

EXECUTIVE SUMMARY

Background

The Ashton Mine Complex and Ravensworth Mine Complex are neighbouring open cut and underground coal mining complexes, located in the Singleton Local Government Area, in the Hunter Valley region of New South Wales (NSW).

The Ashton Mine Complex includes the Ashton Coal Project (including the completed North East Open Cut [NEOC] and the Ashton Underground Mine) and approved Ashton South East Open Cut (SEOC) Project. The Ashton Coal Project is operated by Ashton Coal Operations Pty Limited (ACOL), a wholly owned subsidiary of Yancoal Australia Limited (Yancoal). Development for the SEOC Project has not yet commenced.

The Ravensworth Mine Complex includes the Ravensworth Operations Project and the Ravensworth Underground Mine (RUM). The RUM is owned and operated by Resource Pacific Pty Limited. Glencore Coal Assets Australia Pty Limited oversees the management of RUM.

The Ashton Underground Mine and the RUM share a common mining lease boundary and are approved to extract coal from similar coal seams.

ACOL is proposing to access and extract approved but unmined coal resources at the RUM and integrate part of the approved RUM with the Ashton Coal Project (hereafter referred to as the Modification). The coal would be accessed from the Ashton Underground Mine via new non-subsiding first workings developed between the two mining areas.

To support the modification applications, separate Modification Reports have been prepared for the Ashton Coal Project and the RUM. This Modification Report has been prepared to support an application to modify the Development Consent DA 309-11-2001-i for the Ashton Coal Project. A separate modification application has been prepared to modify Development Consent DA 104/96 for the RUM.

Modifications to both Development Consent DA 309-11-2001-i (Ashton Coal Project) and Development Consent DA 104/96 (RUM) are being sought under section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

Modification Overview

The Modification would allow ACOL to access and mine coal resources at the RUM that are approved to be mined under Development Consent DA 104/96.

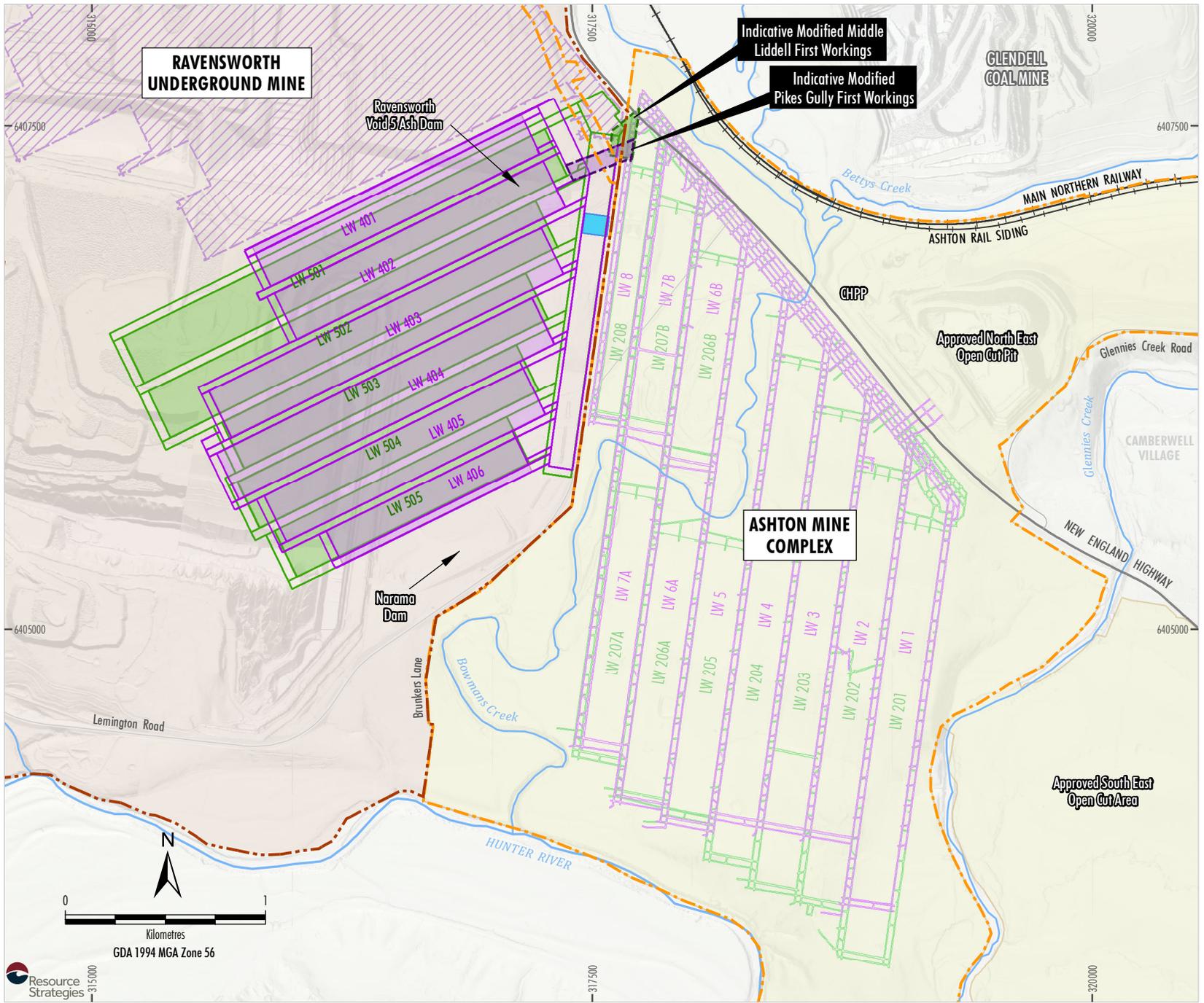
The modifications to the Ashton Coal Project Development Consent DA 309-11-2001-i would involve the following (Figure ES-1):

- underground connection from the existing Ashton Underground Mine workings to the approved RUM Pikes Gully and Middle Liddell coal seams via first workings;
- receipt of run-of-mine (ROM) coal mined in the RUM Pikes Gully and Middle Liddell coal seams for handling, processing and transportation using the existing Ashton Coal Project infrastructure;
- management of RUM ROM coal coarse rejects and tailings by emplacement in the NEOC void and at the Ravensworth Void 4 Tailings Dam;
- receipt and management of water and gas from the ACOL-operated portion of the RUM;
- extension of mining operations until approximately December 2035; and
- other administrative changes to facilitate management of the ACOL-operated portion of the RUM and integration with the Ashton Coal Project, such as integrated environmental management plans (as appropriate).

Strategic Context

The RUM has been in care and maintenance since 2014. If mining was not to recommence, then the approved but as yet unmined RUM coal resources would most likely not be mined. An opportunity therefore exists for ACOL to access and extract approved but unmined RUM coal resources via the Ashton Underground Mine.

The proposal would extend the life of the Ashton Underground Mine and thereby secure continued employment at the Ashton Coal Project for a further 11 years. It would provide royalties to NSW and direct and flow-on economic effects that would likely not be realised if the Modification does not proceed. While the SEOC Project Approval (08_0182) remains valid, approval to commence mining operations will lapse in April 2022 if the SEOC Project is not commenced.



- LEGEND**
- Ashton Mine Complex
 - Ashton Coal Project Development Consent Boundary
 - Ashton Mine Complex
 - Pikes Gully Seam Longwall Layout
 - Upper Lower Liddell Seam Longwall Layout
 - Ravensworth Underground Mine
 - Ravensworth Underground Mine Development Consent Boundary
 - Completed Pikes Gully Seam Workings
 - Existing Shaft 5 Location
 - Proposed Modification
 - Indicative Pikes Gully Seam Longwall Layout
 - Indicative Modified Pikes Gully First Workings
 - Indicative Middle Liddell Seam Longwall Layout
 - Indicative Middle Liddell Seam First Workings

NOTE
 The approved Upper Liddell and Lower Barrett Seams at the Ashton Coal Project and approved Lemington and Barrett Seams at the Ravensworth Underground Mine are not shown on this figure.

Source: NSW Spatial Services (2021); Dams Safety NSW (2020)



ASHTON - RAVENSWORTH UNDERGROUND MINE INTEGRATION MODIFICATION

Indicative Modification General Arrangement

Figure ES-1

The proposal would provide better environmental and social outcomes than developing the approved SEOC Project.

Mining the approved RUM coal resource is Yancoal’s preferred pathway for continued operations at the Ashton Mine Complex.

Stakeholder Engagement

Yancoal and Glencore have consulted with the following stakeholders during the development of this Modification Report:

- the Ashton Coal Project and RUM Community Consultative Committees;
- the Department of Planning, Industry and Environment (DPIE);
- NSW Resources Regulator;
- NSW Division of Mining, Exploration and Geoscience within the Department of Regional NSW;
- DPIE – Water;
- NSW Natural Resources Access Regulator;
- NSW Environment Protection Authority;
- Singleton Council;
- Subsidence Advisory NSW;
- Dams Safety NSW; and
- NSW Health.

Key comments and issues raised during consultation have been considered and addressed in the preparation of this Modification Report.

Assessment of Potential Environmental Impacts

ACOL has undertaken a review of the potential environmental impacts of the Modification to identify key potential environmental issues requiring assessment. The key environmental issues identified are summarised in Table ES-1.

Based on the outcomes of the environmental review, the Modification would result in no or negligible change to previously assessed and approved impacts and, therefore, would involve minimal environmental impact.

Justification for the Modification

The modified Ashton Coal Project would be “substantially the same” as the approved Ashton Coal Project. It would involve the continued handling and processing of coal extracted via underground mining methods using existing infrastructure from the same coal seams currently approved for mining at the Ashton Coal Project. The overall scale and nature of the development including intensity, production rates, mining method, hours of operation and severity of impacts would remain unchanged.

The Modification would enable ACOL to mine approved, but as yet unmined, coal resources at the RUM. These coal resources would most likely not be mined without the Modification.

The proposed Modification would have the following benefits:

- would provide for continued operations and continued employment of ACOL’s workforce at the Ashton Coal Project;
- would utilise existing planning approvals to maximise economic recovery of approved coal resource;
- would avoid disturbance of additional areas (i.e. by limiting disturbance to previously cleared areas);
- provides better environmental and social outcomes than developing the approved SEOC Project; and
- is on land approved for mine development within current mining leases for the RUM.

The Modification can be implemented in accordance with the existing environmental limits and performance measures for the Ashton Coal Project, and with no additional disturbance required beyond existing approved disturbance.

This Modification Report has been prepared in consideration of relevant legislation. ACOL would make revisions to plans, licences, and agreements to incorporate changes from the Modification as necessary.

In weighing up the main environmental impacts (costs and benefits) assessed and described in this Modification Report, the Modification is, on balance, considered to be in the public interest of the State of NSW.

Table ES-1
Key Outcomes of Environmental Review for the Modified Ashton Coal Project

Environmental Aspect	Summary of Key Environmental Review Conclusions
Groundwater Resources	<p>There would be no change in groundwater impacts compared to the approved Ashton Coal Project as the longwall layout remains the same.</p> <p>Updated groundwater modelling incorporating the revised sequencing of mining (including the revised RUM longwall layout) indicates that groundwater inflows would be generally consistent with the approved Ashton Coal Project.</p>
Surface Water Resources	<p>There would be negligible change in surface water impacts compared to the approved Ashton Coal Project. There would also be a significant reduction in approved surface water impacts by not commencing the SEOC Project.</p> <p>Water transferred from the RUM to the Ashton Coal Project can be managed within the existing water management system. The Modification would not require any material changes to the currently approved water management system (including no change to predicted off-site discharges).</p> <p>The existing Surface Water Management Performance Measures in Development Consent DA 309-11-2001-i would continue to be met under the Modification.</p>
Air Quality	<p>There would be no increase in air quality impacts relative to the existing and approved Ashton Coal Project.</p> <p>There would be a negligible impact on future cumulative dust levels at the Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future air quality emissions would be significantly lower than previously assessed.</p> <p>The completion of the Ashton Coal Project in 2035 would not have any significant impacts on future cumulative dust levels at privately-owned receptors in Camberwell, and would not alter the findings of the most recent cumulative assessment of the locality.</p>
Noise	<p>There would be no change in noise impacts compared to the approved Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future noise emissions would be significantly lower than previously assessed.</p> <p>The Ashton Coal Project would continue to comply with the noise limits conditioned in Development Consent DA 309-11-2001-i under the extended mine life (to 2035).</p>
Social	<p>There would be a negligible change in social impacts under the Modification compared to the approved operations and in some cases, the Modification would provide better environmental and social outcomes than developing the SEOC Project, which is approved for a period of 12 years.</p>
Transport	<p>There would be a negligible impact on the local road network associated with the continuation of the Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future traffic volumes would be lower than previously assessed.</p> <p>There would be no changes to existing Ashton Coal Project employee vehicle movements associated with the Modification.</p>
Biodiversity	<p>The Modification would not increase the impact on biodiversity values, including threatened species and ecological communities. The relevant Performance Measures in Development Consent DA 309-11-2001-i would continue to be met.</p> <p>The Modification does not require additional surface disturbance of remnant vegetation beyond that already approved or cleared for the Ashton Coal Project. There would be no change in subsidence impacts (including to vegetation) compared to the approved Ashton Coal Project.</p>
Heritage	<p>There would be no increase in impacts on heritage compared to the approved Ashton Coal Project. The relevant Performance Measures in Development Consent DA 309-11-2001-i would continue to be met.</p> <p>The Modification does not require additional surface disturbance beyond that already approved or cleared for the Ashton Coal Project. There would be no change in subsidence impacts compared to the approved Ashton Coal Project.</p>
Subsidence	<p>There would be no change in subsidence impacts as there is no change proposed to the approved Ashton Coal Project longwall layouts.</p>
Other Aspects	<p>The Modifications would result in negligible or no change in potential impacts on other environmental and economic considerations.</p> <p>The Modification would allow ACOL to mine approved RUM coal resources that would most likely not be mined without the Modification. This would allow for the continued employment of the ACOL workforce until 2035 and provide associated economic benefits.</p>

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1 INTRODUCTION

The Ashton Mine Complex and Ravensworth Mine Complex are neighbouring open cut and underground coal mining complexes, located in the Singleton Local Government Area (LGA), in the Hunter Valley region of New South Wales (NSW) (Figure 1).

The Ashton Mine Complex includes the Ashton Coal Project (including the completed North East Open Cut [NEOC] and the Ashton Underground Mine) and approved Ashton South East Open Cut (SEOC) Project. The Ashton Coal Project is operated by Ashton Coal Operations Pty Limited (ACOL), a wholly owned subsidiary of Yancoal Australia Limited (Yancoal).

The Ravensworth Mine Complex includes the Ravensworth Operations Project and the Ravensworth Underground Mine (RUM). The RUM is owned and operated by Resource Pacific Pty Limited (RPPL). Glencore Coal Assets Australia Pty Limited oversees the management of RUM.

The Ashton Underground Mine and the RUM share a common mining lease boundary (Figure 2) and are approved to extract coal from similar coal seams.

ACOL is proposing to access and extract approved but unmined coal resources at the RUM and integrate part of the approved RUM with the Ashton Coal Project (hereafter referred to as the Modification). The coal would be accessed from the Ashton Underground Mine via new non-subsiding first workings developed between the two mining areas.

To support the modification applications, separate Modification Reports have been prepared for the Ashton Coal Project and the RUM. This Modification Report has been prepared to support an application to modify the Development Consent DA 309-11-2001-i for the Ashton Coal Project. A separate modification application has been prepared to modify Development Consent DA 104/96 for the RUM.

1.1 APPLICANT'S DETAILS

The Applicant is:

Ashton Coal Operations Pty Limited
Glennies Creek Road
Camberwell NSW 2330

1.2 Background

1.2.1 Ashton Mine Complex

The Ashton Mine Complex includes the Ashton Coal Project, approved under Development Consent DA 309-11-2001-i, and the SEOC Project, approved under Project Approval 08_0182.

The Ashton Coal Project includes the completed NEOC, Ashton Underground Mine, a Coal Handling and Preparation Plant (CHPP), a rail siding and rail loadout as well as a range of other surface support facilities and infrastructure.

The Ashton Coal Project has an approved operational capacity of up to 5.45 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal until 26 February 2024, or a period of 12 years following recommencement of open cut mining operations (i.e. the SEOC Project), whichever is the longer.

Development Consent DA 309-11-2001-i also authorises the integration of the Ashton Coal Project and the SEOC Project, which combined comprise the Ashton Mine Complex (Figure 2).

Development under Project Approval 08_0182 for the SEOC Project has not yet commenced.

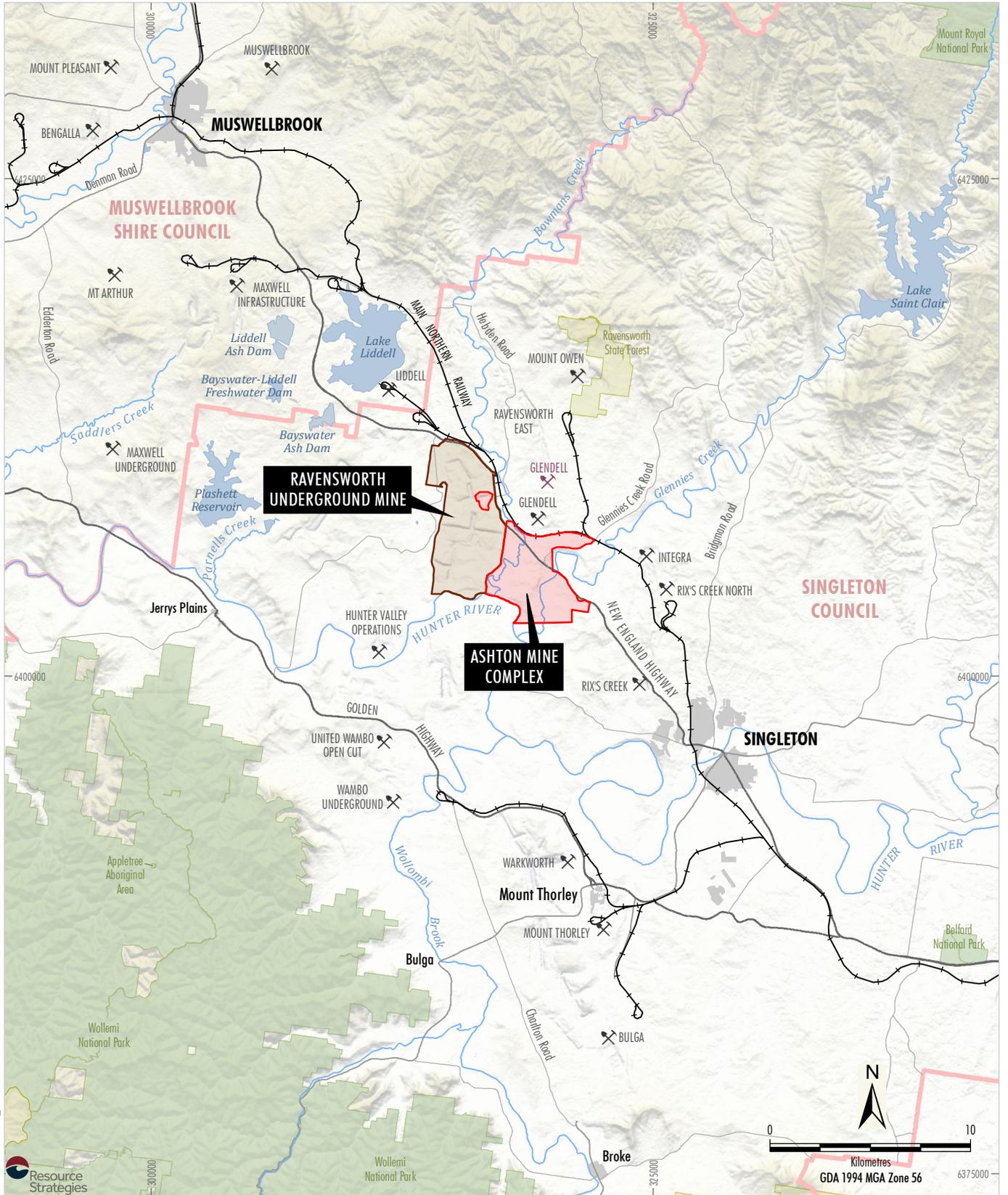
Development Consent DA 309-11-2001-i has been modified 10 times since approval for the Ashton Coal Project was originally granted, most recently under the former section 75W of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.2.2 Ravensworth Mine Complex

The Ravensworth Mine Complex includes the Ravensworth Operations Project and the RUM.

The Ravensworth Operations Project is a standalone open cut operation authorised under Project Approval 09_0176. The Ravensworth Operations Project is not a component of this Modification.

The RUM has an approved operational capacity of up to 7 Mtpa of ROM coal until 31 July 2024.



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Source: NSW Spatial Services (2021)



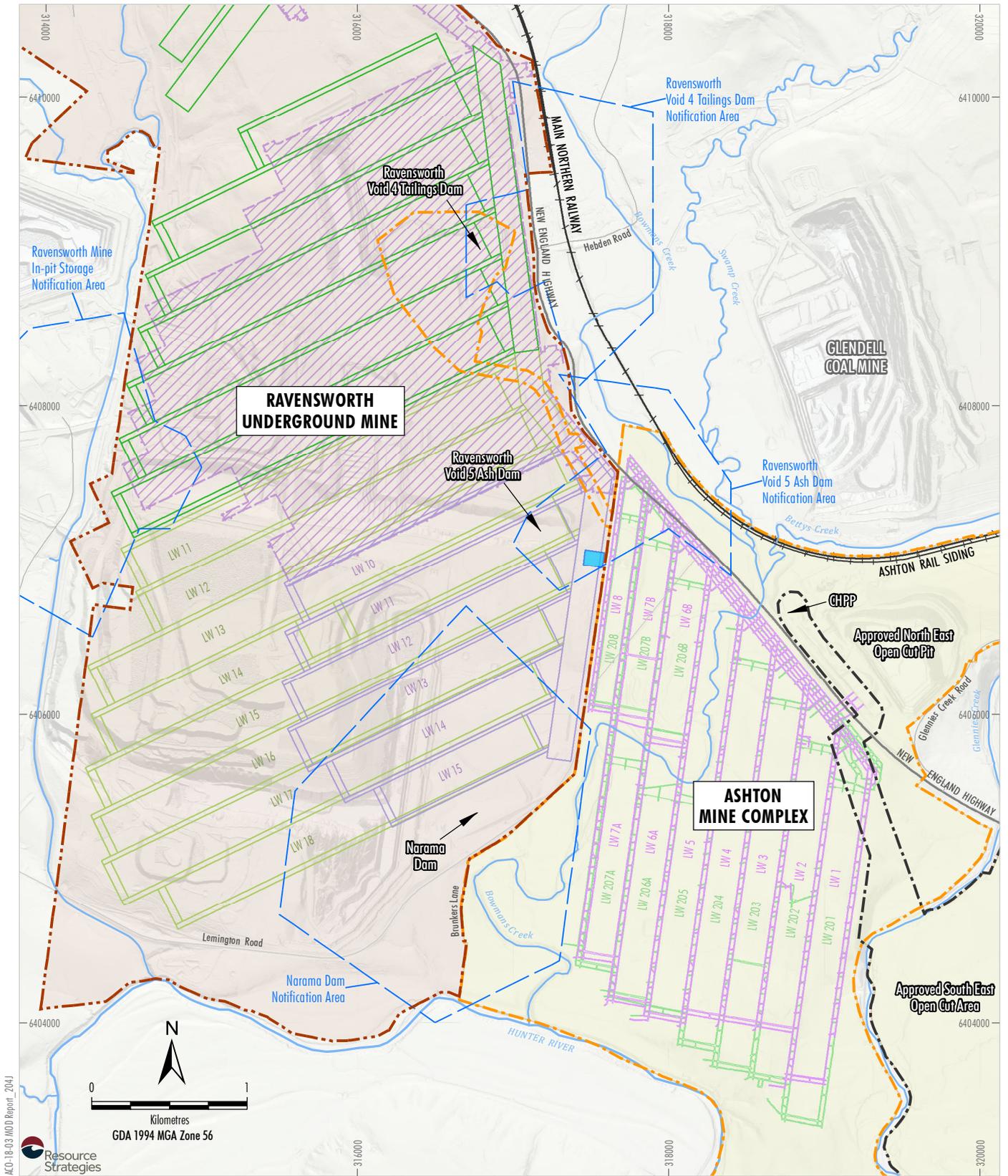
- LEGEND**
- Mining Operation
 - Proposed Mining Operations (Application Lodged)
 - Local Government Area
 - State Forest
 - National Parks and Wildlife Estate
 - Ashton Mine Complex - Mining and Exploration Tenement Area
 - Ravensworth Underground Mine - Mining and Exploration Tenement Area

YANCOAL
 安煤澳洲大矿业有限公司

ASHTON - RAVENSWORTH UNDERGROUND MINE INTEGRATION MODIFICATION

Regional Location

Figure 1



AKO-18-03 MCD Report_2041
Resource Strategies

- LEGEND**
- Dam Notification Area
 - Ashton Mine Complex
 - Ashton Coal Project Development Consent Boundary
 - South East Open Cut Approval Boundary
 - Ashton Mine Complex
 - Pikes Gully Seam Longwall Layout
 - Upper Lower Liddell Seam Longwall Layout
 - Ravensworth Underground Mine
 - Ravensworth Underground Mine Development Consent Boundary
 - Existing Shaft 5 Location
 - Completed Pikes Gully Seam Workings
 - Approved Pikes Gully Seam Longwall Layout
 - Approved Middle Liddell Seam Longwall Layout
 - Approved Upper Liddell Seam Longwall Layout

NOTE
The approved Upper Liddell and Lower Barrett Seams at the Ashton Coal Project and approved Lemington and Barrett Seams at the Ravensworth Underground Mine are not shown on this figure.

Source: NSW Spatial Services (2021); Dams Safety NSW (2020)



ASHTON - RAVENSWORTH
UNDERGROUND MINE INTEGRATION MODIFICATION

Approved Longwall Layouts

Figure 2

Development Consent DA 104/96 allows for ROM coal from the RUM to be transferred via underground conveyors to the RUM pit top area, for processing at the Ravensworth CHPP. The Ravensworth CHPP and product coal loadout facilities are approved under Project Approval 09_0176 for the Ravensworth Operations Project.

Development Consent DA 104/96 has been modified nine times since approval for the RUM was originally granted.

The RUM has been in care and maintenance since 2014. If mining was not to recommence, then the approved but as yet unmined RUM coal resources would most likely not be mined. An opportunity therefore exists for ACOL to access and extract approved but unmined RUM coal resources via the Ashton Underground Mine.

1.3 OVERVIEW OF THE MODIFICATION

The Modification would allow ACOL to access and mine coal resources at the RUM that are approved to be mined under Development Consent DA 104/96. The modifications to the Ashton Coal Project Development Consent DA 309-11-2001-i would involve the following (Figure 3):

- underground connection from the existing Ashton Underground Mine workings to the approved RUM Pikes Gully and Middle Liddell coal seams via first workings;
- receipt of ROM coal mined in the RUM Pikes Gully and Middle Liddell coal seams for handling, processing and transportation using the existing Ashton Coal Project infrastructure;
- management of RUM ROM coal coarse rejects and tailings by emplacement in the NEOC void and at the Ravensworth Void 4 Tailings Dam;
- receipt and management of water and gas from the ACOL-operated portion of the RUM;
- extension of mining operations until approximately December 2035; and
- other administrative changes to facilitate management of the ACOL-operated portion of the RUM and integration with the Ashton Coal Project, such as integrated environmental management plans (as appropriate).

1.3.1 Integration of Operations

The Ashton Underground Mine and the RUM share a common mining lease boundary and the approved underground mining areas are separated (at their closest) by approximately 45 metres (m) in the Pikes Gully and Upper Lower Liddell coal seams (Figure 2).

The proposal requires a connection to be made between the existing Ashton Underground Mine Pikes Gully Seam main headings to the approved RUM Pikes Gully Seam longwall mining area via non-subsiding first workings (Figure 3). A further connection would be made between the Ashton Underground Mine Upper Lower Liddell Seam main headings to the approved RUM Middle Liddell Seam longwall mining area. ACOL would utilise its existing longwall mining equipment and employees to mine the Pikes Gully and Middle Liddell coal seams at the RUM.

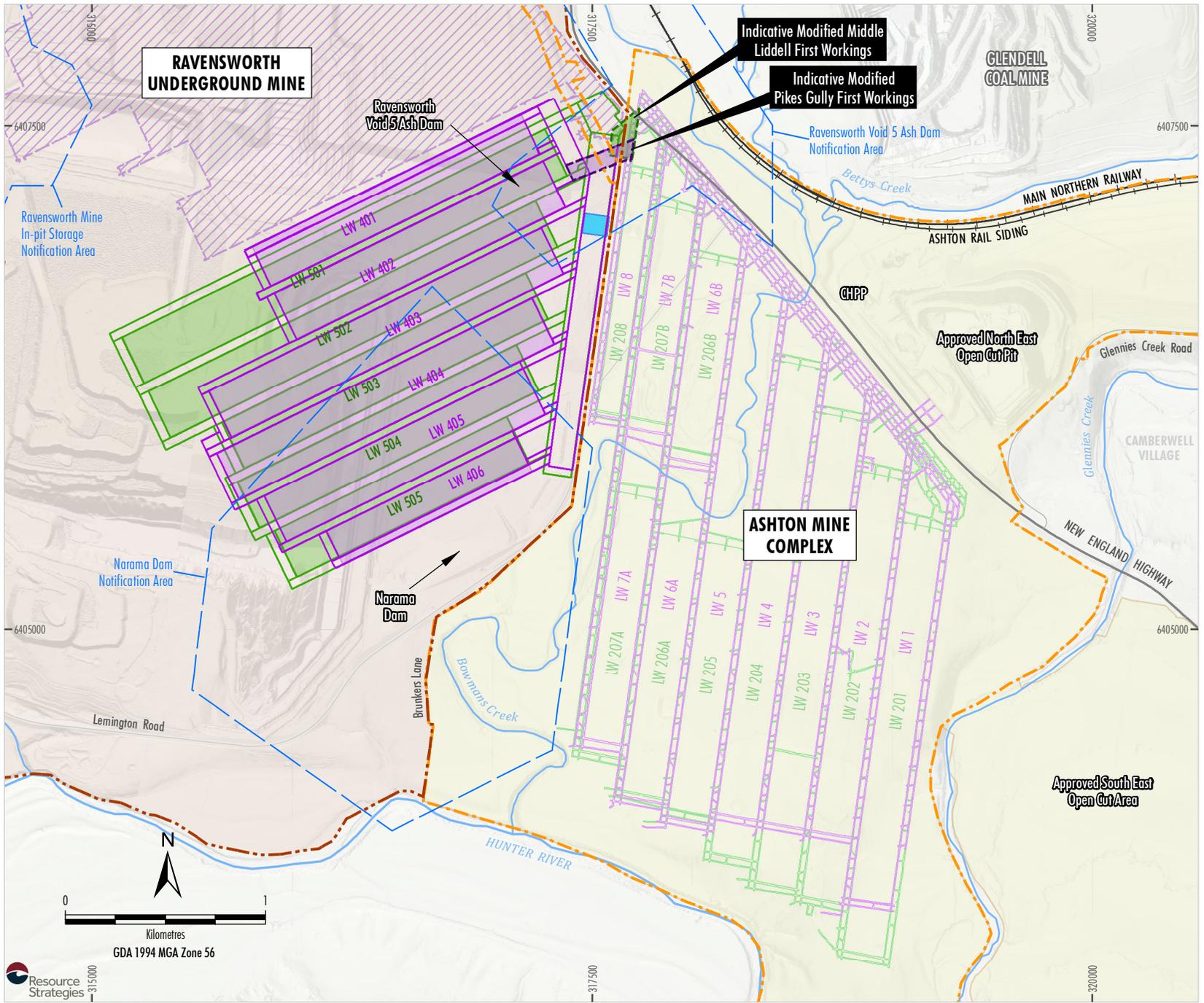
Development of first workings in the Pikes Gully Seam between the two mines would need to commence in August 2022 to enable continuity of ACOL's operations. This will allow ACOL to shift mining to the RUM after the completion of mining in the Upper Lower Liddell Seam (where it is currently mining). Mining of the remaining Lower Barrett Seam at the Ashton Underground Mine would then proceed upon completion of mining in the Pikes Gully and Middle Liddell coal seams at the RUM.

ACOL would handle, process and transport coal from the RUM in the same manner it handles coal from its Ashton Underground Mine. ROM coal from the RUM would be transferred via underground conveyors to the Ashton Underground Mine and through to the Ashton pit top, via its existing coal clearance system. The ROM coal would be processed at the Ashton Coal Project CHPP prior to being loaded onto trains for transportation to market using the existing Ashton Coal Project rail siding and rail loadout.

Rejects and tailings generated from the processing of the RUM ROM coal would be emplaced in the existing NEOC void and Ravensworth Void 4 Tailings Dam.

Water from the ACOL-operated portion of the RUM would also be transferred to the Ashton Coal Project to be managed within the existing water management system.

A combination of approved gas management and ventilation infrastructure at the Ashton Coal Project and the RUM would be used for the integrated operations.



- LEGEND**
- Dam Notification Area
 - Ashton Mine Complex
 - Ashton Coal Project Development Consent Boundary
 - Ashton Mine Complex
 - Pikes Gully Seam Longwall Layout
 - Upper Lower Liddell Seam Longwall Layout
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 - Ravensworth Underground Mine Development Consent Boundary
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 - Indicative Middle Liddell Seam First Workings

NOTE
 The approved Upper Liddell and Lower Barrett Seams at the Ashton Coal Project and approved Lemington and Barrett Seams at the Ravensworth Underground Mine are not shown on this figure.

Source: NSW Spatial Services (2021); Dams Safety NSW (2020)



ASHTON - RAVENSWORTH UNDERGROUND MINE INTEGRATION MODIFICATION

Indicative Modification General Arrangement

Figure 3

To enable the integration of the operations, modifications to Development Consent DA 309-11-2001-i (Ashton Coal Project) and Development Consent DA 104/96 (RUM) are required. The modifications to the Ashton Coal Project are described in Section 4. This would include the modification of Development Consent DA 104/96 conditions to facilitate environmental and operational management of part of the RUM by ACOL. The area of the RUM that would be managed by ACOL under the modified Development Consent DA 104/96 is shown on Figure 4 (and is herein referred to as the ACOL-operated portion of the RUM). The modifications to the RUM are described in a separate Modification Report supporting the application to modify Development Consent DA 104/96 (ACOL, 2021).

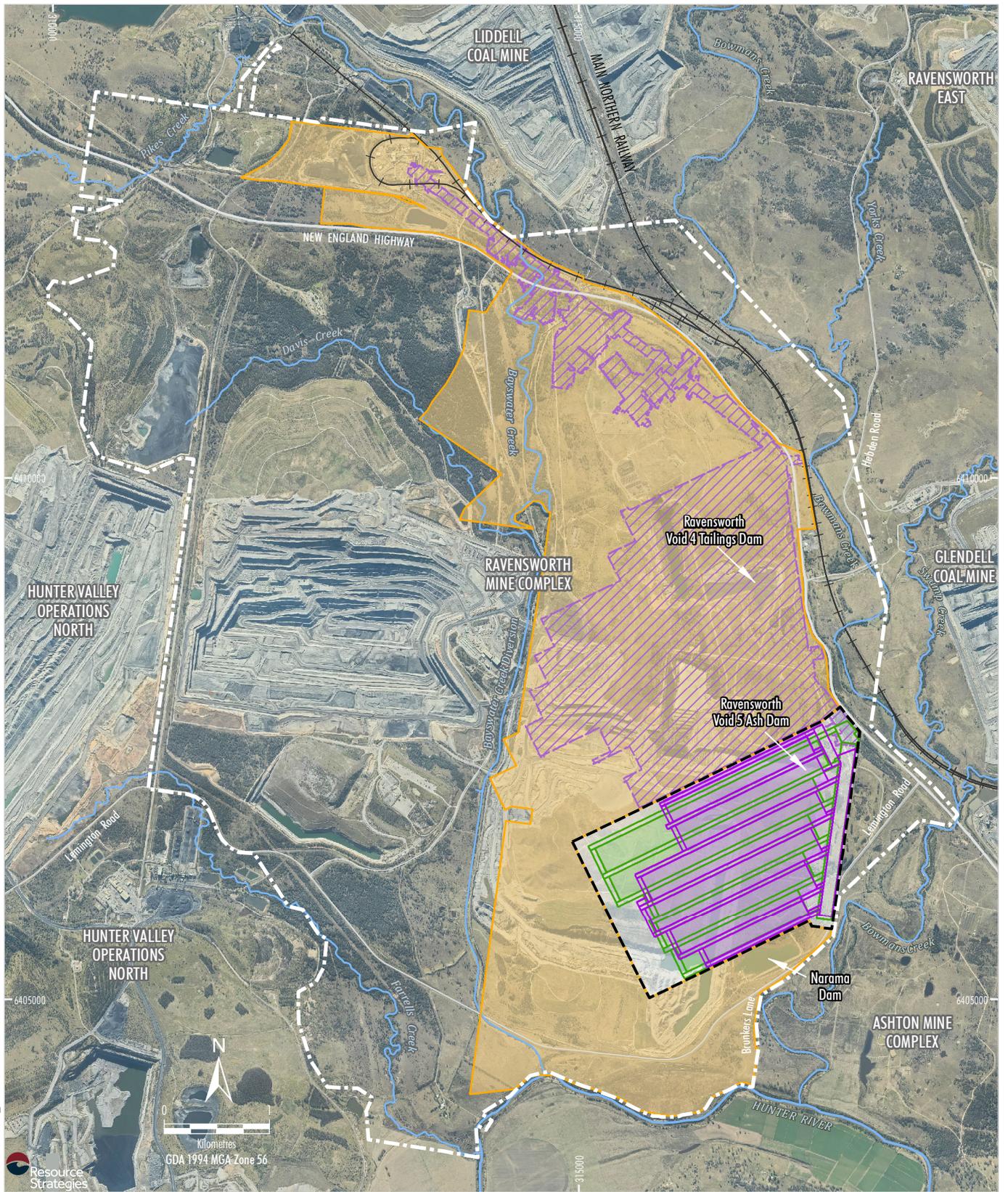
1.3.2 Consideration of Alternative Options

The original plan to extend mining operations at the Ashton Mine Complex was to develop the approved SEOC Project. This Modification is being pursued as an alternative.

Pursuing underground mining of the approved RUM coal resource is a logical and efficient extension to the Ashton Underground Mine, and it is now Yancoal's preferred pathway for continued operations at the Ashton Mine Complex.

The Modification was selected as being the preferred option on the basis that it:

- would provide for continued operations and continued employment of the ACOL workforce at the Ashton Coal Project;
- utilises existing planning approvals to maximise economic recovery of approved coal resource;
- would avoid disturbance of additional areas (i.e. by limiting disturbance to previously cleared areas);
- provides better environmental and social outcomes than developing the approved SEOC Project; and
- is on land approved for mine development within current mining leases for the RUM.



AC-18-03 MOD Report_2024H



LEGEND

- Ravensworth Open Cut Operations Development Consent Boundary
- Ravensworth Underground Mine
- Completed Pikes Gully Seam Workings
- Indicative Pikes Gully Seam Longwall Layout
- Indicative Middle Liddell Seam Longwall Layout
- Ravensworth Underground Mine - Management Responsibility under Development Consent DA 104/96
- Operational Area to be managed by Resource Pacific Pty Ltd (Glencore) #
- Operational Area to be managed by Ashton Coal Operations Ltd (Yancoal) # ^

Source: NSW Spatial Services (2021)
 Orthophoto: Ravensworth Mine Complex (2021)



**ASHTON - RAVENSWORTH
 UNDERGROUND MINE INTEGRATION MODIFICATION**

**ACOL's Management Responsibility
 Under Development Consent DA 104/96**

The Ravensworth Underground Mine includes ancillary infrastructure and surface disturbance associated with underground mining including, but not limited to, ventilation, gas management and water management infrastructure and subsidence monitoring, management and remediation activities.

^ This area is called the 'ACOL-operated portion of the RUM' in the Modification Report.

Figure 4

2 OVERVIEW OF THE APPROVED OPERATIONS

2.1 ASHTON COAL PROJECT

2.1.1 Underground Mining

The Ashton Underground Mine includes underground longwall mining within the Pikes Gully, Upper Liddell, Upper Lower Liddell and Lower Barrett coal seams (Figure 2).

Underground longwall mining of the Pikes Gully and Upper Liddell coal seams was completed in 2012 and 2017, respectively, and mining of the Upper Lower Liddell Seam commenced in 2017 and is anticipated to be completed by approximately August 2023. Mining of the Lower Barrett Seam has not yet commenced.

2.1.2 Coal Handling and Processing

The Ashton Coal Project CHPP is located to the west of the NEOC, adjacent to the New England Highway and the Main Northern Rail Line. ROM coal is processed through the CHPP and product coal is loaded onto trains for transport to the Port of Newcastle.

The CHPP was commissioned in 2004 and has since been upgraded to provide an operating capacity of 1,000 tonnes per hour.

The Ashton Coal Project produces high quality metallurgical grade coal for the international market.

2.1.3 Coarse Rejects and Tailings Management

ROM coal from the Ashton Underground Mine is processed through the CHPP which results in the production of product coal, coarse rejects and fine rejects (tailings).

Coarse Rejects

Development Consent DA 309-11-2001-i authorises the use of the Ravensworth Void 4 Tailings Dam and NEOC void for emplacement and permanent storage of reject materials. Coarse rejects are currently trucked from the Ashton Coal Project CHPP to the NEOC void for emplacement. Rejects trucks servicing the CHPP may operate 24 hours per day, seven days per week in accordance with DA 309-11-2001-i.

The NEOC void rejects emplacement strategy is designed to enable effective water recovery, via an in-pit caisson with a submersible pump.

Tailings

Tailings from the CHPP are currently piped to the Ravensworth Void 4 Tailings Dam.

The Ravensworth Void 4 Tailings Dam is approved under AGL Energy Ltd's (AGL) Development Consent DA 144/93 (Figure 2). Under Development Consent DA 309-11-2001-i and a commercial agreement with AGL, ACOL has constructed and operates pipelines and supporting infrastructure to facilitate tailings emplacement. Once the Ravensworth Void 4 Tailings Dam reaches capacity, tailings will be disposed of in the NEOC void.

Tailings are processed through a thickener and are pumped to the Ravensworth Void 4 Tailings Dam, where they are treated with coagulants and allowed to settle. Water is decanted from the tailings dam and pumped back to the Ashton Coal Project process water dam for reuse on site. The management and rehabilitation of the Ravensworth Void 4 Tailings Dam is detailed in the approved Tailings Emplacement Operations Management Plan (TEOP)¹.

2.1.4 Gas and Ventilation Management

Carbon dioxide (CO₂) and methane (CH₄) gas emissions are released during mining of the coal. These are both classified as greenhouse gases. They also pose a significant safety hazard to underground mine operations.

Development Consent DA 309-11-2001-i authorises the installation and use of a gas drainage network, a central gas drainage plant and gas flaring facility. The gas drainage network is constructed progressively, with goaf gas drainage boreholes and supporting pipelines being developed throughout the life of the Ashton Coal Project.

Ventilation of the underground mine is achieved via a series of strategically located shafts and fans, which, in conjunction with the gas drainage network, provides for the safe operation of the mine.

¹ Approved as a component of the Mining Operations Plan/Rehabilitation Management Plan.

2.1.5 Water Management

Water at the Ashton Coal Project is managed in accordance with ACOL's approved Water Management Plan (WMP). The WMP includes a Site Water Balance, Surface Water Management Plan (SWMP) and Groundwater Management Plan (GWMP).

The Ashton Coal Project is operated on a nil-discharge basis under the *Protection of the Environment Operations Act 1997* (PoEO Act), with all water collected from disturbed areas stored in approved water storages for reuse on-site.

Water demand is supplied by site runoff, underground dewatering, tailings decant reclaim and water sourced from the Hunter River and Glennies Creek via water access licences (WALs).

Dewatering of the underground mine is managed by either collecting and pumping mine water inflows to the surface via the mine portal or a series of strategically located dewatering bores. Water recovered from the mine is pumped via surface pipelines to the CHPP Settling Dam for reuse in the operations.

2.2 RAVENSWORTH UNDERGROUND MINE

This Modification Report and the separate Modification Report for the RUM (ACOL, 2021) applies to the ACOL-operated portion of the RUM only (Figure 4). RPPL will continue to manage the completed Pikes Gully Longwalls 1 to 9 mining area and continue evaluating its future plans for the remaining approved Lemington and Barrett coal seams at the RUM.

2.2.1 Underground Mining

The RUM Development Consent DA 104/96 includes underground longwall mining within the Lemington (B and C), Pikes Gully, Liddell (Upper and Middle) and Barrett coal seams (Figure 2)².

In October 2014, after the completion of Longwall 9 in the Pikes Gully Seam, operations at RUM were placed into care and maintenance and no further underground mining has occurred since. A total of nine longwalls (Longwalls 1 to 9) were mined out of the approved 16 longwall panels in the Pikes Gully Seam.

Approximately 400 m of development headings had also been advanced ahead of Longwall 9 in the Pikes Gully Seam (in preparation for Longwall 10), before the operations were suspended. An approved (August 2013) SMP³ remains in place for Longwalls 10 to 15 in the Pikes Gully Seam. This SMP approves the secondary extraction of Longwalls 10 to 15 in the Pikes Gully Seam and satisfies all requirements of Condition 6, Schedule 3 of Development Consent DA 104/96.

Mining within the Lemington, Liddell and Barrett coal seams has not commenced at the RUM.

While in care and maintenance, water has accumulated in the extracted areas of the Pikes Gully Seam, which would need to be removed if operations were to recommence, as approved, via the existing RUM portal.

2.2.2 Coal Handling and Processing

Development Consent DA 104/96 allows for ROM coal from the RUM to be transferred via underground conveyors to the RUM pit top area, for processing at the Ravensworth CHPP.

Product coal produced at the Ravensworth CHPP is conveyed to the Ravensworth Coal Terminal rail loadout facility to be transferred onto trains for transportation to market.

2.2.3 Coarse Rejects and Tailings Management

Coarse rejects and tailings produced at the Ravensworth CHPP are managed in accordance with Project Approval 09_0176 for the Ravensworth Operations Project, which authorises the emplacement and permanent storage of the coal washery rejects in open cut voids (e.g. Cumnock Voids 1, 2 and 3, Cumnock Wash Plant Pit Void and West Pit Void).

2.2.4 Gas and Ventilation Management

Development Consent DA 104/96 authorises installation and use of a gas drainage network, including in-seam gas pre-drainage and surface goaf gas drainage bores.

A number of indicative locations for surface goaf gas drainage bores were described in the Environmental Assessments for Modifications 8 and 9.

² The Middle Liddell Seam approved for extraction under the RUM Development Consent DA 104/96 aligns with the Upper Lower Liddell Seam approved for extraction at the Ashton Underground Mine.

³ A Subsidence Management Plan (SMP) approved prior to 1 January 2014 is also taken to satisfy all requirements of an Extraction Plan under Condition 6, Schedule 3 of Development Consent DA 104/96.

Under Condition 9, Schedule 3 of Development Consent DA 104/96, where additional or revised gas drainage infrastructure is required for the RUM, it can be constructed and used subject to approval of a Gas Drainage Management Plan (GDMP).

Development Consent DA 104/96 also authorises the construction and operation of a series of ventilation shafts and supporting infrastructure to ventilate the mine. Three ventilation shafts (Ventilation Shafts 1 to 3) were constructed for the RUM and will continue to be used by RPPL for maintenance of, and access to, the existing RUM area. Ventilation Shaft 4 was never constructed, although an initial pad was developed. Ventilation Shaft 5 was constructed, but was not connected to the underground workings.

2.2.5 Water Management

During mining operations, dewatering of the RUM was managed by collecting and pumping mine water inflows to the surface via the mine portal and then transferred to site water storages for reuse at the Ravensworth Mine Complex.

3 STRATEGIC CONTEXT

3.1 REGIONAL CONTEXT

The Ashton Coal Project is located within the Hunter Coalfield. The Hunter Coalfield and adjacent Newcastle Coalfield in the Sydney-Gunnedah Basin form the target resource of major coal developments in the Hunter region.

Coal mining operations in the region have been occurring for many decades, with operations commencing at the Ashton Coal Project in 2004 and at the Ravensworth Mine Complex in the early 1970s. Coal mining has close ties with regional communities in the Hunter region.

In the Singleton LGA, the mainstays of the economy are coal mining, agriculture, manufacturing and retail. The *Hunter Regional Plan 2036* states that coal mining will remain significant in the region (NSW Government, 2016).

Coal from the Upper Hunter is transported via the Hunter Valley rail network (Figure 1), which provides access to domestic coal customers (i.e. primarily electricity production) and international markets via the Port of Newcastle.

In the Upper Hunter Valley, mining employs almost 8,000 people in the Muswellbrook and Singleton LGAs alone (NSW Government, 2016).

3.2 PROJECT CONTEXT

The Ashton Coal Project is located in the Singleton LGA, approximately 14 kilometres (km) north-west of the township of Singleton in the Upper Hunter Valley (Figure 1). The Ashton Coal Project is located within a recognised mining precinct, with the Ravensworth Mine Complex located to the west, the Mount Owen Complex located to the north, Integra Underground located to the north-east and Rix's Creek Mine located to the south-east.

Land uses other than mining in the vicinity of the Ashton Coal Project comprise a combination of agricultural land uses, industrial and residential areas in the village of Camberwell.

The Ashton Underground Mine and RUM share a common mining lease boundary and approved underground mining areas are separated (at their closest) by approximately 45 m in the Pikes Gully and Upper Lower Liddell coal seams (Figure 2).

Mining of the Upper Lower Liddell Seam at the Ashton Underground Mine commenced in 2017 (following mining in the Pikes Gully and Upper Liddell seams) and is anticipated to be completed by approximately August 2023. The Lower Barrett Seam would be next to be mined under the approved mining sequencing for the Ashton Underground Mine.

The RUM has been in care and maintenance since 2014. If mining was not to recommence, then the approved but as yet unmined RUM coal resources would most likely not be mined. An opportunity therefore exists for ACOL to access and extract approved but unmined RUM coal resources via the Ashton Underground Mine.

Pursuing underground mining of the approved RUM coal resource is a logical and efficient extension to the Ashton Underground Mine and Yancoal has commenced commercial negotiations with Glencore Newpac Pty Limited (Glencore) to realise this opportunity.

The proposal would extend the life of the Ashton Underground Mine and thereby secure continued employment at the Ashton Coal Project for a further 11 years. It would provide royalties to NSW and direct and flow-on economic effects that would likely not be realised if the Modification does not proceed. While the SEOC Project Approval (08_0182) remains valid, approval to commence mining operations will lapse in April 2022 if the SEOC Project is not commenced.

The proposal would provide better environmental and social outcomes than developing the approved SEOC Project.

Mining the approved RUM coal resource is Yancoal's preferred pathway for continued operations at the Ashton Mine Complex.

3.3 KEY STRATEGIC PLANNING DOCUMENTS

The *Strategic Statement on Coal Exploration and Mining in NSW* outlines how the NSW Government will continue to support responsible resource development for the benefit of the State (NSW Government, 2020). The *Strategic Statement on Coal Exploration and Mining in NSW* recognises the value of coal production to the NSW economy, including:

- The long history of coal mining in NSW and its close ties with regional communities in the Hunter region.
- The potential for coal production to provide significant benefits to local communities, including jobs and investment.
- Coal production's significant contributions to export earnings as the State's biggest single export earner.

The Modification would provide for the ongoing safe and efficient extraction of significant coal resources at the RUM that State and Commonwealth Governments have approved to be mined, subject to the conditions of the relevant State approvals.

The Modification would not materially change the scale or nature of the approved Ashton Coal Project, and would continue to align with the objectives of the *Strategic Statement on Coal Exploration and Mining in NSW*.

3.3.1 Climate Change

The NSW Government has released the *NSW Climate Change Policy Framework* (Office of Environment and Heritage, 2016), which commits NSW to the 'aspirational long-term objective' of achieving net-zero emissions by 2050. The *NSW Climate Change Policy Framework* endorses the Paris Agreement and includes as one of its aspirational objectives the implementation of policies consistent with the Commonwealth Government's plans for long-term greenhouse gas emission reductions. It also includes an objective for NSW to be more resilient to climate change impacts (Office of Environment and Heritage, 2016).

The NSW Government's *Net Zero Plan Stage 1: 2020 – 2030* (Net Zero Plan) has recently reiterated that the State's actions on climate change should not undermine the business, jobs and communities supported by mining (Department of Planning, Industry and Environment [DPIE], 2020). This illustrates that the State of NSW is adopting an approach to emissions reduction that balances both socio-economic factors and emission reduction opportunities for the long-term benefit of the State.

The proposed Modification would not increase greenhouse gas emissions compared to the approved Ashton Coal Project and would provide for the ongoing employment of the ACOL workforce and, therefore, is consistent with the NSW Government's Net Zero Plan.

3.3.2 Air Quality

The NSW Environment Protection Authority (EPA) has released the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods) (NSW EPA, 2016) since the previous air quality assessment for the Ashton Coal Project. The applicable air quality criteria outlined in the Approved Methods has been considered in the review of air quality impacts associated with the Modification (Appendix C).

4 PROPOSED ASHTON COAL PROJECT MODIFICATION

The modifications to the Ashton Coal Project Development Consent DA 309-11-2001-i would involve the following (Figure 3):

- underground connection from the existing Ashton Underground Mine workings to the approved RUM Pikes Gully and Middle Liddell coal seams via first workings;
- receipt of ROM coal mined in the RUM Pikes Gully and Middle Liddell coal seams for handling, processing and transportation using the existing Ashton Coal Project infrastructure;
- management of RUM ROM coal coarse rejects and tailings by emplacement in the NEOC void and at the Ravensworth Void 4 Tailings Dam;
- receipt and management of water and gas from the ACOL-operated portion of the RUM;
- extension of mining operations until approximately December 2035; and
- other administrative changes to facilitate management of the ACOL-operated portion of the RUM and integration with the Ashton Coal Project, such as integrated environmental management plans (as appropriate).

A summary of the approved operations and proposed modifications for the Ashton Underground Mine is provided in Table 1.

4.1 COAL HANDLING AND PROCESSING

ROM coal recovered from the RUM Pikes Gully and Middle Liddell coal seams would be transferred via the Ashton Underground Mine to the pit top and CHPP area for processing. The ROM coal would be processed at the Ashton Coal Project CHPP prior to being loaded onto trains for transportation to market.

The expected maximum ROM coal production under the Modification would be within the approved maximum annual production. There are no proposed upgrades to the coal handling or CHPP infrastructure required for the Modification (beyond those already approved). The Modification would result in the current CHPP and train loadout facilities at the Ashton Coal Project operating until December 2035.

Provisional production rates for the Modification are provided in Table 2. The actual timing, mining sequence and annual coal production profile may vary to take account of various factors, including localised geological features, coal quality characteristics, detailed mine design, mine economics, market volume requirements, and/or adaptive management requirements.

4.2 COARSE REJECTS AND TAILINGS MANAGEMENT

Coarse rejects generated by the processing of RUM ROM coal at the Ashton Coal Project CHPP would continue to be trucked to and emplaced within the NEOC void in accordance with existing management practices.

Tailings generated by the processing of RUM ROM coal would also continue to be transferred to the Ravensworth Void 4 Tailings Dam for disposal until it reaches capacity in approximately December 2022.

Once capacity has been reached, tailings generated from the processing of ROM coal would be co-emplaced with coarse rejects at the NEOC void, consistent with the currently approved practices. This may require the dewatering of tailings prior to co-emplacement.

The NEOC void would provide adequate capacity for the emplacement of rejects and tailings over the remainder of the mine life. This capacity is available as a result of not proceeding with the SEOC Project.

The Modification would result in approximately 8.9 million tonnes (Mt) of coarse rejects and approximately 2.4 Mt of tailings being stored within the NEOC void. This would result in an approximate surface level of 78 m Australian Height Datum (AHD) for the rehabilitated landform of the NEOC void.

4.3 GAS AND VENTILATION MANAGEMENT

Gas from the RUM Modification mine area would either be transferred via a combination of surface and underground pipelines (in the underground workings) to the Ashton Coal Project for management within ACOL's gas drainage network or treated using portable gas flares (as approved under Development Consent DA 104/96).

Ventilation of the ACOL-operated portion of the RUM would be designed and integrated with the existing ventilation system for the Ashton Coal Project.

Table 1
Comparison of the Approved Ashton Coal Project and the Modification

Project Component	Summary of Relevant Component of Existing/Approved Ashton Coal Project (DA 309-11-2001-i)	Summary of the Modification to the Ashton Coal Project
Mining Method	Underground longwall mining.	No change.
Underground Mine Resource	Mining of the Pikes Gully, Liddell (Upper and Upper Lower) and Lower Barrett coal seams in the Ashton Coal Project Development Consent area.	No change. Non-subsiding first workings developed between the Ashton Underground Mine and RUM in the Pikes Gully and Middle Liddell coal seams ¹ .
Annual Production	ROM coal production of up to approximately 5.45 Mtpa from the Ashton Coal Project and 8.6 Mtpa from the Ashton Mine Complex.	No change.
Consented Operational Mine Life	Until 26 February 2024, or a period of 12 years following recommencement of open cut mining operations (including overburden removal) at the Ashton Mine Complex, whichever is the longer.	Until 31 December 2035.
Coal Handling and Preparation	Processing of up to 8.6 Mtpa of ROM coal from the Ashton Mine Complex.	Processing of additional coal received from the RUM Pikes Gully and Middle Liddell coal seams. No change to processing rate.
Product Transport	Up to five train movements per day, averaged over a calendar month.	No change.
Coarse Rejects and Tailings Management	Coarse rejects are currently trucked to and emplaced within the NEOC void. Tailings are currently piped to and emplaced in the Ravensworth Void 4 Tailings Dam. Tailings will be emplaced within the NEOC void once the Ravensworth Void 4 Tailings Dam reaches capacity.	No change to rejects and tailings management strategy. Additional rejects and tailings generated from the processing of ROM coal from the RUM would be emplaced in the NEOC and Ravensworth Void 4 Tailings Dam.
Water Management	On-site management systems for clean water, sediment water and operational water. The Ashton Coal Project is operated on a nil-discharge basis under the PoEO Act, with opportunistic water sharing with neighbouring operations. (Dewatering bores for the ACOL-operated portion of the RUM would be constructed and operated under the Development Consent DA 104/96.)	Receipt of water from the ACOL-operated portion of the RUM and management of this water using existing Ashton Coal Project infrastructure.
Gas and Ventilation Management	Gas and ventilation infrastructure includes gas drainage boreholes, gas drainage plant, gas flaring facility, and ventilation and fans. (Surface gas and ventilation management infrastructure for the ACOL-operated portion of the RUM would be constructed and operated under the Development Consent DA 104/96.)	No change to approved infrastructure. Receipt of gas from the RUM and management of this gas using existing Ashton Coal Project infrastructure (including the central gas drainage plant and gas flaring facility).
General Infrastructure	Surface infrastructure including offices, workshops, stores, bathhouses, first aid rooms, muster and crib rooms, sewage treatment facility, fuel farm, helipad, car parks, workshop facilities, water supply infrastructure, power and telecommunications infrastructure and other associated facilities.	No change.
Hours of Operation	24 hours per day, seven days per week.	No change.
Operational Workforce	Workforce of up to approximately 386 (personnel and contractors).	No change.
Management Responsibilities	Operated and managed by ACOL.	No change.

¹ The Ashton Underground Mine Upper Lower Liddell Seam aligns with the RUM Middle Liddell Seam.

Table 2
Indicative Modification Coal Processing and Production
Schedule

Year	Ashton Underground Mine		Ravensworth Underground Mine		Total ROM (Mt)
	Upper Lower Liddell Seam (Mt)	Lower Barrett Seam (Mt)	Pikes Gully Seam (Mt)	Middle Liddell Seam (Mt)	
2022	2.8	-	0.1	-	2.9
2023	1.9	-	0.4	-	2.3
2024	-	-	3.6	-	3.6
2025	-	-	3.1	0.2	3.3
2026	-	-	2.1	0.9	3.0
2027	-	-	-	3.3	3.3
2028	-	0.3	-	2.8	3.1
2029	-	0.5	-	2.9	3.4
2030	-	3.8	-	-	3.8
2031	-	3.0	-	-	3.0
2032	-	3.3	-	-	3.3
2033	-	2.8	-	-	2.8
2034	-	2.3	-	-	2.3
2035	-	1.4	-	-	1.4
Total	4.7	17.4	9.3	10.1	41.5

4.4 WATER MANAGEMENT

There would be no change in the maximum processing rate at the Ashton Coal Project CHPP or increase in disturbance footprint as a result of the Modification.

A negligible change in groundwater inflows, compared to the two approved underground operations, would result from the additional development to connect the RUM and Ashton Underground Mine.

Water from the RUM would be transferred via a combination of surface and underground pipelines (in the underground workings), and once received by the Ashton Coal Project, would be managed within ACOL's water management system, including the transfer of the water to surface water storages.

A review of the Site Water Balance of the Ashton Coal Project incorporating the Modification was conducted by Hydro Engineering and Consulting Pty Ltd (HEC) (Appendix C). HEC concluded that the Modification would not result in any significant changes in forecast external raw water requirements or overflow risk from site storages.

ACOL would continue to obtain and hold relevant licences under the *Water Management Act 2000* to account for the take of water associated with the Ashton Coal Project and the ACOL-operated portion of the RUM.

The Ashton Coal Project WMP (including the Site Water Balance, SWMP and GWMP) would be revised to incorporate the Modification.

4.5 PROPOSED AMENDMENTS TO DEVELOPMENT CONSENT

The Modification would require amendments to the existing Ashton Coal Project Development Consent DA 309-11-2001-i. A summary of the proposed amendments is provided in Table 3.

ACOL will consult with key NSW Government agencies post approval to update the Ashton Coal Project management plans to reflect the Modification, including details of environmental management and compliance responsibilities within the ACOL-operated portion of the RUM given the overlapping mining areas with the Ravensworth Operations Project. The Ashton Coal Project management plans that would likely be reviewed and updated to incorporate the ACOL-operated portion of the RUM are outlined in Table 4.

Table 3
Summary of Proposed Amendments to the Ashton Coal Project Development Consent

Reference	Existing Condition	Proposed Condition	Justification																		
-	Department names, titles and guidelines should be updated to their latest versions.		Global administrative update.																		
Sch. 2, Cond. 5	The Applicant may carry out mining operations on the site until 26 February 2025, or a period of 12 years following recommencement of open cut mining operations (including overburden removal) at the Ashton Mine Complex, whichever is the longer.	The Applicant may carry out mining operations on the site until 31 December 2035.	Proposed amendment to operational mine life is required to permit ACOL to extract the RUM Pikes Gully and Middle Liddell coal seams and subsequently the approved Lower Barrett Seam. Yancoal's preference is to proceed with the Modification rather than commencing the approved SEOC Project.																		
Sch. 2, Cond. 15 (new)	-	With the approval of the Secretary, the Applicant may integrate any strategy, plan, program, report, review or audit required by this consent with any similar strategy, plan, program, report, review or audit for the Ravensworth Underground Mine.	This proposed amendment would allow for integrated management plans and monitoring programs to be prepared and implemented that would allow for effective environmental management across the consents. The relevant plans to be updated are outlined in Table 4.																		
Sch. 3, Table 6 of Cond. 12,	<p>Table 6: Air Quality Criteria</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion^d</th> </tr> </thead> <tbody> <tr> <td>PM₁₀</td> <td>Annual</td> <td>^a 30 µm/m³</td> </tr> <tr> <td>PM₁₀</td> <td>24 hour</td> <td>^b 50 µm/m³</td> </tr> </tbody> </table> <p>...</p> <p>^a Total impact (ie incremental increase in concentrations due to the Ashton Mine Complex plus background concentrations due to all other sources);</p> <p>^b Incremental impact (incremental increase in concentrations due to the Ashton Mine Complex on its own);</p> <p>...</p>	Pollutant	Averaging Period	Criterion ^d	PM ₁₀	Annual	^a 30 µm/m ³	PM ₁₀	24 hour	^b 50 µm/m ³	<p>Table 6: Air Quality Criteria</p> <table border="1"> <thead> <tr> <th>Pollutant</th> <th>Averaging Period</th> <th>Criterion^d</th> </tr> </thead> <tbody> <tr> <td>PM₁₀</td> <td>Annual</td> <td>^a 30 µm/m³</td> </tr> <tr> <td>PM₁₀</td> <td>24 hour</td> <td>^b 50 µm/m³</td> </tr> </tbody> </table> <p>...</p> <p>^a Total impact (ie incremental increase in concentrations due to the Ashton Mine Complex plus background concentrations due to all other sources);</p> <p>^b Incremental impact (incremental increase in concentrations due to the Ashton Mine Complex on its own);</p> <p>...</p>	Pollutant	Averaging Period	Criterion ^d	PM ₁₀	Annual	^a 30 µm/m ³	PM ₁₀	24 hour	^b 50 µm/m ³	<p>This proposed change of the 24-hour PM₁₀ criterion to incremental impact (i.e. incremental increase due to the Ashton Coal project on its own) is proposed on the basis that monitoring data shows ACOL's contribution to 24-hour PM₁₀ levels at monitoring locations surrounding the Ashton Coal Project is minor. Similarly, predicted impacts for the Modification are also minor. The proposed criterion would be consistent with other underground mines in the local area (e.g. Integra Underground Project and Maxwell Underground Coal Mine Project).</p> <p>Further justification is provided in Section 7.3 and Appendix C.</p>
Pollutant	Averaging Period	Criterion ^d																			
PM ₁₀	Annual	^a 30 µm/m ³																			
PM ₁₀	24 hour	^b 50 µm/m ³																			
Pollutant	Averaging Period	Criterion ^d																			
PM ₁₀	Annual	^a 30 µm/m ³																			
PM ₁₀	24 hour	^b 50 µm/m ³																			
Sch. 5, Note to Cond. 7	<p>Notes:</p> <ul style="list-style-type: none"> The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent. In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Applicant, Council, recognised environmental groups and the local community. In establishing the CCC, the Department will accept the continued representation from existing CCC members. The CCC may be combined with any similar CCC for the Ashton Mine Complex. 	<p>Notes:</p> <ul style="list-style-type: none"> The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent. In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Applicant, Council, recognised environmental groups and the local community. In establishing the CCC, the Department will accept the continued representation from existing CCC members. With agreement of the CCC Chairs and the approval of the Secretary, the operation of this CCC may deal with matters associated with the ACOL-operated portion of the Ravensworth Underground Mine. 	It is anticipated that the Community Consultative Committee (CCC) for the Ashton Coal Project may deal with matters associated with the ACOL-operated portion of the RUM subject to agreement of the CCC Chairs and approval of the Secretary.																		

Table 4
Summary of Ashton Coal Project Management Plans to be Updated to Incorporate the ACOL-operated Portion of the RUM

Document	Equivalent Management Plan Condition in RUM Development Consent DA 104/96	Relevant Activities and Impacts at the ACOL-operated Portion of the RUM to be Considered in the Revised Document ¹
Water Management Plan	Schedule 3, Condition 23.	Groundwater inflows management. Surface water and erosion management for infrastructure required to support the underground operations (e.g. ventilation fans).
Air Quality and Greenhouse Gas Management Plan	Schedule 3, Condition 18.	Construction and operation of ventilation and gas management infrastructure.
Noise Management Plan	Schedule 3, Condition 14.	Construction and operation of backroad ventilation fans.
Heritage Management Plan	Schedule 3, Condition 26.	Construction of ventilation, gas, water management and other surface infrastructure to support the underground mining operations (located in previously cleared or areas approved for clearing).
Biodiversity Management Plan	Schedule 3, Condition 6 (required under the Extraction Plan/SMP).	Construction of ventilation, gas, water management and other surface infrastructure to support the underground mining operations (located in previously cleared or areas approved for clearing).
Environmental Management Strategy	Not applicable.	Incorporation of the ACOL-operated portion of the RUM in the strategic framework for environmental management.
Mining Operations Plan/Rehabilitation Management Plan	[required under <i>Mining Act 1992</i>]	Mining activities, infrastructure and equipment required to support the underground operations (Section 5.2.3).

¹ Some of the activities are described in the RUM Modification Report (ACOL, 2021).

5 ASHTON MINE COMPLEX STATUTORY CONTEXT

This section outlines the statutory requirements relevant to the assessment of the Modification.

As outlined in the *State Significant Development Guidelines* (DPIE, 2021), Attachment 1 provides a detailed statutory compliance table for the Ashton Coal Project incorporating the Modification that identifies all the relevant statutory requirements and the relevant sections in this Modification Report that address these requirements.

5.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

The EP&A Act and *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation) set the framework for planning and environmental assessment in NSW.

5.1.1 Applicability of Section 4.55(2) of the EP&A Act

The Ashton Coal Project was approved under Part 4 of the EP&A Act by the then NSW Minister for Planning on 11 October 2002 (Development Consent DA 309-11-2001-i). Development Consent DA 309-11-2001-i has been modified 10 times, most recently on 20 June 2016 via former section 75W of the EP&A Act.

Approval for the proposed Modification has been sought under section 4.55(2) of the EP&A Act.

Clause 3BA(6) of Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017* relevantly provides:

3BA Winding-up of transitional Part 3A modification provisions on cut-off date of 1 March 2018 and other provisions relating to modifications

...

(6) *In the application of section 4.55 (1A) or (2) or 4.56 (1) of the Act to the following development, the consent authority need only be satisfied that the development to which the consent as modified relates is substantially the same development as the development authorised by the consent (as last modified under section 75W):*

(a) *development that was previously a transitional Part 3A project and whose approval was modified under section 75W,*

...

Substantially the Same Development

The Ashton Coal Project has demonstrably remained an open cut and underground coal mining operation. This would also clearly continue to be the case if the Modification was approved as the overall scale and nature of the development including intensity, production rates, mining method, hours of operation and severity of impacts would remain unchanged (Table 1).

In the context of the surrounding open cut and underground mining operations and proposed Modification activities (i.e. continuation of underground mining, coal preparation and handling of product and rejects), the 11 year extension of mining operations (i.e. to December 2035) would not materially change the overall scale and nature of the Ashton Coal Project.

Therefore, the consent authority can be satisfied that the Ashton Coal Project incorporating the Modification would remain “substantially the same” development as was last modified under section 75W of the EP&A Act (i.e. Modification 5), inclusive of consideration of the changes arising from previously approved modifications.

Minimal Environmental Impact

A review of the potential environmental impacts associated with the Modification has been undertaken and is outlined in Section 7 and Appendices A to C. The key outcomes of the environmental review are set out in Section 8.2.

Based on the outcomes of the environmental review, the Modification would result in no or negligible change to previously assessed and approved impacts and, therefore, would involve minimal environmental impact.

5.2 RELEVANT NSW LEGISLATION

In addition to the EP&A Act, the following NSW legislation may be applicable to the Ashton Coal Project incorporating the Modification:

- *Biodiversity Conservation Act 2016* (BC Act);
- *Dams Safety Act 2015*;
- *Mining Act 1992*;
- *National Parks and Wildlife Act 1974*;
- PoEO Act; and
- *Water Management Act 2000*.

Relevant licences or approvals required under these Acts would continue to be obtained for the Ashton Coal Project incorporating the Modification.

5.2.1 Biodiversity Conservation Act 2016

The BC Act provides the approach to be followed for conducting an assessment of a development's impacts on threatened species and ecological communities.

Under the *Biodiversity Conservation (Savings and Transitional) Regulation 2017*, a Biodiversity Development Assessment Report is not required to be submitted with a modification if the authority or person determining the application for modification (or determining the environmental assessment requirements for the application) is satisfied that the modification would not increase the impact on biodiversity values.

The Modification does not require additional surface disturbance beyond the approved areas (Section 4) and would therefore not increase the impact on biodiversity values, including threatened species and ecological communities.

Nonetheless, biodiversity values requiring consideration in accordance with section 7.17(2)(c) of the BC Act and clause 1.4 of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* are addressed in Table 5.

Accordingly, with reference to section 7.17(2)(c) of the BC Act and the *Threatened Species Test of Significance Guidelines* (State of NSW and Office of Environment and Heritage, 2018), no Biodiversity Development Assessment Report is required for the Modification as the Modification would not increase impacts on biodiversity values.

5.2.2 Dams Safety Act 2015

The objects of the *Dams Safety Act 2015* are to manage matters relating to dams safety, and promote the application of risk management.

ACOL operates and maintains two declared dams under the *Dams Safety Act 2015*:

- Ashton Coal Clean Water Dam 1; and
- Ravensworth Void 4 East Tailings (Ravensworth Void 4 Tailings Dam).

There would be no changes proposed to the declared dams as a result of the Modification. ACOL would continue to manage the declared dams in accordance with the requirements of the *Dams Safety Act 2015*.

5.2.3 Mining Act 1992

The objects of the *Mining Act 1992* are to encourage and facilitate the discovery and development of mineral resources in NSW, having regard to the need to encourage ecologically sustainable development.

The Modification does not involve development which requires a mining lease to be issued for the Ashton Coal Project to enable the development to be carried out. Therefore, there would be no need for the amendment or variation of the existing Ashton Coal Project authorities or the issue of new authorities under the *Mining Act 1992*.

The *Mining Act 1992* regulates environmental protection and rehabilitation of all mining leases, including the requirement for the submission of a Mining Operations Plan (MOP) or Rehabilitation Management Plan (RMP).

The proposed Modification activities at the Ashton Coal Project (i.e. processing of ROM coal, water and gas management, and coarse rejects and tailings emplacement) would be located within Mining Lease (ML) 1623 and ML 1533 held by White Mining (NSW) Pty Limited, and Mining Lease Application 500 lodged by White Mining (NSW) Pty Limited.

The proposed activities within the ACOL-operated portion of the RUM (i.e. mining of the Pikes Gully and Middle Liddell seams) would be located within ML 1348, ML 1349, ML 1668, held by Glencore, and ML 1495, held by RPPL.

Subdivision and partial transfer of tenements ML 1348, ML 1349, ML 1495 and ML 1668 to ACOL is proposed to facilitate the proposed Modification.

The MOP/RMP would be reviewed and revised to incorporate the Modification. This would include updating the MOP/RMP for both the Ashton Coal Project and the RUM and accompanying securities to incorporate the partially transferred areas of ML 1348, ML 1349, ML 1495 and ML 1668. The Ashton Coal Project MOP/RMP would be updated to cover the ACOL-operated portion of the RUM and the RUM MOP/RMP would be updated to remove this area.

Pursuant to section 380AA of the *Mining Act 1992*, ACOL has obtained written consent from the relevant tenement holders to modify Development Consent DA 309-11-2001-i (Attachment 2).

Table 5
Biodiversity Values Consideration

Biodiversity Value	Modification Consideration
<i>(a) threatened species abundance—being the occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site,</i>	The Modification would not change the approved disturbance footprint at the Ashton Coal Project. There would be no change in subsidence impacts (including to vegetation) at the Ashton Coal Project as there is no change proposed to the Lower Barrett longwall layout. Therefore, there is no impact on threatened species abundance anticipated.
<i>(b) vegetation abundance—being the occurrence and abundance of vegetation at a particular site,</i>	The Modification would not change the approved disturbance footprint at the Ashton Coal Project. There would be no change in subsidence impacts (including to vegetation) at the Ashton Coal Project as there is no change proposed to the Lower Barrett longwall layout. Therefore, there is no impact on vegetation abundance anticipated.
<i>(c) habitat connectivity—being the degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range,</i>	The Modification would not change the approved disturbance footprint at the Ashton Coal Project. There would be no change in subsidence impacts (including to vegetation) at the Ashton Coal Project as there is no change proposed to the Lower Barrett longwall layout. Therefore, there is no impact on habitat connectivity anticipated.
<i>(d) threatened species movement—being the degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle,</i>	The Modification would not change the approved disturbance footprint at the Ashton Coal Project. Therefore, there is no impact on threatened species movement anticipated.
<i>(e) flight path integrity—being the degree to which the flight paths of protected animals over a particular site are free from interference,</i>	The Modification does not propose the construction of any new infrastructure at the Ashton Coal Project beyond those already approved. Therefore, there is no impact on flight path integrity anticipated.
<i>(f) water sustainability—being the degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.</i>	The outcomes of the water resources studies conducted for this Modification demonstrate that the Modification would not result in any new or additional impacts to surface water or groundwater resources compared to the approved Ashton Coal Project. Therefore, there is no impact on water sustainability anticipated.

5.2.4 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* contains provisions for the protection and management of national parks, historic sites, nature reserves and Aboriginal cultural heritage in NSW.

The Modification does not seek to change the approved surface development extent for the Ashton Coal Project, or increase subsidence impacts/consequences, and therefore would not involve additional potential impacts on Aboriginal cultural heritage to those previously assessed.

Notwithstanding, ACOL will continue to manage Aboriginal cultural heritage at the Ashton Coal Project in accordance with its Heritage Management Plan and Aboriginal Heritage Impact Permits granted under the *National Parks and Wildlife Act 1974*. The Heritage Management Plan would also be updated to incorporate the ACOL-operated portion of the RUM, which ACOL would take responsibility over, as shown on Figure 4.

5.2.5 Protection of the Environment Operations Act 1997

The PoEO Act and the NSW *Protection of the Environment Operations (General) Regulation 2009* set out the general obligations for environmental protection for industry in NSW, which is regulated by the NSW EPA.

Operations and monitoring at the Ashton Mine Complex are currently undertaken in accordance with existing Environment Protection Licence (EPL) 11879 held by ACOL issued under the PoEO Act.

Operations and monitoring at the RUM are currently undertaken in accordance with existing EPL 2652 held by Ravensworth Operations Pty Ltd issued under the PoEO Act.

ACOL and RPPL would seek to vary the existing EPL 2652 (held by Ravensworth Operations Pty Ltd) to remove the relevant part of the ACOL-operated portion of the RUM and include them in EPL 11879 (held by ACOL). The proposed variations would be undertaken in consultation with the NSW EPA.

5.2.6 Water Management Act 2000

The *Water Management Act 2000* contains provisions for the licensing, allocation, capture and use of water resources.

Under the *Water Management Act 2000*, water sharing plans have commenced for water sources relevant to the Ashton Coal Project. Water sharing plans establish rules for sharing water between different users and between the various environmental sources (namely rivers or aquifers). Water sharing plans relevant to the Ashton Coal Project are:

- *Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016.*
- *Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2009.*
- *Water Sharing Plan for the Hunter Regulated River Water Source 2016.*

Consideration of the Modification against the water management principles and access licence dealing principles of the *Water Management Act 2000* is provided in Section 7.1.

5.3 RELEVANT NSW ASSESSMENT POLICIES

Aquifer Interference Policy

The *Aquifer Interference Policy* (AIP) (NSW Government, 2012) has been developed by the NSW Government as a component of the NSW Government's *Strategic Regional Land Use Policy*. The AIP applies State-wide and details water licence and impact assessment requirements.

The stated purpose of the AIP is to ensure equitable water sharing between various water users and proper licencing of water taken by aquifer interference activities, such that the take is accounted for in the water budget and water sharing arrangements.

The *Water Management Act 2000* defines an aquifer interference activity as that which involves any of the following:

- *the penetration of an aquifer;*
- *the interference with water in an aquifer;*
- *the obstruction of the flow of water in an aquifer;*
- *the taking of water from an aquifer in the course of carrying out mining or any other activities prescribed by the regulations; and*

- *the disposal of water taken from an aquifer in the course of carrying out mining or any other activity prescribed by the regulations.*

The Groundwater Review (Appendix A) has been prepared in consideration of the AIP for the Modification and the results are described in Section 7.1.3.

5.4 ENVIRONMENTAL PLANNING INSTRUMENTS

State environmental planning policies of relevance to the Project were described in the Ashton Coal Project Environmental Impact Statement (EIS) (White Mining Limited, 2001) and subsequent modifications. Detail on potential Modification requirements under the key environmental planning instruments is included in the statutory compliance table provided in Attachment 1.

5.5 COMMONWEALTH LEGISLATION

5.5.1 Environment Protection and Biodiversity Conservation Act 1999

The objective of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is to provide for the protection of the environment, especially those aspects of the environment that are matters of national environmental significance (MNES).

Proposals that are likely to have a significant impact on a MNES are defined as a controlled action under the EPBC Act. A proposal that is, or may be, a controlled action is required to be referred to the Commonwealth Department of Agriculture, Water and Environment to determine whether or not the action is a controlled action.

Based on the minor nature of the Modification, it was concluded that the Modification would not have a significant impact on MNES for the following reasons:

- The Modification would not have a significant impact on listed threatened species and ecological communities and/or migratory species.
- The Modification would not have a significant impact on wetlands of international importance.
- The Modification would not have a significant impact on world heritage properties or national heritage places.
- The Modification would not impact the Great Barrier Reef Marine Park and/or Commonwealth marine areas.

- The Modification is not a nuclear action.
- The assessment of potential impacts of the Modification on water resources indicates that there would be no significant impact on water resources as a result of the Modification (Sections 7.1 and 7.2 and Appendices A and B).

5.5.2 National Greenhouse and Energy Reporting Act 2007

The Commonwealth *National Greenhouse and Energy Reporting Act 2007* (NGER Act) introduced a single national reporting framework for the reporting and dissemination of corporations' greenhouse gas emissions and energy use.

ACOL would take over responsibility for NGER Act reporting for the ACOL-operated portion of the RUM, and account for the greenhouse gas emissions associated with mining of the ACOL-operated portion of the RUM in its annual NGER Act report.

6 ENGAGEMENT

Consultation with NSW government agencies, Singleton Council and the local community has been undertaken by Yancoal and Glencore.

6.1 NSW GOVERNMENT AGENCIES

NSW Department of Planning, Industry and Environment

Yancoal held a meeting with DPIE on 23 September 2021 to provide an overview of the Modification, the supporting environmental assessments to be undertaken, and the proposed approval process and timing. Feedback on the proposed environmental assessments provided by DPIE during this meeting has been considered in this Modification Report.

On 1 October 2021, Yancoal submitted a scoping letter to DPIE providing an overview of the Modification, proposed approval pathway and the proposed scope of the environmental assessment.

DPIE subsequently responded to Yancoal on 12 October 2021, nominating a proposed approval pathway, consultation requirements and environmental assessment matters to be considered as part of the Modification.

On 28 October 2021, Yancoal provided further information to DPIE providing justification that the Modification would involve minimal environmental impact.

The matters raised by DPIE have been considered in this Modification Report.

NSW Resources Regulator

Yancoal provided a briefing letter to NSW Resources Regulator on 1 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken. Yancoal offered to meet with NSW Resources Regulator to discuss the details of the proposed Modification and environmental assessment, and invited NSW Resources Regulator to provide any comments or feedback on the proposal.

NSW Division of Mining, Exploration and Geoscience

Yancoal provided a briefing letter to the NSW Division of Mining, Exploration and Geoscience (MEG) within the Department of Regional NSW on 15 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken. Yancoal met with MEG on 9 November 2021 to discuss coal resource information relevant to the approved and modified RUM. Yancoal plans to meet with MEG in November 2021 to discuss the tenement requirements relevant to the Modification.

Natural Resources Access Regulator

Yancoal provided a briefing letter to NSW Natural Resources Access Regulator (NRAR) (and the Department of Planning, Industry and Environment – Water [DPIE – Water]) on 6 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken. Feedback on the proposed environmental assessments provided by NRAR in response to the letter has been considered in this Modification Report.

NSW Environment Protection Authority

Yancoal provided a briefing letter to the NSW EPA on 1 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken.

Dams Safety NSW

Yancoal provided a briefing letter to Dams Safety NSW on 12 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken. Yancoal offered to meet with Dams Safety NSW to discuss the details of the proposed Modification and environmental assessment, and invited Dams Safety NSW to provide any comments or feedback on the proposal. In reply, Dams Safety NSW indicated that it did not require a meeting with Yancoal and indicated it had no issues with the proposal. Dams Safety NSW also noted the notification requirements applicable to the proposed Modification activities.

Subsidence Advisory NSW

Yancoal provided a briefing letter to Subsidence Advisory NSW on 1 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken.

NSW Health

Yancoal provided a briefing letter to NSW Health on 1 October 2021 to provide an overview of the Modification and the supporting environmental assessments to be undertaken.

6.2 SINGLETON COUNCIL

The Ashton Coal Project and Ravensworth Mine Complex are located within the Singleton LGA (Figure 1).

Yancoal provided a briefing letter to the Singleton Council on 1 October 2021 to provide an overview of the Modification and outline the approach to assessing potential environmental impacts associated with the Modification. Yancoal offered to meet with the Singleton Council to discuss the details of the proposed Modification and environmental assessment, and invited the Singleton Council to provide any comments or feedback on the proposal. In reply, the Singleton Council indicated that it did not require a meeting with Yancoal and provided no comments on the briefing letter.

6.3 COMMUNITY CONSULTATION

Community Consultative Committees

The Ashton Coal Project CCC was established in accordance with DA 309-11-2001-i. The Ravensworth Mine Complex CCC was established in accordance with Development Consent DA 104/96 and Project Approval 09_0176.

The CCCs provide a mechanism for ongoing communication between the mines and the local community. Membership of the CCCs include representatives of the local community, the Singleton Council, and Operators (ACOL and Glencore). Meetings for both CCCs are currently held every four months.

The CCCs have been, and will continue to be, consulted on the Modification. It is anticipated that the CCC for the Ashton Coal Project may deal with matters associated with the ACOL-operated portion of the RUM subject to agreement of the CCC Chairs and approval of the Secretary.

Public Consultation

The ACOL website provides up to date information on the Ashton Mine Complex, and provides access to relevant environment and community information, including compliance reports and approval documents. The ACOL Environment and Community Response Line (1800 657 639) allows members of the public to contact ACOL with enquiries or complaints.

The Glencore website provides up to date information on the Ravensworth Mine Complex, and provides access to relevant environment and community information, including compliance reports and approval documents. The Ravensworth Mine Complex Environment and Community Enquiries Hotline (1800 620 553) allows members of the public to contact Glencore with enquiries or complaints.

7 ASSESSMENT OF IMPACTS

This section presents the assessment of impacts associated with the modified Ashton Coal Project. The assessment of impacts associated with the separate application for the modified RUM (that is required to integrate the two underground mining operations) is presented in the RUM Modification Report (ACOL, 2021).

7.1 GROUNDWATER

A Groundwater Review has been undertaken by Australasian Groundwater & Environmental Consultants Pty Ltd (AGE) (2021) for the Modification and is presented in Appendix A.

The Groundwater Review has been peer reviewed by Dr Noel Merrick (Director, HydroAlgorithmics Pty Ltd) and is presented in Attachment 3.

7.1.1 Methodology

The main purpose of the revised groundwater modelling was to predict groundwater inflows due to the combined operations of the modified RUM and Ashton Underground Mine (i.e. the Modification) to assess water take from relevant water sources. This was required due to ACOL proposing to take responsibility for the modified RUM (i.e. the ACOL-operated portion of the RUM), and to account for the change in longwall sequencing and extraction timing compared to previous predictions.

The modelling was also undertaken to verify that impacts of the Modification are consistent with, or in some cases less than, the approved impacts at the Ashton Underground Mine and RUM.

A contemporary groundwater model was developed in 2015 for the Ashton Coal Project by AGE and was most recently updated in 2019. AGE (2021) builds on these earlier studies and groundwater model to provide a review of potential groundwater impacts associated with the Modification. The modified RUM longwall panels were incorporated into the existing groundwater model to enable prediction of cumulative impacts due to both the Ashton Underground Mine and RUM through to the end of mining (2035).

7.1.2 Background

A number of groundwater investigations, assessments and reviews have been undertaken since the 1990s to assess the potential impacts of the approved RUM and Ashton Coal Project. Recent groundwater assessments undertaken include:

- Ravensworth Underground Mine Assessment of Groundwater Impacts Associated with Proposed Modification to DA 104/96 (Mackie Environmental Research [MER], 2009);
- Assessment of Groundwater Impacts Associated with Modifications to Mining in the Liddell Seam (MER, 2012); and
- Ashton Coal Project Bowmans Creek Diversion: Groundwater Impact Assessment Report (Aquaterra, 2009).

MER (2012) concluded that extensive mining in the areas surrounding RUM and historical mining in the overlying Ravensworth Operations Project open cuts had already substantially depressurised and dewatered the coal measures down to the Bayswater Seam (which overlies the Pikes Gully Seam). The historical Cumnock Operations to the west and the current Ashton Coal Project and RUM have further reduced pore pressures down to the Pikes Gully Seam which has led to a partial reduction in pressures in the deeper Liddell Seam (MER, 2012).

Predictions in MER (2012) for modelled year 2024 show significant depressurisation of coal measures including Pikes Gully, Liddell and Barrett seams associated with the mining operations at and surrounding the Ashton Coal Project and the RUM.

7.1.3 Potential Impacts

The existing Ashton Coal Project groundwater model has been updated by AGE (2021) for the Modification to incorporate the modified RUM longwall panels (Appendix A). This model has been used to predict groundwater inflows over the life of the Modification (including the mining of the RUM longwalls).

The key findings of the Groundwater Review (Appendix A) are:

- The predicted groundwater inflows due to the Modification are generally consistent with those previously assessed and approved for the Ashton Coal Project and RUM.
- There is no increase in impacts expected at privately-owned bores neighbouring the proposed Modification.
- There is no increase in impacts expected to the Hunter River, Glennies Creek or Bowmans Creek alluvium or baseflows to those previously assessed and approved for the Ashton Coal Project and the RUM.
- There is no increase in impacts expected to groundwater dependent ecosystems.

Groundwater Inflows

The predicted inflows to the Pikes Gully and Middle Liddell seams are consistent with those reported in MER (2012). The maximum annual predicted inflow to the RUM and Ashton Coal Project is 884 megalitres per annum (ML/annum). This maximum inflow is predicted to occur during the mining of the RUM Middle Liddell Seam, with inflows reducing during the mining of the Ashton Coal Project Lower Barrett Seam.

Groundwater Licensing

ACOL holds sufficient water licences for the total predicted take for the Modification (i.e. combined Ashton Underground Mine and the ACOL-operated portion of the RUM) for the relevant water sources (Appendix A).

7.1.4 Mitigation and Monitoring

The Ashton Coal Project WMP (ACOL, 2020a) would be reviewed and updated to incorporate the Modification. This would include revising the WMP to incorporate groundwater management for the ACOL-operated portion of the RUM, which ACOL would take responsibility over, as outlined on Figure 4.

7.2 SITE WATER BALANCE

A Site Water Balance has been undertaken by HEC (2021) for the Modification and is presented in Appendix B.

The Site Water Balance was undertaken to assess impacts on water management at the Ashton Coal Project associated with:

- continuation of coal handling and preparation at the Ashton CHPP for a further 11 years (to December 2035), with associated water demands and management;
- emplacement of additional RUM tailings within the Ravensworth Void 4 Tailings Dam and tailings and coarse rejects within the completed NEOC; and
- management of additional groundwater inflows in the Ashton Coal Project water management system associated with the ACOL-operated portion of the RUM.

7.2.1 Background

Proposed Changes to Surface Water Management

The relevant water management components of the Ashton Coal Project that would change under the Modification have been assessed by HEC (2021), and would include:

- continuation of coal handling and preparation of coal extracted via underground mining methods at the Ashton CHPP for a further 11 years and associated water demands and management;
- emplacement of additional RUM tailings within the Ravensworth Void 4 Tailings Dam and completed NEOC;
- emplacement of RUM coarse rejects within the completed NEOC; and
- management of additional water received from the RUM (i.e. groundwater inflows).

There would be no change to the surface development area associated with the Modification. There is also no increase in mining rates or water supply requirements compared to the approved Ashton Coal Project.

7.2.2 Potential Impacts

An updated Site Water Balance has been prepared for the Modification to assess water supply reliability and potential storage overflow risk. The operational rules and storage details used in the Site Water Balance model are outlined in Appendix B.

Water Supply Reliability

Water supply reliability has been modelled for the CHPP and dust suppression, which can utilise poorer quality water, and the underground operation, which sources water from WALs.

The Site Water Balance model predicts that there would be no water supply shortfalls for the Ashton CHPP and dust suppression.

The Site Water Balance model predicts that the average reliability for the underground operations over all realizations was 83.7%, while the lowest in any one realization was 43.2%. This is also the case for the approved Ashton Coal Project (as there is no change in water supply requirement for the underground operations due to the Modification).

Consistent with the approved Ashton Coal Project, ACOL may need to source additional water for the underground operations. This may include:

- Obtaining additional permanent or temporary WALs.
- Treating or mixing water stored on-site to meet underground operations water quality requirements.
- Sourcing water from other external sources, such as excess water from the adjoining mining operations.

There is no environmental impact associated with potential water supply shortfalls for the underground operations.

Storage Overflow Risk

There is no increase in annual storage overflow risk as a result of the Modification. There are no predicted overflows from site storages with the exception of two predicted overflow events from the Process Water Dam under modelled extreme wet periods, one of which is the 1955 Hunter Valley floods.

The Site Water Balance model predicts that there would be a less than 1% annual risk of overflows from the Process Water Dam over the life of the modified Ashton Coal Project. The Process Water Dam has the potential to spill to Bettys Creek. The constituents present in the Process Water Dam during overflow periods would be highly diluted and therefore the impact of overflow from the Process Water Dam on downstream water quality is expected to be negligible. In addition, ACOL would transfer water from the Process Water Dam to the NEOC ahead of any significant forecasted rainfall events, to further reduce the risk of potential overflows, which is not accounted for in the Site Water Balance modelling. This is consistent with current water management practices at the Ashton Coal Project.

7.2.3 Mitigation and Monitoring

The Ashton Coal Project WMP (ACOL, 2020a) would be reviewed and updated to incorporate the Modification. This would include revising the WMP to incorporate surface water management within the ACOL-operated portion of the RUM, which ACOL would take responsibility over, as outlined on Figure 4.

7.3 AIR QUALITY

An Air Quality Review has been undertaken by Todoroski Air Sciences (TAS) (2021) for the Modification and is presented in Appendix C.

The Air Quality Review was undertaken to assess potential air quality impacts associated with the extension of mining until 2035 at the Ashton Coal Project. Other proposed activities associated with the Modification (e.g. processing of ROM coal, handling of rejects and transportation of product coal) are already approved under Development Consent DA 309-11-2001-i.

7.3.1 Background

The Ashton Coal Project is located within a recognised mining precinct, with the Ravensworth Mine Complex located to the west, the Glendell Mine (part of the Mount Owen Complex) located to the north and Rix's Creek Mine located to the south-east (Figure 1).

Following the completion of the NEOC, the main sources of dust emissions associated with the Ashton Coal Project have included handling and processing of coal at the CHPP and rail loadout, and trucking of coarse rejects to the completed NEOC void for emplacement.

If the approved SEOC Project were to be commenced, the maximum ROM coal mining rate would be up to 8.6 Mtpa compared to the currently approved mining rate of 5.45 Mtpa for the Ashton Underground Mine only. In addition, the SEOC Project open cut mining operations would be located less than 1 km from Camberwell during the early stages of the project. Air quality impacts in Camberwell due to the SEOC Project was a key issue raised during its assessment.

Existing Air Quality

A review of air quality data at monitoring locations surrounding the Ashton Coal Project was completed by TAS (2021) to assess ACOL's contribution to total dust levels. TAS estimated that ACOL's contribution to the annual average particulate matter with an equivalent aerodynamic diameter of 10 micrometres (μm) or less (PM_{10}) levels at a monitoring location in Camberwell would be minor.

Complaints

Since 2016, ACOL has received two dust related complaints with both occurring in July 2020. In both cases, subsequent investigation of operations occurring at the time and meteorological conditions found that the contribution from the Ashton Coal Project was unlikely to be a significant contributor to dust levels at the complainant's residence.

7.3.2 Potential Impacts

The Modification would not seek to change the currently approved Ashton Coal Project mining or coal processing rates and therefore would not result in any increase to the approved Ashton Coal Project air quality impacts.

Compared to the approved operations and in absence of the approved SEOC Project, the Modification would result in an increase in the duration of dust emissions for an additional 11 years. Dust generating activities would be associated with the handling and processing of coal at the Ashton Coal Project CHPP and rail loadout, and the emplacement of coarse rejects and tailings into the NEOC void.

As described in Section 1.3.1, Yancoal's preference is to proceed with the Modification rather than commencing the approved SEOC Project. There would be a significant reduction in the future approved emissions resulting from not proceeding with the SEOC Project (Appendix C).

Total Suspended Particulates

Air quality modelling for the SEOC Project (PAE Holmes, 2009) and Ashton Coal Project (TAS, 2016) indicates that the emission rates associated with the approved but not yet commenced SEOC Project are significantly higher than the emissions associated with the approved Ashton Coal Project. The total suspended particulate (TSP) for the Ashton Coal Project was estimated to be 116,741 kilograms per year (kg/year), which would account for between 5-11% of the total for the approved Ashton Mine Complex (Ashton Coal Project plus SEOC Project). By not proceeding with the SEOC Project, future air quality emissions would be lower than previously assessed by approximately 89-95% (Appendix C).

Future Cumulative Air Quality Emissions

In order to assess potential cumulative impacts associated with the change in mine life, existing assessments for adjacent mining operations were reviewed by TAS (2021).

A cumulative assessment undertaken by Jacobs (2019) for the *Glendell Continued Operations Project Air Quality Impact Assessment* conservatively includes the operation of the Ashton Coal Project in years 2033 and 2038. This cumulative assessment indicates that the estimated TSP emission rate for the Ashton Coal Project in year 2033 contributes only 0.6% of the total TSP emissions from all surrounding mining operations (Appendix C).

Umwelt (2020) also presented the contribution of surrounding mining operations to the predicted annual average PM_{10} levels at privately-owned receptors in Camberwell during modelled years up to 2038 (Appendix C).

The data from Umwelt (2020) indicates that in modelled year 2033, the Ashton Coal Project's contribution to the total impacts at a representative receptor in Camberwell is minor relative to the surrounding mining operations and that there would likely be exceedances of the applicable annual average PM_{10} criteria at a privately-owned receptor for the approved and proposed operations (i.e. from the adjacent Glendell Mine open cut operations), regardless of the contribution of the Ashton Coal Project (Appendix C). Further, the contribution from the Ashton Coal Project in future years would be simply too small to alter the findings of Jacobs (2019) (Appendix C).

On the basis that Ashton Coal Project's contribution to cumulative PM₁₀ levels is relatively minor and open cut activities are no longer proposed, TAS (2021) recommended that ACOL's Development Consent criteria for 24-hour PM₁₀ average impacts be aligned with those for other underground mines in the area (i.e. using incremental impact criteria only) such as the Integra Underground Project and Maxwell Underground Coal Mine Project.

The assessment undertaken by Jacobs (2019) also applies for particulate matter with an equivalent aerodynamic diameter of 2.5 µm or less (PM_{2.5}) (Appendix C). Based on an assessment of the data from Jacobs (2019), TAS concluded that if the Modification continued production until 2035, predicted PM_{2.5} levels would remain below the applicable criteria (Appendix C).

The extension of the Ashton Coal Project mine life would therefore not have any significant impact on future cumulative dust levels at the nearest and most impacted privately-owned receptors to the Ashton Coal Project.

7.3.3 Mitigation and Monitoring

ACOL would continue to implement existing air quality management measures in accordance with the Air Quality and Greenhouse Gas Management Plan (ACOL, 2020b), which would be reviewed and updated to incorporate the Modification. The Air Quality and Greenhouse Gas Management Plan would be updated to incorporate the ACOL-operated portion of the RUM which ACOL would take responsibility for, as shown on Figure 4.

7.4 GREENHOUSE GAS

Under this Modification, ACOL would receive ROM coal mined in the RUM Pikes Gully and Middle Liddell seams and process this ROM coal at the Ashton Coal Project CHPP. This activity would not result in any material change in greenhouse gas emissions as the processing and transportation of coal at the Ashton Coal Project are expected to use similar amounts of energy as that approved for the RUM.

The total Scope 1, 2 and 3 greenhouse gas emissions associated with the SEOC Project is 35.1 Mt carbon dioxide equivalent (CO₂-e) (PAEHolmes, 2009). Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex, ACOL would utilise the existing Ashton Coal Project infrastructure, equipment and workforce to mine the approved RUM and would not proceed with the SEOC Project. Therefore, 35.1 Mt CO₂-e emissions would be avoided if the SEOC Project is not commenced.

Under the Modification, ACOL would be responsible for reporting of emissions under the NGER Act associated with the proposed underground mining activities at RUM (as per the ACOL-operated portion of the RUM defined on Figure 4) and the processing and handling of coal at the Ashton Coal Project.

7.5 OTHER ENVIRONMENTAL CONSIDERATIONS

7.5.1 Social

The Ashton Coal Project, the RUM and SEOC Project have approval to operate concurrently, with dedicated workforces operating at each of the three mining operations. The RUM has been in care and maintenance since 2014 and therefore has not employed an operational workforce since that time (with three current roles at the site). The SEOC Project has not yet commenced.

Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex, ACOL would utilise the existing Ashton Coal Project infrastructure, equipment and workforce to mine the ACOL-operated portion of the RUM and would not proceed with the SEOC Project.

Potential social impacts associated with the Modification would primarily relate to the continuation of amenity impacts from the Ashton Coal Project and employment of the ACOL workforce until 2035 (i.e. an additional 11 years of underground mining). It is relevant to note that the SEOC Project would operate for 12 years if commenced (i.e. up to 2034), requiring a similar number of employees as the current underground operations and in addition to the current workforce.

Social impact themes for the local area in the context of a proposed mining development were identified in the *Glendell Continued Operations Project Social Impact Assessment* (Umwelt, 2019). These themes are generally consistent with the social themes previously raised for the Ashton Mine Complex, and include issues such as dust and noise emissions, health, community, economic benefits, employment, property prices and impacts on water. A review of the relevance of the Modification to the social impact themes identified by Umwelt (2019) is provided in Table 6.

Based on the review, there would be a negligible change in social impacts under the Modification compared to the approved operations and in some cases, impacts would reduce as a result of not proceeding with the SEOC Project.

Table 6
Review of Social Impact Themes Identified in Glendell Continued Operations Project Social Impact Assessment

Social Impact Theme ¹	Definition ¹	Relevance of Modification
Social Amenity	Social amenity concerns primarily relate to the impacts on way of life and rural lifestyle and include the impacts experienced as a result of dust/air quality, operational noise, blasting (vibration and plumes), visual impact and potential odour.	<p>Under the Modification, the Ashton Coal Project would be completed in 2035. The existing ACOL workforce would continue to be employed to mine already approved Ashton Coal Project and RUM coal resources. The amenity impacts associated with the approved Ashton Coal Project (e.g. coal preparation, coal and rejects handling and product transportation) would continue until 2035.</p> <p>The Modification is not expected to have any significant impact on future cumulative dust levels at privately-owned receivers.</p> <p>If the Modification proceeds, the total approved emissions from the Ashton Mine Complex (i.e. cumulative Ashton Coal Project plus SEOC Project) would reduce as the SEOC Project would not be commenced.</p>
Sense of Community and Culture	Changes to the cohesion and character of the community, including impacts on cultural heritage.	<p>The Modification does not propose disturbance of any land beyond the historical/approved development footprint. There would also be no change to subsidence impacts as the existing Ashton Coal Project longwall layout would remain unchanged. Therefore, no new impacts to Aboriginal cultural heritage are expected.</p> <p>Under the Modification, the Ashton Coal Project would be completed in 2035. The existing ACOL workforce would continue to be employed to mine the already approved RUM and Ashton Coal Project coal resources. The amenity impacts associated with the approved Ashton Coal Project (e.g. coal preparation, coal and rejects handling and product transportation) would continue until 2035.</p>
Economic Contribution and Community Investment	Contribution to the regional economy and community investment efforts. Opportunities for employment, training and partnerships, particularly for near neighbours, the Aboriginal community and emergency services.	<p>Under the Modification, the Ashton Coal Project would be completed in 2035. The existing ACOL workforce would continue to be employed to mine the already approved Ashton Coal Project and RUM coal resources.</p> <p>It is expected that ACOL would continue to make contributions to community groups and causes under the Modification, consistent with current practices.</p> <p>ACOL would continue to engage with the Aboriginal and local community via the Ashton CCC and Aboriginal Community Consultation Forum to identify opportunities employment, training and partnerships.</p>
Access to and Use of Infrastructure and Services	Potential disruption on the local road network due to operational activities (e.g. blasting and cumulative effects of mine traffic). Inability to access particular services and facilities in the area, (e.g. provision of telecommunications, housing/accommodation).	The Modification does not propose any new activities that would disrupt the local road network or reduce access to services or facilities.

Table 6 (Continued)
Review of Social Impact Themes Identified in Glendell Continued Operations Project Social Impact Assessment

Social Impact Theme ¹	Definition ¹	Relevance of Modification
Water Access and Use	Access to and use of water, including impacts on both ground and surface water.	<p>There would be no change in groundwater impacts compared to the approved Ashton Coal Project as the longwall layout remains the same.</p> <p>There would be negligible change in surface water impacts compared to the approved Ashton Coal Project. There would also be a significant reduction in approved surface water impacts by not commencing the SEOC Project.</p>
Engagement and Decision-Making	Existing engagement mechanisms and the ongoing potential to have a voice in the assessment process - provide input and feedback to decision making.	ACOL engaged with the Ashton CCC as part of the engagement undertaken for the Modification and has considered comments raised in this Modification Report. ACOL will also respond to comments raised by the community during the assessment of the Modification.
Intergenerational Equity	Intergenerational equity refers to addressing the needs of the present generation without compromising the ability of future generations to meet their own needs (IAIA, 2003). The Intergenerational equity theme includes impacts relating to future land use, land management (including the management of pests such as wild dogs) and climate change.	<p>The Modification does not propose any material change to landforms in the underground areas at the Ashton Coal Project. The NEOC void would be backfilled with coal rejects and tailings, consistent with the approved Ashton Coal Project.</p> <p>The Modification would not change the future land use or land management at the Ashton Mine Complex.</p> <p>The Modification would not result in any additional climate change impacts as the coal resources are already approved to be mined, and mining methods remain unchanged (Section 7.4).</p>
Health and Wellbeing	Health impacts as a result of dust impacts, including respiratory issues and psychosocial affects relating to the cumulative presence of mining.	<p>Under the Modification, the Ashton Coal Project would be completed in 2035. The existing ACOL workforce would continue to be employed to mine the already approved RUM and Ashton Coal Project coal resources. The amenity impacts associated with the approved Ashton Coal Project (e.g. coal preparation, coal and rejects handling and product transportation) would continue until 2035.</p> <p>The Modification is not expected to have any significant impact on future cumulative dust levels at privately-owned receivers (Section 7.3).</p> <p>If the Modification proceeds, the total approved emissions from the Ashton Mine Complex (i.e. cumulative Ashton Coal Project plus SEOC Project) would reduce as the SEOC Project would not be commenced.</p> <p>The Modification is not expected to result in new psychosocial impacts.</p>
Personal and Property Rights	Impacts of the project on private property values and the ability to sell/move out of the area.	<p>Under the Modification, the Ashton Coal Project would be completed in 2035. The existing ACOL workforce would continue to be employed to mine the already approved Ashton Coal Project and RUM coal resources.</p> <p>It is anticipated that the Modification would result in a negligible change to property values and the ability to sell properties.</p>

¹ Social impact themes and definition sourced from the Glendell Continued Operations Project Social Impact Assessment (Umwelt, 2019).

7.5.2 Economic

The Modification would allow for the continued employment of Ashton Coal Project employees and contractors until the end of 2035.

The economic benefits associated with these employment opportunities (e.g. increased wages, business turnover) in the regional economy would continue as a result of the Modification.

As described in Section 1.3.2, in absence of the Modification, the approved unmined RUM coal resource would most likely not be mined and, therefore, the NSW Government royalties associated with the mining of the approved RUM coal in the Pikes Gully and Middle Liddell seams may not be realised.

7.5.3 Road Transport

The Modification would result in the continued employment of the ACOL workforce until 2035 and associated traffic movements surrounding the Ashton Coal Project.

The New England Highway is the principal road servicing the local area and links Singleton to Muswellbrook (Figure 1). The Ashton Coal Project CHPP and site offices are located to the north of the New England Highway, off Glennies Creek Road (Figure 2).

Level of Service

The Level of Service for local roads including the New England Highway were identified in the *Traffic and Transport Assessment for Glendell Continued Operations Project* (Puliyapang Joint Venture, 2019). The Level of Service was identified for the New England Highway across a baseline year (2018) and two future years (2022 and 2033). The baseline and forecast years include the existing Ashton Coal Project traffic.

The Level of Service for the New England Highway was Level of Service A (where Level of Service A represents free flowing traffic, and Level of Service F represents queuing and delays) for both future years under morning and evening peaks, except for the 2033 morning peak where it was modelled as Level of Service B.

Potential Impacts

The Modification would not change the roads used to access the Ashton Coal Project by employees and contractors (i.e. employees would reside in similar LGAs as present).

There would be no changes to existing Ashton Coal Project employee vehicle movements associated with the Modification.

While the Modification would result in the Ashton Coal Project generated traffic using the surrounding road network for an additional 11 years, in the context of the surrounding approved and proposed mining operations, there would be no significant change in the total traffic volumes on the New England Highway or local roads. In addition, not commencing the SEOC Project would reduce future approved traffic volumes on the New England Highway and local road network.

Given the above, there is a negligible impact on the road network surrounding the Ashton Coal Project expected due to the continued operations of the Ashton Coal Project until 2035.

7.5.4 Noise

A review of the Ashton Coal Project's noise performance during the period January 2016 to June 2021 shows that ACOL has complied with relevant noise limits conditioned in Development Consent DA 309-11-2001-i.

The Modification does not require any new infrastructure or changes to operational activities beyond those already approved for the Ashton Coal Project. The Ashton Coal Project would continue to comply with the noise limits conditioned in Development Consent DA 309-11-2001-i under the modified mine life (to 2035).

Future noise emissions would be significantly lower than previously assessed by not commencing the SEOC Project.

7.5.5 Biodiversity

The Modification does not require additional surface disturbance or infrastructure beyond those already approved or previously cleared. There would be no change in subsidence impacts (including to vegetation) at the Ashton Coal Project under the Modification, as there is no change proposed to the approved Lower Barrett longwall layout. Therefore, the Modification would not increase the impact on biodiversity values, including threatened species and ecological communities.

7.5.6 Visual

The Modification does not require any new infrastructure beyond those already approved for the Ashton Coal Project.

Rejects and tailings generated from the processing of the RUM ROM coal would be emplaced in the existing NEOC void and Ravensworth Void 4 Tailings Dam, utilising the capacity available through ACOL not proceeding with the SEOC Project.

The Modification would involve a change in the final landform of the NEOC void, with rehabilitated surface levels expected to be approximately 78 mAHD at its maximum height. The maximum rehabilitated surface would be lower than the current elevation of the adjacent NEOC waste rock emplacement (i.e. approximately 135 mAHD) and therefore would have negligible impact on views from public and private vantage points.

7.5.7 Other Matters

As the Modification would not change the Ashton Coal Project's approved surface development extent or longwall layout, no new assessments of the following potential impacts have been carried out for the Modification:

- subsidence effects and potential subsidence impacts;
- Aboriginal and historic heritage;
- potential soil impacts; or
- potential impacts to agricultural land.

These matters would continue to be managed in accordance with the Ashton Mine Complex's existing State approval conditions and relevant management plans, where appropriate.

8 JUSTIFICATION OF THE MODIFIED PROJECT

The Ashton Coal Project was approved under Part 4 of the EP&A Act by the then NSW Minister for Planning on 11 October 2002 (Development Consent DA 309-11-2001-i).

The Modification would allow ACOL to access and mine coal resources at the RUM that are approved to be mined under Development Consent DA 104/96 and continue the employment of the ACOL workforce for a further 11 years.

The Modification would not change the following components of the approved Ashton Coal Project:

- longwall layout;
- mining method and operating hours;
- operational employee numbers;
- ROM coal extraction rate;
- coal handling and preparation including coal processing rates;
- product coal transport; and
- reject management.

The Modification can be implemented in accordance with the existing environmental limits and performance measures for the Ashton Coal Project, and with no additional disturbance required beyond existing approved disturbance.

This Modification Report has been prepared in consideration of relevant legislation. ACOL would make revisions to plans, licences, and agreements to incorporate changes from the Modification as necessary.

8.1 STAKEHOLDER ENGAGEMENT

Yancoal and Glencore have consulted with the following stakeholders during the development of this Modification report:

- the Ashton Coal Project and RUM CCCs;
- DPIE;
- NSW Resources Regulator;
- MEG;
- DPIE – Water;
- NRAR;
- NSW EPA;

- Singleton Council;
- Subsidence Advisory NSW;
- Dams Safety NSW; and
- NSW Health.

Key comments and issues raised during consultation have been considered and addressed in the preparation of this Modification Report.

8.2 CONSOLIDATED SUMMARY OF ASSESSMENT OF IMPACTS

ACOL would operate the Ashton Coal Project incorporating the Modification in accordance with the existing environmental management plans and environmental monitoring programs, incorporating any necessary revisions.

ACOL has undertaken a review of the potential environmental impacts of the Modification to identify key potential environmental issues requiring assessment. The key environmental issues identified are summarised in Table 7.

Based on the outcomes of the environmental review, the Modification would result in no or negligible change in previously assessed and approved impacts.

8.3 CONSIDERATION OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

8.3.1 Objects of the Environmental Planning and Assessment Act 1979

Section 1.3 of the EP&A Act describes the objects of the EP&A Act as follows:

- (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,*
- (b) *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- (c) *to promote the orderly and economic use and development of land,*

Table 7
Key Outcomes of Environmental Review for the Modified Ashton Coal Project

Environmental Aspect	Summary of Key Environmental Review Conclusions
Groundwater Resources	<p>There would be no change in groundwater impacts compared to the approved Ashton Coal Project as the longwall layout remains the same.</p> <p>Updated groundwater modelling incorporating the revised sequencing of mining (including the revised RUM longwall layout) indicates that groundwater inflows would be generally consistent with the approved Ashton Coal Project.</p>
Surface Water Resources	<p>There would be negligible change in surface water impacts compared to the approved Ashton Coal Project. There would also be a significant reduction in approved surface water impacts by not commencing the SEOC Project.</p> <p>Water transferred from the RUM to the Ashton Coal Project can be managed within the existing water management system. The Modification would not require any material changes to the currently approved water management system (including no change to predicted off-site discharges).</p> <p>The existing Surface Water Management Performance Measures in Development Consent DA 309-11-2001-i would continue to be met under the Modification.</p>
Air Quality	<p>There would be no increase in air quality impacts relative to the existing and approved Ashton Coal Project.</p> <p>There would be a negligible impact on future cumulative dust levels at the Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future air quality emissions would be significantly lower than previously assessed.</p> <p>The completion of the Ashton Coal Project in 2035 would not have any significant impacts on future cumulative dust levels at privately-owned receptors in Camberwell, and would not alter the findings of the most recent cumulative assessment of the locality.</p>
Noise	<p>There would be no change in noise impacts compared to the approved Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future noise emissions would be significantly lower than previously assessed.</p> <p>The Ashton Coal Project would continue to comply with the noise limits conditioned in Development Consent DA 309-11-2001-i under the extended mine life (to 2035).</p>
Social	<p>There would be a negligible change in social impacts under the Modification compared to the approved operations and in some cases, the Modification would provide better environmental and social outcomes than developing the SEOC Project, which is approved for a period of 12 years.</p>
Transport	<p>There would be a negligible impact on the local road network associated with the continuation of the Ashton Coal Project. Under Yancoal's preferred pathway for continued operations at the Ashton Mine Complex (i.e. proceed with the Modification and not commence the SEOC Project), future traffic volumes would be lower than previously assessed.</p> <p>There would be no changes to existing Ashton Coal Project employee vehicle movements associated with the Modification.</p>
Biodiversity	<p>The Modification would not increase the impact on biodiversity values, including threatened species and ecological communities. The relevant Performance Measures in Development Consent DA 309-11-2001-i would continue to be met.</p> <p>The Modification does not require additional surface disturbance of remnant vegetation beyond that already approved or cleared for the Ashton Coal Project. There would be no change in subsidence impacts (including to vegetation) compared to the approved Ashton Coal Project.</p>
Heritage	<p>There would be no increase in impacts on heritage compared to the approved Ashton Coal Project. The relevant Performance Measures in Development Consent DA 309-11-2001-i would continue to be met.</p> <p>The Modification does not require additional surface disturbance beyond that already approved or cleared for the Ashton Coal Project. There would be no change in subsidence impacts compared to the approved Ashton Coal Project.</p>
Subsidence	<p>There would be no change in subsidence impacts as there is no change proposed to the approved Ashton Coal Project longwall layouts.</p>
Other Aspects	<p>The Modifications would result in negligible or no change in potential impacts on other environmental and economic considerations.</p> <p>The Modification would allow ACOL to mine approved RUM coal resources that would most likely not be mined without the Modification. This would allow for the continued employment of the ACOL workforce until 2035 and provide associated economic benefits.</p>

- (d) *to promote the delivery and maintenance of affordable housing,*
- (e) *to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *to promote good design and amenity of the built environment,*
- (h) *to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *to provide increased opportunity for community participation in environmental planning and assessment.*

The Modification is considered to be generally consistent with the objects of the EP&A Act, because it is a Modification that:

- involves the orderly and economic use of land as the Modification area is the minimum amount of land required to accommodate the Modification; and
- is an application under section 4.55(2) of the EP&A Act that would be determined by the NSW Government.

8.4 JUSTIFICATION FOR THE MODIFICATION

The Modification would enable ACOL to mine approved, but as yet unmined, coal resources at the RUM. These coal resources would most likely not be mined without the Modification.

The proposed Modification would have the following benefits:

- would provide for continued operations and continued employment of ACOL's workforce at the Ashton Coal Project;
- would utilise existing planning approvals to maximise economic recovery of approved coal resource;
- would avoid disturbance of additional areas (i.e. by limiting disturbance to previously cleared areas);

- provides better environmental and social outcomes than developing the approved SEOC Project; and
- is on land approved for mine development within current mining leases for the RUM.

8.5 CONCLUSION

The modified Ashton Coal Project would be "substantially the same" development as the approved Ashton Coal Project. It would involve the continued handling and processing of coal extracted via underground mining methods using existing infrastructure from the same coal seams currently approved for mining at the Ashton Coal Project. The overall scale and nature of the development including intensity, production rates, mining method, hours of operation and severity of impacts would remain unchanged.

The Ashton Coal Project (as modified) would continue to comply with existing criteria, performance measures and limits described in Development Consent DA 309-11-2001-i.

ACOL would also continue to operate the Ashton Coal Project (as modified) in accordance with the existing management and monitoring regime (as required to be updated from time to time) described in Development Consent DA 309-11-2001-i.

Based on the outcomes of the environmental review in Section 7, the Modification would result in no or negligible change in previously assessed and approved impacts and, therefore, would involve minimal environmental impact.

In weighing up the main environmental impacts (costs and benefits) assessed and described in this Modification Report, the Modification is, on balance, considered to be in the public interest of the State of NSW.

9 REFERENCES

- Ashton Coal Operations Pty Limited (2020a) *Water Management Plan*.
- Ashton Coal Operations Pty Limited (2020b) *Air Quality and Greenhouse Gas Management Plan*.
- Ashton Coal Operations Pty Limited (2021) *Ashton-Ravensworth Underground Mine Integration Modification – Ravensworth Underground Mine Modification Report*.
- Aquaterra (2009) *Ashton Coal Project Bowmans Creek Diversion Groundwater Impact Assessment*.
- Australasian Groundwater & Environmental Consultants (2021) *Ashton Coal Project Groundwater Review*.
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- International Association for Impact Assessment (2003) *International Principles for Social Impact Assessment*.
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- New South Wales Environment Protection Authority (2016) *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*.
- New South Wales Department of Planning, Industry and Environment (2020) *Net Zero Plan Stage 1: 2020 – 2030*.
- New South Wales Department of Planning, Industry and Environment (2021) *State Significant Development Guidelines*.
- New South Wales Government (2012) *Aquifer Interference Policy*.
- New South Wales Government (2016) *Upper Hunter Regional Plan*.
- New South Wales Government (2020) *Strategic Statement on Coal Exploration and Mining in NSW*.
- New South Wales Office of Environment and Heritage (2016) *NSW Climate Change Policy Framework*.
- PAE Holmes (2009) *SEOC Project Air Quality Model*.
- Puliyapang Joint Venture (2019) *Traffic and Transport Assessment for Glendell Continued Operations Project*.
- State of New South Wales and Office of Environment and Heritage (2018) *Threatened Species Test of Significance Guidelines*.
- Todoroski Air Sciences (2016) *Ashton Coal Project Air Quality Model*.
- Todoroski Air Sciences (2021) *Air Quality Assessment – Ashton Ravensworth Underground Integration Modification*.
- Umwelt (2019) *Glendell Continued Operations Project Social Impact Assessment*.
- Umwelt (2020) *Glendell Continued Operations Project Response to Submissions*.
- White Mining Limited (2001) *Ashton Coal Project Environmental Impact Statement*.

Attachment 1
Detailed Statutory Compliance Reconciliation Table for Ashton Coal Project

**Table A1-1
Summary Statutory Compliance for State Legislation**

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>				
section 1.3	<p>Relevant objects of the EP&A Act:</p> <ul style="list-style-type: none"> • 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. • Facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment. • Promote the orderly and economic use and development of land. • Protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats. • Promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage). • Promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State. • Provide increased opportunity for community participation in environmental planning and assessment. 	-	Sections 3 and 8.3	✓
section 4.15	<p>Relevant environmental planning instruments:</p> <ul style="list-style-type: none"> • <i>State Environmental Planning Policy (State and Regional Development) 2011</i> (State and Regional Development SEPP). • <i>State Environmental Planning Policy (SEPP) No 33: Hazardous and Offensive Development</i> (SEPP 33). • <i>State Environmental Planning Policy No.55 – Remediation of Land</i> (SEPP 55). • <i>State Environmental Planning Policy (Koala Habitat Protection) 2021</i> (Koala SEPP). • <i>State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007</i> (Mining SEPP). • <i>State Environmental Planning Policy (Infrastructure) 2007</i> (Infrastructure SEPP). • <i>Singleton Local Environmental Plan 2013</i> (Singleton LEP). • Any planning agreement or draft planning agreement that a developer has entered into under section 7.4 of the EP&A Act. • The EP&A Regulation. <p>The likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; the suitability of the site for the development; any submissions made in accordance with the EP&A Act or the EP&A Regulation; the public interest.</p>	Section 2.2 of the EIS	Remainder of Table A1-1.	✓

Table A1-1 (Continued)
Summary Statutory Compliance for State Legislation

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>EP&A Regulation</i>				
clause 115AA	An application for modification of a development consent for State significant development under the Act, section 4.55(1), (1A) or (2) or 4.56(1) must— a) be in the form approved by the Planning Secretary and made available on the NSW planning portal, and b) include particulars of the nature of the proposed modification to the development consent, and c) be prepared having regard to the State Significant Development Guidelines, and d) be lodged on the NSW planning portal.	-	Sections 1 to 8	✓
<i>Mining Act 1992</i>				
section 380AA	An application for development consent to mine for coal cannot be made or determined unless the applicant is the holder of an authority that is in force in respect of coal for the relevant land, or the applicant has the written consent of the holder of such an authority to make the application.	-	Section 5.2.3 Attachment 2	✓
<i>Biodiversity Conservation Act 2016</i>				
section 7.14(2)	The consent authority is to take into consideration the likely impact of the proposed development on biodiversity values as assessed in the BDAR. The Modification does not require additional surface disturbance beyond the approved areas and would therefore not increase the impact on biodiversity values, including threatened species and ecological communities.	-	Sections 5.2.1 and 7.5.5	✓
section 7.16(3)	If the consent authority is of the opinion that the Ashton Coal Project (as modified) is likely to have serious and irreversible impacts on biodiversity values, the consent authority is required to: <ul style="list-style-type: none"> • take those impacts into consideration; and • determine whether there are any additional and appropriate measures that will minimise those impacts if consent or approval is to be granted. 	-	Sections 5.2.1 and 7.5.5	✓
<i>Protection of the Environment Operations Act 1997 (PoEO Act)</i>				
section 43	The Ashton Coal Project currently operates under EPL 11879, granted under the PoEO Act, which allows for coal works and mining for coal as scheduled activities. The EPL contains conditions that relate to emission and discharge limits, environmental monitoring and reporting.	Section 2.10 of the EIS	Section 5.2.5	✓

Table A1-1 (Continued)
Summary Statutory Compliance for State Legislation

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>Water Management Act 2000</i>				
sections 89, 90 and 91	ACOL holds appropriate licences under the <i>Water Management Act 2000</i> for the existing activities at the Ashton Coal Project. Appropriate licences under the <i>Water Management Act 2000</i> would continue to be held and where necessary obtained via purchase or trade according to the operating rules of the water market.	-	No change.	✓
<i>Dams Safety Act 2015</i>				
section 48(4)	A consent authority must, before granting Development Consent for mining operations within a notification area of a declared dam, refer the application to Dams Safety NSW and take into consideration any matters raised by Dams Safety NSW.	-	Section 5.2.2	✓
<i>Coal Mine Subsidence Compensation Act 2017 (CMSC Act)</i>				
section 8	At all times while the Ashton Coal Project is an active mine, ACOL would be liable to pay compensation in relation to damage caused by subsidence arising from the Ashton Coal Project on improvement or goods under Part 2 of the CMSC Act. Any claims for compensation under the CMSC Act would be lodged with Subsidence Advisory NSW. The Ashton Coal Project is not located within a Mine Subsidence District declared under section 20 of the CMSC Act, and in the regulations made under the CMSC Act.	-	No change.	✓
<i>National Parks and Wildlife Act 1974 (NPW Act)</i>				
section 90	Relevant section 90 permits under the NPW Act have been obtained for the Ashton Coal Project. ACOL operates in accordance with these permits.	Sections 2.10 and 8.2.2 of the EIS	Section 5.2.4	✓
<i>Heritage Act 1977</i>				
section 139	No items of historic heritage would be directly disturbed by the underground mining at the Ashton Coal Project (as modified) as there would be no additional surface disturbance beyond the approved areas or increased subsidence impacts.	-	No change.	✓

Table A1-2
Summary Statutory Compliance for Environmental Planning Instruments

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>State and Regional Development SEPP</i>				
clause 3	Clause 3 of the State and Regional Development SEPP outlines the aims of the policy, that includes identifying development that is State Significant Development. The Ashton Coal Project falls within item 5 of Schedule 1 of the State and Regional Development SEPP as it is development for the purpose of mining that is coal mining. Under clause 8 of the State and Regional Development SEPP, the Ashton Coal Project is, therefore, a State Significant Development for the purposes of the EP&A Act.	-	No change.	✓
<i>Mining SEPP</i>				
clause 12	Before determining an application for consent for the purposes of mining the consent authority must: (a) consider – (i) the existing uses and approved uses of land in the vicinity of the development, and (ii) whether or not the development is likely to have a significant impact on the uses that, in the opinion of the consent authority having regard to land use trends, are likely to be the preferred uses of land in the vicinity of the development, and (iii) any ways in which the development may be incompatible with any of those existing, approved or likely preferred uses, and (b) evaluate and compare the respective public benefits of the development and the land uses referred to in paragraph (a)(i) and (ii), and (c) evaluate any measures proposed by the applicant to avoid or minimise any incompatibility, as referred to in paragraph (a)(iii).	Section 2.2.3.6 of Modification 5 EA.	No change.	✓
clause 12A	Before determining an application for consent for the purposes of mining the consent authority must consider relevant provisions of the <i>Voluntary Land Acquisition and Mitigation Policy</i> (NSW Government, 2018).	-	No change.	✓
clause 13	Before determining an application for development in the vicinity of mining, petroleum or extractive industry, the consent authority must (among other things) consider whether or not the development is likely to have a significant impact on current or future extraction or recovery of minerals, petroleum or extractive materials (including by limiting access to, or impeding assessment of, those resources), and any ways in which the development may be incompatible with any of those existing or approved uses or that current or future extraction or recovery.	Sections 2.2.3.6 and 5 of the Modification 5 EA	Section 3	✓

Table A1-2 (Continued)
Summary Statutory Compliance for Environmental Planning Instruments

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>Mining SEPP (Continued)</i>				
clause 14	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions aimed at ensuring that the development is undertaken in an environmentally responsible manner (including conditions to ensure that impacts on significant water resources, including surface and groundwater resources, are avoided, or are minimised to the greatest extent practicable, that impacts on threatened species and biodiversity, are avoided, or are minimised to the greatest extent practicable, and that greenhouse gas emissions are minimised to the greatest extent practicable). This includes considering an assessment of greenhouse gas emissions (including downstream emissions) having regard to any applicable State or National policies, programs of guidelines concerning greenhouse gas emissions.	Sections 2.2.3.6 and 5 of the Modification 5 EA	Section 7	✓
clause 15	Before determining an application for consent for the purposes of mining the consent authority must consider the efficiency of the development in terms of resource recovery and whether or not the consent should be issued subject to conditions aimed at optimising the efficiency of resources recovery and the reuse or recycling of material.	Sections 2.2.3.6 and 5.26 of the Modification 5 EA	Section 3	✓
clause 16	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions regarding transport of materials.	Sections 2.2.3.6 and 5.22 of the Modification 5 EA	No change.	✓
clause 17	Before determining an application for consent for the purposes of mining the consent authority must consider whether or not the consent should be issued subject to conditions regarding rehabilitation, including the particular considerations set out in clause 17(2).	Sections 2.2.3.6 and 5 of the Modification 5 EA	No change.	✓
<i>SEPP 33</i>				
clause 13	A consent authority must consider current circulars or guidelines published by the DPIE relating to hazardous or offensive development, whether to consult with relevant public authorities regarding any environmental or land use safety requirements, a preliminary hazard analysis prepared by the applicant, feasible alternatives to the development and likely future use of surrounding land.	Section 2.2 of the EIS and Section 2.2.3.2 of the Modification 5 EA	No change to potentially hazardous or offensive activities.	✓
<i>SEPP 55</i>				
clause 7(1)	A consent authority must consider whether the land is contaminated and be satisfied that, if the land is contaminated, the land is suitable in its contaminated state (or will be suitable after remediation) for the purpose of the Project.	Section 2.2 of the EIS and Section 2.2.3.4 of the Modification 5 EA	No change to Development Application area.	✓

Table A1-2 (Continued)
Summary Statutory Compliance for Environmental Planning Instruments

Relevant Legislation or Instrument	Mandatory Consideration	Relevant Section in the Ashton Coal Project EIS or Modification EA	Relevant Section in Modification Report	Modified Project Compliance Status
<i>Infrastructure SEPP</i>				
clause 45(2)	Before determining a development application (or an application for modification of a consent) for development to which this clause applies the consent authority must give written notice to the electricity supply authority for the area in which the development is to be carried out, inviting comments about potential safety risks and take into consideration any response to the notice that is received within 21 days after the notice is given.	Sections 2.2.3.5 and 5 of the Modification 5 EA	No change.	✓
clause 85(2)	Before determining a development application for development to which this clause applies, the consent authority must within 7 days after the application is made, give written notice of the application to the rail authority for the rail corridor, and take into consideration: (i) any response to the notice that is received within 21 days after the notice is given, and (ii) any guidelines that are issued by the Secretary for the purposes of this clause and published in the Gazette.	Sections 2.2.3.5 and 5 of the Modification 5 EA	No change.	✓
<i>Singleton LEP</i>				
clause 2.3	A consent authority must have regard to the objectives for development in a zone when determining a development application in respect of land within that zone.	Section 2.4 of the EIS	No change.	✓
clause 5.10(4)	If applicable, a consent authority must, before granting consent under clause 5.10 in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned.	Sections 2.4 and 5.8.2 of the EIS	No change.	✓
clause 5.10(8)	If applicable, a consent authority must, before granting consent under clause 5.10 to the carrying out of development in an Aboriginal place of heritage significance, consider the effect of a proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment.	Section 5.8.1 of the EIS	No change.	✓
clause 7.6	If applicable, a consent authority must, before granting development consent for earthworks, consider the effect of proposed earthworks on drainage patterns, soil stability, quality of fill, likely amenity impacts, likelihood of disturbing relics and proximity to and potential impacts on water courses.	Sections 2.4, 5.4 and 5.5 of the EIS	No change.	✓

Attachment 2
Consent under Section 380AA of the Mining Act



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5 November 2021

Ashton Coal Operations Pty Limited
Glennies Creek Road
Camberwell NSW 2330

To whom it may concern,

RE: APPLICATION TO MODIFY DEVELOPMENT CONSENT DA 309-11-2001-I

White Mining (NSW) Pty Limited ABN 19 089 414 595 is the **Current Registered Holder** of Mining Lease No 1533 (ML 1533).

ML 1533 for Group 9 minerals (coal) is over all relevant land where mining for coal is proposed to be carried out for the modified Ashton Coal Project (DA 309-11-2001-i).

I am a Director of the Current Registered Holder. Pursuant to section 380AA of the New South Wales *Mining Act 1992*, the Current Registered Holder of Mining Lease 1533 provides consent to Ashton Coal Operations Pty Limited (ACN 22 078 556 500) to lodge a Development Application to modify the Ashton Coal Project Development Consent DA 309-11-2001-i.

Yours sincerely,

DocuSigned by:

A handwritten signature in black ink that reads 'David Moulton'.

David James Moulton

Director – White Mining (NSW) Pty Limited

Attachment 3
Groundwater Peer Review Letter

Ref: HA2021/15

Date: 8 November 2021

HydroAlgorithmics Pty Ltd
ABN 25 163 284 991

To: Phillip Brown
Ashton Coal Operations Pty Ltd
Glennies Creek Road
Camberwell NSW 2330

PO Box 4282, Hawker ACT 2614
Phone +61 (0)404 001 780

From: Dr Noel Merrick

info@hydroalgorithmics.com
www.hydroalgorithmics.com

Re: Ashton-Ravensworth Integration Modification - Groundwater Peer Review

Introduction

This letter provides a peer review of the Groundwater Review and associated modelling for the Ashton-Ravensworth Underground Mine Integration Modification (the Modification). The Groundwater Review has been prepared by Australasian Groundwater and Environmental Consultants Pty Ltd (AGE), for the client Yancoal Australia Limited.

Relevant to my peer review, I have previously undertaken groundwater peer reviews for the Ashton Coal Project in 2008 and 2009, and have been involved in peer reviews for the nearby Integra Underground Mine, Mt Owen Complex and Glendell Mine over the past five years.

The Ashton Underground Mine and the Ravensworth Underground Mine are neighbouring approved mines in the Hunter Valley, New South Wales. Ashton Coal Operations Pty Ltd is proposing to access and extract approved but unmined coal resources at the Ravensworth Underground Mine and integrate part of the approved Ravensworth Underground Mine with the Ashton Underground Mine (hereafter referred to as the Modification). The coal would be accessed from the Ashton Underground Mine via new non-subsiding first workings developed between the two mining areas.

Documentation and Review

The review is based on the AGE (2021) "*Ashton-Ravensworth Integration Modification Groundwater Review. Letter report to Ashton Coal Operations Pty Ltd, 8 November 2021*" and supporting information provided by AGE as noted below.

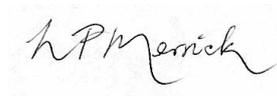
The numerical groundwater model used and updated by AGE is a mature model. The major update for the Modification was the introduction of a fracture zone into the Ravensworth Underground Mine area. I provided feedback to AGE on the fracture model implementation during a teleconference on 7 September 2021. Following this meeting, AGE provided evidence showing that these comments were incorporated into the model satisfactorily and the resulting fracture zone parameters are considered to be reasonable, based on my experience.

My comments on the draft Groundwater Review report have been incorporated in the final report. Given the Modification does not involve an increase in longwall mining extent and, in fact, proposes to reduce the longwall extent in some areas (e.g. shortened longwalls), the assessment methodology used by AGE and findings presented in the Groundwater Review report are considered to be appropriate.

Conclusion

Based on the evidence presented, supporting information provided by AGE and the modelling conducted, I concur with the overarching report conclusion that the Modification would not result in any additional groundwater impacts compared to those already approved for Ravensworth Underground Mine and Ashton Underground Mine.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'N Merrick', is written over a light blue rectangular background.

Dr Noel Merrick