



# **Glendell Coal Mine - Mod 4**

## **Minor Extension to Mining Area**

*State Significant  
Development  
Modification Assessment  
(DA 80/952 MOD 4)*

November 2019

Cover photo: Barret Pit, Glendell Mine, DPIE site visit to Mt Owen Complex, December 2018

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# Glossary

Abbreviation	Definition
BCD	Biodiversity and Conservation Division within the Department
Consent	Development Consent
Council	Singleton Shire Council
Department	Department of Planning, Industry and Environment
DRG	Division of Resources and Geoscience within the Department
EIS	Environmental Impact Statement
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
ESD	Ecologically Sustainable Development
LEP	Local Environmental Plan
Minister	Minister for Planning and Public Spaces
PM	Particulate Matter
Resources Regulator	NSW Resources Regulator within the Department
RtS	Response to Submissions
Secretary	Planning Secretary of the Department of Planning, Industry and Environment
SEE	Statement of Environmental Effects
SEPP	State Environmental Planning Policy
SSD	State Significant Development





## Executive Summary

Glendell Open Cut Coal Mine (Glendell Mine) is located approximately 20 kilometres north-west of Singleton in the Upper Hunter Valley. The mine is owned and operated by Mt Owen Pty Limited (the Applicant), a subsidiary of Glencore Coal Pty Limited (Glencore). Glencore manages Glendell Mine as part of the Mount Owen Complex, which also includes the Mount Owen and Ravensworth East open cut coal mines.

The Applicant proposes to modify the development consent for the Glendell Mine (DA 80/952) as a minimal impact modification under Section 4.55 (1A) of the *Environmental Planning and Assessment Act 1979*. The modification seeks to mine an additional 1.97 Million tonnes (Mt) of ROM coal within the existing approved mining life of the development consent and would result in (see Figure E1):

- a net increase in disturbance of 4.3 hectares (ha), including new disturbance area of 12 ha and avoidance of 7.7 ha of approved disturbance area, this equates to around a 0.5% increase in the approved disturbance area;
- a net 0.4 ha reduction in clearing of native vegetation (new disturbance of 7.3 ha and avoidance of 7.7 ha of approved native vegetation clearing);
- disturbance of one artefact scatter site and partial disturbance of two other artefact scatter sites of low scientific value; and
- no additional noise and dust impacts at sensitive receivers, compared to the approved operations.

No changes are proposed to the currently approved mine life, mining methods, processing rates, transportation methods, operational hours or workforce numbers. The additional disturbance area is also within the approved disturbance area of the originally approved 1983 development consent.

Glencore also proposes to submit a separate development consent application, known as the Glendell Continued Operations Project (GCOP) to continue mining from the Barrett Pit until 2044. The Department issued environmental assessment requirements for the GCOP in July 2018. The GCOP would be subject to a separate State Significant Development (SSD) application under the EP&A Act.

Glencore's current mine scheduling anticipated mining from the Barrett Pit would finish in 2022, ahead of the condition of consent limiting coal extraction after 2024. This modification would allow the Applicant to continue mining for a further eight months (until quarter one of 2023), facilitate resource recovery and the efficient progression of mining operations into the GCOP area (should the project be approved), and provide for continued employment of the existing Glendell workforce of 300 personnel.

The Department exhibited the development application from 22 November to 6 December 2018. Advice was received from five Government agencies and Singleton Shire Council did not provide a submission. In total, 36 community and special interest groups submissions were received, all objecting to the modification, which means that the Independent Planning Commission is the consent authority for the modification.

None of the Government agencies objected to or raised significant issues about the proposed modification. Community submissions raised concerns about air quality impacts, greenhouse gas emissions and climate change, lack of community consultation, and rehabilitation. In its assessment, the Department has carefully considered all concerns raised in submissions.

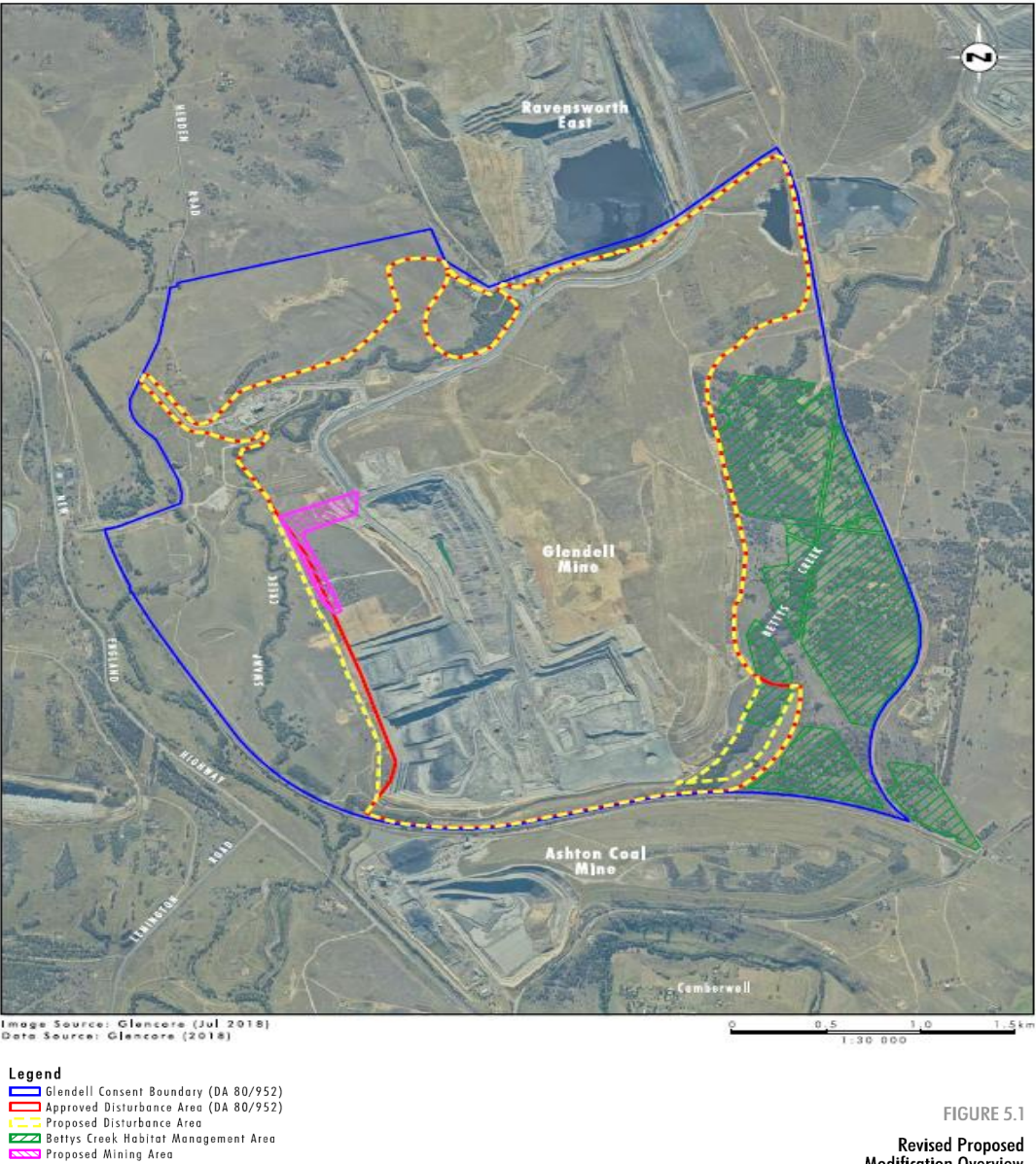


The Department’s assessment has concluded that the modification, combined with the Applicant’s proposed mitigation measures, would have a minimal incremental environmental impact relative to the approved project.

The Department has recommended revisions to existing conditions of consent which reflect advice from Government agencies and commitments made by the Applicant to offset and/or mitigate the modification’s impacts.

To address the community’s concerns regarding air quality and greenhouse gas emissions, the Department recommends updating the air quality operating conditions and requiring development of a comprehensive Air Quality and Greenhouse Management Plan. The Department has also taken the opportunity to recommend other contemporary updates to conditions.

The Department considers that the socio-economic benefits of the modification, including continued employment of the Glendell workforce and about \$8.5 million of additional royalties to the NSW Government, outweigh the incremental impacts, and that therefore the proposed modification is in the public interest and is approvable.



**FIGURE 5.1**  
**Revised Proposed Modification Overview**

**Figure E1 | Proposed modification**



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# 1. Introduction

## 1.1. Background

1. Glendell Open Cut Coal Mine (Glendell Mine) is located approximately 20 kilometres (km) north-west of Singleton in the Upper Hunter Valley (see **Figure 1**). The mine is owned and operated by Mt Owen Pty Limited (the Applicant), a wholly owned subsidiary of Glencore Coal Pty Limited (Glencore). Glencore manages Glendell Mine as part of the Mount Owen Complex, which also includes the Mount Owen and Ravensworth East open cut coal mines.

## 1.2. Approval History

2. The Glendell Mine was approved on 2 May 1983, following a Commission of Inquiry, by the then Minister for Planning and Environment under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). Mining leases were secured over the site in 1990 and initial site preparation works undertaken. Glencore (formerly Xstrata) acquired Glendell in early 2003. Mining operations commenced in 2008 and Glendell Mine is currently approved to produce 4.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal until 2024 (see **Figure 2**).
3. The consent has since been modified on three occasions (see **Table 1**).

**Table 1** | Summary of previous modifications

Mod No.	Summary of Modification	Approval Authority	Approval Date
MOD 1	Extension of mining area; extraction of 3.6 Mtpa of ROM coal via open cut methods; construction of Mount Owen rail loop and a coal handling and preparation plant; and approval to place rejects in the Swamp Creek Mine South Void.	Minister	1997
MOD 2	Increase in production rate to 4.5 Mtpa and extend mining operations to 30 June 2024. Reduction of the approved disturbance area. Modifications to the mining footprint and integration with Mount Owen Complex coal handling, processing and transport facilities; mining in a general north to south direction, within the Barrett Pit.	Minister	2008
MOD 3	Realignment of a 2.7 km section of an existing 132 kV powerline	Planning Assessment Commission	2016

### Glendell Continued Operations Project

4. Glencore has announced its intention to submit a separate development consent application, known as the Glendell Continued Operations Project (GCOP) to continue mining from the Barrett Pit until 2044. The Department issued environmental assessment requirements for the GCOP in July 2018. The GCOP would be subject to a separate State Significant Development application under Part 4 of the EP&A Act.

### Mount Owen Complex

5. While Glendell Mine operates under DA 80/952, aspects of its operations were integrated with the Mount Owen Complex as a result of Modification 2 (see Table 1). Mount Owen and Ravensworth East Mines operate under the Mount Owen Continued Operations development consent (SSD 5850) which authorises processing of ROM coal extracted from Glendell's Barrett Pit through the Mount Owen Coal Handling and Processing Plant (CHPP).



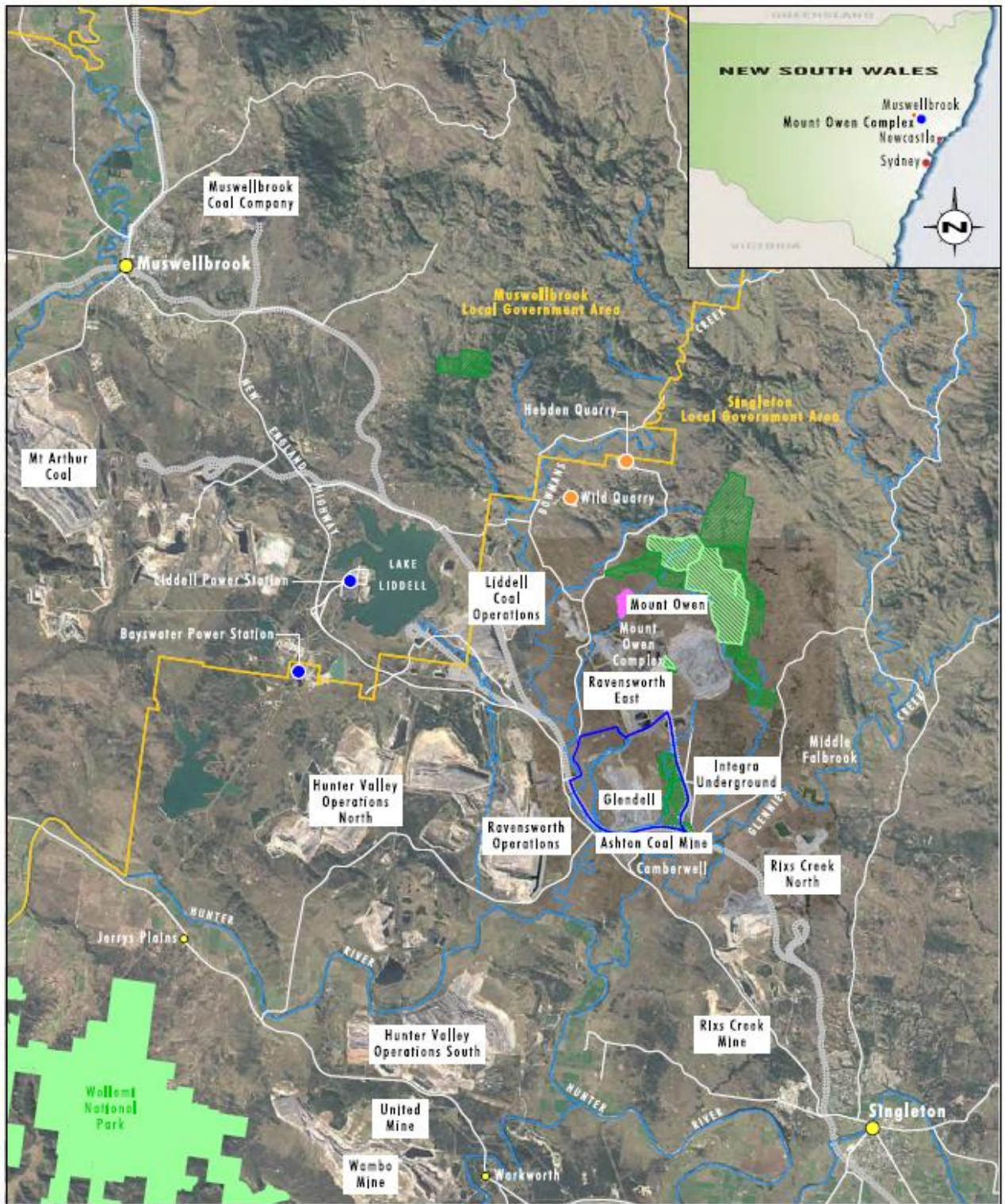
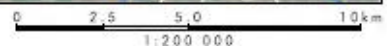


Image Source: Google Earth (2016), Glencore (2017)  
 Date Source: Glencore (2018), OEH (2013), Forest Corporation of NSW (2013)

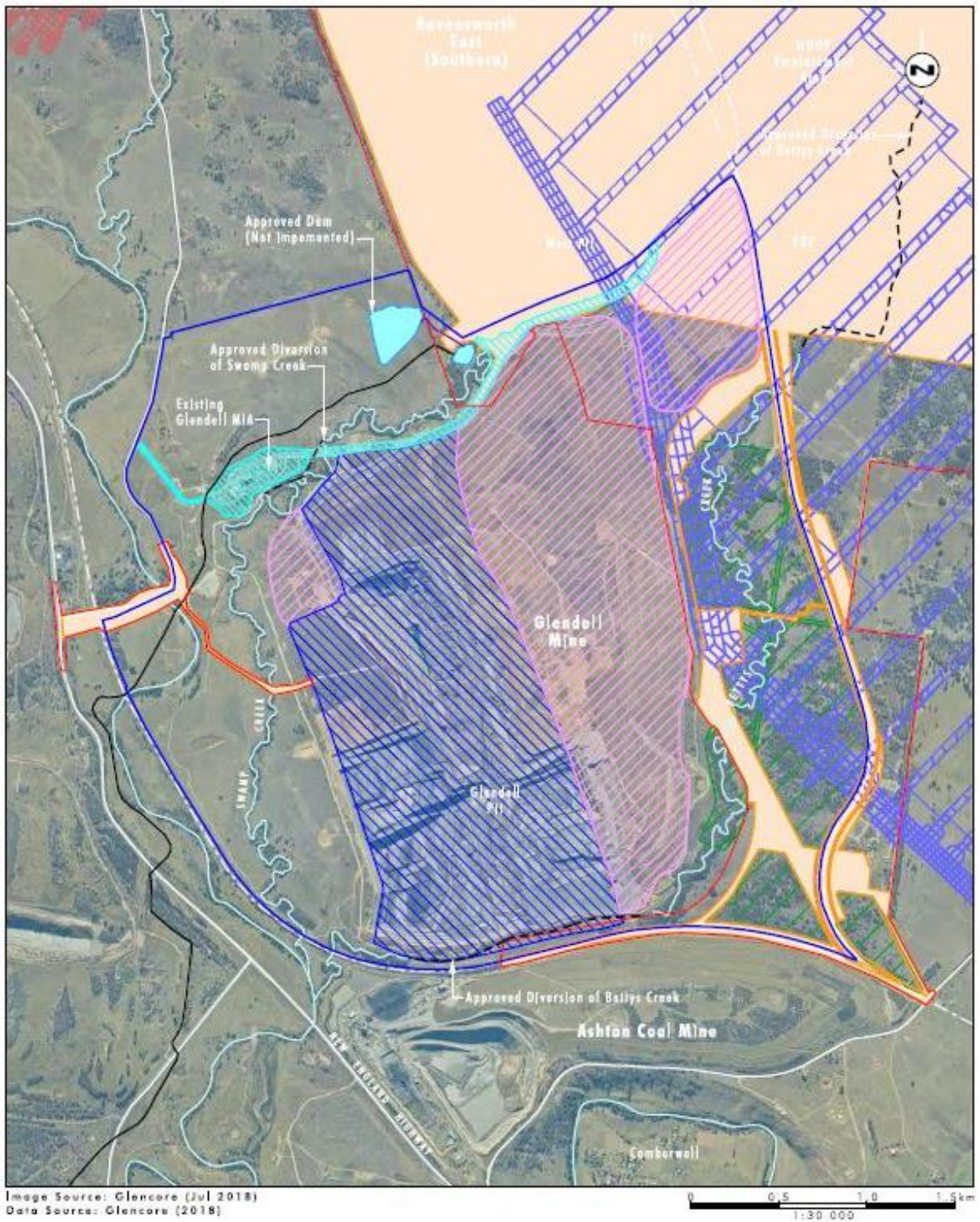


- Legend**
- Glendell Mine DA Boundary (DA 80/952)
  - Local Government Area Boundary
  - Existing Biodiversity Offset Area
  - Ravensworth State Forest
  - Yorks Creek Voluntary Conservation Area
  - National Park
  - Road
  - Railway
  - Drainage Line
  - Towns
  - Power Stations
  - Quarry

**FIGURE 1.1**  
**Upper Hunter Valley Context and**  
**Approved Glendell Mine Operations**

**Figure 1 | Site location**





**Legend**

- Glendell Consent Boundary (DA 80/952)
- Mount Owen Consent Boundary (SSD-5850)
- Mount Owen Continued Operations Disturbance Area
- Approved Glendell Overburden Emplacement Area
- Approved Glendell Mining Area
- Approved Glendell Water Storage
- Approved Infrastructure Area
- Existing Creek Diversion
- Existing GRAWTS pipeline
- Approved Integra Underground Mining Area - Middle Liddell Seam Workings
- Liddell Underground Mining Area
- Bettys Creek Habitat Management Area

**FIGURE 1.2**  
**Approved Operations**

**Figure 2** | Glendell Mine - approved operations

- Two Mt of product coal from Mt Owen may be transported by conveyor to the Liddell or Bayswater power stations for domestic power generation. All other product coal is exported to South-East Asia for power generation and use in steel production. Currently all product coal from Glendell Mine is transported to Newcastle for export. To increase operational efficiencies across the different mine sites, the Mount Owen Complex also has integrated management and monitoring systems for noise, air quality, water and tailings.

### 1.3. Local Context

- The Mount Owen Complex, including Glendell Mine, is surrounded by several other mining operations including Liddell Coal Operations, Ravensworth Operations, Integra Underground Mine, Ashton Mine and Rix's Creek North (see **Figure 1**). The site is physically constrained by other coal mining operations, watercourses and the Main Northern Rail Line (see **Figure 2**).
- Large sections of land within and surrounding the Mount Owen Complex are owned by Glencore or other mining companies. However, there are private residences located to the south-east of the Glendell Mine, the closest of which are subject to acquisition rights for air quality and/or noise impacts. In the nearby village of Camberwell (1.2 km south of Glendell), most of the residences are mine-owned and the remainder subject to acquisition rights from Glencore or other nearby mining operations. The nearest private rural landholders are located approximately 1.8 kilometres to the east.



## 2. Proposed Modification

- The Applicant lodged its modification application on 13 November 2018 under section 4.55(1A) of the EP&A Act.
- This modification application seeks approval for:
  - a minor extension of the Barrett Pit to extract an additional 1.97 million tonnes (Mt) of ROM coal, an approximate increase of 4 % of the total approved resource; and
  - an additional 12 hectares (ha) of surface disturbance to facilitate the pit extension.
- No changes are proposed to the currently approved mine life, mining methods, processing rates, transportation methods, operational hours or workforce numbers. Originally the Applicant proposed to recover an additional 2.5 Mt but revised this to 1.97 Mt as a result of further mine design and scheduling information.
- The Applicant's current mine scheduling anticipated mining from the Barrett Pit would finish in 2022, ahead of the condition of consent limiting coal extraction after 2024. This modification would allow the Applicant to continue mining for a further eight months (until quarter one of 2023) by extending the existing approved pit shell 130 metres (m) north and 60 m west. This would also allow efficient progression of mining operations into the GCOP area (should the project be approved), provide for continued employment for the Glendell Mine workforce and allow for efficient resource recovery.
- The minor extension requires disturbance of an additional 12 ha along the site's western boundary primarily to allow space along the highwall crest for dewatering pipelines, other water management structures, access tracks and flood/safety bunds. This area is located within the originally approved disturbance area approved under DA 80/952. The approved disturbance area was subsequently reduced through the redesign of conceptual mine plans as part of the 2008 modification (see **Table 1**). The proposed disturbance area provides access to the required coal reserves and existing infrastructure



while maintaining a set back from the alluvium of Swamp Creek. To partially offset this additional disturbance, the Applicant would no longer disturb 7.7 ha of land previously approved for disturbance along the eastern boundary (see **Figure 3**), resulting in a net increase in overall disturbance area of only 4.3 ha, which is around 0.5% of the approved disturbance area of 834 ha.

14. Minor changes are proposed to allow haulage of overburden along the western boundary of the pit, while coal haulage would continue on the eastern haul road. By 2023, overburden could be hauled along the western edge of the pit, reducing haulage distances. This haulage route would also minimise air quality and noise impacts as during adverse weather conditions overburden haulage would occur along a sub-surface bench potentially reducing noise and dust emissions. A minor change to existing truck parking areas is also proposed.
15. **Figure 4** shows the conceptual mine plan for Glendell Mine for Year 2023. The proposed modification would continue mining operations in a northerly direction away from Camberwell. At this stage, rehabilitation would be occurring over much of the site, (including the area closest to Camberwell) providing additional separation between active mine areas and Camberwell.
16. Additional overburden would be emplaced within the existing approved height limits of 160 m within the Barrett Pit. The approved conceptual final landform design would be amended to relocate key features to the north and west while remaining consistent with the existing design and current rehabilitation objectives. The proposed modification is supported by a Statement of Environmental Effects (see **Appendix A**) and is further summarised in **Table 2**.

**Table 2** | Comparison of approved and proposed activities at Glendell Mine

Aspect	Approved	Proposed
Mining Method	Truck and excavator	No change
Depth of extraction	Approximately 200 m	No change
Disturbance Area	834 ha approved for disturbance	Net 4.3 ha increase to approved disturbance area (12 ha additional disturbance and 7.7 ha reduction in approved disturbance)
Annual Production	4.5 Mtpa	No change
Total Reserve	50 Mt ROM coal	Additional 1.97 Mt ROM coal
Mine Life	2024	No change - the 8 month increase in the current mining schedule would be undertaken within the approved life of mining operations
CHPP Capacity	17 Mtpa (under SSD 5850)	No change
Hours of Operation	24 hours per day, 7 days per week	No change
Waste Management	In-pit and out-of-pit emplacement, with maximum height of 160 m	No change
Employees	Approximately 300	No change
Water Management	Swamp Creek and Bettys Creek diversions. Existing water management system and Greater Ravensworth Area Water and Tailings Scheme	Extension of mine water management system to proposed disturbance area
Final Landform	Barrett Pit void Progressive rehabilitation of final landform incorporating vegetation corridors and post-mining landuse of grazing land and bushland	Minor changes to final landform

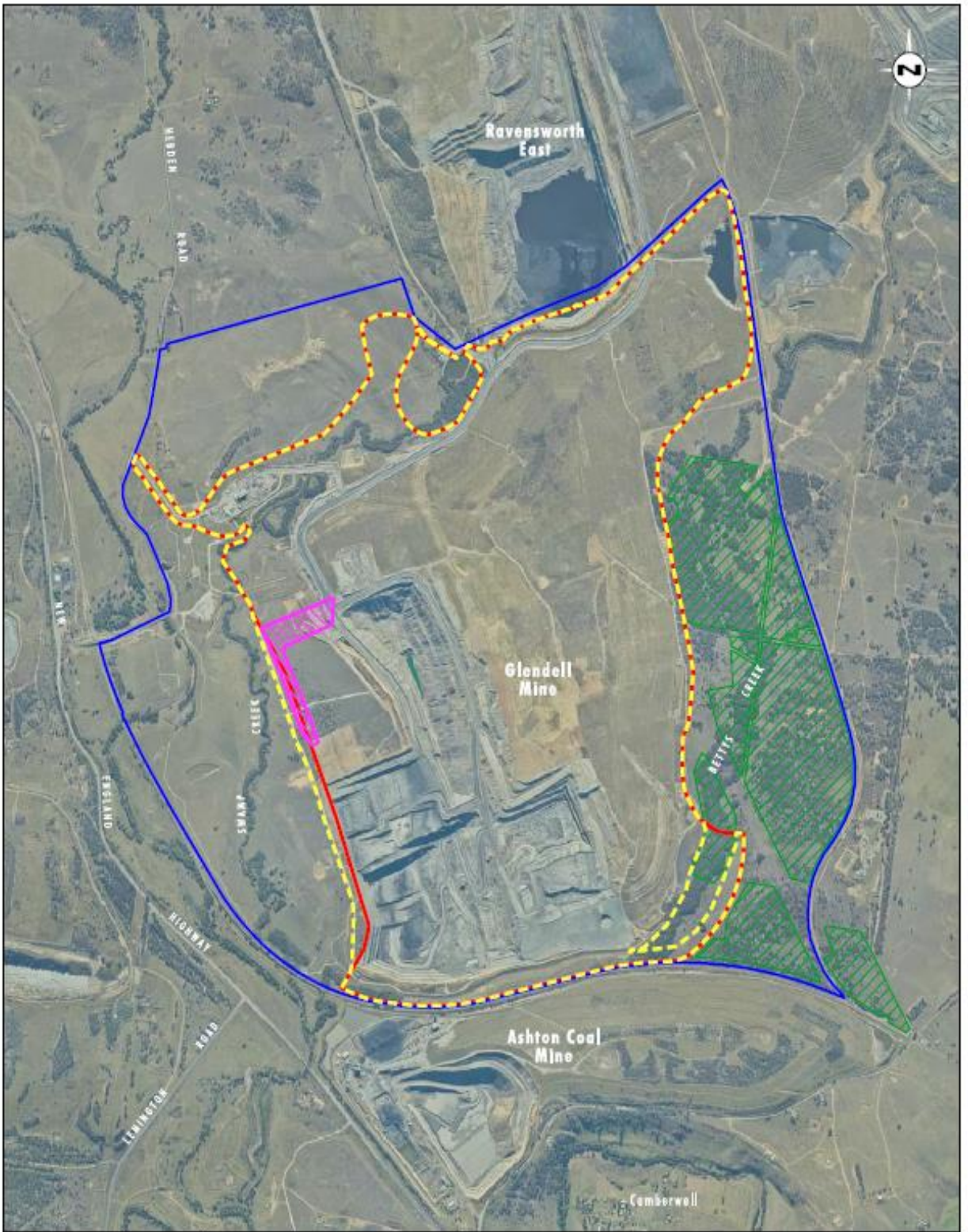


Image Source: Glencore (Jul 2018)  
 Data Source: Glencore (2018)

0 0.5 1.0 1.5 km  
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**Legend**

- ▬ Glendell Consent Boundary (DA 80/952)
- ▬ Approved Disturbance Area (DA 80/952)
- ▬ Proposed Disturbance Area
- ▨ Bettys Creek Habitat Management Area
- ▨ Proposed Mining Area

**FIGURE 5.1**  
**Revised Proposed**  
**Modification Overview**

**Figure 3 | Proposed modification**



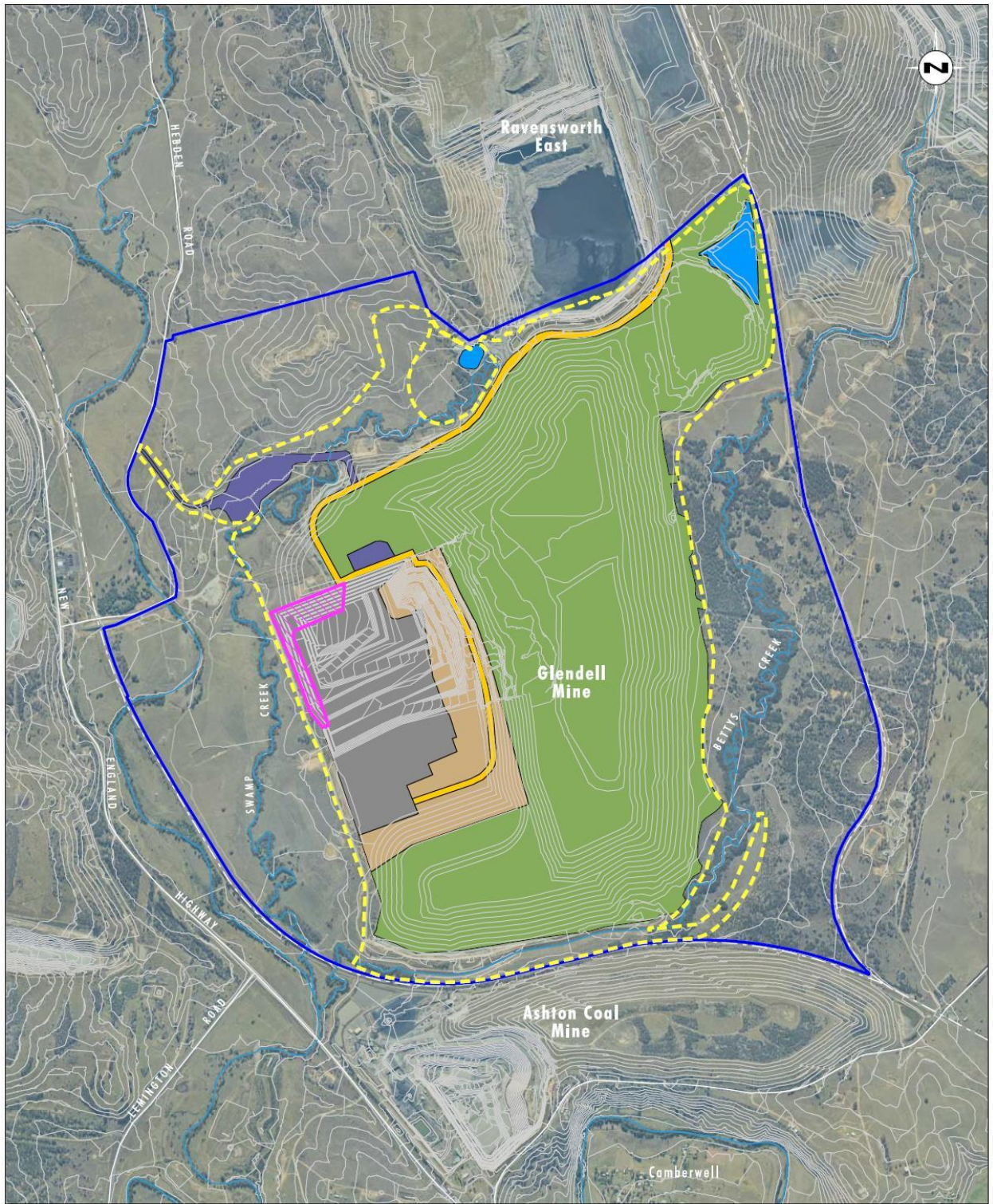


Image Source: Glencore (Jul 2018)  
 Data Source: Glencore (2018)

0 0,5 1,0 1,5 km  
 1:30 000

**Legend**

- Glendell Mine DA Boundary (DA 80/952)
- Proposed Disturbance Area
- Active Mining
- Active Overburden Emplacement Area
- Infrastructure
- Haul Road
- Rehabilitation
- Water Storage

**FIGURE 2.3**

**Conceptual Mine Plan  
 2023**

**Figure 4** | Proposed conceptual mine plan year 2023





## 3. Statutory Context

### 3.1. Scope of Modification

17. As DA 80/952 was originally approved under Part 4 of the EP&A Act, it is now taken to be State significant development (SSD) under Part 4.1 of the Act in accordance with Schedule 2 of the *Environmental Planning and Assessment (Savings, Transitional and Other Provisions) Regulation 2017*. Accordingly, this modification application has been lodged under section 4.55(1A) of the EP&A Act.
18. The Department has reviewed the scope of the modification application and considers that it would result in minimal environmental impacts and that the development, as proposed to be modified, would remain substantially the same development as last modified by the former Planning Assessment Commission in 2016. In this regard:
  - there are no proposed changes to the approved mining, processing or transportation methods or production rates;
  - there is only a small increase in coal extracted over the life of the project (ie the modification would increase the total recovered coal resource by approximately 4 %); and
  - the incremental impacts associated with the pit extension (ie 0.51 % increase in the overall disturbance area) are a continuation of existing approved impacts, which are being appropriately managed through the existing conditions of consent.
19. Consequently, the Department is satisfied that the proposed modification is within the scope of section 4.55(1A) of the EP&A Act and can be assessed and determined accordingly.

### 3.2. Consent Authority

20. Due to the operation of clause 8A of the *State Environmental Planning Policy (SEPP) (State and Regional Development) 2011*, the Independent Planning Commission is the consent authority for this modification, since at least 25 public submissions by way of objection were received during the exhibition period.

### 3.3. Mandatory Matters for Consideration

21. In accordance with section 4.55(3), the Department has considered the relevant matters for consideration under Section 4.15 of the EP&A Act and the reasons given by the consent authority in its determination of the original project.
22. The Department conducted a comprehensive assessment of the project against the relevant matters for consideration in recent modifications to the development, particularly Modification 2 in 2008 where there were more substantive changes to mining operations and considered the Applicant's review of the mandatory matters provided in Section 3 of its SEE.
23. Given the modification is of minimal impact compared to the approved project, key relevant matters for consideration, such as site suitability remain consistent with original approval and subsequent modifications.

### Environmental Planning Instruments and Regional Plans

24. Under section 4.15 of the EP&A Act, the consent authority is required to take into consideration any environmental planning instrument (EPI) or draft EPI that is of relevance to the development. Several

environmental planning instruments, including State Environmental Planning Policies (SEPPs) apply to the modification, including:

- *SEPP (State and Regional Development) 2011;*
- *SEPP (Mining, Petroleum Production and Extractive Industries) 2007;*
- *SEPP No. 55 – Remediation of Land;*
- *SEPP No. 33 – Hazardous and Offensive Development;*
- *SEPP No. 44 – Koala Habitat Protection;*
- *Singleton Local Environmental Plan 2013*
- *Upper Hunter Strategic Regional Land Use Plan 2012; and*
- *Hunter Regional Plan 2036.*

25. The Department has assessed the proposed modification against the relevant provisions and the Applicant’s consideration of these EPLs in the SEE of these instruments and considers that the modification can be carried out in a manner that is consistent with their aims, objectives and provisions.

### Objects of the EP&A Act

26. The objects of the EP&A Act are the underpinning principles upon which the assessment is conducted, and they must be considered by the consent authority. The Department has assessed the proposed modification against the objects of the EP&A Act. **Table 3** summarises how the relevant objects have been considered.

**Table 3** | Consideration of the proposal against relevant objects of the Act

Objects of the EP&A Act	Consideration
to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State’s natural and other resources;	The modification would facilitate eight months of additional mining within the existing project life, which would:  provide socio-economic benefits to the people of NSW and employment opportunities for the region; and  allow recovery of coal resources owned by the people of NSW in a safe and efficient manner.
to facilitate ecologically sustainable development (ESD) by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	The modification can be carried out in a manner that is consistent with the principles of ESD. The Department’s assessment has sought to integrate all significant environmental, social and economic considerations.
to promote the orderly and economic use and development of land;	The modification would allow for the economic recovery of a coal resource.  The targeted coal resource is located within an existing mining lease area.  The modification would use existing equipment and infrastructure.
to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;	The modification would not significantly impact any threatened species, populations or ecological communities (see <b>Section 5.4</b> ).

Objects of the EP&A Act	Consideration
to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);	The modification would not directly impact Aboriginal cultural heritage or historic heritage (see <b>Section 5.3</b> ).
to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State	The Department publicly exhibited the proposal (see <b>Section 4.1</b> ) and consulted with the affected Council and NSW government authorities. The Department has considered all responses received.
to provide increased opportunity for community participation in environmental planning and assessment	The Department publicly exhibited the proposal and made the modification application and accompanying SEE publicly available on its website (see <b>Section 4</b> ).



## 4. Engagement

### 4.1. Public Exhibition

27. In accordance with clause 10 of Schedule 1 of the EP&A Act and clause 118 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation), the Department exhibited the application from 22 November to 6 December 2018:
- on the Department's website;
  - at Singleton Shire Council's office; and
  - at the Nature Conservation Council of NSW's office in Sydney.
28. The modification application was advertised in the Singleton Argus and Hunter Valley News. Previous submitters were notified of the modification application and invited to make a submission. The modification application was also referred to Singleton Shire Council (Council), the Department's Division of Resources and Geoscience (DRG), the Resources Regulator, Biodiversity and Conservation Division (BCD), (formerly the Office of Environment & Heritage), Water and Crown Lands Groups (DPIE Water and DPIE Crown Lands, formerly within the Department of Industry), the Natural Resources Access Regulator (NRAR) and the Environment Protection Authority (EPA).
29. During the exhibition period, the Department received 36 submissions on the proposal, comprising six from special interest groups (SIGs) and 30 from the community, all objecting to the modification. Advice was received from five Government agencies. Council did not provide any comment.

### 4.2. Government Agency Advice

30. A summary of advice received from agencies and the issues raised in all submissions is provided below. Copies of all advice and submissions are provided in **Appendix B**. The Applicant submitted its Response to Submissions (RTS) in May 2019 including revised air quality and Aboriginal cultural heritage assessments (see **Appendix C**).
31. **BCD** recommended that the Applicant prepare an Aboriginal archaeological cultural heritage assessment report to identify any Aboriginal cultural heritage items or cultural values present within the proposed disturbance area. The Applicant included an Aboriginal archaeological cultural heritage assessment report in its RTS.



32. BCD also recommended that only Aboriginal objects occurring within the proposed disturbance area should be salvaged and that the mine's Aboriginal Cultural Heritage Management Plan (ACHMP) should be updated to reflect these changes. The Department notes that existing conditions of consent require management plans to be reviewed and updated within three months of any modification. The Department's assessment of Aboriginal heritage impacts is discussed further in **Section 5.3**.
33. BCD advised that it was satisfied with the SEE's biodiversity and flooding assessments. The Department's assessment of biodiversity and flooding impacts is discussed further in **Section 5.5**.
34. **DPIE Water** and **NRAR** recommended that groundwater monitoring continue. It also requested that vibrating wire piezometer GNP1 is replaced after being impacted by mining and that any impacted monitoring bores are reported in the Annual Review. The Department notes that these requests are already required through existing conditions of consent.
35. **DPIE Crown Lands** advised that any Crown land or roads subject to the modification require existing or proposed occupation to be authorised under the *Crown Land Management Act 2016* or *Roads Act 1993*, except if within a mining lease. The Department notes that there is no Crown land within the modification's proposed disturbance area. However, a Crown Land reserve (Lot 58 DP752499) is within the approved Glendell Mine development consent boundary, for clarity the Department has recommended a condition to reflect this advice.
36. **DRG** considered that the modification would result in efficient development and utilisation of coal resources and advised that the Applicant holds the appropriate mining leases. DRG estimated that the product coal from the modification sold on the export thermal market would be valued at \$109 million (or around \$81 million net present value (NPV)). DRG calculated that this would generate around \$8.5 million (\$6.3 million NPV) in additional royalties for the State and provide continued employment for the existing Glendell Mine's existing workforce of around 300 personnel.
37. On review of the coal quality data, DRG advised that the Applicant's proposed product quality, target export market split, and yield would be achievable.
38. **Resources Regulator** advised that sustainable rehabilitation outcomes could be achieved, and any risks or opportunities could be effectively regulated under the *Mining Act 1992*. The Department's assessment of rehabilitation is discussed further in **Section 5.4**.
39. EPA advised that it did not have any specific concerns over the proposed modification and that, given the minor nature of the proposed changes, the operations could be appropriately regulated under the mine's existing EPL 12840.

#### 4.3. Community and Special Interest Groups Submissions

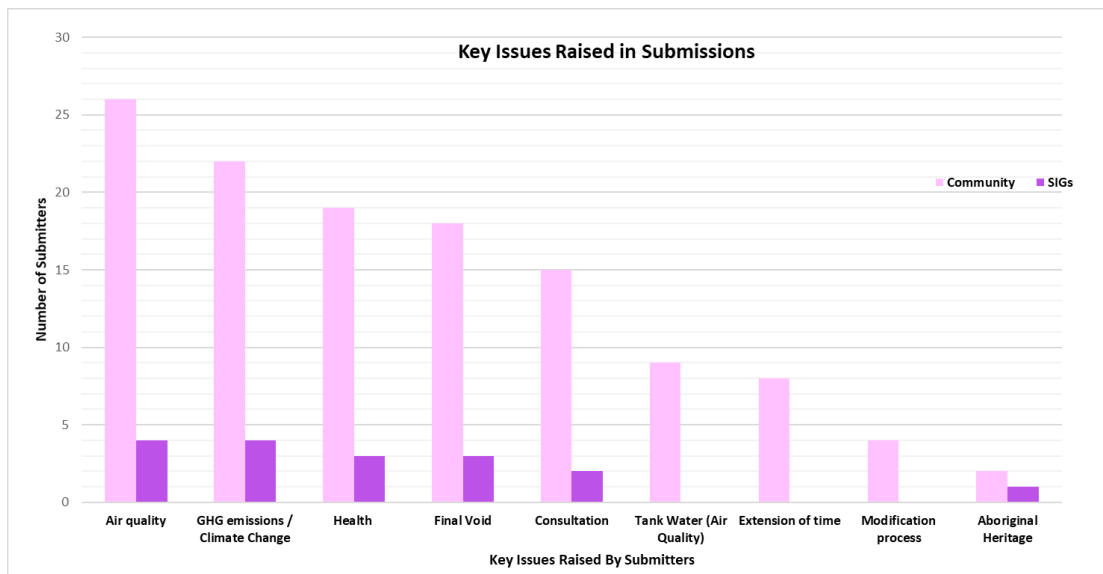
40. In total, 36 submissions objecting to the modification were received. Six were received from SIGs (Plains Clan of the Wonnarua People Registered Native Title Group (PCWP), Climate Change Balmain-Rozelle, Hunter Environment Lobby, Climate Action Newcastle, North Rothbury Residents Group and Hunter Communities Network). Of the 30 individual community submissions received, 12 were from the nearby towns of Camberwell, Bulga, Singleton and Muswellbrook, while the remaining 18 were from locations more than 30 kilometres (km) from the Mount Owen Complex.
41. The key concerns raised in submissions are summarised in **Figure 5** and discussed further below. The Department notes that a number of these concerns extend to issues with broader government policy or matters that are not directly relevant in considering the merits of this modification. The Department acknowledges these concerns, but also recognises that its merit assessment must focus only matters relevant to the modification.

## Air Quality and Health

42. Community submissions raised concerns that air quality impacts were not considered against the most contemporary air quality standards set by the *National Environment Protection (Ambient Air Quality) Measure* (NEPM) and EPA's 2016 *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (Approved Methods 2016).
43. Both community and SIG submitters also raised concerns about coal dust pollution in water tanks, health issues attributed to poor air quality across the Hunter Valley and that the cumulative air quality impacts of mining have not been considered. The Department has further considered air quality impacts in **Section 5.1**.

## Rehabilitation and Final Void

44. Some submitters were concerned that a final void would be retained after mine closure and that the agricultural land class would be lowered, reducing land value and productivity for future use. Submitters argued that if it is uneconomic to backfill a mining void, the project must not be financially viable, and it should not be approved.



**Figure 5** | Key issues raised by submitters

45. The Applicant noted in its RTS that very minor changes are proposed to the approved final landform, which already includes a single final void. Glendell Mine would also be included in the final land use strategy for the wider Mount Owen Complex. If the GCOP goes ahead, the approved final landform would not be developed, and mining would continue towards a revised, newly-assessed and approved final landform. The Department has further considered rehabilitation and the final void in **Section 5.4**.

## Greenhouse Gas and Climate Change

46. Submitters raised several concerns about greenhouse gas emissions and anthropogenic climate change, including that:
- variations in rainfall patterns are impacting on people dependent on tank water;
  - Australia needs to reduce its greenhouse gas emissions to meet its *Paris Agreement* targets;
  - there should be a focus on renewable energy over fossil fuels; and
  - there will be an increase in climate change - related health impacts.
47. The Applicant provided a detailed response to these submitters in its RTS noting that it does not dispute that action needs to be taken to enable the *Paris Agreement*'s goals to be realised. However, the Applicant argued that:

- demand for coal is driven by global coal-fired electricity generation, which is unlikely to change in the near future;
- Scope 3 greenhouse gas emissions from the burning of coal for electricity generation would be accounted for, regulated and reported by the respective consumer countries;
- in NSW, coal mining projects are permitted with development consent under the Mining SEPP;
- the “no fossil fuel development” position is not consistent with the decision-making framework set out by NSW planning laws and could have serious consequences for many different forms of development that currently rely on fossil fuels as a reliable, affordable and efficient means of direct energy consumption or produced electricity;
- in determining the merits of the proposed modification, regard must be given to all relevant matters, of which greenhouse gas emissions is only one such matter; and
- the Scope 1 greenhouse gas emissions from the modification and associated upstream and downstream Scope 2 and 3 greenhouse gas emissions, in and of themselves, would not cause unacceptable health impacts for people living in the local community, as the environmental impacts remain consistent with the currently approved operations and the modification does not propose any increase to the current approved mine life.

48. The Department has further considered the greenhouse gas emissions associated with the modification in **Section 5.1**.

### **Community Consultative Committee (CCC)**

49. The Applicant reports that it notified the Mount Owen Complex Community Consultative Committee (CCC) about this modification on 11 October 2018. However, 50 % of submitters considered that the Applicant misled the CCC about whether the modification would be publicly exhibited.

50. The Department is not required to publicly exhibit section 4.55(1A) modification applications; however, it may decide to do so based on anticipated community interest. Any decision regarding exhibition is not made until the Department has reviewed and accepted the SEE. In this case, the Department decided to exhibit the application. This decision favoured community participation, rather than hindered it.

### **Extension of Operational Life**

51. Approximately 26 % of objectors considered that the modification proposes to change the mine’s operational time from June 2024 to the end of 2024 (ie a six month extension). The Applicant clarified in its RTS that the modification does not propose to change the approved life of the project (see **Section 2**).

### **Aboriginal Cultural Heritage**

52. Submitters raised concerns over the Applicant’s assessment of impacts on Aboriginal heritage, including that the registered Native Title parties were not consulted, a heritage protection application by the PCWP under section 9 and section 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* (ATSIHP Act) was not discussed and that the assessment did not consider recent information from an article in the Newcastle Herald on a historic massacre of Aboriginal people in the area.

53. In its RTS, the Applicant clarified the consultation undertaken in assessing Aboriginal heritage. The Department notes that PCWP’s heritage protection application was withdrawn on 6 September 2019.

54. The Departments consideration of impacts on Aboriginal cultural heritage is addressed in **Section 5.3**.



## 5. Assessment

55. In assessing the merits of the proposal, the Department has considered the:
- Environmental Impact Statement (EIS) for the original development application;
  - existing conditions of consent, as modified;
  - modification application SEE and RTS and additional information;
  - advice from Government agencies and community submissions; and
  - relevant EPIs, policies and guidelines.
56. The modification application seeks a minor extension to the approved pit shell (0.51 % increase to disturbance footprint) and to the approved disturbance area.
57. It does not propose to intensify or otherwise alter the approved mine operations. As such, there would be minimal change to the development's approved impacts.

### 5.1. Air Quality

#### Background

58. The SEE included a qualitative Air Quality Assessment (AQA) of potential changes to air quality impacts from the modification. The Applicant argued that a qualitative assessment was appropriate for the modification application because the air quality impacts at Glendell Mine would be unlikely to change as the current approved mine life, mining methods, mining extraction rate, processing rate, transportation methods and hours of operation would remain the same.
59. Modelling undertaken for Modification 2 in 2007 predicted that operational Year 9 (approximately 2017) represented the mine's maximum impact to sensitive receivers, as mining reached its southern extent closest to Camberwell. In the mine's final operational year (approximately 2021), this modelling predicted reduced air quality impacts to sensitive receivers, as compared to the Year 9 peak, due to mining moving towards the north, further away from these receivers.
60. The purpose of the AQA was to demonstrate that the mine, would continue to comply with its existing air quality criteria, based on the 2007 modelling predictions, and set under the former *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2005*.
61. Given that there would be no change to the intensity of mining operations and the pit extension would be further away from sensitive receivers, both the Department and the EPA considered that a qualitative assessment was appropriate for this modification. However, as outlined in **Section 4**, submitters raised concerns over potential air quality impacts, and that the AQA was not consistent with the contemporary and more stringent EPA Approved Methods 2016<sup>1</sup>.
62. To further address these community concerns and to provide further quantitative evidence to support the conclusion that there would be no increase in air quality impacts at private receivers, the Department requested that the Applicant provide a revised AQA in its RTS, including air dispersion modelling for the final operational year (ie 2022 – 2023) and compare the results of this modelling to the approved

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<sup>1</sup> The Approved Methods 2016 revised the existing annual average PM10 criterion downwards from 30 µg/m<sup>3</sup> to 25 µg/m<sup>3</sup> and introduced new 24-hour and annual average criteria for PM2.5.



operations. The modelling included a comparison for both project alone impacts and cumulative impacts (including other mining operations in the area).

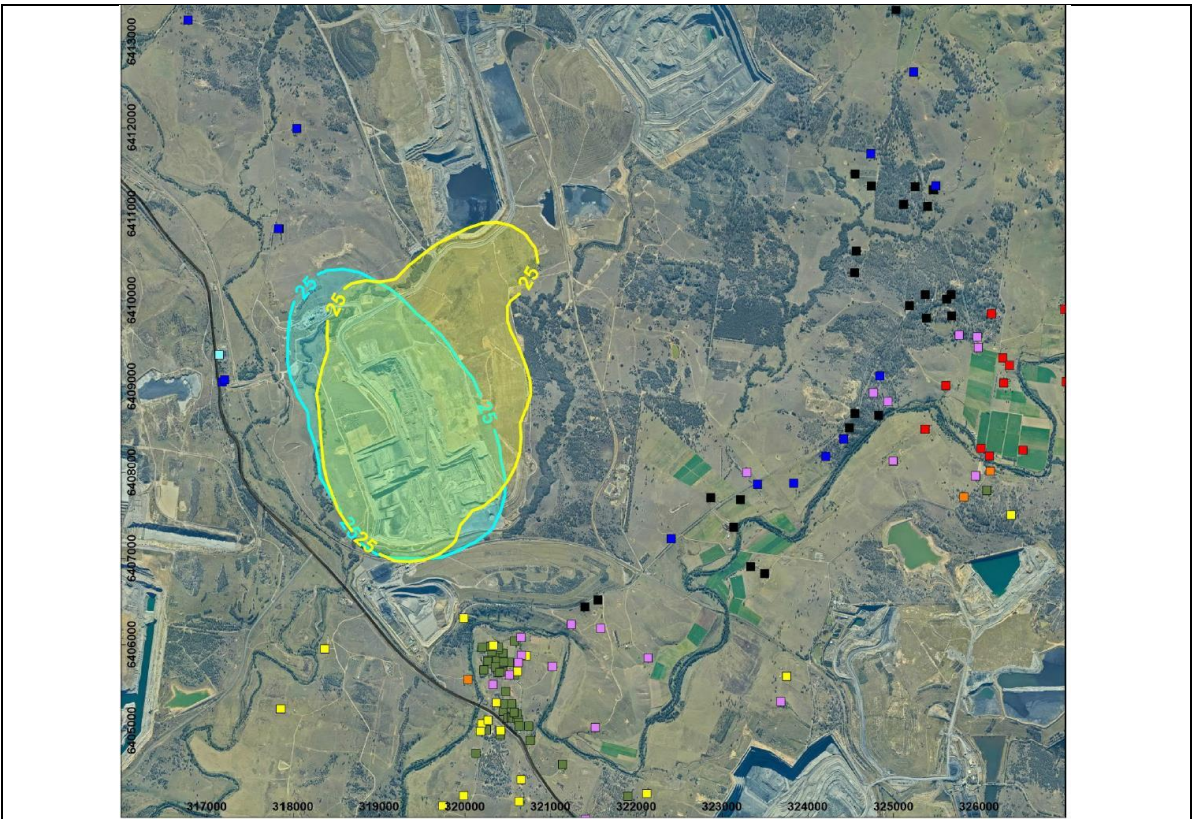
63. The Department notes that the EPA did not raise any concerns with the revised AQA and did not recommend any changes to existing conditions.

### **Predicted Impacts – Project Alone**

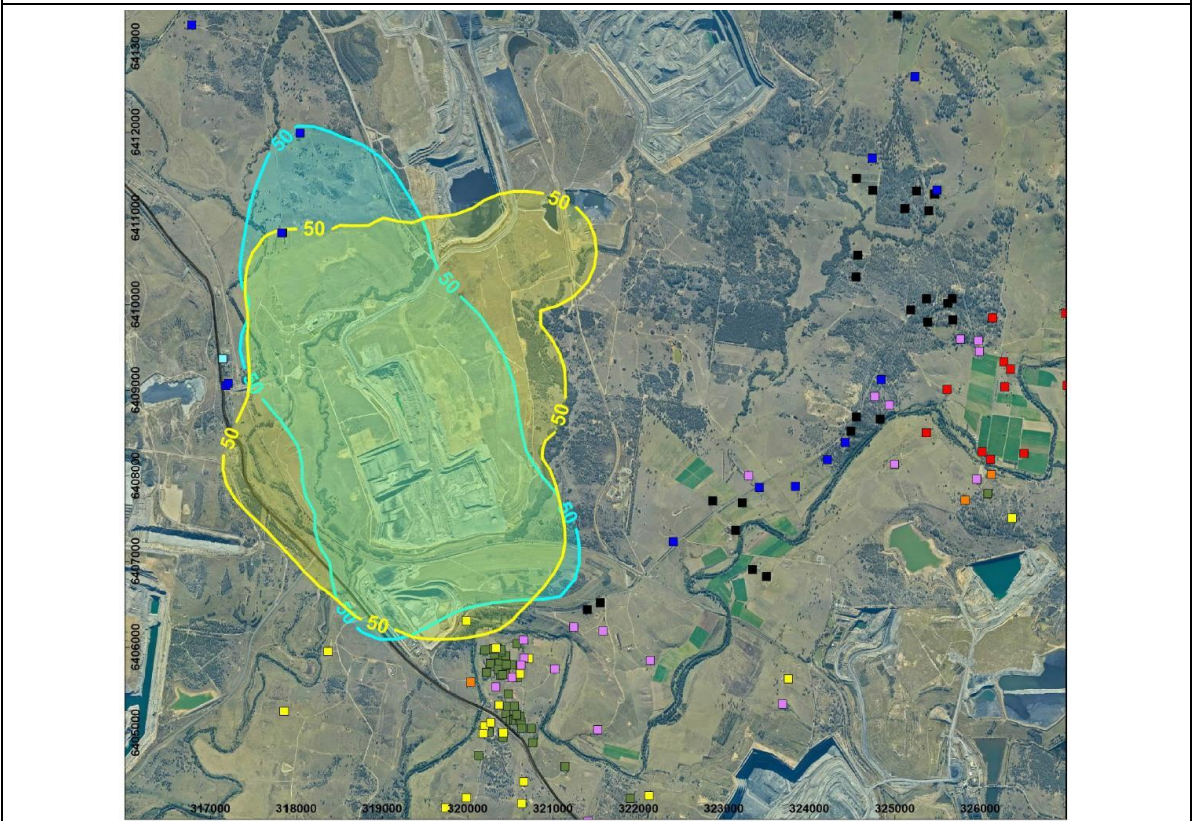
64. For project alone impacts, the revised AQA showed that the modification would not materially alter particulate matter (PM) compared to the approved operations with only minor variations in the predicted modelled air quality contours. These variations include a reduction in PM to the south-west, near Camberwell, and a slight increase in PM to the north and west, around the pit extension, see **Figure 6** below for PM<sub>10</sub> 24 hour and average annual predicted dust concentrations.
65. The variations are largely due to differences in modelling (ie different modelling platforms were used for the approved and modification scenarios), the northward advance of mining and the progression of rehabilitation as the final operational year approaches. The PM<sub>10</sub> contours shift northwards (relative to the approved operations) over Glencore-owned land and would not result in exceedances at any privately-owned sensitive receivers. The annual average contour shown is the Approved Methods 2016 reduced criterion of 25 µg/m<sup>3</sup>. These results support the qualitative assessment conclusion that there is minimal change to approved dust impacts.

### **Predicted Impacts - Cumulative**

66. The cumulative air quality modelling undertaken for the assessment compares the proposed modification contribution to modelling undertaken for the recent Mount Owen Continued Operations Modification 2 that included contributions from the Glendell Mine. This cumulative modelling includes background dust levels as well as contributions from 9 mining operations, including the Glendell Mine.
67. The revised AQA predicts that the cumulative annual average PM<sub>10</sub> concentration would exceed both the existing ambient criterion of 30 µg/m<sup>3</sup> as well as the new 25 µg/m<sup>3</sup> assessment criterion at all Camberwell receivers and to the south-east of Glendell Mine (see **Figure 7**). The Department notes that the cumulative annual average PM<sub>2.5</sub> criterion of 8 µg/m<sup>3</sup> is also exceeded at all Camberwell receivers and to the south-east of Glendell Mine (see **Figure 8**).
68. However, **Figures 7** and **8** show that there is minimal change in the predicted PM<sub>10</sub> and PM<sub>2.5</sub> dust contours comparing the approved operations to the proposed modification, with some minor changes to the predicted contour close to Camberwell (moving away from the residences).
69. The Applicant asserts that these exceedances reflect a worst-case scenario as all current and approved mining operations were modelled as operating at maximum capacity, including the Ashton South East Open Cut Project (ASEOC).
70. Further, modelling of the cumulative annual average PM<sub>10</sub> concentration at Camberwell predicts that background levels contribute 39 % of the annual average PM<sub>10</sub> concentrations, while the remaining 61 % is comprised of contributions from the various surrounding mining operations. ASEOC's modelled proportion of the cumulative annual average PM<sub>10</sub> concentration is the most significant at 15 %, while Glendell Mine's cumulative contribution is the fourth highest at 9 %.
71. Glendell Mine's predicted annual average PM<sub>10</sub> contribution at Camberwell under the approved operations is 5.2 µg/m<sup>3</sup>, compared to 3.1 µg/m<sup>3</sup> for the proposed modification, further demonstrating the proposed modification would have minimal impact compared to the approved operations.
72. The Department notes that ASEOC is not yet operating and even if its operations did commence, it is likely that its maximum contributions would occur sometime after 2023. Therefore, the modelled exceedances, while representing the worst case, would be unlikely to occur in practice.



Annual Average PM<sub>10</sub> (25µg/m<sup>3</sup> contour)



Easting (m) - MGA Zone 56

Concentrations in µg/m<sup>3</sup>  
 - Approved Operation Maximum Extent  
 - Proposed Modification for 2023

■ Receptor (Private)  
 ■ Receptor (Private - Subject to Acquisition Rights)  
 ■ Receptor (Private Infrastructure)  
 ■ Receptor (Community Infrastructure)

■ Receptor (Glenore Owned)  
 ■ Receptor (Glenore Vacant)  
 ■ Receptor (Other Mine Owned)  
 ■ Receptor (Other Mine Owned - Vacant)

PM<sub>10</sub> 24 hr (50 µg/m<sup>3</sup> contour)

**Figure 6** | PM<sub>10</sub> Contours - Approved vs Proposed



73. Further, as the modification does not involve an increase to the approved dust impacts, the *Voluntary Land Acquisition and Mitigation Policy 2018* (VLAMP) also does not apply and no mitigation or acquisition rights are recommended. However, the Department also notes that all receivers that were subject to a predicted PM<sub>10</sub> exceedance for the approved project either have existing acquisition rights under the Glendell Mine, Mount Owen or ASEOC consents or are already mined-owned (either by Glencore or another mining company). Therefore, all receivers likely to experience an exceedance of the air quality criteria would be appropriately considered under the various mining consents in this area.

### **Deposited dust and impacts on rainwater tanks**

74. In response to submitter's concerns about impacts of dust on rainwater tank quality, the Applicant confirmed that DA 80/952 has no existing requirement to inspect and if necessary clean rainwater tanks. However, it was noted that this is required under existing conditions of consent for the Mount Owen Continued Operations Project (SSD-5850). The Department also notes that the annual total suspended particulate (TSP) matter for the modification (2,026,746 kg/year) is significantly lower (45% reduction) than the worst-case year for the approved Glendell operations (3,713,715 kg/year).
75. The Department does not consider a condition requiring inspection and/or cleaning of rainwater tanks necessary given the scale of this modification and as the existing obligation under the Mount Owen consent would generally encompass receivers close to Glendell Mine.

### **Greenhouse Gas Emissions**

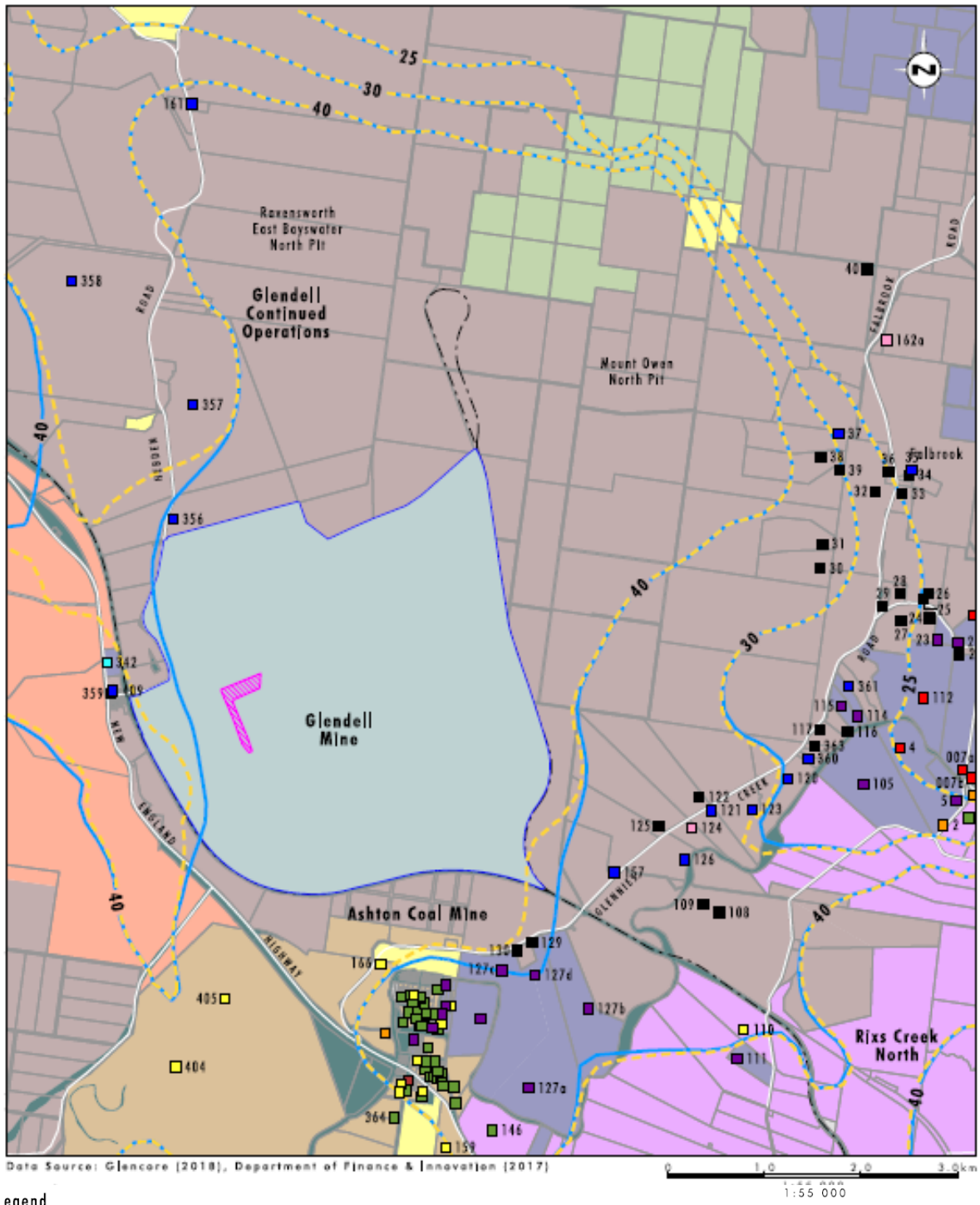
#### *Scope 1 and 2 Emissions*

76. The Applicant calculated predicted Scope 1 and 2 emissions from the modification based on its earlier proposal to recover 2.5 Mt rather than 1.97 Mt as now. The Applicant predicts that the modification would generate approximately 184,000 t carbon dioxide equivalent (CO<sub>2</sub>-e) of Scope 1 and 2 emissions over the proposed eight months of extraction. This is approximately a 6.5 % increase in the total Scope 1 and 2 emissions calculated for the project in 2007.
77. This modification would result in a 0.034 % increase of Australia's annual emissions<sup>2</sup> and 0.041 % of Australia's 2030 commitment<sup>3</sup> under the 2016 Paris Agreement. This is a minor incremental increase that represents a very small percentage of NSW and Australia's global contributions.
78. Under current conditions of consent, the Applicant is required to implement a Greenhouse and Energy Efficiency Plan which must include a framework to investigate and implement measures to reduce Scope 1 and 2 greenhouse gas emissions and energy use at Glendell Mine.
79. The Department recommends that the existing Greenhouse and Energy Efficiency Plan condition is replaced with its contemporary Air Quality and Greenhouse Gas Management Plan condition which requires implementation of best practice management measures to minimise greenhouse gas emissions and improve energy efficiency.

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<sup>2</sup> Based on the Commonwealth Department of Environment and Energy's latest quarterly report, Quarterly Update of Australia's National Greenhouse Gas Inventory for March 2019, Australia's national inventory is currently estimated to be 538.9 Mt CO<sub>2</sub>-e.

<sup>3</sup> Under the United Nations Framework Convention on Climate Change Paris Agreement, the Australian Government committed to a nationally determined contribution (NDC) to reduce national emissions by between 26 and 28 percent from 2005 levels by 2030.

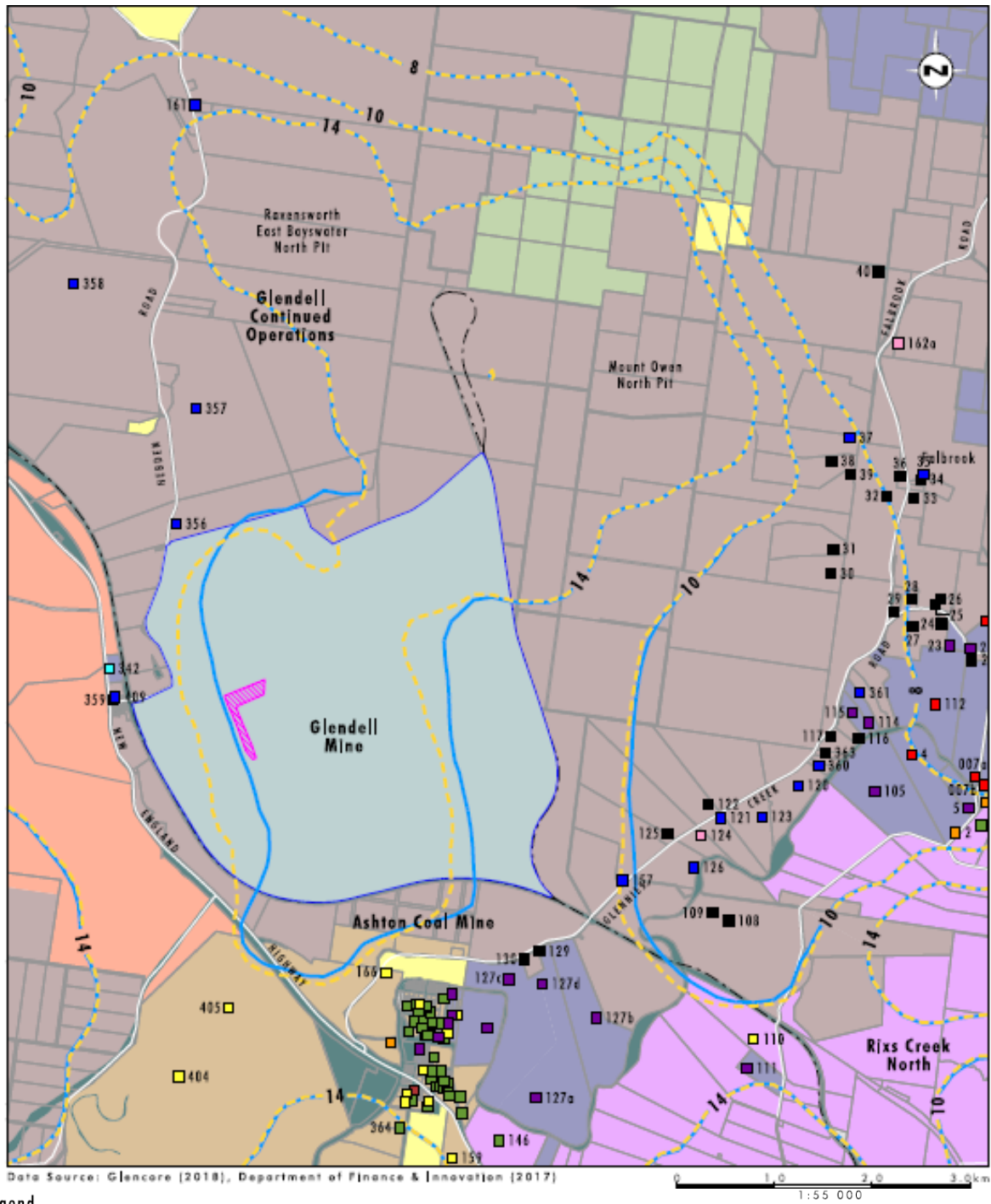


- Legend**
- ▬ Glendell Consent Boundary (DA 80/952)
  - ▬ Proposed Mining Area
  - ▬ Ashton Coal
  - ▬ Bloomfield Collieries
  - ▬ AGL Macquarie
  - ▬ Crown Land
  - ▬ Glencore
  - ▬ Government Authority
  - ▬ Hunter Valley Operations
  - ▬ Private
  - ▬ State Forest
  - ▬ Community Infrastructure
  - Glencore Owned
  - Glencore Owned - Demolished
  - Glencore Owned - Vacant
  - Other Mine Owned
  - Other Mine Owned - Demolished
  - Other Mine Owned - Vacant
  - Private
  - Private - Subject to Acquisition Rights
  - Private Infrastructure
  - ▬ Mount Owen Continued Operations Modification 2 Contour -  $\mu\text{g}/\text{m}^3$
  - ▬ Proposed Modification Annual Average  $\text{PM}_{10}$  Contour -  $\mu\text{g}/\text{m}^3$

FIGURE 6.3  
Annual Average  $\text{PM}_{10}$   
Cumulative

**Figure 7** | Comparison of cumulative annual average  $\text{PM}_{10}$  of Mount Owen Mod 2 and proposed modification





**Legend**

- Glendell Consent Boundary (DA 80/952)
- Proposed Mining Area
- Ashton Coal
- Bloomfield Collieries
- AGL Macquarie
- Crown Land
- Glencore
- Government Authority
- Hunter Valley Operations
- Private
- State Forest
- Community Infrastructure
- Glencore Owned
- Glencore Owned - Demolished
- Glencore Owned - Vacant
- Other Mine Owned
- Other Mine Owned - Demolished
- Other Mine Owned - Vacant
- Private
- Private - Subject to Acquisition Rights
- Private Infrastructure
- Mount Owen Continued Operations Modification 2 - 2020 Contour -  $\mu\text{g}/\text{m}^3$
- Proposed Annual Average  $\text{PM}_{2.5}$  Proposed Modification Contour -  $\mu\text{g}/\text{m}^3$

**FIGURE 6.6**  
**Predicted Annual Average  $\text{PM}_{2.5}$  Cumulative**

**Figure 8 | Comparison of cumulative annual average  $\text{PM}_{2.5}$  of Mount Owen Mod 2 and proposed modification**

### Downstream Scope 3 Emissions

80. The Applicant predicts that the modification would generate approximately 3.9 Mt CO<sub>2</sub>-e of Scope 3 emissions, increasing the total Scope 3 emissions calculated for the project in 2007 by approximately 4.8 %. In comparison the global greenhouse emissions for 2018 total 33,100 Mt. The Scope 3 emissions from the modification represents a very small increase when compared to the global total.
81. The Department has considered the *NSW Climate Change Policy Framework (CCPF)*, which outlines the State's long-term aspirational objectives of achieving net-zero emissions by 2050 and making NSW more resilient to a changing climate. The CCPF does not set prescriptive emission reduction targets and sets policy directions for government action, for example, to improve opportunities for private sector investment in low emissions technology in the energy industry, which is needed for a transition to a net-zero emissions inventory.
82. This modification would, in part, support continuity of supply of fuel for global electricity needs, within the already approved project life. Glencore has also committed to a coal production cap of 150 Mtpa across its global operations to limit its greenhouse gas emissions. The proposed modification is included in this cap.
83. The Department recognises the importance of reducing greenhouse gas emissions to limit increased climate change and the need for ongoing clarification of the NSW greenhouse gas emissions policy framework, for the benefit of both applicants and the community. The Department notes that most of these Scope 3 emissions would not be included in Australia's nationally determined contribution, as product coal would be primarily exported for combustion overseas. These Scope 3 emissions become the consumer countries Scope 1 and 2 emissions and would be accounted for in their respective national inventories. Importantly, the NSW or Commonwealth Government's current policy frameworks do not promote restricting private development as a means for Australia to meet its commitments under the Paris Agreement or the long-term aspirational objective of the CCPF.
84. On 24 October 2019, the *Environment Planning and Assessment Amendment (Territorial Limits) Bill 2019* was introduced to NSW parliament by the Minister for Planning and Public Spaces. If enacted the bill would prohibit the imposition of any conditions of consent that relate to impacts or activities occurring outside of Australia or its territories.

### Mitigation and Monitoring

85. Glencore currently implements an air quality monitoring program for the Mount Owen Complex to monitor ambient air quality and manage its dust emissions from its combined operations. Controls to limit PM emissions include dust suppression, haul road speed limits and adjusting/reducing operations as guided by trigger action response plans, monitoring data and weather conditions. It is proposed that these existing air quality management practices would be extended to include the proposed modification.
86. Additionally, the modification would result in shorter overburden haulage distances along a western bench in the Barrett Pit (rather than at the surface) in adverse weather conditions, which would also assist in reducing PM emissions (see **Section 2**).

### Discussion and Conclusions

87. The Department acknowledges that air quality, particularly around Camberwell, is a significant concern to the community. The Department's assessment of this modification is limited in scope to consider only the incremental air quality impacts from mining an additional 1.97 Mt of coal and additional 12 ha of surface disturbance, on sensitive receivers. As discussed above, the proposed extraction is located away from sensitive receivers (and land that is not already mine-owned) and the AQA in the SEE and revised AQA in

the RTS shows there is no increased impact compared to the approved operations. Therefore, the VLAMP does not apply.

88. In relation to greenhouse gas emissions, the Department considers that the predicted increases are small. Extraction remains within the approved project life and annual extraction limit and the direct greenhouse gas impacts are outweighed by the project's benefits, including continuity of supply for secure and affordable electricity generation, continued employment and generation of royalties.
89. The Department has limited scope to revise the existing air quality criteria (ie annual criterion of  $30 \mu\text{g}/\text{m}^3$  and a 24 hour criterion of  $50 \mu\text{g}/\text{m}^3$  for  $\text{PM}_{10}$ ) to align with the 2016 Approved Methods and the revised VLAMP. Nevertheless, the Department considers it appropriate to update both the air quality operating and monitoring conditions to its contemporary standard conditions. This would require the Applicant to use all reasonable and feasible measures to reduce PM emissions, including during adverse weather conditions. This condition also requires co-ordination with nearby mines to minimise cumulative impacts.
90. The more stringent condition governing the Air Quality and Greenhouse Gas Management Plan would incorporate a monitoring program and focus on using best practice management techniques to reduce Scope 1 and 2 emissions and PM emissions. The Applicant would be required to submit the revised Air Quality and Greenhouse Gas Management Plan within three months of any approval of this modification.

## 5.2. Groundwater

### Background

91. The SEE included a groundwater assessment undertaken by Australasian Groundwater and Environmental Consultants Pty Ltd (AGE). Given the limited footprint of the proposed modification, AGE undertook a qualitative assessment by extrapolating previous monitoring information and considering the predictions from numerical models for nearby projects (Greater Ravensworth model including Rix's Creek/Rix's Creek North, Ravensworth East, Ravensworth Operations, Liddell Mine, ASEOC, and Hunter Valley Operations North Mine).
92. The groundwater assessment was peer reviewed by Dr Noel Merrick, who concluded that the assessment was appropriate.
93. The groundwater regime at Glendell Mine consists of three low productivity groundwater systems, including:
  - alluvium along Bowmans, Swamp and Betty's Creeks;
  - weathered bedrock (regolith); and
  - the Permian strata, comprising the target coal measures and sand/siltstone overburden/interburden.
94. Swamp Creek and Betty's Creek are both minor ephemeral watercourses with no permanent groundwater fed baseflow. To the north of the Barrett Pit a section of Swamp Creek is diverted around the mine infrastructure area, while Betty's Creek has been diverted around the southern end of the pit.

### Impacts on alluvium

95. The pit boundary of the proposed modification would extend the Barrett Pit to approximately 50 m from the northern edge of the Swamp Creek alluvium, at its closest point. Clay rich sediments are present between Bowmans and Swamp Creeks and monitoring data from the beginning of mining operations at Glendell (2009) shows that the alluvium has limited saturated thickness or is dry. Where the alluvium is saturated, the groundwater is brackish to saline. Therefore, the alluvium is not considered a highly productive aquifer as defined in the *Aquifer Interference Policy* (AIP). The Department notes that the modification was determined to have a Level 1 (ie minimal) impact, as defined in the AIP.



96. Nevertheless, the modification would extend the zone of depressurisation within the coal seam approximately 60 m to the west and 130 m to the north. AGE notes that while there is hydraulic connection between the alluvium and the underlying Permian coal measures, the groundwater exchange is extremely low due to the low permeability of the interburden strata between the coal seam and the alluvium. The available monitoring data indicates that depressurisation of the coal seams does not propagate upwards sufficiently to influence shallow groundwater levels within the regolith or alluvial groundwater systems. That is, despite the depressurisation of the coal seams, the groundwater levels within the overlying alluvial systems are not detectably affected.
97. The Barrett Pit is also located along the Camberwell anticline, mining along the anticline means the coal seams intersected by the pit dip to the west and increase in depth below the alluvium further reducing the likelihood of hydraulic connectivity between the Permian strata and alluvium. It is further noted that the alluvium receives rainfall recharge which maintains groundwater levels and exceeds leakage rates to the deeper underlying strata, even when depressurised.
98. The Department notes that while the modification would extend the pit boundary closer to the Swamp Creek alluvium, it does not directly intercept the alluvium and, in this location, the alluvium is dry or of limited saturation. AGE reports that the saturated thickness is generally fewer than two metres and limited in extent to the area near Bowmans Creek confluence. It is therefore unlikely that the proposed modification would significantly increase leakage from the Swamp Creek alluvium.
99. As the modification does not propose an increase in the approved depth of mining within the Barrett Pit and the target seams are already being mined, there is unlikely to be any increase in cumulative impacts on Swamp Creek or Bowmans Creek. There are no privately-owned groundwater bores near the proposed extension area.

### **Pit inflows**

100. The 1996 groundwater model for Glendell Mine estimated two pit inflow scenarios. With no alluvium seepage pit inflows were estimated at approximately 1.3 ML/day, while with pit seepage leakage from the alluvium ranged from zero to 6 ML/day after 20 years of mining. The Applicant notes that the seepage rates predicted by the modelling are conservative and, (while difficult to measure) actual inflows are likely to be less than 1 ML/day, with the rate of evaporation from the mined face commonly exceeding the seepage rate. The volume of groundwater from the mining area requiring pumping is low and AGE considers the seepage rates of groundwater into the active mining area would not be detectably different from those currently experienced.

### **Discussion and Conclusion**

101. DPIE – Water did not raise any significant concerns with groundwater impact assessment but recommended that groundwater monitoring continue in accordance with the mine’s approved Groundwater Management Plan and reported annually. The Department notes that the Groundwater Management Plan is required to be updated to reflect the proposed modification, if approved. DPIE – Water also recommended that an existing monitoring bore (GNPI) be replaced as soon as possible after impact. The Applicant has committed to do this.
102. The proposed modification represents an incremental change to the existing approved mining operations. The Department considers that the proposed modification would not have an impact greater than that already approved for the existing operations, and that no additional conditions are required.

## **5.3. Aboriginal Heritage**

### **Background**

103. In response to SIG and community submissions and recommendations from BCD, the Applicant provided an Aboriginal Cultural Heritage Assessment (ACHA) prepared by OzArk Environmental & Heritage

Management (OzArk) in its RTS (see **Section 4**). The ACHA reported that in August 2017 a larger area was surveyed, which was then scaled back to the area proposed under this modification. In April and May 2018, surveys for the GCOP were undertaken (with existing Registered Aboriginal Parties (RAPs)), which included the proposed disturbance area for this modification application.

104. Previous assessments in the area support the general archaeological context that Aboriginal occupation along Swamp Creek was likely sporadic, evidenced by a reduction in the number of sites away from larger watercourses, a reduced likelihood of subsurface deposits associated with sites and the likelihood that these sites have been disturbed.

### **Predicted Impacts**

105. The 2017 survey identified four isolated finds (Swamp Creek IF 1 to 4), all located outside the proposed modification footprint (see **Figure 9**). During the 2018 survey, a further three low-density artefact scatter sites were recorded (Swamp Creek OS1, Glendell North OS28 and Glendell North OS31). Of these sites, only one (Glendell North OS28) would be totally impacted by the modification. The other two sites (Swamp Creek OS1 and Glendell North OS31) are partially within the proposed modification footprint (see **Figure 9**).
106. OzArk considers that these sites are in a highly disturbed context and have low scientific value and considers that the impacts of the modification on Aboriginal heritage scientific values would be negligible, given the nature and number of sites impacted and that the area is already highly disturbed. OzArk recommended that prior to impact, these sites be recorded, and all low-density surface artefacts collected within the proposed disturbance area.
107. BCD recommended that only the portions of sites Swamp Creek OS1 and Glendell North OS31 within the disturbance footprint are salvaged and the remaining areas fenced for protection. BCD also requested that the ACHMP is revised, in consultation with RAPs, to include all sites identified during the 2017 and 2018 surveys. The Applicant has committed to these mitigation and management measures.
108. PCWP noted in its submission that a crown land parcel (Lot 58 DP 752499) is still registered as a crown reserve and questioned whether native title would need to be granted. The Applicant clarified that this land parcel is within the approved Glendell Mine development consent boundary but is not within the proposed disturbance footprint. Additionally, this lot is subject to a mining lease, CL 385, granted prior to the *Native Title Act 1993* and therefore native title is extinguished.

### **Ravensthorpe Massacre Site**

109. There are documented conflicts between the Wonnarua people and colonial settlers in the wider region surrounding the modification area. This includes a historic account of 18 Aboriginal people being killed 'near the town of Ravensthorpe', however the exact location is unknown.
110. Submitters noted that the assessment did not refer to a Newcastle Herald article which discussed events occurring around the Ravensthorpe area between 1825 and 1826, including an account of 18 Aboriginal people being killed (see **Section 4.3**). The Applicant advised that the assessment did not refer to the article as it was published after the SEE was finalised.
111. An Aboriginal Heritage Information Management System (AHIMS) site 37-3-0390 (Ravensthorpe Massacre Site) is located on the western side of the New England Highway, outside of the modification's proposed disturbance area, and was previously considered to reflect the area where the 18 Aboriginal people were killed (see **Figure 9**). However, there are doubts that this site was the exact location of the massacre and the actual site may have been further away from the area of disturbance associated with the proposed modification.

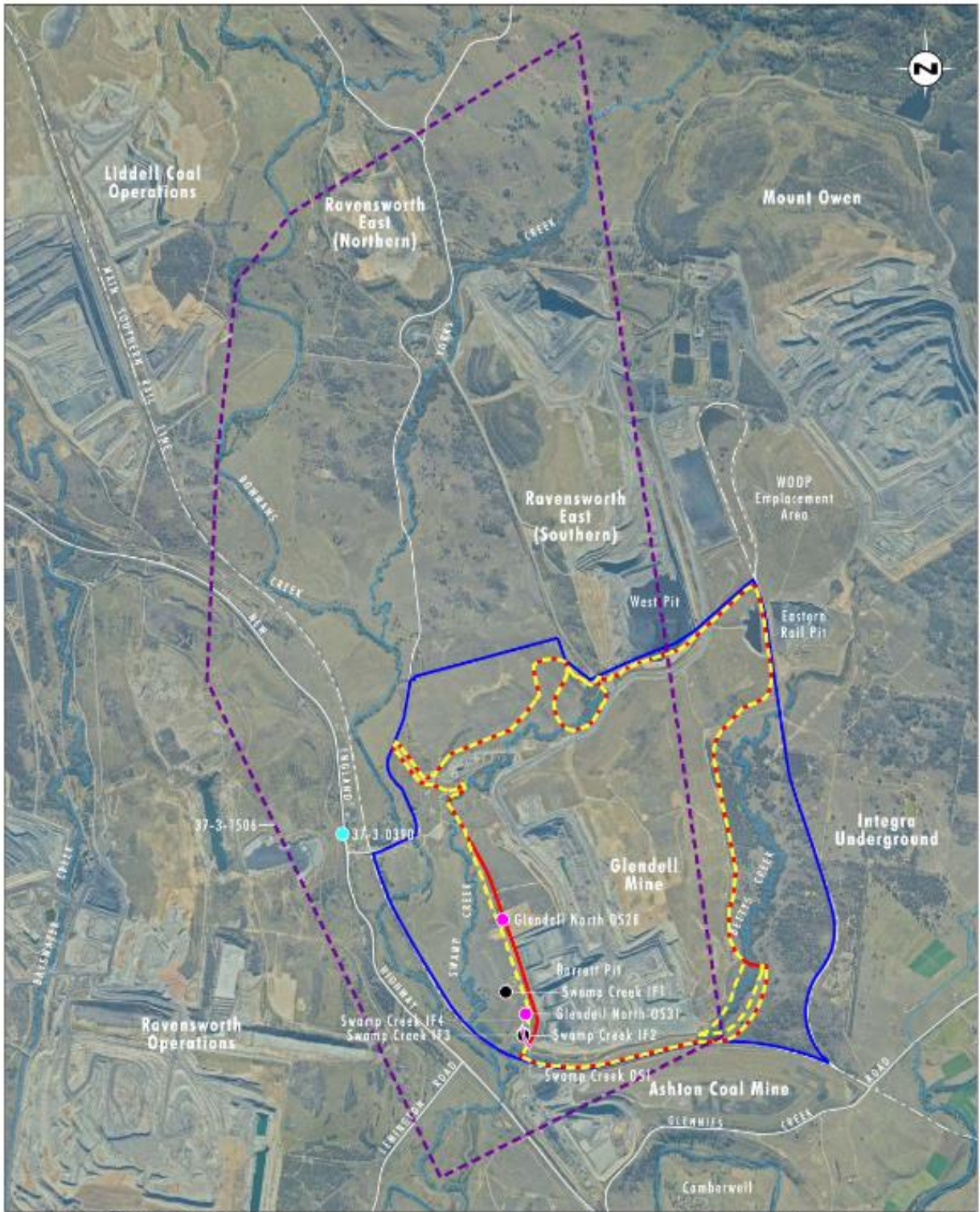


Image Source: Glencore (Jul 2018)  
 Data Source: Glencore (2018), OzArk (2018)

0 0.5 1.0 2.0km  
 1:50 000

**Legend**

- Glendell Consent Boundary (DA 80/952)
- Approved Disturbance Area (DA 80/952)
- Proposed Disturbance Area
- 37-3-1506
- Artefact Scatter
- Isolated Find
- Massacre Site

**Recorded Sites**

**Figure 9** | Aboriginal heritage sites in proximity to Glendell Mine



112. There is a further site nominated by PCWP (37-3-1506) which is yet to be given formal AHIMS site status and encompasses site 37-3-0390. Site 37-3-1506 is approximately 34 km<sup>2</sup> and is proposed to be registered as an Aboriginal resource and gathering, burial and conflict site. Further information is required by BCD before the AHIMS status can be finalised. This proposed site covers all of the proposed modification area and the majority of the proposed GCOP project (see **Figure 9**). The area specified by 37-3-1506 was also the subject of a Heritage Protection Application under the ATSIHP Act. This application was withdrawn on 6 September 2019 (see **Section 4.3**).
113. Currently site 37-3-1506 is listed as 'not a site' on the AHIMS register and is not an Aboriginal place under the *National Parks and Wildlife Act 1974* or the ATSIHP Act. OzArk considers that, even if it was formally accepted on the AHIMS register, the highly disturbed nature of the site is unlikely to maintain any of the cultural values associated with the site's nomination.

### **Discussion and Conclusions**

114. BCD advised the Department that it was satisfied that the Applicant's RTS adequately addressed its concerns regarding Aboriginal cultural heritage.
115. The Department considers that there would be minimal impacts on Aboriginal cultural heritage as a result of the proposed modification, given the nature of the proposed mitigation and management measures. The directly impacted sites are of low scientific value and the artefacts would be salvaged prior to disturbance. The Department notes that existing conditions of consent require the Applicant to implement an ACHMP and that all relevant management plans are updated within three months of a modification being approved. The Department considers the existing conditions of consent remain appropriate.

## **5.4. Rehabilitation and Final Void**

### **Background**

116. Retaining a final void was raised as a concern by submitters objecting to this modification (see **Section 4.3**). Glendell Mine's approved final landform includes partial backfill of its open cut pit, leaving a single final void and a combination of rehabilitated grazing land and native woodland.
117. Pre-mining, the land capability of the site consisted largely of class V land with smaller areas of class II and IV land. Rehabilitated topsoiled areas would have a nominal land capability of class IV or V, depending on the slope and landscape position. Areas rehabilitated without topsoil would have an end land capability of Class VI. The Department notes that existing conditions of consent set rehabilitation objectives and performance criteria to ensure this land capability is achieved.

### **Predicted Impacts**

118. The modification would result in minor changes to the existing conceptual landform (ie the final void would move slightly northwest compared to the current proposed landform) although the void size, depth, catchment and pit lake depth would remain as currently approved. The Applicant proposes to continue with its existing rehabilitation methods, including shaping, vegetation establishment, fencing and feral animal control.
119. As part of conceptual mine closure planning, the Applicant would investigate final land use options, particularly agricultural and/or conservation land use.

### **Discussion and Conclusions**

120. The Applicant's currently approved final land use for Glendell Mine includes a combination of grazing land and bushland. Other possible land uses include ancillary mining infrastructure, water storage, industrial/intensive agriculture; waste recycling, re-use and emplacement. These potential land uses would be further considered nearer to the closure of the overall Mount Owen Complex.

121. The existing rehabilitation strategy and conceptual final landform was approved as part of the 2008 modification and involved a substantial reduction in the size of the mine’s final void, from 140 million m<sup>3</sup> to 65 million m<sup>3</sup>. The Department considers that the scale of changes to the conceptual landform are minor compared to the approved landform, which includes an approved final void, and notes that the Resources Regulator did not raise any issues regarding the proposed final landform.
122. The Department also notes that existing conditions of consent require the development of a Rehabilitation and Offset Strategy, Mine Closure Plan and Final Void Management Plan. It considers that the modification would have a minimal impact on rehabilitation outcomes at the site. The Department has recommended the conceptual final landform diagram is updated in the development consent to reflect the modification.

## 5.5. Other Issues

123. Other issues which are not considered key issues have been addressed in **Table 4** below.

**Table 4** | Summary of other issues

Issue	Findings	Recommended Condition
Biodiversity	<ul style="list-style-type: none"> <li>The Applicant proposes to disturb an additional 12 ha on the western edge of the Barrett Pit (see Figure 3) which has low biodiversity values and was previously approved for disturbance (under the original project approval, which was revised under Modification 2, see Table 1).</li> <li>The SEE includes a Biodiversity Development Assessment Report (BDAR) in accordance with the Biodiversity Conservation Act 2016 (BC Act).</li> <li>The vegetation in the proposed disturbance area comprises 6.4 ha of Narrow-leaved Ironbark-Grey Box Grassy Woodland of Central and Upper Hunter Derived Native Grassland (PCT 1691); and 0.9 ha of Bull Oak Grassy Woodland of the Central Hunter Valley – Regeneration (PCT1692).</li> <li>To offset the 7.3 ha of native vegetation, the Applicant calculated that 109 ecosystem credits are required. BCD advised that it was satisfied with the Applicant’s BDAR and calculation of 109 ecosystem credits.</li> <li>The Applicant proposes mine plan changes that would avoid clearing of 7.7 ha of PCT 1691 and Swamp Oak-Weeping Grass Grassy Riparian Forest of the Hunter Valley, currently approved to be cleared.</li> <li>The Department notes that the Applicant’s proposed credit calculation is based on the additional disturbance area (ie offsetting 7.3 ha of native vegetation), even though there would be a net reduction in native vegetation clearing of 0.4 ha.</li> <li>The Department also notes that, while the Applicant has not advised its proposed method of credit retirement, there are three available options; establishment and retirement of credits with a Stewardship site; purchasing credits on the open market or making a payment into the Biodiversity Conservation Fund.</li> <li>The proposed disturbance area does not contain hollow-bearing trees, fallen logs or threatened flora species habitat. No species-</li> </ul>	<ul style="list-style-type: none"> <li>The Department has recommended a new condition requiring the retirement of 109 ecosystem credits within, 6 months of this modification being determined, in accordance with the BC Act.</li> <li>The Department has also recommended that the proposed changes to the disturbance boundary (ie 7.7 ha reduction) is formalised as part of this modification by updating the figures in the development consent.</li> </ul>

Issue	Findings	Recommended Condition
	<p>credit species were predicted to occur within the proposed disturbance area.</p> <ul style="list-style-type: none"> <li>The Department considers the proposed modification would have minimal impacts on biodiversity, given the proposed avoidance of approved impacts on PCT 1691, and credit retirement for the full 7.3 ha of native vegetation proposed to be cleared under the modification.</li> <li>Existing conditions of consent require the development of a Rehabilitation and Offset Management Plan and the Department recommends that this plan is updated to reflect the modification.</li> </ul>	
<b>Surface Water and Flooding</b>	<ul style="list-style-type: none"> <li>To accommodate the progression of mining from the extended pit, the Applicant proposes minor changes to its existing water management system.</li> <li>Modelling of the 1% Annual Exceedance Probability (AEP) flood event predicts that flooding could extend along Swamp Creek to within approximately 30 m of the extended pit shell.</li> <li>Under the Mount Owen Continued Operations Project, flood mitigation berms would be constructed as part of highwall access and safety works for a 0.1% AEP flood event, including along the western pit wall. Given the location of these works outside of the predicted flood extent, the Applicant considers there is unlikely to be any significant impact on flood flow velocities or afflux effects.</li> <li>BCD was satisfied with the flood impact assessment and considered that the modification would have no significant off-site flooding impacts.</li> <li>The Department considers the modification would result in a negligible flooding impact relative to existing operations and that flood risks would continue to be managed through the Mount Owen Complex Surface Water Management and Monitoring Plan. The Department recommends this plan is updated to reflect the modification.</li> </ul>	<ul style="list-style-type: none"> <li>No changes to existing conditions of consent are considered necessary.</li> </ul>
<b>Noise</b>	<ul style="list-style-type: none"> <li>This modification would not result in any increase in operational noise impacts as mining operations would continue to occur at existing approved rates, would move further north away from sensitive receivers located in Camberwell and would use an alternative western haul road for overburden emplacement during adverse weather conditions (see Section 2).</li> <li>The eight months of additional mining operations would remain within the existing approved life of mining operations, which is permitted until June 2024.</li> <li>The Applicant currently operates a comprehensive noise management system for the Mount Owen Complex.</li> <li>The Department considers that the consent's noise conditions remain appropriate for the development, as proposed to be modified, and no changes are required.</li> </ul>	<ul style="list-style-type: none"> <li>No changes to existing conditions of consent are considered necessary.</li> </ul>
<b>Socio-economic</b>	<ul style="list-style-type: none"> <li>The key purpose of the modification is to allow continuity of mining operations and employment and efficient resource</li> </ul>	<ul style="list-style-type: none"> <li>No changes to existing conditions of consent or new</li> </ul>



Issue	Findings	Recommended Condition
	<p>recovery while the Applicant finalises its application for the GCOP.</p> <ul style="list-style-type: none"> <li>• The Applicant considers that the modification would result in minimal additional impact to the local community as the operations would not be new or significantly different (in terms of scale and intensity) to those approved under the existing consent.</li> <li>• The Department acknowledges that members of the community have objected to this modification. However, the concerns are mostly related to the approved operations of the mine and other mines in the vicinity.</li> <li>• The Department considers that the proposed modification would provide benefits to NSW in the form of additional royalties while efficiently extracting a resource with existing fleet and personnel.</li> </ul>	<p>conditions are considered necessary.</p>



## 6. Evaluation

124. The Department has assessed the merits of the proposed modification in accordance with the requirements of the EP&A Act. The Department has carefully considered and acknowledges the community's concerns, particularly regarding air quality impacts.
125. The modification seeks to mine an additional 1.97 Mt of ROM coal within the existing approved mining life of the development consent and would result in:
- a net increase in disturbance of 4.3 ha (ie new disturbance area of 12 ha and avoidance of 7.7 ha);
  - a net 0.4 ha reduction in clearing of native vegetation, however the new clearing of 7.3 ha is proposed to be fully offset through the retirement of 109 biodiversity credits;
  - disturbance of one artefact scatter site and partial disturbance of two other artefact scatter sites of low scientific value; and
  - no additional noise and dust impacts at sensitive receivers, compared to the approved operations.
126. No changes are proposed to the currently approved mine life, mining method, processing rate, transportation methods, operational hours or workforce numbers.
127. As the Applicant is not proposing to intensify, alter or extend the duration of approved mining operations, the potential environmental and social impacts of the modification are consistent with the currently approved operations. The modification would provide continuity of mining operations while the GCOP application is being finalised.
128. The Department considers that, with the Applicant's proposed mitigation measures and the required review, revision and implementation of existing management plans to incorporate the modification's changes and mitigation measures there would be minimal social and environmental impacts as a result of the modification.
129. The modification would generate:
- continued employment for 300 people; and

- \$6.3 million NPV in additional royalties for the State of NSW.
130. The Department also considers that the above socio-economic benefits of the modification outweigh the incremental impacts associated with the continuation of mining for a further 8-month period, and that therefore the proposed modification is in the public interest and is approvable.
131. The Department has recommended revisions to existing conditions of consent which reflect advice from Government agencies and commitments made by the Applicant to offset or mitigate the modification's impacts. To address the community's concerns regarding air quality and greenhouse gas emissions, the Department recommends updating the air quality operating conditions and requiring development of a comprehensive Air Quality and Greenhouse Management Plan. The Department has also taken the opportunity to recommend other contemporary updates to conditions.
132. The Department has drafted a Notice of Modification (**Appendix D**) for the proposed modification, as well as a consolidated version of the consent (**Appendix E**) as proposed to be modified.
133. The assessment report is hereby presented to the Independent Planning Commission of NSW for determination.

Endorsed by:

 29/11/2019

**Melanie Hollis**

Senior Planning Officer  
Resource Assessments

Endorsed by:

 29/11/19

**Steve O'Donoghue**

Director  
Resource Assessments

Endorsed by:

 29.11.19.

**Mike Young**

Executive Director  
Energy and Resource Assessments



## 7. Appendices

### 7.1. Appendix A – Statement of Environmental Effects

<https://www.planningportal.nsw.gov.au/major-projects/project/14556>

### 7.2. Appendix B – Submissions

<https://www.planningportal.nsw.gov.au/major-projects/project/14556>

### 7.3. Appendix C – Response to Submissions

<https://www.planningportal.nsw.gov.au/major-projects/project/14556>

### 7.4. Appendix D – Draft Notice of Modification

<https://www.planningportal.nsw.gov.au/major-projects/project/14556>

### 7.5. Appendix E – Draft Consolidated Consent

<https://www.planningportal.nsw.gov.au/major-projects/project/14556>