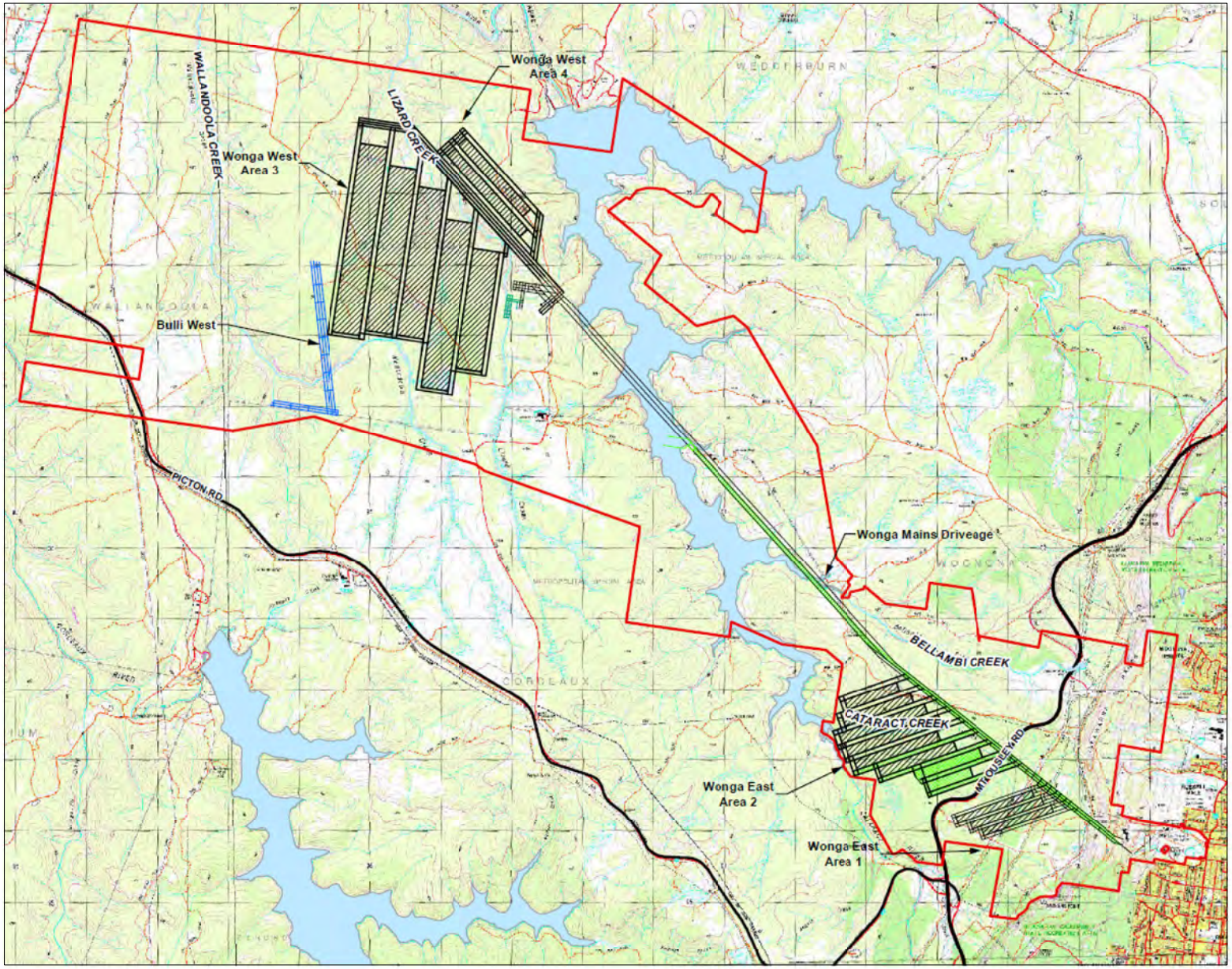
Image Source: Nearmap (Oct 2016)
Data Source: Wollongong Coal (2016)

Legend

- UEP Project Application Area
- Coal Truck Route

FIGURE 1.3

Existing Russell Vale Pit Top Facilities



Legend

- Project Application Area
- Previously Proposed Longwalls
- Approved Workings (MP10_0046)
- Proposed Balgownie Seam First Workings
- Proposed Bulli Seam First Workings
- Major Road

FIGURE 1.4

2009 Original Proposed UEP Mine Plan

Image Source: ERM (2013)

File Name (A4): R05/3687_063.dgn
20190703 14.23

1.2 Previous Assessment of the UEP

The original UEP application was submitted in 2009, with a supporting Environmental Assessment publicly exhibited in 2013 (ERM, 2013). A Preferred Project was exhibited in 2014 based on a reduced longwall mine plan of eight longwalls in the Wonga East area only (refer to **Figure 1.5**). The Preferred Project was referred to the Planning Assessment Commission (PAC) and the PAC released its first Review Report on the UEP Preferred Project in April 2015. The report recommended that further work and assessments was required before a determination could be made.

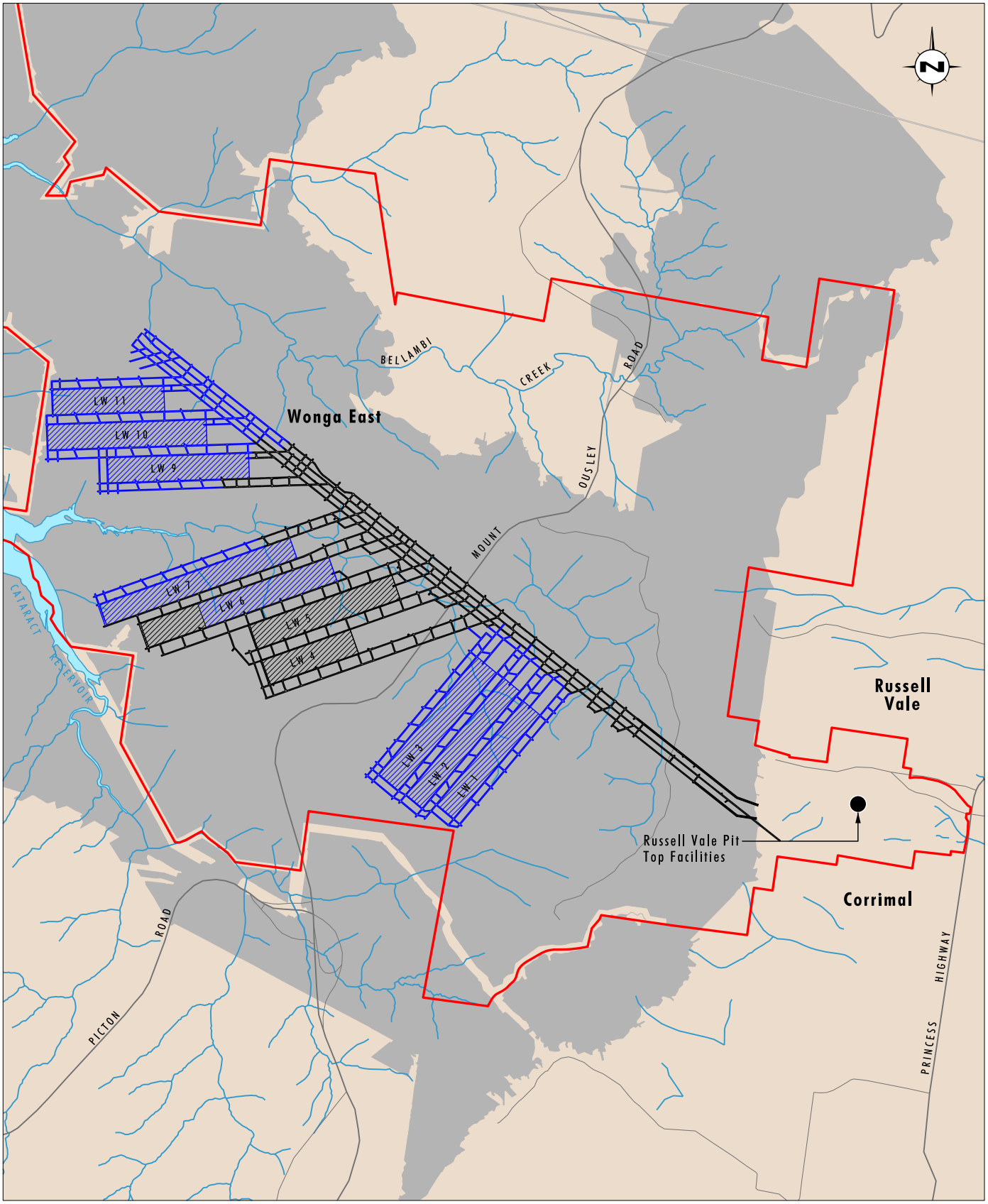
In July and September 2015 WCL submitted its responses to the first PAC Review Report following consultation with various agencies. In October 2015, the Minister referred the responses to the PAC for a second review.

The PAC's Second Review Report was released in March 2016 and required further consideration and assessment of water and subsidence, risks of water loss and impact to upland swamps, the estimated cost associated with water loss, and the noise assessment (PAC, 2016).

Through the course of the UEP application process the following reports and amendments of the UEP have been prepared on behalf of the proponent and submitted for review:

- Environmental Assessment (ERM, February 2013) to support the original UEP application;
- Preferred Project Report including Response to Submissions (Natural Resources Environment (NRE), undated) and the Residual Matters Report (Hansen Bailey, June 2014);
- Response to the PAC's First Review Report Part 1 (Hansen Bailey, July 2015) and Part 2 (Hansen Bailey, September 2015) including an Independent Risk Assessment (Broadleaf, 2015).

These reports have been made available on the DPIE website.



Data Source: Wollongong Coal (2016)

0 0.5 1.0 1.5km

1:30 000

Legend

- UEP Project Application Area
- Existing Wongawilli Seam Workings
- Previous Preferred Project Mine Plan
- Historic Workings (other mines)

FIGURE 1.5

2014 Preferred Project Mine Plan

1.3 Revised Preferred Project Overview

In order to address residual uncertainty regarding the impacts of longwall mining raised by the PAC Second Review Report, a revised mine design has been developed based on a non-caving first workings mining system. The revised mine plan has been designed to be long term stable with negligible risk of pillar failure to address potential subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment.

Changes to the Russell Vale Pit Top are also proposed to address concerns regarding potential amenity impacts to surrounding residential areas.

This revised plan is referred to in this document as the Revised Preferred Project. The Revised Preferred Project is outlined in detail in **Section 2.0** of this report.

Key elements of the Revised Preferred Project are:

- Mining by means of first working mining techniques only, with the workings designed to be long term stable with minimal subsidence impacts. No longwall mining is proposed;
- Extraction of approximately 3.7 Mt of ROM coal over 5 years at a production rate that will not exceed 1 Mt of product coal per year;
- Construction and use of a coal processing plant to improve the quality of product coal;
- Redesign of the Pit Top layout to strategically relocate infrastructure to more shielded locations;
- Reduced hours of operation for surface facilities relative to the Preferred Project mine plan; and
- Additional noise mitigation works at the Russell Vale Pit Top including a new noise barrier, extension to the height of existing bunds and acoustic treatment of coal processing infrastructure.

1.4 Revised Preferred Project Objectives and Key Design Considerations

The following key objectives have guided the refinement of the UEP mine plan subsequent to the PAC Second Review Report:

- develop a mine design that eliminates residual uncertainty regarding subsidence predictions, geotechnical constraints and potential impacts on groundwater, surface water and biodiversity associated with longwall mining
- gain access to sufficient resources to enable mining to recommence and occur over a sufficient time frame to undertake the necessary assessments to confirm a suitable mine plan in the Wonga West area that would extend the life of Russell Vale Colliery for a period similar to that sought in the initial UEP application
- develop comprehensive mitigation and management strategies to reduce environmental and social impacts associated with the Revised Preferred Project in order to meet relevant criteria where-ever practicable and feasible
- conduct mining in an environmentally responsible manner to minimise project specific and cumulative environmental and social impacts

- create additional employment opportunities within the local and regional community
- co-exist with the local community.

Furthermore, the mine design for the Revised Preferred Project has also taken account of:

- surface constraints (such as the Cataract Reservoir, ecological and Aboriginal Heritage constraints as well as built features),
- underground geological discontinuities (dykes, faults, roof strata sill and lease boundary) and
- existing workings above the targeted Wongawilli Seam, in the Balgownie and Bulli seams.

1.5 Consideration of Project Alternatives

The Revised Preferred Project represents the culmination of an exhaustive process of reviewing project alternatives to address issues raised in agency and public submissions and by the PAC Second Review Report. This included consideration of options to:

- Undertake further investigation and assessment work on the UEP Preferred Project mine plan design to reduce uncertainty in impact predictions and address issues raised by the PAC.
- Amend the UEP Preferred Project mine plan by redesigning second workings to address impact issues raised by the PAC. This would be supported by additional research and assessment of subsidence impacts to remove uncertainty in subsidence impact predictions. This scenario was likely to result in reduced resource recovery.
- Amend the UEP Preferred Project mine plan to be first workings only with workings designed to be long term stable. This scenario was likely to result in significantly reduced production rates and resource recovery.
- Withdraw the UEP application and close Russell Vale Colliery. The option was not considered a feasible alternative due to the significant investment in the UEP from WCL to date and the extent of valuable coal resources remaining in the colliery holding.

1.5.1 Rationale for Moving to First Workings Mine Plan

A key issue for the PAC in its consideration and review of the UEP Preferred Project was the uncertainty associated with subsidence and groundwater impacts as a result of the proposed longwall mining in the multi-seam mining environment present at Russell Vale, and in particular the Wonga East area. In assessing the constraints and opportunities associated with each of the potential project alternatives outlined above, the need to reduce this uncertainty was considered a priority.

During the WCL and Umwelt review process, it was considered unlikely that the options to amend the previous second workings mine plan would sufficiently resolve the uncertainty to a level that was acceptable to the PAC. Therefore, a mine plan option for long term stable first workings was considered the only feasible alternative, despite the lower production rates and resource recovery volumes that would result from this option.

Section 1.5.2 provides a discussion of the difference between longwall mining and first workings mining methods and typical subsidence behaviour associated with these methods.

1.5.2 Underground mining methods: First workings vs Longwall mining

First workings comprise a series of self-supporting roadways or 'tunnels' driven into the coal seam by a continuous miner. Left behind is a grid of pillars (blocks of coal) between the roadways that are designed to provide stability to the seam void in the long term and support the roof strata above the seam (refer to **Figure 1.6**). This method is commonly undertaken where surface subsidence has to be limited (IESC, 2014).

The width of the roadways is limited to reduce the likelihood of roof falls and minimise the load on the pillars. As the depth of cover above the coal seam increases, the width of the pillars also increases to carry the extra weight of the overburden.

Some low-level subsidence of the ground surface above first workings will occur as a result of compression of the coal pillars and the strata above and below the seam from the weight of overburden, however where pillars have been designed to be long-term stable (low probability of pillar failure), vertical subsidence will be very small. These movements are typically comparable to surface and ground variations that occur from natural and seasonal processes with the wetting and drying of soils and is at the limit of general surveying accuracies (IESC, 2014).

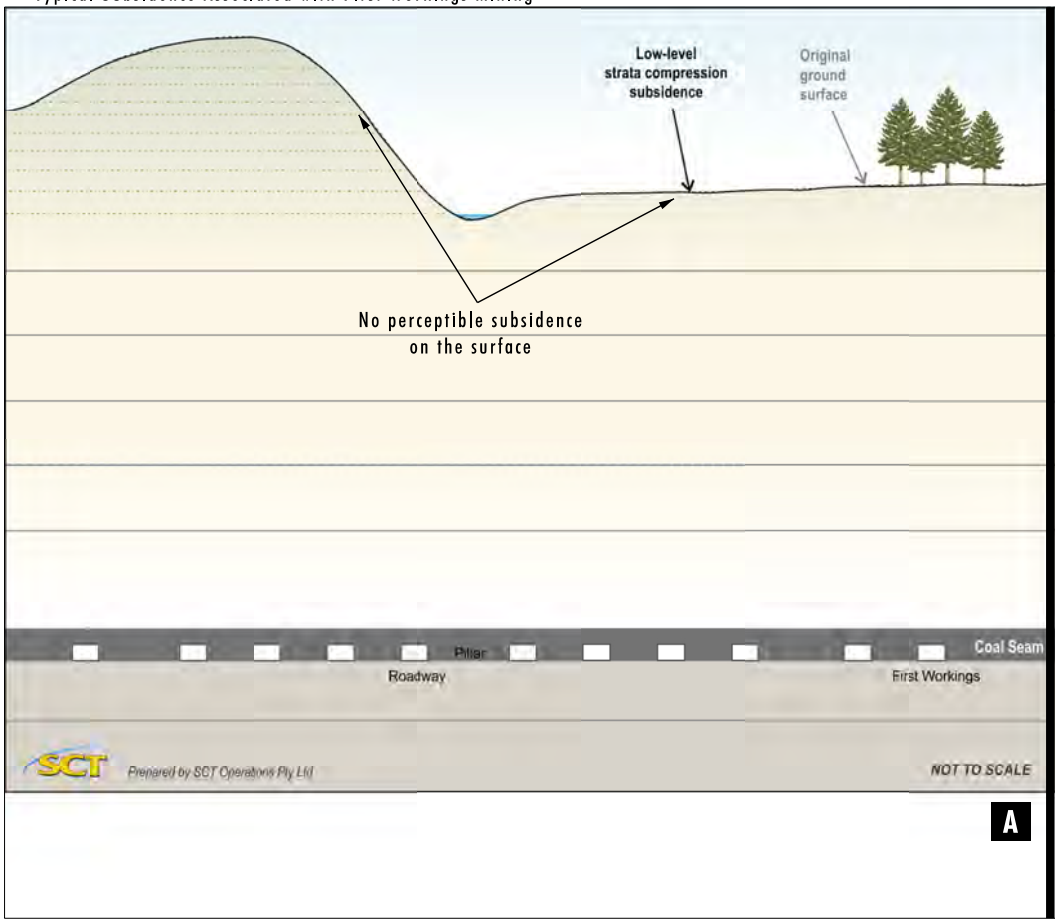
Longwall mining involves the secondary extraction of large panels of coal between parallel first workings roadways, these panels can typically be 150 - 400 m wide and 1 - 4 km long (IESC, 2014). A longwall shearer is used to progressively remove all the coal within the panel, creating a void into which the roof material and overlying rock collapses. This triggers a subsidence process in the overburden strata. The strata layers above bend and shear, with the amount of strata sagging, fracturing and bed-separation reducing towards the surface (IESC, 2014). The fracture zone commonly forms an arch over the extracted panel (as illustrated in **Figure 1.6**).

This method of mining typically results in vertical and horizontal subsidence movement at the land surface, which can extend beyond the edge of the longwall panel and can impact on natural and built features on the surface.

The conceptual illustration in **Figure 1.7** depicts the situation at Russell Vale Colliery where historical longwall mining has been undertaken in over lying seams (with existing subsidence effects as a result of this activity) and first workings is proposed in an underlying seam. Subsidence monitoring data available from previous mining indicates that while there are some significant differences in behaviour compared to single seam mining, the multi-seam subsidence behaviour is reasonably predictable (SCT, 2019). The assessment of potential subsidence impacts of the proposed first workings mine plan has considered potential interactions with overlying historical workings and concludes that it is not expected to cause perceptible surface subsidence, significant interaction with the overlying seams or significant interaction with existing ground water systems (SCT, 2019) (refer to **Section 5.2**).

Proposed mining (First Workings Method)

Typical Subsidence Associated with First Workings Mining



Not proposed mining (Longwall Mining Method)

Typical Subsidence Associated with Longwall Mining

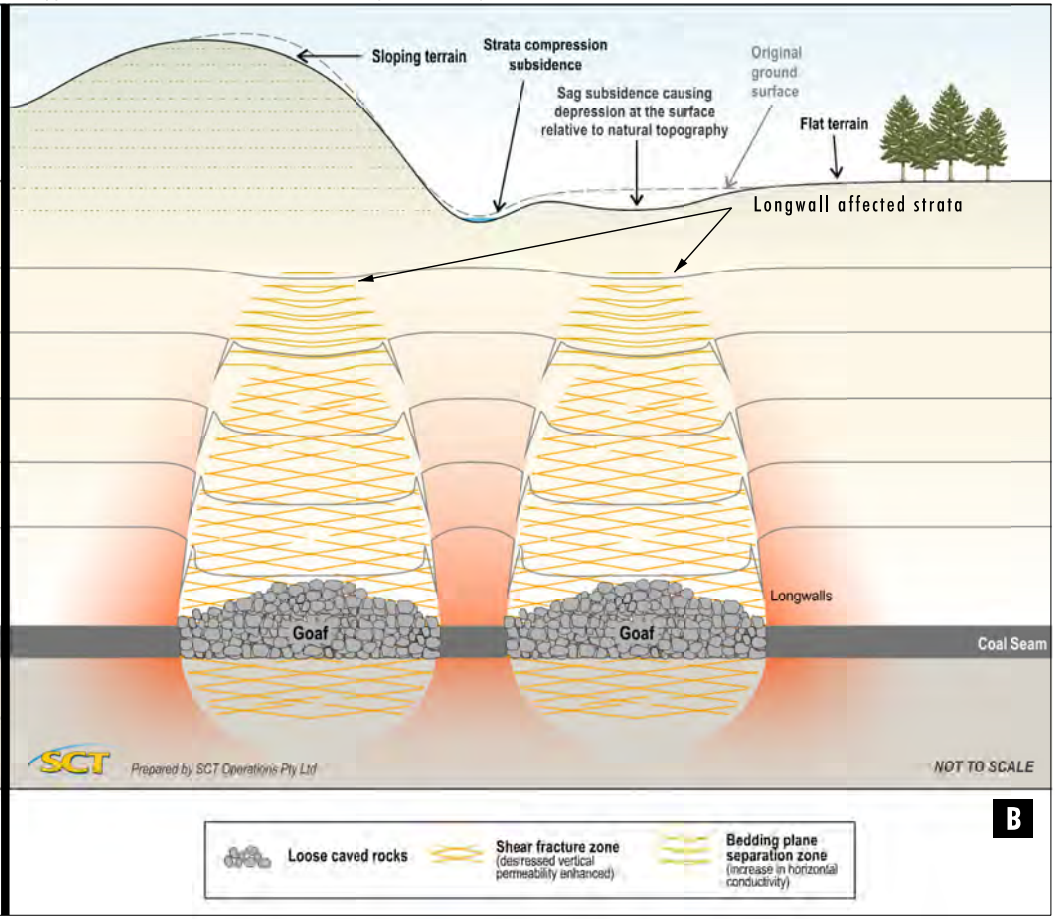


FIGURE 1.6

General Subsidence behaviour associated with First Workings (A) Vs Longwall Mining (B).

Image Source: SCT Operations (Pty Ltd (2019)

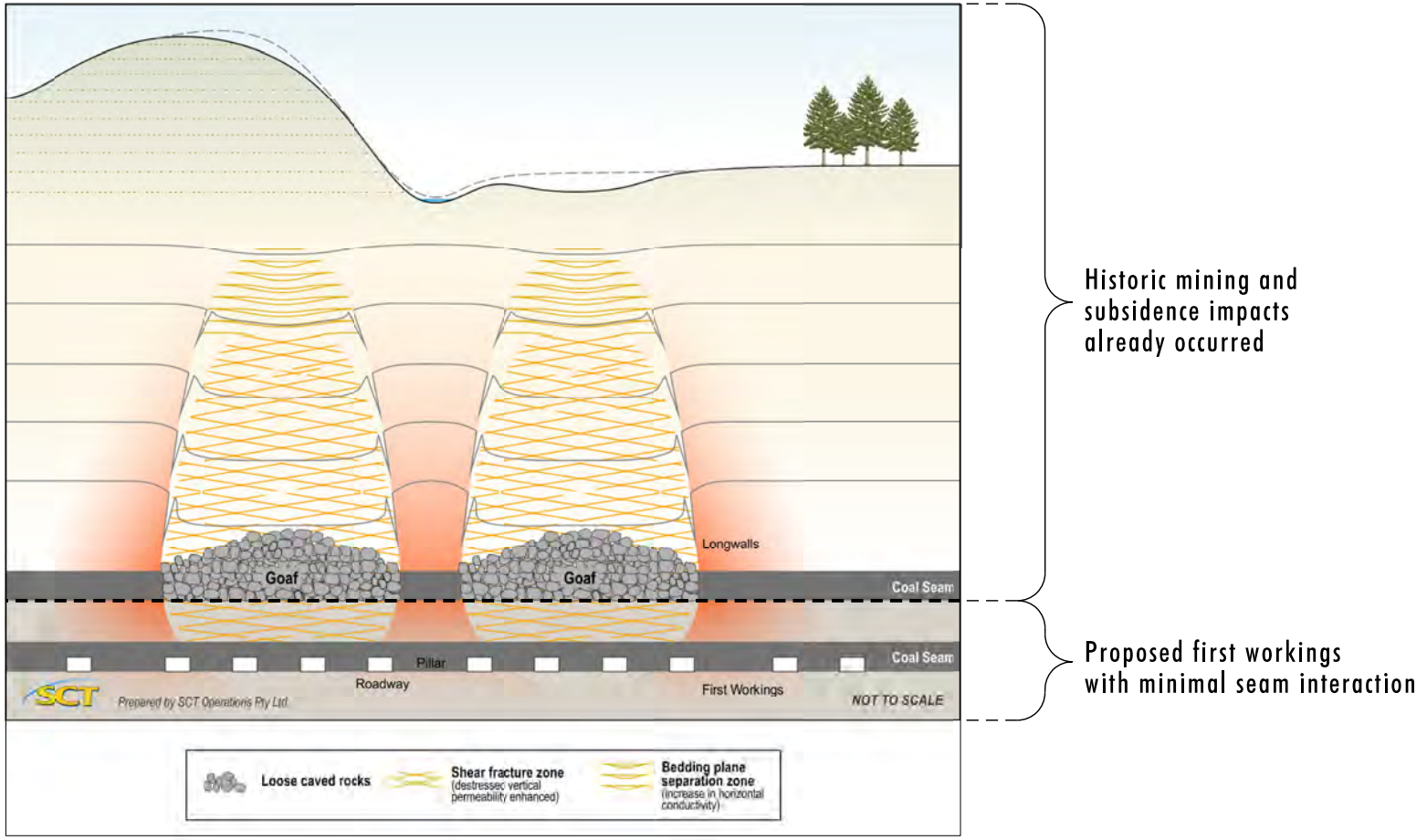


FIGURE 1.7

General layout of Two Seams with Proposed First Workings Below Historical Longwall Mining

Image Source: SCT Operations (Pty Ltd (2019)

1.6 Future Mine Planning

Large volumes of economically viable coal remain un-extracted within the central and western portions of the Russell Vale lease holding. The UEP in its original form sought to recover a substantial portion of this resource, however due to major concerns raised in submissions on the original project, the project was modified to remove the Wonga West mining domain from the application. WCL remains committed to undertaking further detailed environmental and social impact studies to enable the recovery of this resource in an environmentally and socially acceptable manner and has commissioned studies that are ongoing for this purpose.

WCL has committed that all future mine planning within the Russell Vale Colliery lease holding will be based on non-caving first workings mining methods in order to limit the potential for subsidence related impacts to surface features or water resources. WCL will not be seeking future approval for longwall mining within the Russell Vale Colliery lease holding. Existing longwall equipment will be extracted and sold should the UEP be approved.

Works toward a long-term consolidated approval for Russell Vale Colliery are in progress. WCL commenced an exploration program in August 2018 consisting of 11 boreholes covering the central and western areas of the lease. These holes will improve the resource definition and will also provide base line data. The exploration program is ongoing. In parallel, a conceptual life of mine plan is being developed. As the exploration data becomes available the mine plan will be further refined to provide Joint Ore Reserves Committee (JORC) Code compliant reserves. The JORC Code sets minimum standards for the classification of minerals Exploration Results, Mineral Resources and Ore Reserves.

Subject to completion of further detailed environmental studies and development of a suitable non-caving first workings mine plan for Wonga West, WCL intends to seek development consent for the continued operation of the Russell Vale Colliery to recover the portions of this resource that can be extracted in an environmentally acceptable manner.

1.7 Structure and Purpose of this Report

This report details the Revised Preferred Project and provides a response to the issues raised in the PAC Second Review Report.

This report is divided into two parts:

- Part A – Revised Preferred Project Report, and
- Part B – Response to PAC Second Review Report.

Part A contains a description of the Revised Preferred Project, outlining the key changes to the UEP in response to issues raised in the PAC Second Review Report. It contains further evaluation of the statutory context for the Revised Preferred Project, with changes to key planning legislation that have occurred since the last submission. Part A also contains a description of the stakeholder engagement process undertaken for the Revised Preferred Project and an updated assessment of the key environmental, social and economic issues including a review of subsidence, groundwater, ecology (particularly upland swamps), noise, air quality, traffic, surface water and water balance assessments as well as a greenhouse gas assessment. Part A concludes with an updated Statement of Commitments.

Part B of this report provides responses to the issues raised in the PAC Second Review Report.

PART A – Revised Preferred Project Report

2.0 Description of Revised Preferred Project

In order to address residual uncertainty regarding potential subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir water catchment, WCL has redesigned the UEP. Longwall mining is no longer proposed as part of the UEP and the revised mine design is based on a non-caving first workings mining system that will result in imperceptible subsidence.

Key elements of the Revised Preferred Project are:

- Mining using first working mining techniques only, with the workings designed to be long-term stable with minimal subsidence impacts. No longwall mining is proposed. Further, WCL have resolved that all future mine designs will be based on first working mine designs only to eliminate subsidence from mining activities affecting significant levels of strata stability and integrity towards the surface.
- Current longwall equipment will be retrieved from underground and sold.
- Extraction of approximately 3.7 Mt of ROM coal over a period of 5 years at a reduced production rate that will not exceed 1 Mt of product coal per year.
- Mining within the Wonga East area only, with no mining proposed within the Wonga West area or underneath the full supply level of Cataract Reservoir.
- Construction and use of a coal processing plant to improve the quality of product coal.
- Substantial redesign of the Pit Top layout to reduce amenity impacts.
- Operation of surface facilities and product transport typically limited to daytime hours only (7.00 am to 6.00 pm Mondays to Friday, 8.00 am to 6.00 pm Saturday, no Sundays and Public Holidays); with provision for occasional operation until 10.00 pm Monday to Friday to cater for unexpected Port closures or interruption.
- Reduced product trucking rates relative to the Revised Preferred Project.
- Additional noise mitigation works surrounding the Pit Top including a new noise barrier, extension to the height of existing bunds and acoustic treatment of coal processing infrastructure.

The key features of the Revised Preferred Project are summarised in **Table 2.1** along with a comparison of the Revised Preferred Project with the Preferred Project.

Table 2.1 Revised Preferred Project Key Features and Comparison with Preferred Project

Project Component	Preferred Project (2014)	Revised Preferred Project (2019)
Project Life	5 years	No change
Project Application Area	As per the historical Colliery Holdings/lease boundary, including Consolidated Coal Lease (CCL) 745, Mining Purposes Lease (MPL) 271 and Mining Lease (ML) 1575.	No change
Mine design and method	Extraction of 8 longwalls in three blocks within the Wonga East area, as illustrated in **Figure 1.5**.	Non-caving first workings within the Wonga East area, as shown in **Figure 2.1**. No longwall mining proposed. Longwall equipment will be recovered from underground and sold.
Target seam	Wongawilli seam	No change
Total Reserves Recovered	Approximately 4.7 Mt of ROM coal	Approximately 3.7 Mt of ROM coal
Extraction Rate	Up to 3 Mtpa	Up to 1.2 Mtpa ROM coal
Production Rate	Up to 3 Mtpa	Up to 1 Mtpa of product coal
Hours of Operation	**Underground Operations:** 24 hours, 7 days a week **Surface Facilities:** 24 hours, 7 days a week. **Product Transport:** 7.00am - 10.00pm, Mondays to Fridays; and 8.00am - 6.00pm Saturdays, Sundays and Public Holidays	**Underground Operations and delivery of ROM coal to the surface:** 24 hours, 7 days a week **Surface Facilities and Product Transport:** 7.00am - 6.00pm, Mondays to Friday, 8.00am - 6.00pm Saturday. No Sundays or Public Holidays. Provision for occasional operation until 10.00pm Monday to Friday to cater for unexpected Port closures or interruptions. Operation until 10.00pm Monday to Friday has been considered in this assessment.
Pit Top Facilities	• Upgraded and continued operation of the Pit Top area, support facilities and utilities; • Construction and use of two new stockpiles of 140,000 t capacity each with associated reclaim facilities. • Construction and use of a new Sizing Plant • Construction and use of new truck loading facilities. • Upgrading of existing surface conveyers.	• Upgraded and continued operation of the Pit Top area, support facilities and utilities; • Establishment of new product stockpile (approx. 14,000 t capacity) and rejects stockpile (approx. 1,500 t capacity) within Pit Top disturbance area. • Construction and use of new enclosed Coal Processing Plant to improve coal quality. • Construction and use of a new Secondary Sizing Plant. • Construction and use of new Surge Bin in more shielded location.

Project Component	Preferred Project (2014)	Revised Preferred Project (2019)
		• Construction and use of enclosed conveyors for transfer of ROM coal to Secondary Sizer, Processing Plant and truck loading facility. • Construction of new truck loading facility. • Construction of noise barrier along access road and extension to height of existing bunds. • Establishment of a designated truck parking area.
Management of Mining Waste	Waste rock used onsite, or if the need arises, disposed of at an appropriately licensed facility.	Coarse rejects from the processing plant will be trucked off site as fill if it meets requirements for Virgin Excavated Natural Material (VENM), stockpiled for emplacement underground or used in the rehabilitation of the site.
Coal Transport	Transport by road to the PKCT for export.	No change.
Transport Hours and Rates	• An average rate of 17 coal truck loads per hour with a peak of 22 coal truck loads per hour, leaving the site between 7.00am - 10.00pm on Mondays to Fridays. • An average rate of 19 coal truck loads per hour with a peak of 26 coal truck loads per hour, leaving the site between 8.00am and 6.00pm Saturdays. • An average rate of 10.5 coal truck loads per hour with a peak of 14 coal truck loads per hour, leaving the site between 8.00 am and 6.00 pm Sundays and Public Holidays.	• An average rate of 16 laden outbound trucks per hour leaving the site between 7.00 am - 6.00 pm Monday to Friday and 8.00 am - 6.00 pm Saturday. • No coal transport Sundays or Public Holidays. • If coal transport is required during the evening to cater for unexpected Port closures or interruptions, these movements would be limited to an average of 12 trucks per hour leaving the site between 6.00 pm - 10.00 pm Mondays to Fridays only. • Trucks arriving at the site between 6:00 am - 7.00 am Monday to Friday or between 7.00 am - 8.00 am Saturday will be required to proceed to the truck parking area on site and turn off engine until loading commences at 7.00 am Monday to Friday or 8.00 am Saturday.
Employment	• Operational workforce of 300 employees and contractors. • Short-term construction workforce of up to 100 employees at various stages of the project	• Operational workforce of approximately 205 employees and contractors. • Short-term construction workforce of approximately 22 employees over a 12 - 24 month period.
Ongoing activities within mining tenements	• Exploration activities, environmental monitoring and maintenance of access to the	No change

Project Component	Preferred Project (2014)	Revised Preferred Project (2019)
	existing underground workings and surface infrastructure within exploration and mining tenements in the Wonga West domain. • Ongoing maintenance and refurbishment of ventilation shafts, water and electrical facilities	
Rehabilitation	Progressive rehabilitation over project life, with rehabilitation of all surface facilities following the completion of mining.	No change
Capital Investment Value	$85 million	$35.3 million

2.1 Proposed Mining Operations

2.1.1 Mining Areas and Methods

The Illawarra Coal Measures[2] include the Bulli, Balgownie and Wongawilli seams. The uppermost Bulli seam has been extensively mined dating back to 1880, while the Balgownie seam was subject to mining between 1970 and 1982. The target resource for the Revised Preferred Project is within the Wongawilli seam, which lies approximately 27 m below the Bulli seam within the eastern portion of the UEP Application Area. The Wongawilli seam is approximately 8 - 11 m thick across the UEP Application Area with the basal part of the seam containing the highest proportion of coal. The depth of cover to the Wongawilli seam ranges from 200 - 320 m within the East of the UEP Application Area, increasing to 400 - 450 m in the western portion of the UEP Application Area.

The mine plan for the Revised Preferred Project (**Figure 2.1**) has been designed as a non-caving first workings mining system using continuous miners to limit potential for interaction with existing overlying workings or subsidence-related impacts to natural or built surface features or groundwater. The pillars remaining are designed to be long-term stable with a large width to height ratio. The proposed mining is not expected to cause perceptible subsidence at the surface, significant interaction with the overlying seams or significant interaction with existing groundwater systems.

The revised mine plan includes the construction of development mains into the Wonga Central Area (refer to **Figure 2.1**). These development mains were previously approved under Project Approval PA 10_0046 (Preliminary Works Project) granted by the PAC on 13 October 2011 under Section 75(J) of the EP&A Act. With the exception of the previously approved development mains into the Wonga Central area, the revised mine plan has been restricted to the Wonga East area. No mining is proposed beneath the full supply level of Cataract Reservoir.

[2] A group of sedimentary rocks up to 150 m thick occurring in the Sydney Basin in eastern Australia.

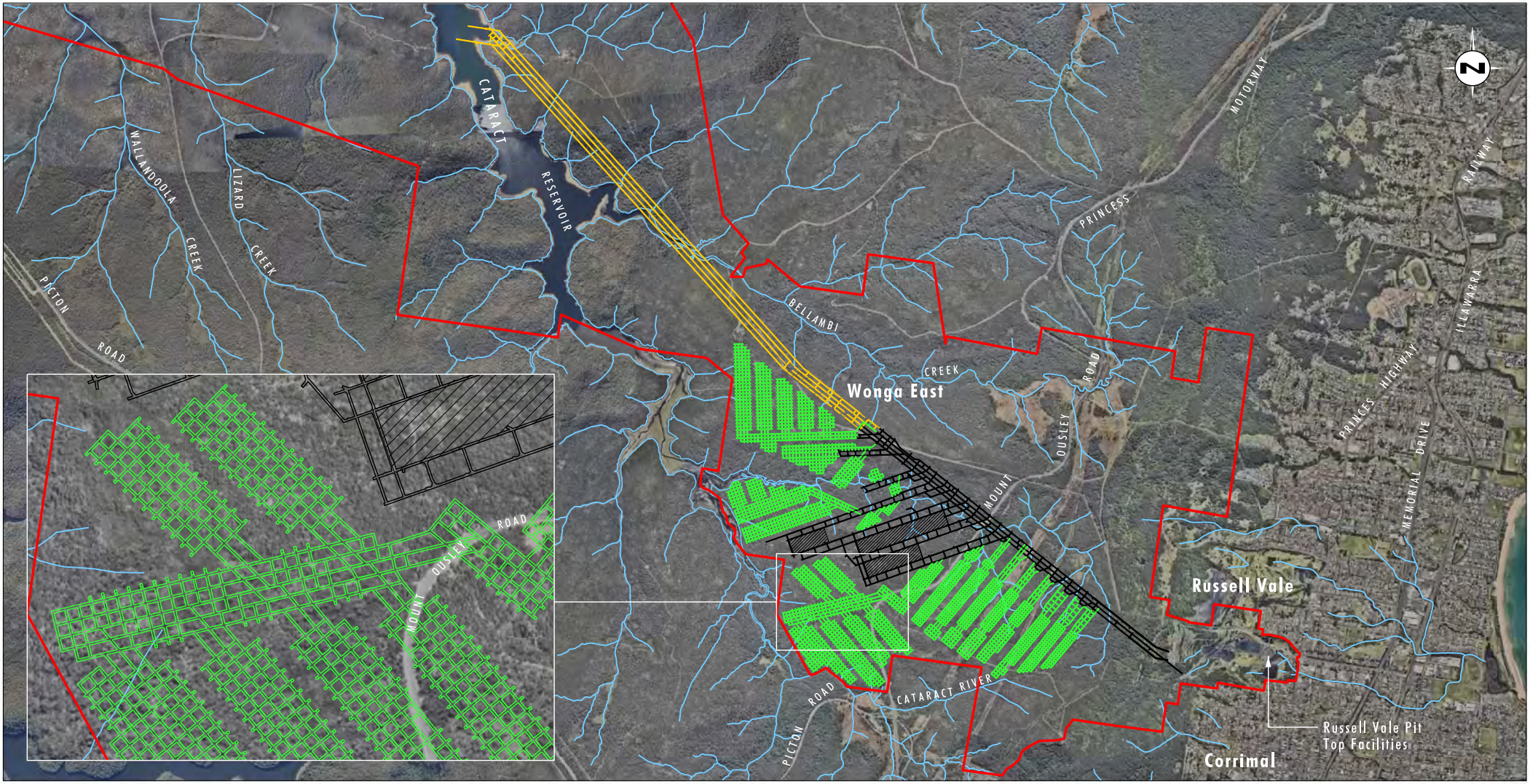


Image Source: Nearmap (Oct 2016)
Data Source: Wollongong Coal (2016)

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Legend

- UEP Project Application Area
- Approved Wonga Central Development Mains
- Proposed Wongawilli Seam Workings
- Existing Wongawilli Seam Workings
- Drainage Line

FIGURE 2.1

Revised Preferred Project Mine Plan

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The proposed mine plan aims to minimise potential subsidence-related mining impacts while maximising the extraction of available resources. The mine design and pillar size are based on the provision of permanently stable pillars to reduce the potential for subsidence. The mine plan utilises existing roadways and avoids underground constraints such as faults and dykes where possible. The revised mine plan also restricts mining to the south of the existing development mains due to the presence of a sill in the northern parts of the Wongawilli Seam in the Wonga East area.

The mining panels are generally designed as 5 headings of 5.5 m width with a separately ventilated conveyor located within the centre of one roadway. Underground mining operations will be undertaken 24 hours per day, 7 days per week.

2.1.2 Retrieval of Longwall Equipment

As discussed in **Section 1.6**, WCL will not be seeking future approval for longwall mining within the Russell Vale Colliery lease holding. To confirm this commitment, the existing longwall mining equipment that is currently located within LW6 will be retrieved and sold. The longwall face equipment is currently located approximately 25 m short of the next gate road access point that would allow for its safe removal. Recovery will therefore require the mining of this 25 m section of LW6 to facilitate removal. This mining has been previously assessed and approved under the existing *Russell Vale East - LW6 (365m) Extraction Plan* (Hanson Bailey, 2015c) and represents the panel retreat between 340 - 365 m of LW6.

2.1.3 Coal Handling and Processing

New coal handling facilities and surface infrastructure upgrades are proposed as part of the Revised Preferred Project to improve the quality of ROM coal in order to meet market demands and to minimise impacts on the environment and local community. The proposed coal handling facilities and surface infrastructure upgrades are illustrated in **Figure 2.2** and described further in **Section 2.2**.

The construction of the new coal handling facilities will be completed and phased in over a 12 - 24 month period. During this period, ROM coal will be transported from the underground workings via the existing underground conveyor system to the primary sizer building where it will be crushed. Coal will then be transferred to the ROM stockpile (refer to **Figure 2.2**) from where a front-end loader will load ROM coal onto trucks to be transported to PKCT.

Once the new Coal Processing Plant and associated infrastructure is fully operational, ROM coal processing will commence. From the ROM stockpile, coal will be fed into an existing underground coal reclaim using a dozer, then conveyed to a new screening and sizing station where oversize material is removed. From the screening and sizing station, coal will be transferred to the new surge bin by conveyor and on to the new Processing Plant (refer to **Figure 2.2**).

The Coal Processing Plant will comprise a coal sizing plant that will remove rock material using crushing and heavy media cyclone methods. No washing of coal will occur on site. Product coal will then be transferred to a new Truck Loading Bin from where it will be either loaded onto road trucks for transportation to PKCT or transferred to the product stockpile area for temporary stockpiling (refer to **Figure 2.2**). The capacity of the product stockpile will be limited to approximately 14,000 t. This is sufficient capacity to ensure continuity of operations during periods when the PKCT is closed or there are restrictions on transferring coal to the stockpiles at the Port.

Rocky material that is separated by the Processing Plant will be transferred to a rejects stockpile by the rejects conveyor (refer to **Figure 2.2**) from where it will be either loaded onto road trucks to be sold as VENM fill material, transferred to the mine portal and emplaced underground or used in site rehabilitation.

ROM coal may also be transferred from the site as a ROM coal product. Where this occurs, road trucks will be loaded using a front-end loader from the ROM stockpile area.

2.1.4 Coal Production Rates

ROM coal production will commence in conjunction with the construction of the new Coal Processing Plant and associated infrastructure. During this construction and phase-in period for the Coal Processing Plant, approximately 500,000 tpa of ROM coal will be produced.

The production schedule will vary from year to year as a result of geological and geotechnical conditions, coal market fluctuations or logistical reasons. At full operation, the Revised Preferred Project will produce up to a maximum of 1 Mtpa product coal.

2.1.5 Coal Transport

Product coal will be transported by truck to PKCT utilising road registered 19 m articulated vehicles such as semi-trailer or truck and dog trailers. WCL may in the future use B-double vehicles which would reduce the average number of trucks per hour. Consistent with previously approved operations, the transport route will be via Bellambi Lane and Memorial Drive, which is the route that has historically been used for the transport of coal from the Russell Vale site.

Outbound laden truck movements will be limited to an average of 16 per hour between the hours of 7.00 am - 6.00 pm (Monday - Friday) and 8.00 am - 6.00 pm (Saturdays). Coal transport may occasionally be required until 10.00 pm Monday to Friday as a result of unexpected Port closures or interruptions. If this is the case, outbound laden truck movements will be further limited to an average of 12 trucks per hour between 6.00 pm - 10.00 pm, Monday to Friday. No evening truck movements are proposed on Saturday, and no truck movements will occur on Sunday's or Public Holidays.

The signposted speed limit for vehicles using Bellambi Lane is 60 km/h. Under the Preliminary Works Project (PA 10_0046), coal truck movements along Bellambi Lane were subject to a voluntary speed limit of 50km/hr. This voluntary speed limit for trucks has been monitored using Geographical Positioning Systems (GPS) equipment fitted to the trucks and monitored centrally by the trucking company. There has been an extremely high compliance with this limit (99.9986% from 2,162 truck movements), with only three minor exceedances registered, all of which were below the signposted 60km/hr limit. The voluntary speed limit for coal trucks of 50 km/hr along Bellambi Lane will be maintained for the Revised Preferred Project with WCL aiming to achieve 95% compliance with the voluntary speed limit and 100% compliance with the sign posted 60km/h speed limit. All haul trucks will be subject to GPS monitoring to monitor compliance with this speed limit.

Early Morning Truck Arrivals

Based on historical operations at the site, it is recognised that inbound trucks may arrive on site prior to the commencement of coal loading operations at 7.00 am (Monday - Friday) and 8.00 am (Saturdays). In order to avoid trucks parking in residential streets prior to 7.00 am (Monday - Friday) and 8.00 am (Saturdays), a designated truck parking area will be established on site (refer to **Figure 2.2**). Trucks entering the site between 6.00 am – 7.00 am, Monday to Friday and between 7.00 am - 8.00 am Saturday, prior to the commencement of loading operations will be required to turn off their engines while parked. Adequate parking will be available on site to avoid trucks queuing on the road outside of the Colliery.

2.1.6 Reject Material Handling

Following commissioning of the Coal Processing Plant, it is anticipated that approximately 0.2 Mtpa of reject material will be produced at full production.

Reject material from the Coal Processing Plant and sizing and screening plant will be transferred via the rejects conveyor to the reject stockpile (refer to **Figure 2.2**). Reject material will consist of rock material. Reject material that meets the specifications for Virgin Excavated Natural Material (VENM) may be sold for use as fill material, alternatively rejects will be used in site rehabilitation or hauled back to the mine portal via the internal haul road shown on **Figure 2.2** for emplacement underground.

Haulage of reject material from the reject stockpile to the portal will be limited to between 7.00 am - 6.00 pm Monday to Friday. Reject material transferred offsite will be subject to the same transport restrictions as ROM and product coal. The transport route for reject transferred offsite will depend on the destination of the material but will generally be transported via Bellambi Lane and Memorial Drive.

2.1.7 Coal Stockpiling

Three main coal stockpiles will operate within the Pit Top area, these being the main ROM stockpile, product stockpile and proposed temporary rejects stockpile (refer to **Figure 2.2**). The approximate maximum capacity and maximum height of these stockpiles is provided in **Table 2.2**.

Table 2.2 Coal Stockpile Capacities and Height

Stockpile	Approximate maximum Capacity	Approximate Maximum Height
ROM stockpile	30,000 tonnes	7 metres
Product stockpile	14,000 tonnes	6 metres
Temporary reject stockpile	1,500 tonnes	4 metres

2.1.8 Operational Hours

Underground Operations

Underground activities will occur 24 hours per day, 7 days per week. This will involve bringing ROM coal from the underground workings to the surface via the underground conveyor system to the ROM stockpile.

Surface Operations

Given the close proximity to neighbouring residential properties, coal beneficiation, truck loading and coal transport will typically be limited to daytime hours only between 7.00 am - 6.00 pm Monday to Friday and 8.00 am - 6.00 pm Saturday. No coal beneficiation, truck loading and coal transport will occur on Sundays or Public Holidays.

Coal beneficiation, truck loading and coal transport may occasionally be required until 10.00 pm Monday to Friday in exceptional circumstances such as Port closure or supply interruption, however such circumstances would be rare and as a result of unexpected events. The relevant technical assessments (noise, air quality and traffic impact assessments) have considered surface operations in the evening period as part of the Revised Preferred Project's updated environmental assessment (refer to **Section 5.0**).

ROM coal will be delivered from the underground to the ROM stockpile 24 hours a day.

2.2 Construction

Construction of the proposed Pit Top upgrades will commence at the same time as operations and the use of new and upgraded facilities will be phased in over approximately 12 - 24 months as construction is completed. The following fixed plant and infrastructure will be constructed as part of the Revised Preferred Project (refer to **Figure 2.2**):

- New 4 m high noise barrier along the site access road and extension/raising of existing bunds around the Pit Top, as described in **Section 2.2.1**.
- A new conveyor system for transferring coal from the underground reclaim bin to the processing plant.
- A new Secondary sizer.
- A new Surge bin.
- A new enclosed Coal Processing Plant and clean coal belt.
- New truck loading bin.
- Establishment of product stockpile area.
- New rejects conveyor and establishment of temporary reject stockpile area.

A Construction Environmental Management Plan (CEMP) will be developed to manage the construction works at the site. This plan will address:

- Environmental management including erosion, water, air and noise.
- Traffic management.
- Waste management.
- Management of construction works with the commencing of operation of the site.

2.2.1 Noise barrier and bunds

In order to minimise the potential noise impacts associated with trucks accessing the site, a 4 m high noise barrier will be installed along the northern side of the site access road between the site entrance and the turn off to the truck parking area prior to phase-in operations commencing.

In order to improve noise mitigation from site operations, bunds surrounding the Pit Top will also be raised and/or extended using material won onsite or imported clean fill material. Bunds shown on **Figure 2.2** will be modified as follows:

- Bund 1 will be raised by an additional 5 m throughout its length and extended to the west to the edge of the access road turn-off.
- Bund 2 will be raised and extended to reach Reduced Level (RL) of 56 m throughout its length.
- Bund 3 will be raised and extended to reach an RL of 47 m throughout its length.
- Bund 4 will be raised by 4-5 m to reach an RL of 44 m throughout its length.

- Bund 5 will be raised by additional 3 m throughout its length, and extended to the south to the access road.

The extension of the main bund to the north of the Pit Top (Bund 1) will be prioritised and commenced prior to phase-in operations and construction of other infrastructure commencing in order to minimise the noise impacts associated with these activities. The construction of Bund 1 will be completed over as short a timeframe as possible, indicatively 6 - 8 weeks to achieve planned height. If phase-in operations or infrastructure construction commence prior to Bund 1 achieving its planned height, phase-in operations and infrastructure construction will be managed to meet the operational project noise trigger levels outlined in **Section 5.6.3** until such time as Bund 1 achieves its planned height.

Bund construction will be managed in accordance with a Construction Noise Management Plan (CNMP) to be prepared and approved prior to commencement of construction.

The remaining bunds shown on **Figure 2.2** will be completed prior to full operation commencing. Bund construction will be undertaken using a dump truck, front end loader, compactor roller and occasional use of a grader.

2.2.2 Coal Processing Plant and associated infrastructure

Construction of the new Coal Processing Plant and associated infrastructure will be staged over an anticipated 12 - 24 month construction period, subject to delays such as weather and logistical issues.

2.2.3 Construction hours and workforce

All construction works will be undertaken during standard working hours as defined in the Interim Construction Noise Guidelines (ICNG) (DECCW, 2009):

- Monday to Friday: 7.00 am - 6.00 pm
- Saturday: 8.00 am - 1.00 pm
- Sunday and public holidays: No work.

It is anticipated that the Revised Preferred Project will require a construction workforce of approximately 22 full time staff for the duration of the construction period (12 - 24 months).

2.3 Operations Maintenance and Management

2.3.1 Mine Workforce

The operation of the Revised Preferred Project will require approximately 205 staff. Underground mining operations will be undertaken 24 hours a day, 7 days per week.

For environmental impact assessment purposes, the following shift details are indicatively proposed, noting that these may be refined or updated as part of ongoing operations.

Office management and support staff will generally work Mondays to Fridays typically from 6.00 am to 4.00 pm and will total approximately 30 staff.

The operations shift workforce will indicatively comprise 35 staff currently proposed to work on the following shift rotations, noting this may change from time to time:

- Mondays to Thursdays – 3 shifts per day (each 9 hours) overlapping – change at face:
    - 7.00 am – 4.00 pm
    - 3.00 pm – 12.00 am
    - 11.00 pm – 8.00 am
- Fridays to Sundays – 2 shifts per day (each 12 hours) back to back – change at surface:
    - 6.00 am – 6.00 pm
    - 6.00 pm – 6.00 am

2.3.2 Environmental Management

Mining operations undertaken at the Russell Vale Colliery under the Preliminary Works Project (PA 10_0046) have been subject to the following updated management plans and strategies:

- Air Quality and Greenhouse Management Plans
- Biodiversity Management Plan
- Conservation Management Plan
- Environmental Management Strategy
- Heritage Management Plan
- Noise Management Plan
- Rehabilitation Management Plan
- Mining Operations Plan
- Surface Facilities Water Management Plan
- Traffic Management Plan
- Water Management Plan.

Longwall mining previously undertaken pursuant to the Preliminary Works Project has been subject to approved Subsidence Management Plans and Extraction Plans. Monitoring and remediation works associated with this previous mining will continue to be undertaken in accordance with these approved plans.

Monitoring undertaken on site includes groundwater, surface water (flow rates and quality), air quality, noise and meteorological data. Biodiversity monitoring is also undertaken in areas above past longwall mining operations.

It is intended that the existing Management Plans and monitoring networks will be reviewed and revised (where necessary) to reflect the Revised Preferred Project approval requirements and continue to be applied, should the project be approved.

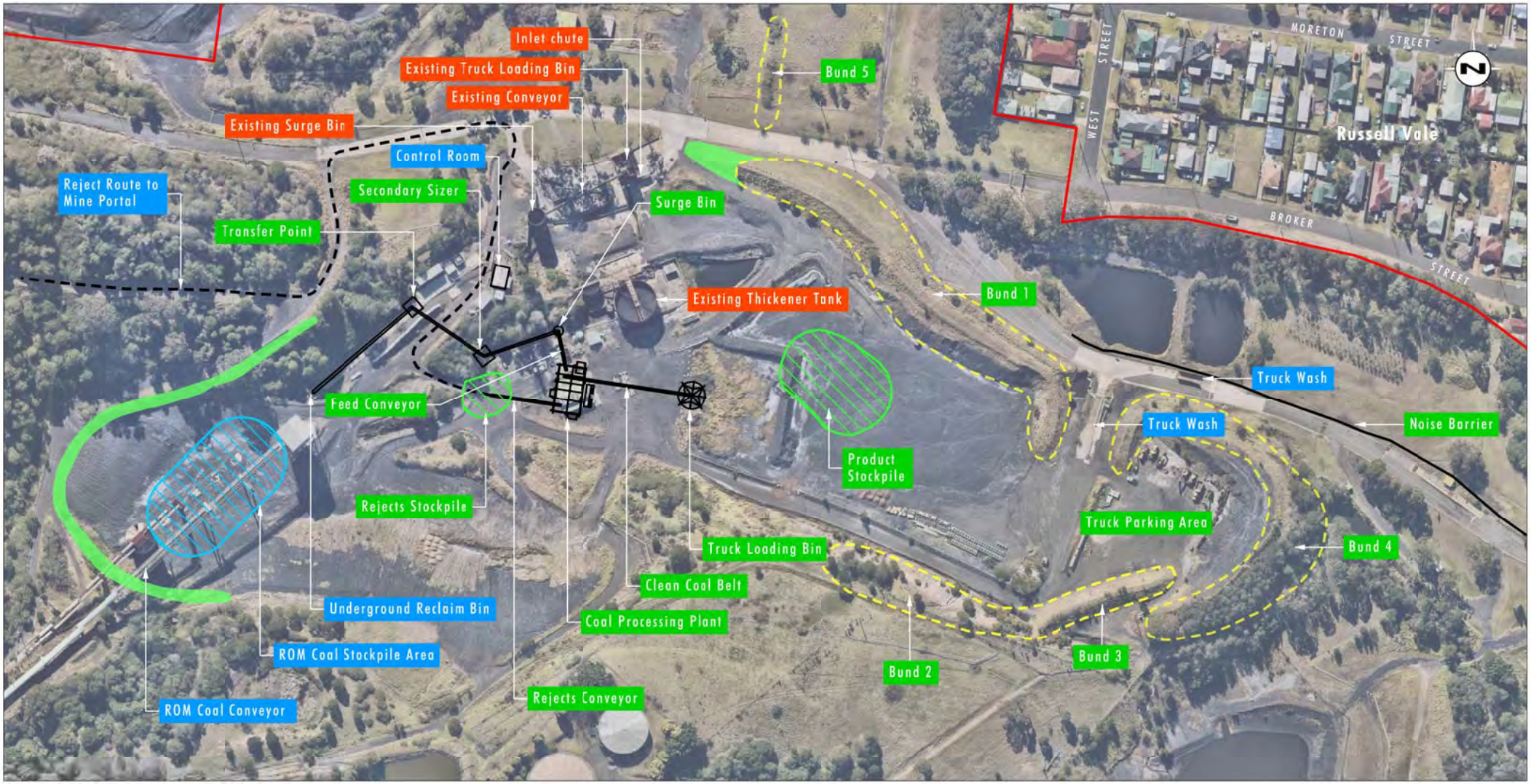

Image Source: Nearmap (Aug 2018)
Data Source: Wollongong Coal (2016)

0 50 100 150m
1:3 000

Legend

- UEP Project Application Area
- Existing Disused Infrastructure
- Existing Infrastructure to be used by UEP
- Infrastructure to be Constructed
- Proposed Flood Levee to be constructed under Mod 4
- Existing bund to be raised/extended

FIGURE 2.2

Current and Proposed Plant and Infrastructure

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2.4 Rehabilitation and Closure

As discussed in **Section 1.6** large volumes of economically viable coal remain un-extracted within the central and Western portions of the Russell Vale mining leases. WCL remains committed to undertaking further detailed environmental studies to enable the environmentally responsible recovery of this resource. To this end, following completion of further detailed environmental studies, WCL intends to seek development consent for the continued operation of the Russell Vale Colliery to recover the portions of this resource that can be done in an environmentally acceptable manner via non-caving first workings mining methods.

Given the intended continuing use of the site (subject to future planning approval), decommissioning and closure of the Russell Vale Colliery Pit Top facilities are not proposed immediately following the completion of the UEP. Rather, it is intended that the site would be maintained in care and maintenance until such time as the planning assessment process is completed. If consent for continuing use of the site is not forthcoming, WCL will prepare and implement a detailed mine closure and rehabilitation plan in consultation with the Resources Regulator and other relevant government agencies and stakeholders.

Until that time, the existing rehabilitation and mine closure strategy outlined in the current Russell Vale Colliery Rehabilitation Management Plan, Preliminary Works Project Environmental Assessment (ERM 2011) and Rehabilitation Objectives established under Schedule 3 Condition 42 the Preliminary Works Project Approval (PA 10_0046) continue to remain valid.

WCL will continue to progressively rehabilitate and decommission non-critical infrastructure as they are phased out of operations or become non-critical to potential future land use options at the colliery. Rehabilitation within the site will continue to be managed in accordance with the existing approved Russell Vale Colliery Rehabilitation Management Plan. WLC will review and update the existing Rehabilitation Management Plan to reflect approval requirements and commitments associated with the Revised Preferred Project and refinements to the site water management system proposed as part of MOD4.

3.0 Statutory Context

This section details the statutory context for the Revised Preferred Project and discusses the application of these planning provisions to the project.

3.1 Commonwealth Legislation

A summary of the Commonwealth legislation potentially relevant to the Revised Preferred Project is provided in **Table 3.1**.

Table 3.1 Commonwealth Statutory Context

Regulatory Instrument	Application to Revised Preferred Project	Approval Required?
Commonwealth Legislation		
Environment Protection and Biodiversity Conservation Act, 1999 (EPBC Act)	Under the EPBC Act the approval of the Commonwealth Minister for the Environment is required for any action that may have a significant impact on a matter of national environmental significance. In 2014 the original UEP project was referred to the Commonwealth Department of Environment (DoE), now the Department of Environment and Energy (DoEE) under section 68 of the EPBC Act for the proposed action of extraction of eight longwall panels from the Wongawilli Seam (EPBC 2014/7628). On 14 November 2014 it was determined that the proposal constituted a controlled action subject to controlling provisions for listed threatened species and ecological communities (sections 18 and 18A) and protection of water resources from coal seam gas development or large coal mining development (sections 24D and 24E). The changes in mining method proposed by the Revised Preferred Project has resulted in a substantial reduction in the predicted impacts of the referred action on listed threatened species and ecological communities and water resources. As discussed in **Sections 5.1** and **5.2**, negligible impacts on listed threatened species and ecological communities and insignificant impacts on water resources are now predicted as a result of the Revised Preferred Project. As previously requested, a copy of this document will be provided to DoEE to confirm any further requirements in in relation to the completion of the referral process.	Yes
Native Title Act 1993	The *Native Title Act 1993* is not directly relevant to the approval process for the Revised Preferred Project; however, it does have implications for the grant of mining leases under the *Mining Act 1992* where there is potentially land in respect of which native title has not been extinguished within the lease application area. No additional mining lease applications are required for the Revised Preferred Project; therefore, consideration of the *Native Title Act 1993* will not be required.	No
National Greenhouse and Energy Reporting Act, 2007 (NGER Act)	The NGER Act provides a single national framework for the reporting and dissemination of information about greenhouse gas emissions, greenhouse gas projects and energy use and production of corporations. It makes registration and reporting mandatory for corporations whose energy production, energy use or greenhouse gas emissions meet specified thresholds. WCL is a registered corporation under the NGER Act and is therefore required to report air emissions. If approved, the UEP will be required to be considered in WCL corporate NGER Act reporting.	No

3.2 NSW Legislation and Policies

There are a substantial number of legislative instruments in NSW which regulate the environmental impact of development. The primary instrument is the EP&A Act which regulates the planning and environmental assessment and approval process for development in NSW. The application of the EP&A Act and relevant planning and environmental legislation to the Revised Preferred Project is discussed in **Section 3.2.1** and **Section 3.2.2**. The operation of other environmental legislation in regard to the Revised Preferred Project is discussed in **Section 3.2.3** and in **Section 5.0** in relation to specific Project impacts where relevant.

Section 3.2.4 discusses the key strategic policies that have relevance to the design and operation of the Revised Preferred Project and which have been considered in the environmental assessment. In addition to the policies discussed in **Section 3.2.4** there are a large number of impact specific guidance documents and policies that have been considered as part of the environmental assessment of the Revised Preferred Project, these are identified and discussed in the relevant impact assessment sections in **Section 5.0**.

3.2.1 Environmental Planning and Assessment Act 1979

The *Environmental Planning and Assessment Act 1979* (EP&A Act) is the primary legislation governing environmental planning and assessment for NSW. The EP&A Act prescribes a number of approval and assessment pathways for new development and modifications to existing development. These pathways are determined by environmental planning instruments such as local environmental plans and State Environmental Planning Policies (SEPPs).

The objects of the EP&A Act are outlined in **Table 3.2**, including a discussion of how the Revised Preferred Project seeks to achieve consistency with these objectives.

Table 3.2 Consideration of EP&A Act Objectives

EP&A Act Object	Consistency of Revised Preferred Project
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources	The Revised Preferred Project represents a continuation of a long-standing historical land use that is permissible under existing environmental planning instruments (refer to **Section 3.2.2.1**). Substantial changes have been made to the Revised Preferred Project to minimise the potential adverse impacts of the project on the environment and local community (as discussed in **Section 1.5**, **Section 2.0** and **Section 5.0**).
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment	The environmental assessment completed for the Revised Preferred Project presents an integrated assessment of relevant economic (refer to **Section 5.13**), environmental (refer to Section 5.0) and social (refer to **Section 4.1** and **Section 5.12**) considerations. Consideration of the principles of ecologically sustainable development has also been provided in **Section 16.3**).
(c) to promote the orderly and economic use and development of land	The Revised Preferred Project represents a continuation of a long-standing historical land use. Consideration of the compatibility of project with surrounding land uses has been provided in **Section 5.9.3** and a cost benefit analysis of the project is provided in **Section 5.13**.

EP&A Act Object	Consistency of Revised Preferred Project
(d) to promote the delivery and maintenance of affordable housing	While not specifically relevant due to the nature of the proposed development, the Russell Vale Colliery produces high quality hard coking coal, a product that can help meet the expanding demand for metallurgical coal globally, where it is used for the production of steel – a product that is used in housing construction.
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats	The Revised Preferred Project has been specifically redesigned to limit potential subsidence related impacts. As discussed in **Section 5.5**, the project is not considered to have any potential to perceptibly impact on natural surface features including upland swamps, cliffs, steep slopes, drainage lines, creeks, Cataract Creek and Cataract Reservoir. As a result, impacts to the biodiversity values of the UEP Application Area are predicted to be negligible.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)	The Revised Preferred Project has been specifically redesigned to limit potential subsidence related impacts. As discussed in **Table 5.1**, the proposed first workings are predicted to result in imperceptible subsidence and are not expected to cause perceptible impacts to any natural surface features, including Aboriginal or cultural heritage sites. Further, no additional disturbance at the Pit Top is proposed, beyond that currently disturbed and approved for development. The Revised Preferred Project is therefore unlikely to result in any impacts to cultural heritage.
(g) to promote good design and amenity of the built environment	As discussed in **Section 2.0**, in response to concerns from the PAC and community regarding amenity impacts associated with the Russell Vale Pit Top, substantial improvements to the Pit Top layout and adoption of a range of additional feasible and reasonable noise control measures, including restricting hours of operation, have been proposed to reduce the amenity impact of the Pit Top and trucks accessing the site.
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants	As discussed in **Section 5.6.1** and **Section 5.7.7**, a range of control measures have been included in the design of Pit Top infrastructure including enclosure of conveyors and material transfer points, and enclosure of the coal processing plant in order to reduce noise and air emission from these facilities.
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State	The UEP (amended here as the Revised Preferred Project) is classified as a 'transitional Part 3A project ' under the savings and transitional provisions established under Schedule 2 Clause 3 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (formerly Schedule 6A of the EP&A Act).
(j) to provide increased opportunity for community participation in environmental planning and assessment	Details of community and stakeholder consultation undertaken during the project redesign and environmental assessment process for the Revised Preferred Project is summarised in **Section 4.0**. Further opportunity for community participation will be provided following submission of this documentation to the DPIE and the public exhibition process.

Approval Pathway

The UEP (amended here as the Revised Preferred Project) is classified as a 'transitional Part 3A project ' under the savings and transitional provisions established under Schedule 2 Clause 3 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* (formerly Schedule 6A of the EP&A Act).

As a 'transitional Part 3A project', the provisions of Part 3A of the EP&A Act (as in force immediately before the repeal of that Part and as modified under this Schedule after that repeal) continues to apply to and in respect of the Revised Preferred Project.

Permissibility

The UEP Application Area is located within the Wollongong and Wollondilly local government areas (LGA). Hence, the *Wollongong Local Environment Plan 2009* (LEP) and *Wollondilly LEP 2011* are relevant to the permissibility of the Revised Preferred Project. Relevant land zonings under each of the LEPs are shown in **Figure 3.1**.

Under these LEPs, mining is prohibited within parts of the Revised Preferred Project area, however the permissibility provisions of *SEPP (Mining, Petroleum Production and Extractive Industries) 2007* (Mining SEPP) provide that 'underground mining carried out on any land' is permissible with development consent. Consequently, the Revised Preferred Project is permissible with development consent under the Mining SEPP (refer to **Section 3.2.2.1**).

3.2.2 Environmental Planning Instruments

Section 75R(3) of Part 3A of the EP&A Act states that environmental planning instruments, other than SEPPs, do not apply to part 3A projects. However, section 75J(3) provides the consent authority with a broad discretion to consider the provisions of any relevant environmental planning instrument, notwithstanding section 75R.

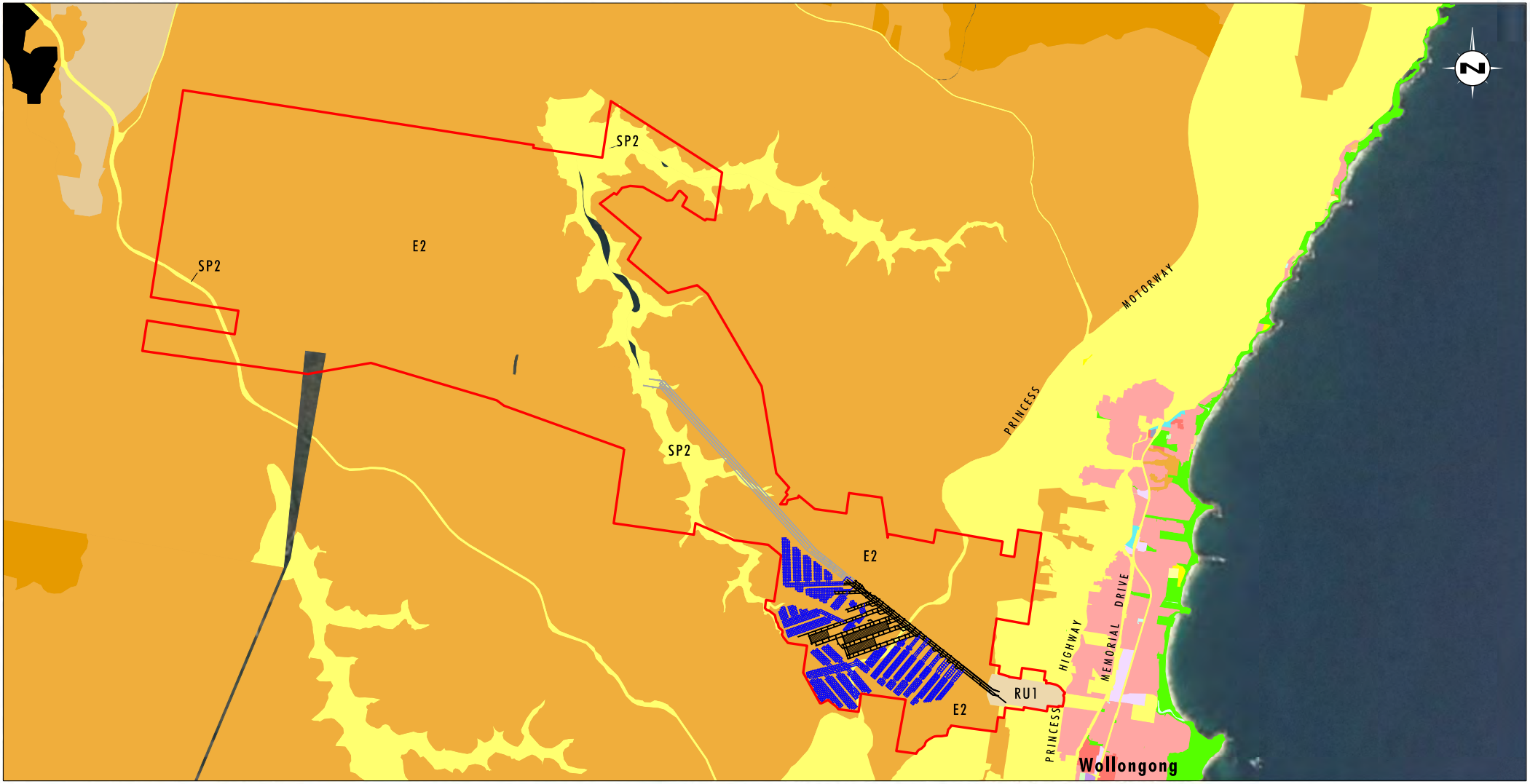

Image Source: Google maps (2016)
Data Source: Wollongong Coal (2016), NSW Environment Planning Industry (2018), Wollongong LEP (2009), Wollondilly LEP (2011), Wingecarribee LEP (2010)

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Legend

- UEP Project Application Area
- Wonga Central Development Mains
- Proposed Wongawilli Seam Workings
- Existing Wongawilli Seam Workings
- B1 Neighbourhood Centre
- B2 Local Centre
- B4 Mixed Use
- B6 Enterprise Corridor
- E1 National Parks / Nature Reserves
- E2 Environmental Conservation
- E3 Environmental Management
- E4 Environmental Living
- IN2 Light Industrial
- IN3 Heavy Industrial
- R2 Low Density Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU1 Primary Production
- RU2 Rural Landscape
- RU4 Primary Production Small Lots
- SP1 Special Activities
- SP2 Infrastructure
- SP3 Tourist
- W1 Natural Waterways

FIGURE 3.1

LEP Zoning

The following SEPPs are relevant to the consideration of the development application for the Revised Preferred Project.

3.2.2.1 State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP)

The Mining SEPP regulates the permissibility and assessment requirements for mining, petroleum production and extractive industries and related development. As set out in **Section 3.2.1**, the permissibility provisions of Mining SEPP provide that 'underground mining carried out on any land' is permissible with development consent. Consequently, the Revised Preferred Project is permissible with development consent under the Mining SEPP.

Part 3 of the Mining SEPP includes specific matters for consideration. in relation to development applications made under Part 4 of the EP&A Act. While these matters do not strictly apply to the Revised Preferred Project as it is a 'transitional Part 3A project', consideration of these matters has been provided in **Table 3.3** to inform the assessment of the project.

Table 3.3 Part 3 Matters for Consideration

Matters for Consideration	Relevance to Revised Preferred Project
Non-discretionary development standards for mining (Clause 12AB)	Clause 12AB establishes non-discretionary development standards relating to cumulative noise, cumulative air quality, airblast overpressure, ground vibration and aquifer interference. The Revised Preferred Project has been assessed against the cumulative noise and air quality standards set out in Clause 12AB and found to comply (refer to **Sections 5.6** and **5.7**). A range of reasonable and feasible noise and air quality mitigation measures are proposed to be implemented as part of the project. No blasting is proposed therefore no significant adverse impacts associated with airblast overpressure or ground vibration are anticipated. Predicted groundwater impacts associated with the Revised Preferred Project have been assessed against the Aquifer Interference Policy. This assessment concludes that the project adequately satisfies the minimal impact considerations for less productive porous rock water sources and perched, ephemeral aquifers defined by the NSW Aquifer Interference Policy (refer to **Section 5.3.7**).
Compatibility of proposed mine, petroleum production or extractive industry with other land uses (Clause 12)	Clause 12 requires the consent authority to consider the compatibility of proposed mining developments with existing land uses in the area. Mining at Russell Vale has been undertaken since 1887. Over time, urban development has encroached on the pit-top facilities at Russell Vale and these facilities are now bordered by residential land uses. Russell Vale Colliery has coexisted with these neighbouring land uses over an extended period with a degree of impact on the amenity of these residential land uses. Key elements of the Revised Preferred Project have been designed to minimise these amenity impacts on surrounding residential land uses. Given the existing and historical use of the site for mining purposes, the Revised Preferred Project is considered to be compatible with the existing land use within the UEP Application Area. With regard to surrounding land uses, the assessment in **Section 5.0** identifies that with the implementation of existing and proposed monitoring, management and mitigation measures, the Revised Preferred Project is predicted to operate within acceptable environmental standards. The project also represents a continuation of an existing local land use (i.e. mining). Post mining, the opportunity exists for the rehabilitated Pit Top to be transferred to an alternate land use compatible with surrounding residential and commercial land uses.

Matters for Consideration	Relevance to Revised Preferred Project
Consideration of voluntary land acquisition and mitigation policy (Clause 12A)	Clause 12A requires the consent authority to consider any applicable provisions of the Voluntary Land Acquisition and Mitigation Policy. Compliance with relevant noise and air quality criteria has been assessed in **Sections 5.6** and **5.7** and a range of reasonable and feasible noise and air quality mitigation measures are proposed to be implemented as part of the project. The results of the noise and air quality impact assessments described in **Sections 5.6** and **5.7** do not trigger voluntary mitigation or acquisition rights established under the Voluntary Land Acquisition and Mitigation Policy.
Compatibility of proposed development with mining, petroleum production or extractive industry (Clause 13)	Clause 13 requires the consent authority to consider the potential impact of proposed mining developments on other mining, petroleum production or extractive industry projects or potential resources. The Revised Preferred Project mine plan has been designed to be long term stable and is not expected to result in perceptible surface subsidence, significant interaction with overlying seams or significant interaction with existing groundwater systems. The proposed mine plan will not limit access or impede assessment of current of future resources. Therefore, the Revised Preferred Project will not have a significant impact on current or future extraction or recovery of resources in the vicinity of the development, nor is it considered incompatible with current or future mining-related activities in the vicinity.
Natural resource management and environmental management (Clause 14)	Clause 14 of the Mining SEPP requires the consent authority to consider the impact of a proposed mining project on the natural resources and whether specific environmental management conditions (relating to water resources, biodiversity and greenhouse gas emissions) should be imposed on the development if approved. The Revised Preferred Project's potential impact on natural resources is assessed in detail in **Section 5.0** and specific commitments regarding the management of potential environmental impacts are contained in **Section 6.0**. As discussed in **Section 5.0**, potential impacts to surface water and groundwater resources, threatened species and biodiversity have been minimised to the greatest extent practicable through the change in mine design to a stable first workings mine plan. The revised mine plan significantly reduces the potential for subsidence-related mining impacts on groundwater, surface water and biodiversity within the Cataract Reservoir catchment, and is not expected to result in perceptible surface subsidence, significant interaction with overlying seams or significant interaction with existing groundwater systems. Importantly, the revised mine plan is not considered to have any potential to perceptibly impact natural surface features including upland swamps, cliffs including the Illawarra Escarpment, steep slopes, drainage lines, creeks, Cataract Creek and Cataract Reservoir.
Resource recovery (Clause 15)	Clause 15 of the Mining SEPP requires the consent authority to have regard to the efficiency of a proposed mining development in terms of its ability to optimise extraction of the target resources. In response to community and agency concerns regarding the potential adverse impacts of mining associated with the original UEP proposal, the Revised Preferred Project proposes the use of non-caving first working techniques to significantly limit the potential adverse impacts of mining. The Revised Preferred Project is considered to strike an appropriate balance between maximising resource recovery within the environmental and community constraints of the site.
Transport (Clause 16)	Clause 16 requires the consent authority to consider whether or not the mining development under consideration should be subject to conditions restricting the use of public roads for product transport or other mining related traffic. Consistent with historical operations at the site, coal from the Revised Preferred Project will be transported by truck to PKCT. An assessment of the road traffic impacts of the Revised Preferred Project are presented in **Section 5.8**.

Matters for Consideration	Relevance to Revised Preferred Project
Rehabilitation (Clause 17)	Clause 17 of the Mining SEPP requires a consent authority determining a development application for a mining development to have regard to whether or not to impose specific conditions regarding the rehabilitation of land affected by the proposed mining development. The Revised Preferred Project will utilise non-caving first workings mining techniques, therefore remediation or rehabilitation of subsidence-related impacts is unlikely to be required. Given the intended continuing use of the site, decommissioning and closure of the Russell Vale Colliery pit top facilities are not proposed immediately following the completion of the UEP. Rather, it is intended that the site will be maintained in a care and maintenance mode until such time as any future planning assessment process is completed. If consent for continuing use of the site is not forthcoming, WCL will prepare a detailed mine closure and rehabilitation plan in consultation with the Resources Regulator.

3.2.2.2 State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011

The UEP Application Area is located within the boundary of the Sydney Drinking Water Catchment (refer to **Figure 3.1**). The *State Environmental Planning Policy (Sydney Drinking Water Catchment) 2011* requires all proposed development in the Greater Sydney drinking water catchment to have a neutral or beneficial effect on water quality (NorBE). The 'Neutral or Beneficial Effect on Water Quality Assessment Guideline 2015' supports the implementation of the SEPP by providing clear direction on what a neutral or beneficial effect means, how to achieve it, and how to assess an application against the neutral or beneficial effect on water quality test using the 'Neutral or Beneficial Effect on Water Quality Assessment Tool' (the NorBE Tool).

While SEPP (Sydney Drinking Water Catchment) 2011 does not strictly apply to the Revised Preferred Project as the project application was lodged on 13 August 2009, prior to the introduction of the Drinking Water SEPP (see Clause 13), the potential impact of the Revised Preferred Project on water quality within the Sydney Drinking Water Catchment has been considered as part of the Groundwater Impact Assessment and Surface Water Assessment presented in **Appendix 2** and **3**. A review of these potential impacts is provided in **Sections 5.3** and **5.4** respectively. The Revised Preferred Project is considered to satisfy the NorBE Test as applied under clause 11A of the Drinking Water SEPP (refer to **Section 5.3.7**).

3.2.2.3 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development (SEPP 33)

SEPP 33 requires the consent authority to consider whether an industrial proposal is a potentially hazardous industry or a potentially offensive industry. A hazard assessment is completed for potentially hazardous development to assist the consent authority to determine acceptability.

A preliminary risk screening has been completed for the Revised Preferred Project. The preliminary risk screening demonstrates that hazardous materials to be stored at the site are below the SEPP 33 screening threshold, therefore the Revised Preferred Project is not considered potentially hazardous and a preliminary hazard analysis is not required under SEPP 33 (refer to **Section 5.10.1**).

3.2.2.4 State Environmental Planning Policy No. 44 – Koala Habitat Protection (SEPP 44)

SEPP 44 was introduced in 1995 to encourage local councils to conserve and manage koala habitat to ensure populations remain stable and population decline is reversed.

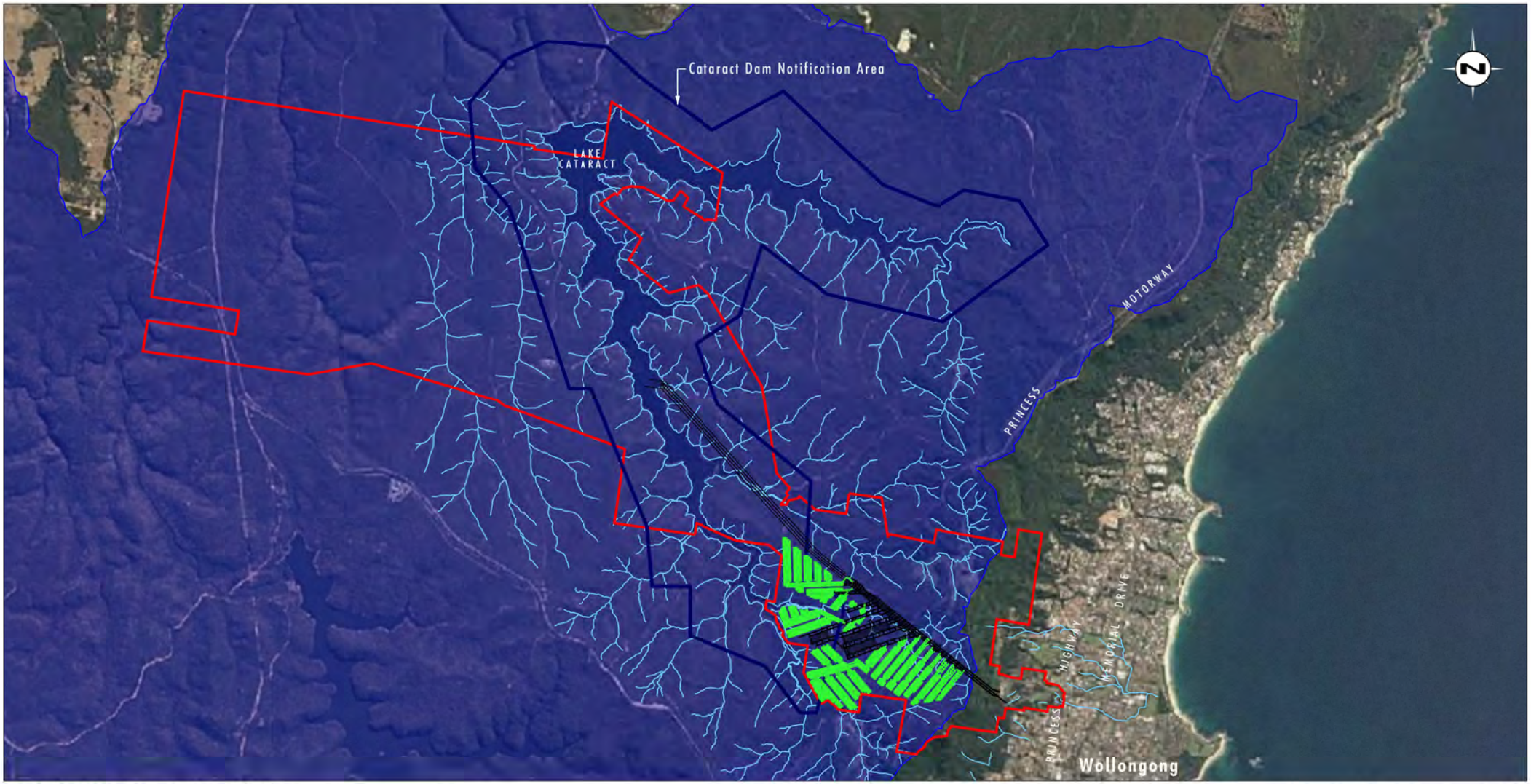

Image Source: Nearmap (Sept 2018)
Data Source: Wollongong Coal (2016), NSW Environment Planning Industry (2018)

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Legend

- UEP Project Application Area
- Cataract Dam Notification Area
- Sydney Drinking Water Catchment Area
- Wonga Central Development Mains
- Proposed Wongawilli Seam Workings
- Existing Wongawilli Seam Workings
- Drainage Line

FIGURE 3.2

Cataract Dam Notification Area and Sydney Drinking Water Catchment Area

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Wollongong and Wollondilly local government areas are listed in Schedule 1 as areas where koalas are known to occur and accordingly where the provisions of SEPP 44 apply. However, only applications under Part 4 of the EP&A Act are subject to this SEPP. As the Revised Preferred Project is being assessed under Part 3A of the EP&A Act this SEPP does not apply. Regardless, the subsidence impact assessment and ecological impact assessment prepared for the Revised Preferred Project (included as **Appendix 1** and **4** respectively), conclude that the revised mine plan will not result in any perceptible surface subsidence and is not considered to have any potential to perceptibly impact on natural surface features, therefore the Revised Preferred Project is considered to have negligible risk of impacting any potential Koala habitat.

3.2.2.5 State Environmental Planning Policy No. 55 Remediation of Land (SEPP 55)

SEPP No. 55 – Remediation of Land aims to provide a state wide planning approach to the remediation of contaminated land, and to reduce the risk of harm to human health and the environment by consideration of contaminated land as part of the planning process. Under the SEPP, a consent authority must not consent to the carrying out of development on land unless it has considered potential contamination issues.

There are no contaminated sites currently recorded within the UEP Application Area. The Revised Preferred Project is within existing mining tenements and will not result in a change of land use, therefore no preliminary land contamination investigation has been undertaken. Further site investigation will be undertaken as part of the mine closure and rehabilitation process, or if a potential contamination issue is identified as part of ongoing operations.

3.2.3 Other State Legislation

A summary of the other State environmental and planning legislation potentially relevant to the Revised Preferred Project is provided in **Table 3.4**.

Table 3.4 Summary of Other State Legislation and Relevance to Revised Preferred Project

Regulatory Instrument	Application to Revised Preferred Project	Approval Required?
Protection of the Environment Operations Act, 1997 **(POEO Act)**	The POEO Act provides an integrated system of licensing for polluting industries. Schedule 1 of the POEO Act identifies types of development that require an Environment Protection Licence (EPL). Mining for coal is included in Schedule 1. WCL currently holds EPL number 12040 issued under the POEO Act for current operations. The licence regulates water quality and the volume of water discharges and requires dust and meteorological monitoring at the site. It is expected that modification to this licence would be required should approval for the Revised Preferred Project be granted. Under section 75V in Part 3A (as it applied immediately prior to its repeal), any modification to the EPL must be approved in a manner that is substantially consistent with any Part 3A approval for the Revised Preferred Project.	Yes

Regulatory Instrument	Application to Revised Preferred Project	Approval Required?
Mining Act 1992 **(Mining Act)**	Under this Act a mining lease is required before any mining or specified mining purpose can be carried out on the land. The site currently has an approved Consolidated Coal Lease (CCL 745), Mining Purpose Lease (MPL 271) and Mining Lease (ML 1575) over the UEP Application Area, which provides WCL with the mining rights to the target seam for the project. All mining operations must be subject to a Mining Operations Plan (MOP) and approved Extraction Plan (where the operation may cause subsidence). A Care and Maintenance MOP for the Colliery has been prepared and accepted by the Resources Regulator. A new MOP would be required to reflect changes resulting from the Revised Preferred Project, if approved.	No, however a new MOP will be required
Biodiversity Conservation Act 2016 **(BC Act)**	The purpose of the BC Act is to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. Under the BC Act it is an offence to harm or pick a threatened species, threatened ecological community or a protected plant or animal, or to damage habitat of a threatened species or ecological community, except under a range of circumstances set out in Division 2, including where the activity has appropriate planning approval under the EP&A Act or where the activity is authorised by a biodiversity conservation licence. A licence under this Act is not required for any activity undertaken in accordance with a development consent granted under the EP&A Act and therefore no separate approvals are required under the BC Act for the Revised Preferred Project.	No
National Parks and Wildlife Act 1974 **(NPW Act)**	The object of the NPW Act relate to conserving their State's natural and cultural heritage; fostering public appreciation, understanding and enjoyment of their State's natural and cultural heritage; and managing any lands reserved for the purposes of conserving and fostering public appreciation and enjoyment of the State's natural and/or cultural heritage. Under section 86 of the NPW Act, it is an offence to harm an Aboriginal object, except where authorised by an Aboriginal heritage impact permit issues under section 90 of the Act. Under section 75U(d) in Part 3A (as it applied immediately prior to its repeal), an Aboriginal heritage impact permit under section 90 of the NPW Act would not be required for the Revised Preferred Project.	No

Regulatory Instrument	Application to Revised Preferred Project	Approval Required?
Heritage Act 1977 **(Heritage Act)**	The Heritage Act provides for the identification, registration and protection of items of State heritage significance. Under Part 4 of the Heritage Act, approval is required to undertake a range of activities relating to a listed an item listed on the State Heritage Register. Under Part 6, an excavation permit is required for any activity that is likely to disturb a relic of State or local heritage significance. Undersection 75U(c) in Part 3A (as it applied immediately prior to its repeal), an approval under Part 4, or an excavation permit under Part 6 section 139 of the Heritage Act would not be required for the Revised Preferred Project.	No
Crown Land Management Act 2016 **(CLM Act)**	The CLM Act provides for the ownership, use and management of Crown land in NSW. Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved or otherwise dealt with unless authorised by this Act. The Minister may grant a 'relevant interest' such as a lease, licence or permit, over Crown land for the purpose of any infrastructure, activity or other purpose that the Minister thinks fit. The Revised Preferred Project does not propose any works within Crown Land therefore approval under this Act is not required.	No
Roads Act 1993 **(Roads Act)**	Consent is required under section 138 of the Roads Act to work on or above a road or to connect a road to a classified road. The Revised Preferred Project will not require any works on or above a road or connection to a classified road. As discussed in **Section 5.2**, some ongoing low-level ground movement, mainly horizontal movement associated with previous mining, including the Wongawilli Seam longwalls, may still be ongoing. This low-level movement has potential to continue to cause perceptible cracking on Mount Ousley Road at the top of the ridge to the south of Cataract Creek and some compression on the road at Cataract Creek that may also be perceptible. This movement is a legacy of previous mining and is not expected to be influenced by the proposed mining. Movement is expected to continue irrespective of any further first workings that are developed in the Wongawilli Seam. Should any perceptible cracking requiring repair of the road surface occur, these impacts will continue to be managed in accordance with the existing Built Features Management Plan for Mount Ousley Road in consultation with RMS.	No

Regulatory Instrument	Application to Revised Preferred Project	Approval Required?
***Water Management Act 2000* (WM Act)**	Under section 75U(h) Part 3A (as it applied immediately prior to its repeal), 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 WM Act would not be required for the Revised Preferred Project. The *Aquifer Interference Policy* (AIP) clarifies the requirements for obtaining water licences for aquifer interference activities under NSW water legislation, and establishes and objectively defines considerations in assessing and providing advice on whether more than minimal impacts might occur to a key water-dependent asset. The AIP requires that, where mining will take water from a source covered by a water sharing plan (WSP), a water access licence is required under the WM Act to account for this loss of water. WCL holds water access licence (WAL) WAL36488 for 515 ML (units)/year under the WM Act for the extraction of water under the *Water Sharing Plan for the Greater Metropolitan Region Groundwater Sources, 2011.* Based on the predicted maximum groundwater inflow make into the WCL workings, including all previous mining impacts, of 288ML/year, WCL currently hold a sufficient quantity of units in their existing Water Access Licence (refer to **Section 5.3.5**). WCL will require a WAL under the *Water Sharing Plan for the Greater Metropolitan Region Unregulated River Water Sources 2011* for the annual cumulative take of up to 10.04 ML/yr of stream baseflow (estimated at 9.91ML/year) and leakage from Cataract Reservoir (estimated at 0.13 ML/year) resulting from depressurisation of deeper aquifers.	Yes, in respect of WALs only.
Dams Safety Act 1978 and 2015	Cataract Dam, South Bulli Basin 1 and South Bulli Stormwater Dam are listed as prescribed dams under Schedule 1 of the *Dams Safety Act 1978*. Notification Areas are defined by the Dams Safety Committee (DSC) under Section 369 of the *Mining Act 1992*. Notification Areas are 'investigation areas' for technical review and regulation of mining and related impacts. The DSC recognises that the Cataract Dam wall may be sensitive to far-field horizontal movements and has set a 1.5 km radius around the dam wall where the assessment of potential mining impacts should be focussed (refer to **Figure 3.1**). There is no Notification Area listed for South Bulli Basin 1 or South Bulli Stormwater Dam. The Revised Preferred Project involves first workings within the DSC Notification Area for Cataract Storage Reservoir. The consent authority must therefore consult with Dam Safety NSW prior to issuing consent for mining within the notification area.	No, however the consent authority must consult with Dam Safety NSW prior to issuing consent for mining within the Cataract Dam Notification Area.

3.2.4 Relevant Strategic Policies

3.2.4.1 Aquifer Interference Policy

The Aquifer Interference Policy requires mining activities to consider 'Minimal Impact Considerations' with respect to groundwater sources.

Predicted groundwater impacts associated with Revised Preferred Project have been assessed against the Aquifer Interference Policy. This assessment concludes that the Revised Preferred Project adequately satisfies the minimal impact considerations for less productive porous rock water sources and for the perched, ephemeral aquifers defined by the NSW Aquifer Interference Policy (refer to **Section 5.3.7**).

3.2.4.2 WaterNSW Principles for Managing Mining and Coal Seam Gas Impacts in Declared Catchment Areas

WaterNSW was established to provide a safe and reliable supply of raw water suitable for treatment to drinking water standards. To meet this objective WaterNSW manages its land, the Sydney drinking water catchments and infrastructure including water storages, to protect water quality and quantity.

WaterNSW has formulated a number of principles that establish the outcomes WaterNSW considers essential to protect the drinking water supplies from the impacts of mining and coal seam gas activities. These principles have been addressed in **Section 5.3.7.**

3.2.4.3 Voluntary Land Acquisition and Mitigation Policy

The NSW Voluntary Land Acquisition and Mitigation Policy (VLAMP) (2018) provides guidance on voluntary mitigation and land acquisition to address noise and dust (particulate matter) impacts from state significant mining, petroleum and extractive industry developments. As a transitional Part 3A project, the VLAMP does not apply to the Revised Preferred Project; however, based on the results of the noise and air quality impact assessments described in **Sections 5.6** and **5.7**, the Revised Preferred Project does not trigger voluntary mitigation or acquisition rights established under the Voluntary Land Acquisition and Mitigation Policy.

3.2.4.4 Independent Expert Panel for Mining in the Catchment

In November 2017 the NSW Government established the Independent Expert Panel for Mining in the Catchment (the Panel) to provide expert advice to DPIE on the impact of underground mining activities in the Greater Sydney Water Catchment Special Areas.

Advice from the Panel will include, but not be limited to, risks to the total water quantity and holding capacity of surface and groundwater systems, including swamps and reservoirs, and the types and reliabilities and methodologies used to predict, monitor, assess and report on mining effects, impacts and consequences. The Panel will also provide, as required, expert advice to the DPIE on mining applications, including monitoring and management plans.

The full Terms of Reference (TOR) established for the Panel are:

1. ***Undertake an initial review and report on specific coal mining activities at the Metropolitan and Dendrobium coal mines in the Greater Sydney Water Catchment Special Areas****, including*:

    a) A review of the findings and recommendations of studies and reports deemed appropriate by the Panel, including but not confined to the reports:

        i. *Height of Cracking*—Area 38, prepared by PSM, dated 16 March 2017

ii. *2016 Audit of the Sydney Drinking Water Catchment,* prepared by Alluvium, dated June 2017.

b) A review of the types and reliability of prediction, monitoring and response methodologies (including mitigation, remediation and rehabilitation) currently used for assessing and managing the effects, impacts and consequences of mining activities at the Metropolitan and Dendrobium coal mines as they relate to water quantity, including having regard to historical data and performance.

c) Provide advice and recommendations on measures required to improve approaches to prediction, monitoring, responses and reporting at the Metropolitan and Dendrobium coal mines, including having regard to cumulative risks posed to the quantity of drinking water available in the Greater Sydney Water Catchment Special Areas.

d) Based on the outcomes TOR 1(a) to 1(c), provide advice to Government on how' to respond to the findings and recommendations of reports reviewed as part of TOR la.

e) In developing its advice, the Panel will meet, undertake site visits, seek information and data, and consult as needed.

f) In delivering its report, the Panel will provide comment on and make observations or recommendations about any information or factors the Panel believes relevant; or further work that should be undertaken.

g) A progress update on the report is to be delivered no later than 30 April 2018 and the report is to be delivered no later than 31 July 2018.

2. ***Undertake a review of current coal mining in the Greater Sydney Water Catchment Special Areas with a particular focus on risks to the quantity of water available, the environmental consequences for swamps and the issue of cumulative impacts****, including:*

a) A review and update of the findings of the 2008 Southern Coalfield Inquiry (impacts of Underground Coal Mining on Natural Features in the Southern Coalfield – Strategic Review) for mining operations at the Dendrobium, Metropolitan, Russell Vale and Wongawilli mines, including recommending measures to improve the way mining effects, impacts and consequences in relation to water quantity are assessed and managed.

b) In developing its advice, the Panel will meet, undertake site visits, seek information and data, and consult as needed.

c) Establish a process for and invite public submissions, including from public authorities and special interest groups.

d) In delivering its report, the Panel will provide comment on and make observations or recommendations about any information or factors the Panel believes relevant, including requirements to strengthen monitoring networks or undertaking further scientific research.

e) The report is to be delivered no later than 31 December 2018.

3. ***Provide advice as required to the Department of Planning and Environment on mining activities in the Greater Sydney Water Catchment Special Areas***, which may include but is not confined to:

a) A Subsidence Management Plan application for Longwall 16 at the Dendrobium mine.

b) An Extraction Plan application for Longwall 303 at the Metropolitan mine.

c) An Environmental Impact Statement for the Dendrobium Extension Project.

d) A Preferred Project Report for the Russell Vale Underground Expansion Project.

e) A modification application for the Wongawilli mine.

The Initial Report from the Panel, addressing the above TOR 1, was issued in draft status in November 2018 to allow consultation and to seek submissions on the observations made in the report before reaching the final conclusions which will be reflected in the final report. The initial report draws a wide range of conclusions and makes a number of recommendations in relation to future investigations and monitoring to better inform groundwater modelling and surface water modelling to quantify mining impacts on water quantity in the Catchment Special Areas.

It is noted that although the review and findings of the Initial Report focus on longwall mining activities at the Metropolitan and Dendrobium coal mines, the Revised Preferred Project has sought to take into consideration the Panel's draft recommendations, as outlined in **Table 3.5**.

Table 3.5 Consideration of Independent Expert Panel Draft Recommendations

Draft Recommendation	Consideration of Revised Preferred Project
Mine design methodologies and procedures that underpin critical aspects of future mining proposals should be supported by robust, independent peer review and/or a demonstrated history of reliability when applications are submitted for approval.	The proposed change in mine design methodology to a stable first workings mine plan is proposed to increase certainty regarding potential subsidence related impacts and is based on a method with a demonstrated history of reliability. Importantly, due to the small magnitude of subsidence effects expected from the proposed mining layout, there is a high level of confidence in the reliability of the subsidence impacts forecast.
All future applications to extract coal within Catchment Special Areas should be supported by independently facilitated and robust risk assessments that conform to ISO 31000 (the international standard for risk management subscribed to by Australia).	As discussed in **Section 5.1.1**, given that the proposed change to the mine design has effectively addressed all of the identified pathways for impacts on water quantity, water quality and environmental effects assessed by the previous independent risk assessment completed for the Preferred Project, and has significantly increased certainty regarding impact predictions, an updated risk assessment is not considered warranted.
Field investigations and data collection, analysis and reporting need to be based on a standard agreed to by key stakeholders.	As noted in **Sections 5.0** and **6.0**, all existing management plans and monitoring programs will be reviewed in consultation with key stakeholders following approval of the Revised Preferred Project, and regularly thereafter as required under contemporary consent conditions. This process of review and consultation will enable ongoing stakeholder input to the standards of field investigations, data collection, analysis and reporting.