

GLENCORE

Glendell Mine Modification 4

RESPONSE TO SUBMISSIONS

May 2019



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LENDELL MINE MODIFICATION 4

Response to Submissions

FINAL

Prepared by
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on behalf of
Mt Owen Pty Limited

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Table of Contents

1.0	Introduction	1
1.1	Background	1
1.2	Report Structure	2
2.0	Overview of the Exhibited Proposed Modification	4
3.0	Submission Analysis	8
3.1	Submission Overview	8
3.2	Interest Group Submissions	8
3.3	Community Submissions	9
4.0	Actions taken since Proposed Modification Exhibited	10
4.1	Consultation	10
4.2	Additional Environmental Assessment	10
5.0	Proposed Modification Changes	12
6.0	Responses to Submissions Received	14
6.1	Air Quality	14
6.1.1	Agency Submissions	14
6.1.2	Interest Group Submissions	25
6.1.3	Community Submissions	28
6.2	Climate Change and Greenhouse Gas and Energy Assessment	31
6.2.1	Interest Group Submissions	31
6.2.2	Community Submissions	31
6.3	Aboriginal Archaeology	36
6.3.1	Agency Submissions	36
6.3.2	Interest Group Submissions	40
6.3.3	Community Submissions	42
6.4	Noise	42
6.4.1	Interest Group Submissions	42
6.5	Mine Closure and Rehabilitation	43
6.5.1	Agency Submissions	43
6.5.2	Interest Group Submissions	43
6.5.3	Community Submissions	44
6.6	Consultation	46
6.6.1	Interest Group Submissions	46
6.6.2	Community Submissions	46
6.7	Biodiversity	47
6.7.1	Agency Submissions	47

6.8	Water Resources	47
6.8.1	Agency Submissions	47
6.9	Social Impacts	47
6.9.1	Interest Group Submissions	47
6.10	Landuse	48
6.10.1	Agency Submissions	48
6.11	Project Justification	48
6.11.1	Agency Submissions	48
6.11.2	Interest Group Submissions	49
6.11.3	Hunter Communities Network	49
6.11.4	Community Submissions	49
7.0	Revised Environmental Management and Monitoring Measures	51
8.0	References	52

Figures

Figure 1.1	Upper Hunter Valley Context and Approved Glendell Mine Operations	3
Figure 2.1	Proposed Modification Overview	5
Figure 2.2	Approved and Proposed Disturbance Area Comparison	6
Figure 2.3	Conceptual Mine Plan 2023	7
Figure 3.1	Key Themes of Submissions	9
Figure 5.1	Revised Proposed Modification Overview	13
Figure 6.1	Maximum 24-hour PM ₁₀ Model Predictions – Glendell Mine	18
Figure 6.2	Annual Average PM ₁₀ Model Predictions – Glendell Mine	19
Figure 6.3	Annual Average PM ₁₀ - Cumulative	20
Figure 6.4	Predicted maximum 24-hour average PM _{2.5}	22
Figure 6.5	Predicted annual average PM _{2.5}	23
Figure 6.6	Predicted cumulative annual average PM _{2.5}	24
Figure 6.7	Recorded Sites	39

Tables

Table 6.1	Air quality criteria for particulate matter and deposited dust (Approved Operations DA 80/952)	15
Table 6.2	Air quality impact assessment criteria from the current Approved Methods (EPA 2016)	15
Table 6.3	Model predictions of PM ₁₀ in Camberwell	17
Table 6.4	Model predictions of PM _{2.5} in Camberwell	21

Appendices

Appendix 1	Glendell Modification 4 Aboriginal Cultural Heritage Assessment Report 2019
Appendix 2	Glendell Modification 4 Air Quality Assessment
Appendix 3	Extract from the Mount Owen Continued Operations Project ACHAR 2013

1.0 Introduction

1.1 Background

The Mount Owen Complex is located within the Hunter Coalfields in the Upper Hunter Valley of New South Wales (NSW), approximately 20 kilometres (km) north-west of Singleton and 24 km south-east of Muswellbrook (refer to **Figure 1.1**) and consists of the Glendell Mine (Barrett Pit), Mount Owen Mine (North Pit) and Ravensworth East Mine (Bayswater North Pit). Mt Owen Pty Ltd (Mount Owen), a subsidiary of Glencore Coal Pty Limited (Glencore) currently operates the Glendell Mine under development consent DA 80/952, which regulates the mining of coal from the Glendell Mine and the rehabilitation of the mining area. DA 08/952 (as modified) provides for continued operations at the Glendell Mine until 2024 and the extraction of approximately 50 million tonnes run of mine (Mt ROM) coal at an annual production rate of 4.5 million tonne per annum (Mtpa).

The processing of coal mined from the Glendell Mine and the transportation of coal is regulated by development consent SSD-5850 (Mount Owen Continued Operations) which also regulates mining at the Mount Owen and Ravensworth East Mines, and associated activities.

DA 80/952 provides for mining operations at Glendell until 2024, based on the current mining schedule mining operations are scheduled to cease in 2022, Mount Owen are seeking a minor extension to the approved pit shell in order to access an additional approximately 2.5 Mt ROM Coal from the Barrett Pit and approximately eight months of continued mining operations (the Proposed Modification). No changes are proposed to the current approved mine life, mining methods, extraction rate, processing rates, transportation methods, operational hours or workforce numbers.

The proposed minor expansion of the Barrett Pit will also assist in ensuring there is a continuous transition in production from the current Glendell mine into the proposed Glendell Continued Operations Project (GCOP) mining area, (should GCOP be approved). Additionally the Proposed Modification would assist with achieving continuity of employment at the Glendell Mine pending the determination of the development application for the GCOP.

The Statement of Environmental Effects (SEE) for the Proposed Modification was placed on public exhibition from 22 November 2018 to 6 December 2018. As part of the public exhibition process, 40 submissions were received in relation to the Proposed Modification, including 5 government agency submissions, 5 interest group submissions and 30 community submissions.

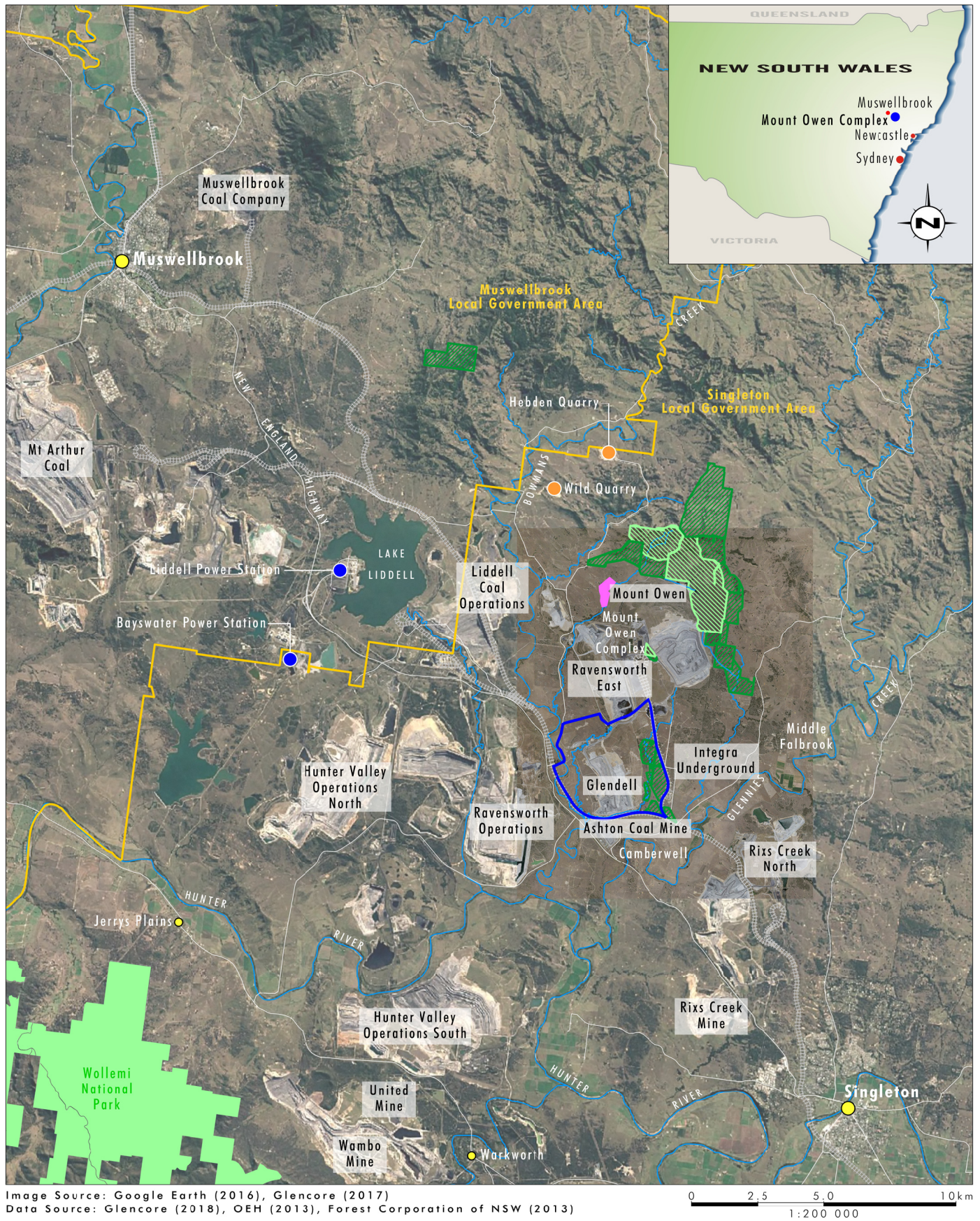
This Response to Submissions (RTS) has been prepared by Umwelt (Australia) Pty Limited (Umwelt) on behalf of Mount Owen to address the key issues raised in the submissions.

The form of this RTS generally follows the requirements of the Department of Planning and Environment (DPE) (2017) Draft Environmental Impact Assessment Guidance Series, Responding to Submissions, which provides direction of analysing and responding to issues raised during the exhibition process and the expected structure and content of the RTS.

1.2 Report Structure

This report provides:

- A brief overview of the exhibited Proposed Modification to provide context for the RTS (**Section 2**);
- An analysis of the issues and themes raised in the submissions (**Section 3**);
- A summary of the actions taken since the exhibition of the SEE for the Proposed Modification (**Section 4**);
- A summary of any changes made to the Proposed Modification (**Section 5**);
- A detailed response to the issues raised in the government, interest group and community submissions (**Section 6**);
- Summary of the revised environmental management and mitigation measures applicable to the Proposed Modification (**Section 7**); and
- References (**Section 8**).



Legend

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

FIGURE 1.1

Upper Hunter Valley Context and
 Approved Glendell Mine Operations

2.0 Overview of the Exhibited Proposed Modification

DA 80/952 provides for mining operations at Glendell Mine until 2024, however based on the current mining schedule operations will cease in 2022, Mount Owen are now seeking a minor extension to the approved mining area in the Barret Pit in order to access an additional approximately 2.5 Mt ROM Coal and provide for an additional 8 months of mining (approximately to Q1 2023), refer to **Figure 2.1**.

The Proposed Modification will provide for continued mining operations at the Glendell Mine and the continued employment of the existing workforce for an additional approximately 8 months and assist in achieving continuity of mining operations pending the determination should the approval process for of the GCOP be delayed. However, the application for the Proposed Modification is not seeking an extension of the currently approved mine life of 2024 as the proposed operations (including the modification) are still scheduled to be undertaken prior to that date.

The proposed minor expansion of the Barrett Pit will also provide for implementation of the initial mine plan changes to the current mining operations in the Barrett Pit in order to progress efficiently into the planned Glendell Pit Extension area, should the GCOP be approved. Extending the approved mining area at the time that mining operations progress through this area represents the most efficient option in implementing the proposed GCOP mine plan, whilst maintaining the associated environmental affects consistent with current predictions and not significantly modifying the approved conceptual final landform.

The proposed disturbance area is within the disturbance area originally approved under DA 80/952 in 1983 and has therefore been subject to previous environmental assessment as part of the development of the Glendell Coal Limited Environmental Impact Statement (EIS), (Croft & Associated Pty Ltd, 1982). The approved disturbance area was reduced through the redesign of the conceptual mine plans as part of the 2008 modification (refer to **Figure 2.2**).

An additional 12 ha of disturbance is required along the western boundary of the approved disturbance area in order to accommodate the proposed mine plan changes. In addition, the approved disturbance area is proposed to be revised to remove an area previously approved for disturbance on the eastern boundary of the approved disturbance area. As reported in the SEE for the Proposed Modification, an area of approximately 15.5 ha was proposed to be removed from the disturbance area, refer to **Figure 2.2**.

Therefore, there was proposed to be a net decrease (3.5 ha) in the overall disturbance area associated with the Glendell Mining operations. Note these areas have been revised through the process of preparing this RTS, resulting in a net increase of 4.3 ha in the overall disturbance area for the Proposed Modification. This change is discussed further in **Section 5.0**.

No changes are proposed to the current approved mine life, mining methods, extraction limits, processing rates, transportation methods, operational hours or workforce numbers.

Figure 2.3 represents the conceptual final year of mining (as modified) with the progression of mining moving further north and reaching the northern extent of proposed mining. Minor changes to the approved operations will also be implemented including hauling overburden along the western edge of the Barrett Pit at surface, providing for efficient establishment of the overburden emplacement area at the southern end of the Barrett Pit. During unfavourable meteorological conditions, alternate arrangements for the haulage of overburden can occur along a western bench within the Barrett Pit (below surface) to assist in managing any potential off-site air quality and noise impacts. Modifications to the haul road, existing truck parking areas and WMS structures will also be implemented to accommodate the progression of mining.

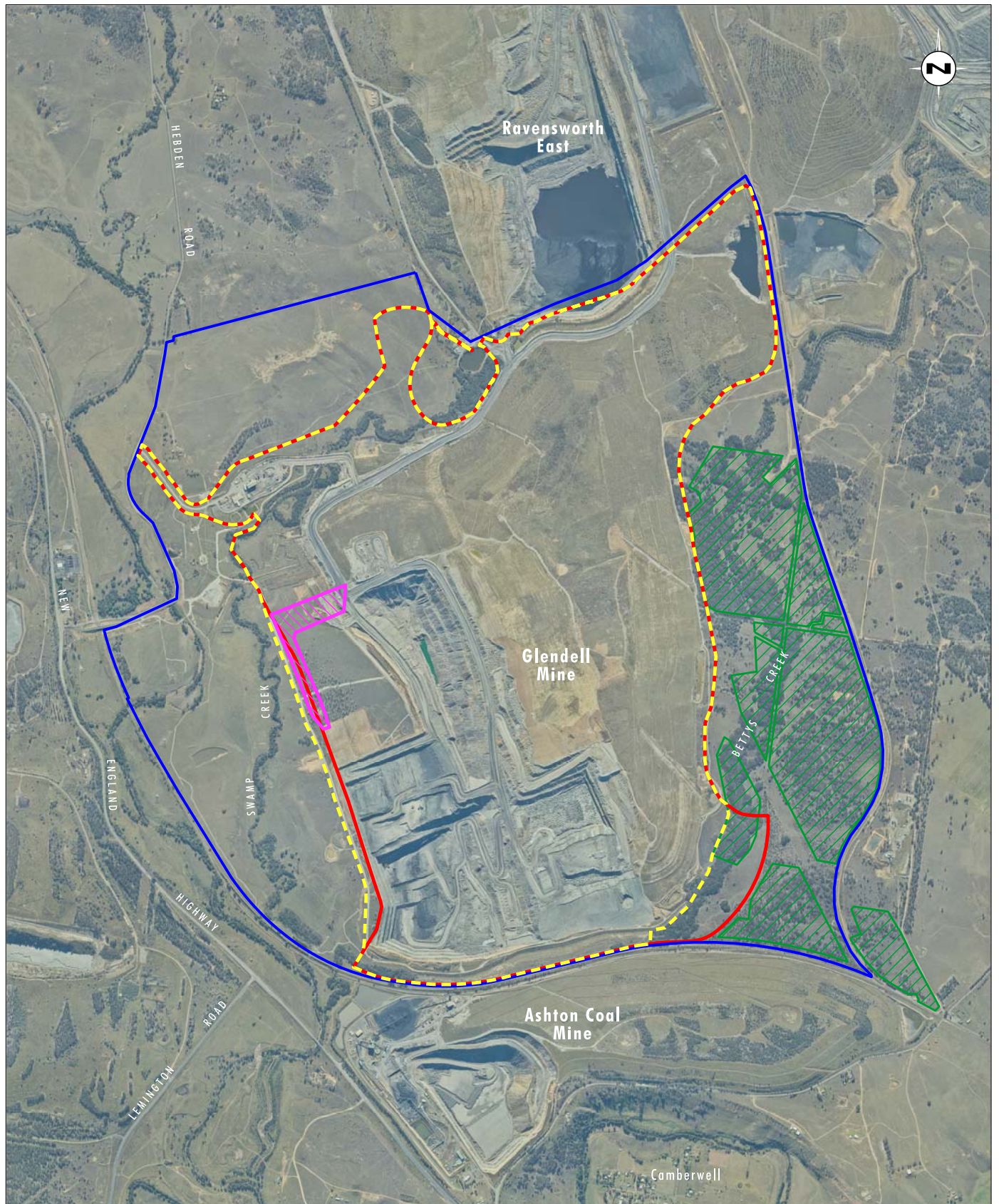


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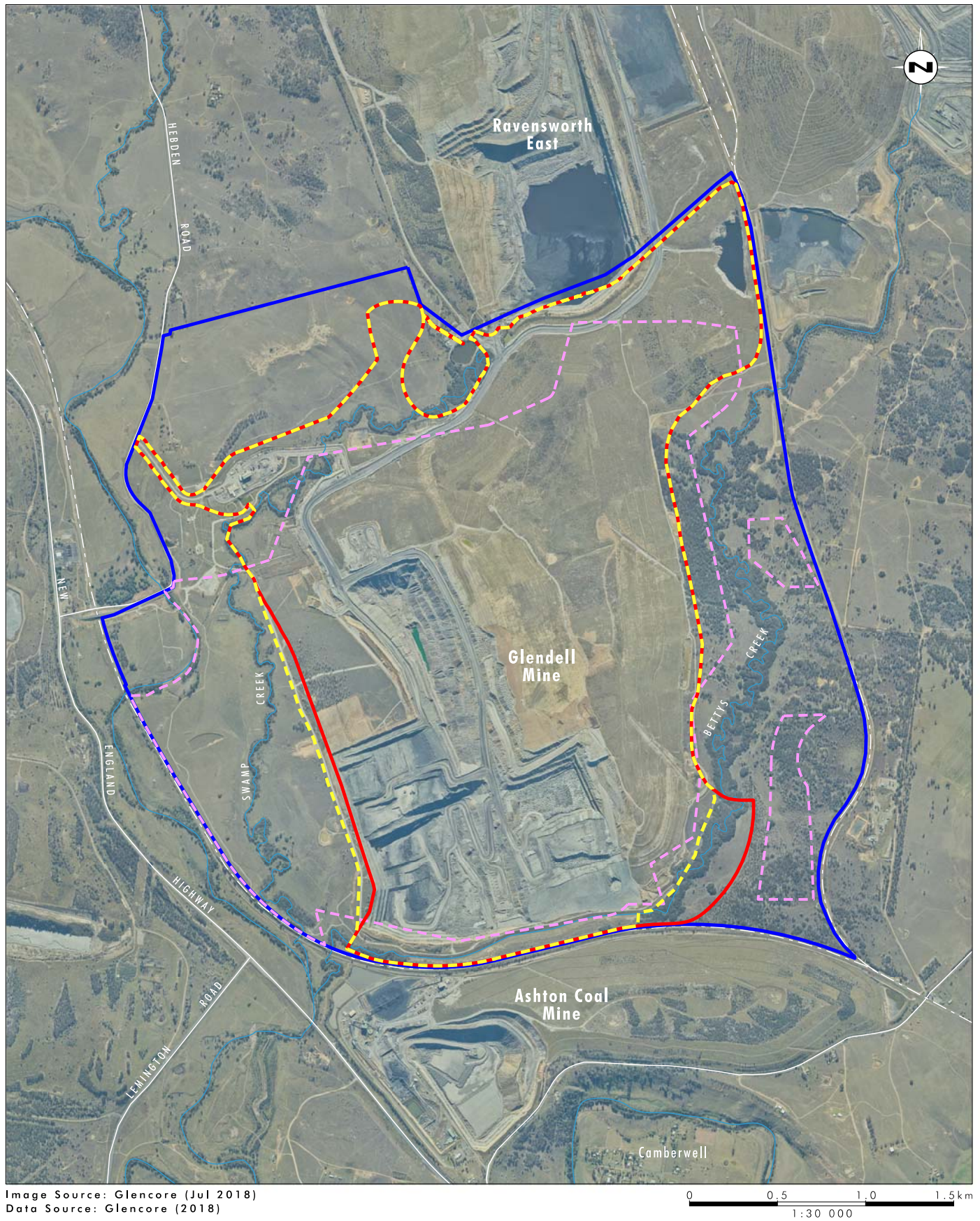
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Legend

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

FIGURE 2.1

Proposed Modification Overview



Legend

- Glendell Consent Boundary (DA 80/952)
- Approved Disturbance Area (DA 80/952) 1997
- Approved Disturbance Area (DA 80/952) 2008
- Proposed Disturbance Area

FIGURE 2.2

Approved and Proposed
Disturbance Area Comparison

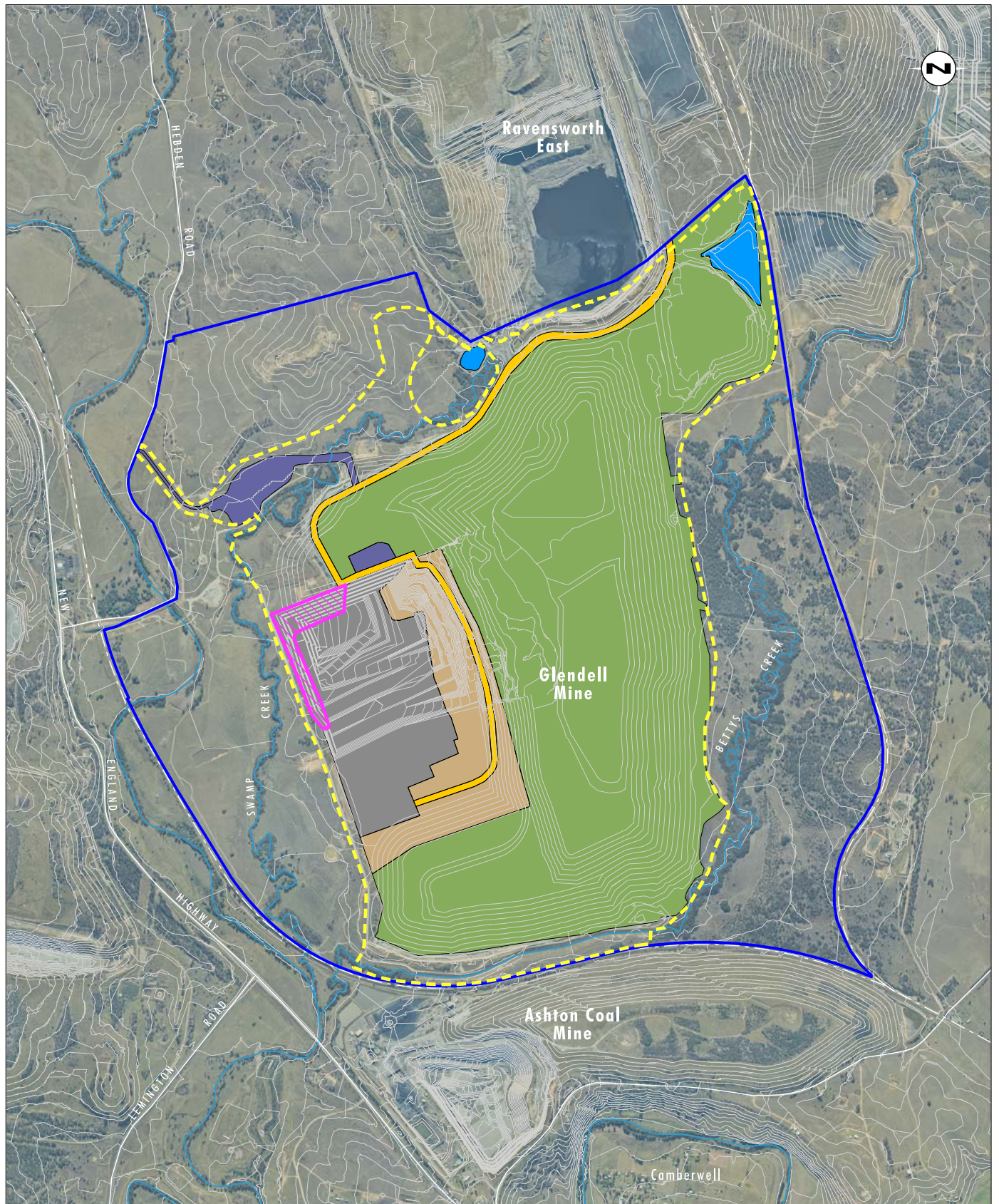


Image Source: Glencore (Jul 2018)
Data Source: Glencore (2018)

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Legend

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

FIGURE 2.3

Conceptual Mine Plan
2023

3.0 Submission Analysis

3.1 Submission Overview

The SEE for the Proposed Modification was placed on public exhibition from 22 November 2018 to 6 December 2018. A total of 40 submissions were received, this included 5 government agency submissions (including DPE), five interest group submissions and 30 community submissions. All of the submissions from the interest groups and the community objected to the Proposed Modification.

DPE (11 December 2018) requested the preparation of an RTS report which responds to all issues raised in the submissions. In particular, DPE requested that an updated air quality impact assessment be provided in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016 to address community concerns and to facilitate harmonisation of contemporary air quality standards across the Mount Owen Complex.

In addition to the DPE request, 5 other government agency submissions were received:

- Environment Protection Authority (EPA)
- Department of Planning and Environment - Resources & Geoscience (DRG)
- Department of Industry – Lands and Water (DoI)
- Office of Environment and Heritage (OEH)
- Department of Planning and Environment - Resources Regulator (Resources Regulator).

None of the government agencies opposed the Proposed Modification and further assessment was only requested by OEH in relation to consultation with the Aboriginal Community. Additionally, Singleton Shire Council confirmed they had no comment in relation to the Proposed Modification.

The agency submissions are discussed further in **Section 6.0**.

3.2 Interest Group Submissions

Submissions were received from 5 interest groups, all expressing objection to the Proposed Modification. The interest groups included:

- Hunter Communities Network (HCN);
- Hunter Environment Lobby (HEL);
- Climate Change Newcastle;
- Climate Change Balmain-Rozelle; and
- Plains Clans of the Wonnarua People (PCWP).

The most prominent issues raised relate to air quality, climate change and final landform. Social impact issues were also raised, relating to consultation (in relation to the community and the Aboriginal Impact Assessment), extension of the mine life and the future use of the site and the mining industry in general. The issues raised in these submissions are discussed in detail in **Section 6.0** of this report.

3.3 Community Submissions

30 individual community submissions were received during the exhibition period objecting to the Proposed Modification, three of these submissions were from the local Camberwell Community the remainder were from residents within the Hunter and wider NSW region. 3 from Camberwell and a further 16 from the Hunter Valley, remaining 11 submissions from outside the Hunter Region.

The issues from the submissions objecting to the Proposed Modification have been grouped into themes (refer to **Figure 3.1**). Multiple issues were included in some submissions. The most common themes were Air Quality (including health and cumulative impacts particularly in relation to Camberwell), climate change, community consultation and final land use.

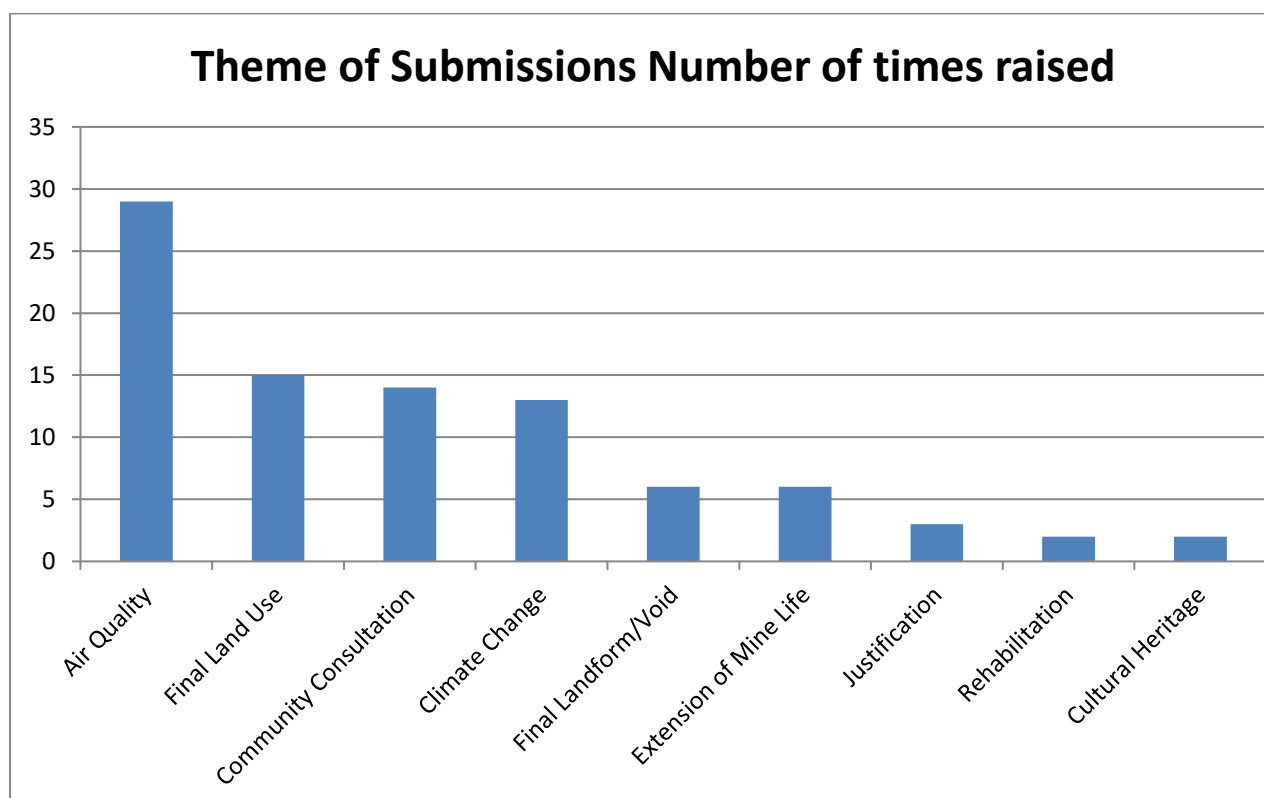


Figure 3.1 Key Themes of Submissions

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A response to the issues raised in the objections is provided in detail in **Section 6.0** of this report.

4.0 Actions taken since Proposed Modification Exhibited

This Section provides an overview of the actions taken during the preparation of the RTS report including additional consultation undertaken and additional environmental assessment.

4.1 Consultation

At the request of OEH, further consultation has been undertaken with the Registered Aboriginal Parties (RAPs) in accordance with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (ACHCR). This consultation included an initial review of a background document and providing further detail regarding the Proposed Modification and survey results. The background document was circulated to the RAPs for review and comment on 6 February 2019, no responses were received. An Aboriginal Cultural Heritage Assessment Report (ACHAR) was developed in accordance with the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011) utilising the previous due diligence report, assessment and consultation undertaken to date for the GCOP and previous assessments undertaken within the area. The ACHAR was circulated to the RAPs for review and comment on 18 March 2019, 1 response was received from Culturally Aware which confirmed no concern or issues with the ACHAR, no feedback requiring incorporation into the ACHAR was received, refer to **Appendix 1**.

4.2 Additional Environmental Assessment

Additional environmental assessment has been undertaken to support the Proposed Modification in relation to Air Quality and Aboriginal Cultural Heritage.

Aboriginal Archaeology

OEH has recommended that an *Aboriginal archaeological cultural heritage assessment report is prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the Glendell Mine Modification 4 footprint. The Aboriginal cultural heritage assessment report should be prepared in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW).*

The area of additional disturbance associated with the Proposed Modification has been subject to previous Aboriginal Archaeology Assessment. The area was first surveyed as part of the development of the original EIS for Glendell Mine in 1981 and 1982 and again in 2007 as part of the development of the Environmental Assessment for the approved operations. Additionally, the area is located within the existing boundary established for the approved *Mount Owen Complex Aboriginal Cultural Heritage Management Plan* (ACHMP). Therefore, the Due Diligence process was considered to be appropriate for this minor modification. As stipulated in the ACHMP, there is on-going consultation with the Aboriginal community, both through the mechanism of the Aboriginal Cultural Heritage Working Group (ACHMP Section 1.4.3), and through the quarterly site condition monitoring which includes a roster of representatives from the Aboriginal community (ACHMP Section 5.7). In addition, the area of additional disturbance had been previously assessed in its entirety in Umwelt 2004, and partially in OzArk 2014, and had been walked over during the quarterly monitoring program. It was therefore considered that an assessment methodology following the Due Diligence guidelines was justifiable in this instance.

However, at the request of OEH and to address the 3 submissions received from the Community relating to Aboriginal Cultural Heritage, Mount Owen initiated the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* so that the cultural values of the study area can be known and to incorporate this information, as well as responses to other public submissions, into an ACHAR. The results of the ACHAR are summarised in **Section 6.3** and the ACHAR is attached, refer to **Appendix 1**.

Air Quality

As discussed in **Section 3.1**, DPE has requested that an updated air quality impact assessment be provided in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016* to address community concerns and to facilitate harmonisation of contemporary air quality standards across the Mount Owen Complex.

Given the Proposed Modification does not involve any activity that will change the nature of the air quality impacts at Glendell Mine, relative to the approved operations a qualitative approach to the assessment of potential air quality impacts was considered appropriate to support the SEE. This approach to the assessment was considered appropriate for the Proposed Modification due to the proposed extension to mining operations progressing in a northwest direction, away from nearby sensitive receptors (including those in Camberwell, in addition to which there will be no change to the current approved mine life, mining methods, mining extraction rates, processing rates, transportation methods or hours of operations.

For the purpose of the RTS, Jacobs Group (Australia) Pty Limited (Jacobs) has completed a review of the potential air quality impacts associated with the Proposed Modification. The air quality review included:

- Identifying the key aspects of the Proposed Modification that relate to air quality;
- Characterising the existing air quality environment; and
- Determining the likely effect of the Proposed Modification on local air quality, with regard to the existing effects of the Approved Operations.

As requested by the DPE an updated air quality impact assessment has been undertaken to support the Proposed Modification in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016*. The modelling confirms the conclusions of the qualitative assessment attached to the SEE, in that from an air quality perspective, the Proposed Modification is considered to be minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

The results of the AQIA are discussed in **Section 6.1** and the AQIA is attached, refer to **Appendix 2**.

5.0 Proposed Modification Changes

In addressing the submissions received during the exhibition period for the Proposed Modification further assessment has been undertaken in relation to Air Quality and Aboriginal Cultural Heritage, and further detail has been provided in respect of the various aspects of the Proposed Modification. However, this has not resulted in any material changes to the description of the Proposed Modification.

Mount Owen completed a detailed prefeasibility study through the development of the GCOP, and the extent of the Proposed Modification has been restricted to avoid disturbance of any areas identified in the GCOP pre-feasibility study that require more detailed assessment of potential environmental impacts. As discussed in the SEE, Mount Owen currently operates in accordance with a range of management plans that include detailed management and mitigation measures to meet the existing criteria and requirements of DA 80/952. Mount Owen is committed to the continuation of this approach to the management of the modified operations in order to continue to meet the existing DA 80/952 criteria.

The mitigation and management measures associated with the Proposed Modification as discussed in Section 2.3 of the SEE are reproduced in **Section 7.0**, and also include amendments identified through the RTS process.

Following submission of the SEE, and continued refinement of the GCOP mine plans, the area of reduced disturbance associated with the Proposed Modification has been refined. The approved rail line (not yet constructed) under the Mount Owen Continued Operations Project (SSD-5850) utilised part of the approved disturbance area applied to the Glendell Consent. The approved rail line extends (partly) into the approved Glendell Mine disturbance area, therefore this small area has been removed from the area of reduced disturbance associated with the Proposed Modification in order to enable the approved rail line to be constructed in the future. As reported in the SEE, an area of approximately 15.5 ha was to be removed from the approved disturbance area as part of the Proposed Modification, with a net decrease (3.5 ha) in the overall disturbance area associated with the Glendell Mining operations.

This area has now been reduced from 15.5 to 7.7 ha, the Proposed Modification will therefore result in a net increase of 4.3 ha in the overall disturbance area, refer to **Figure 5.1**.

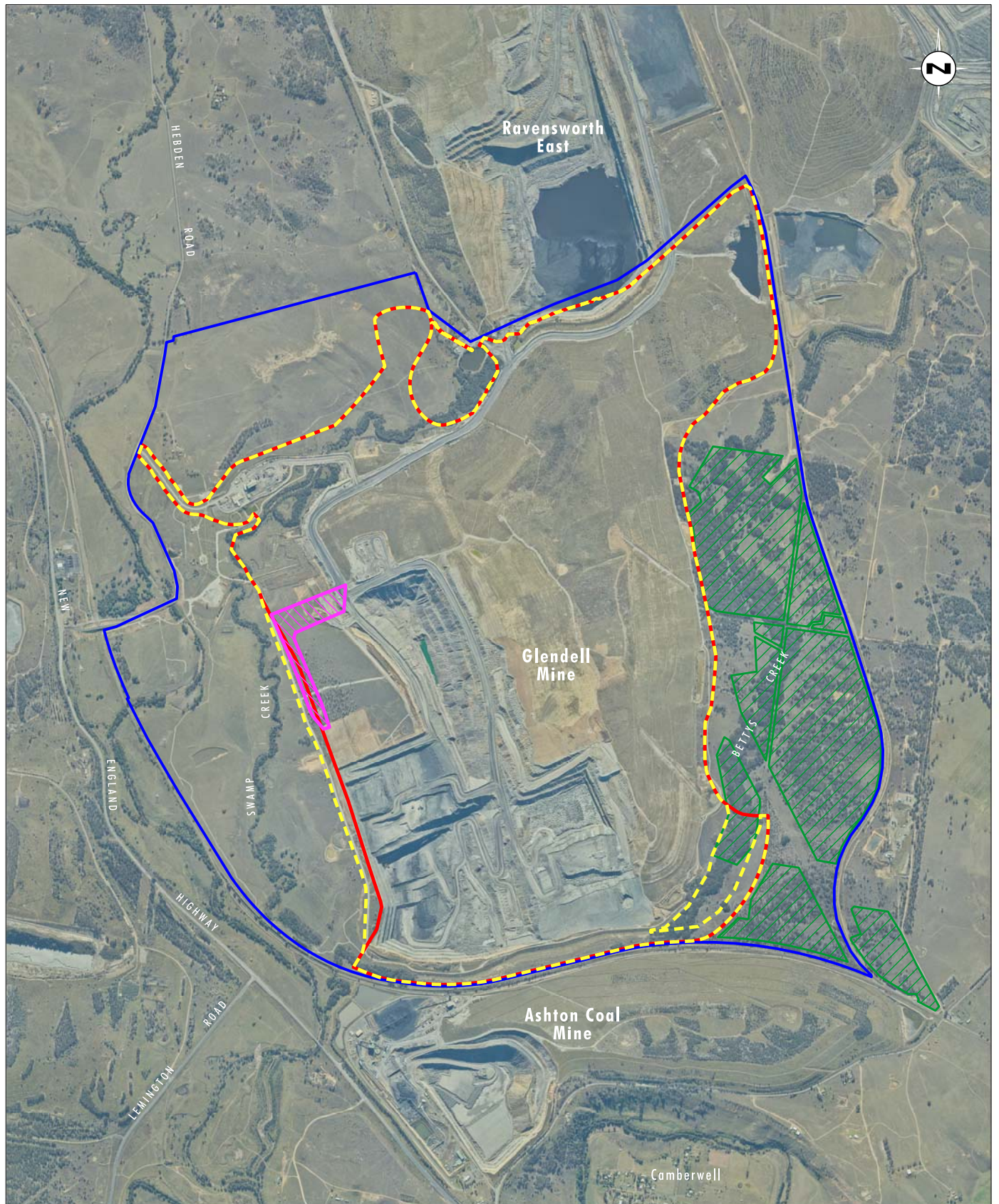


Image Source: Glencore (Jul 2018)
Data Source: Glencore (2018)

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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

6.0 Responses to Submissions Received

The following section provides a response to the issues raised in submissions on the Proposed Modification. The key themes raised in the submissions are summarised in ***bold italic*** text with the response provided below in normal text.

6.1 Air Quality

6.1.1 Agency Submissions

6.1.1.1 DPE

DPE requests that an updated Air Quality Impact Assessment be provided in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016 to address the community concerns and to facilitate harmonisation of contemporary air quality standards across the Mount Owen Complex.

As discussed in **Section 4.2**, the Proposed Modification does not involve any activity that will change the nature of the air quality impacts at Glendell Mine, relative to the approved operations, therefore a qualitative approach to the assessment of potential air quality impacts was considered appropriate to support the SEE. This approach is based on the following:

- The proposed extension to mining operations will progress in a northwest direction, away from nearby sensitive receivers (including those in Camberwell);
- The final modelled year (Year 12 Project Only) of the approved Glendell Mine represented lower air quality risk than earlier years, due to the progression of mining to the northwest away from sensitive receivers; and
- There will be no change to the current approved mine life, mining methods, mining extraction rates, processing rates, transportation methods or hours of operations.

As requested by the DPE, Jacobs has completed an updated air quality impact assessment (AQIA) to support the Proposed Modification in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016*. The modelling confirms there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

The results of the AQIA have been summarised below, the AQIA is also attached, refer to **Appendix 2**.

Air Quality Criteria

The AQIA, undertaken to support the Approved Operations (Holmes Air Sciences 2007) was based on the earlier version of the “Approved Methods for the Modelling and Assessment of Air Pollutants in NSW” (DEC 2005), refer to **Table 6.1**, and are applicable to the current development consent.

Table 6.1 Air quality criteria for particulate matter and deposited dust (Approved Operations DA 80/952)

Air quality indicator	Averaging time	Criterion
Particulate matter (PM ₁₀)	24-hour	^b 50 µg/m ³
	Annual	^a 30 µg/m ³
Total suspended particulate (TSP) matter	24-hour	^a 90 µg/m ³
^c Deposited dust	Annual – maximum increase in deposited dust level	^b 2 g/m ² /month
	Annual – maximum total deposited dust level	^a 2 g/m ² /month

Notes:

^a Total impact (i.e. incremental increase in concentrations due to the development plus background concentrations due to all other sources).

^b Incremental impact (i.e. incremental increase in concentrations due to the development on its own).

^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method.

^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, fire incidents or any other activity agreed to by the Secretary.

The 2016 version of the “Approved Methods” introduced a revised, more stringent criterion for PM₁₀ as well as new criteria for 24-hour and annual average PM_{2.5}. The criteria applicable to the Approved Operations for annual average PM₁₀ is 30 µg/m³. Additionally, there was no adopted criteria for PM_{2.5} at the time of the assessment of DA 80/952 and when consent for DA 80/952 was granted. The potential air quality impacts associated with the Proposed Modification have now been assessed against the revised air quality criteria set by the EPA as part of their Approved Methods (EPA 2016). These criteria are outlined in Table 6.2.

Table 6.2 Air quality impact assessment criteria from the current Approved Methods (EPA 2016)

Air quality indicator	Averaging time	Criterion	Notes
Particulate matter (PM ₁₀)	24-hour	^b 50 µg/m ³	EPA. Applies to sensitive receptors.
	Annual	25 µg/m ³	EPA. Applies to sensitive receptors.
Particulate matter (PM _{2.5})	24-hour	25 µg/m ³	EPA. Applies to sensitive receptors.
	Annual	8 µg/m ³	EPA. Applies to sensitive receptors.
Total Suspended Particulate (TSP) Matter	Annual	90 µg/m ³	EPA. Applies to sensitive receptors.
Deposited Dust	Annual (maximum increase)	2 g/m ² /month	EPA. Applies to sensitive receptors.
	Annual (maximum total)	4 g/m ² /month	EPA. Applies to sensitive receptors.

The NSW Voluntary Land Acquisition and Mitigation Polity (VLAMP) 2018 was gazetted on 21 September 2018. The VLAMP 2018 was updated to be consistent with recent updates made to the Mining SEPP to bring the air quality criteria in line with the NEPM standards and current EPA criteria. DA 80/952 predates the previous VLAMP 2014, which has now been repealed.

In relation to the application of the VLAMP to modifications of consent, the VLAMP states:

The policy commences from the date that it is gazetted, and applies to:

- *Modification applications that involve increases in the approved dust or noise impacts of a development.*

The AQIA demonstrates that the Proposed Modification is not predicted to result in an increase to air quality impact on sensitive receptors relative to the Approved Operations. No additional (current) private sensitive receptors (without existing acquisition rights) will be impacted, than that identified under DA 80/952 for the Approved Operations and the duration of the Approved Operations at Glendell Mine (currently approved to 2024). Accordingly, the VLAMP 2018 does not apply to the assessment of the Proposed Modification.

Modelling

Dust concentrations due to emissions from the Proposed Modification (and other sources) have been predicted using CALPUFF Version 6.42. The modelling was performed using emission estimates and meteorological information provided by the CALMET model. Predictions were made at 986 receptors at sufficient resolution to allow for contouring of results. A detailed description of the model set up and inputs is provided in the AQIA, refer to **Appendix 2**.

The extent of air quality impact of the Approved Operations was most significantly defined (Holmes Air Sciences 2007) by annual average PM₁₀ concentrations as the predictions at the time consumed the highest fraction of the then applicable assessment criterion. As the qualitative review highlighted that the Proposed Modification will be minor in nature, this quantitative assessment has focussed on comparisons between the contributions of the Approved Operations and Proposed Modification for PM₁₀.

Modelling Results

Particulate Matter PM₁₀

No sensitive receivers (excluding community or private infrastructure, or private properties subject to acquisition rights) are predicted to experience exceedances of the maximum 24-hour average or annual average PM₁₀ concentrations due to activities at Glendell Mine as a result of the Proposed Modification.

Modelling predictions indicate a reduced contribution from Glendell Mine to maximum 24-hour PM₁₀ concentrations in the Camberwell area, relative to the Approved Operations. There is a potential increase in maximum contributions to the north of Glendell Mine, most likely attributed to the progression of mining to the north, however the changes are predicted in an area where there are no private sensitive receptors, refer to **Figure 6.1**.

The extent of the annual average 25 µg/m³ contour in the vicinity of the Camberwell area is almost identical for the Approved Operations and Proposed Modification scenarios and, from an air quality perspective, these results would suggest a negligible change in air quality, refer to **Figure 6.2**.

The cumulative predicted annual average PM₁₀ concentrations due to Glendell Mine (as modified) and other sources where the other sources include background levels and other existing and approved mining operations are provided on **Figure 6.3**. The figure provides a comparison of the cumulative PM₁₀ concentrations under the Proposed Modification with the predicted cumulative PM₁₀ concentrations for the most recent modelling available for the Mount Owen Complex and neighbouring operations, undertaken for the recent Mount Owen Continued Operations Modification 2 (Mount Owen Modification 2) (Jacobs 2018), which is currently under assessment by DPE. The Mount Owen Modification 2 model outputs are for the worst-case modelled year for that Modification (year 2020).

The cumulative model prepared at the time of the assessment for Mount Owen Modification 2 included the contribution from Glendell Mine as currently approved (currently scheduled to cease in 2022) and did not include the Proposed Modification. The comparison of these modelling results highlight that the Proposed Modification will not result in an increase in PM₁₀ concentrations in Camberwell or at other sensitive receivers.

The relevant cumulative criteria in assessing PM₁₀ has been revised since DA 80/952 was determined and exceedances of the current criteria (25 µg/m³) are attributed to the change in neighbouring mining operations and to reductions of the relevant criteria rather than an increase in emissions associated with the Proposed Modification. It is also noted that when Glendell Mine was originally approved in 1983 and modified in 2008, Hunter Valley Operations (HVO) was the only operation approved at the time, and included in the model, that would have remained operational in 2023. All other currently operating (and approved) mines considered in the cumulative model, which are currently impacting on Camberwell have been approved following the approval and modification of the current Glendell Mine consent DA 80/952.

Notwithstanding the above, the modelling results indicate that the cumulative annual average PM₁₀ concentrations are predicted to exceed the 25 µg/m³ approved methods criterion and the current 30 µg/m³ cumulative PM₁₀ criteria in the Glendell Consent (DA 80/952) in Camberwell in the modelled years. As discussed above this is based on the inclusion of the Proposed Modification as well as all current and approved mining operations at the maximum production rates for all operations (including the Ashton South East Open Cut (SEOC) Project which has not yet commenced operations). For these reasons, the predictions for the future cumulative operational scenarios have been inferred to be conservative estimates of impacts.

Contributions for the worst-case year (2020) for the Mount Owen Modification 2 were presented in order of significance. The contributions are predicted to be ranked as follows:

- Background (39%)
- Ashton including South East Open Cut (SEOC) Project (15%)
- Rix's Creek North (11%)
- Ravensworth Surface Operations (10%)
- Glendell (as approved) (9%)
- Rix's Creek including Rix's Creek Extension (6%)
- Mount Owen Continued Operations (as proposed to be modified) (4%)
- Liddell Coal Operations (3%)
- Hunter Valley Operations (2%)
- Integra Underground (1%).

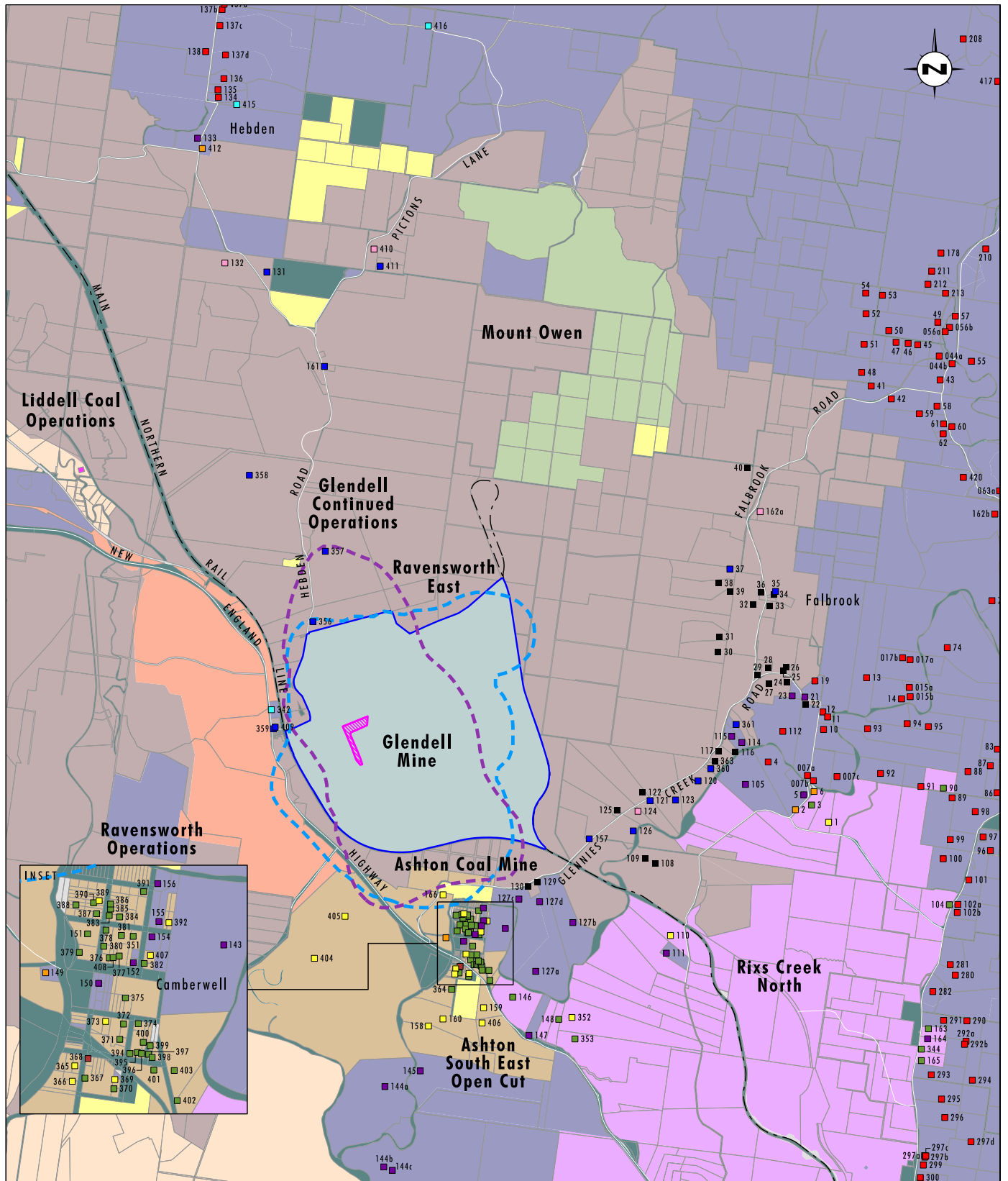
It is important to note that the Glendell Mine is not the main contributor to PM₁₀ levels in Camberwell.

Table 6.3 provides the predicted contribution of Glendell Mine to PM₁₀ levels in Camberwell under the Approved Operations and Proposed Modification scenarios.

Table 6.3 Model predictions of PM₁₀ in Camberwell

Parameter	Scenario	Predicted PM ₁₀ contribution of Glendell Mine
Annual average PM ₁₀ (µg/m ³)	Approved Operations	5.2
	Proposed Modification	3.1

The PM₁₀ predictions, both 24-hour and annual average, provide additional confirmation that the changes due to the Proposed Modification are unlikely to result in an increase in the currently approved air quality impact of Glendell Mine.



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

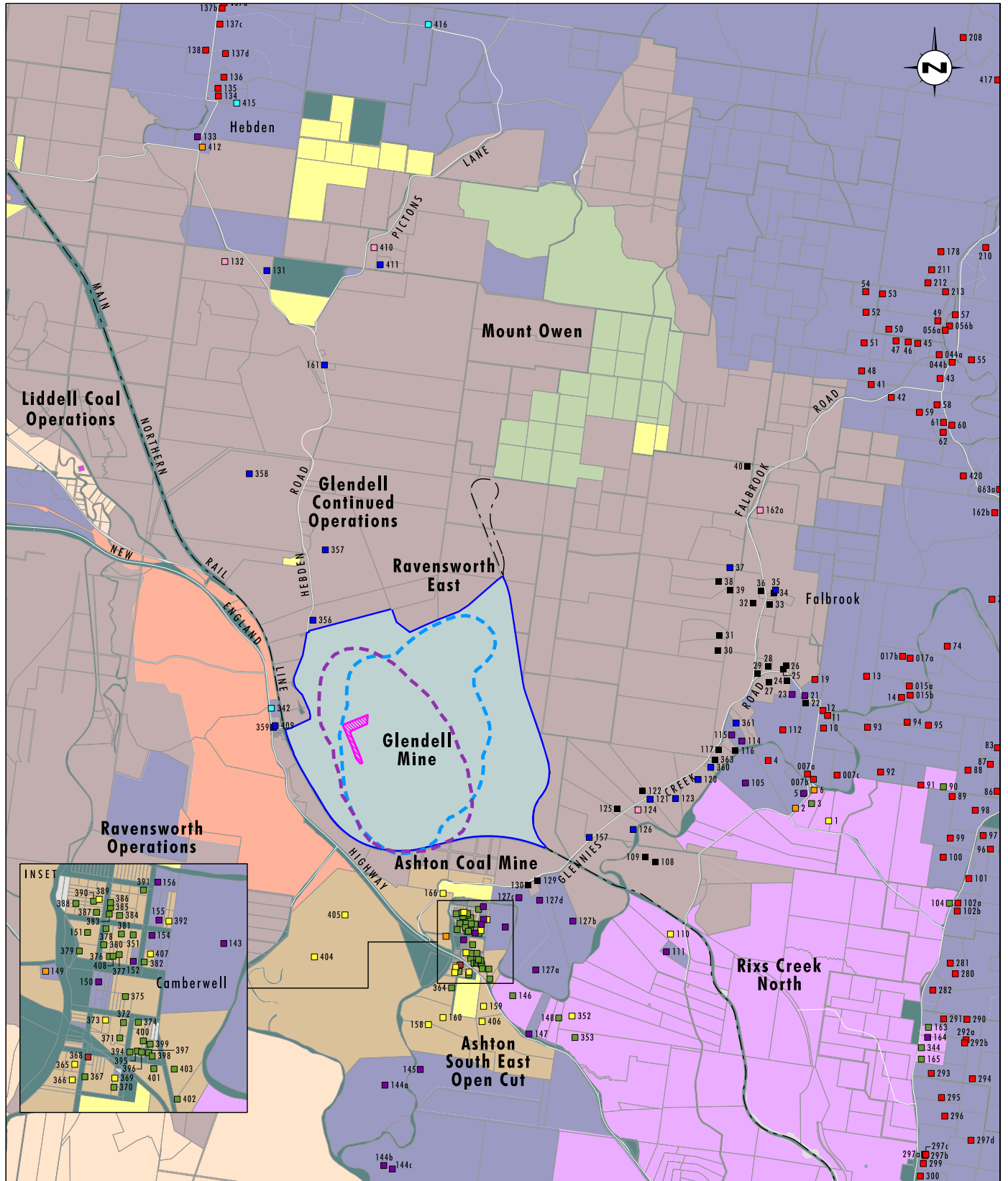
0 1 2 4 km
Scale 1:90 000

Legend

- | | | |
|---|--|--|
| Glendell Consent Boundary (DA 80/952) | Community Infrastructure | Proposed Maximum 24 hour PM_{10} Contour - $50\mu g/m^3$ |
| Proposed Mining Area | Glencore Owned | |
| Ashton Coal | Glencore Owned - Demolished | |
| Bloomfield Collieries | Glencore Owned - Vacant | |
| AGL Macquarie | Other Mine Owned | |
| Crown Land | Other Mine Owned - Demolished | |
| Glencore | Other Mine Owned - Vacant | |
| Government Authority | Private | |
| Hunter Valley Operations | Private - Subject to Acquisition Rights | |
| Private | Private Infrastructure | |
| State Forest | Approved Maximum 24 hour PM_{10} Contour - $50\mu g/m^3$ | |

FIGURE 6.1

Maximum 24-hour Average PM_{10}
Project Only



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

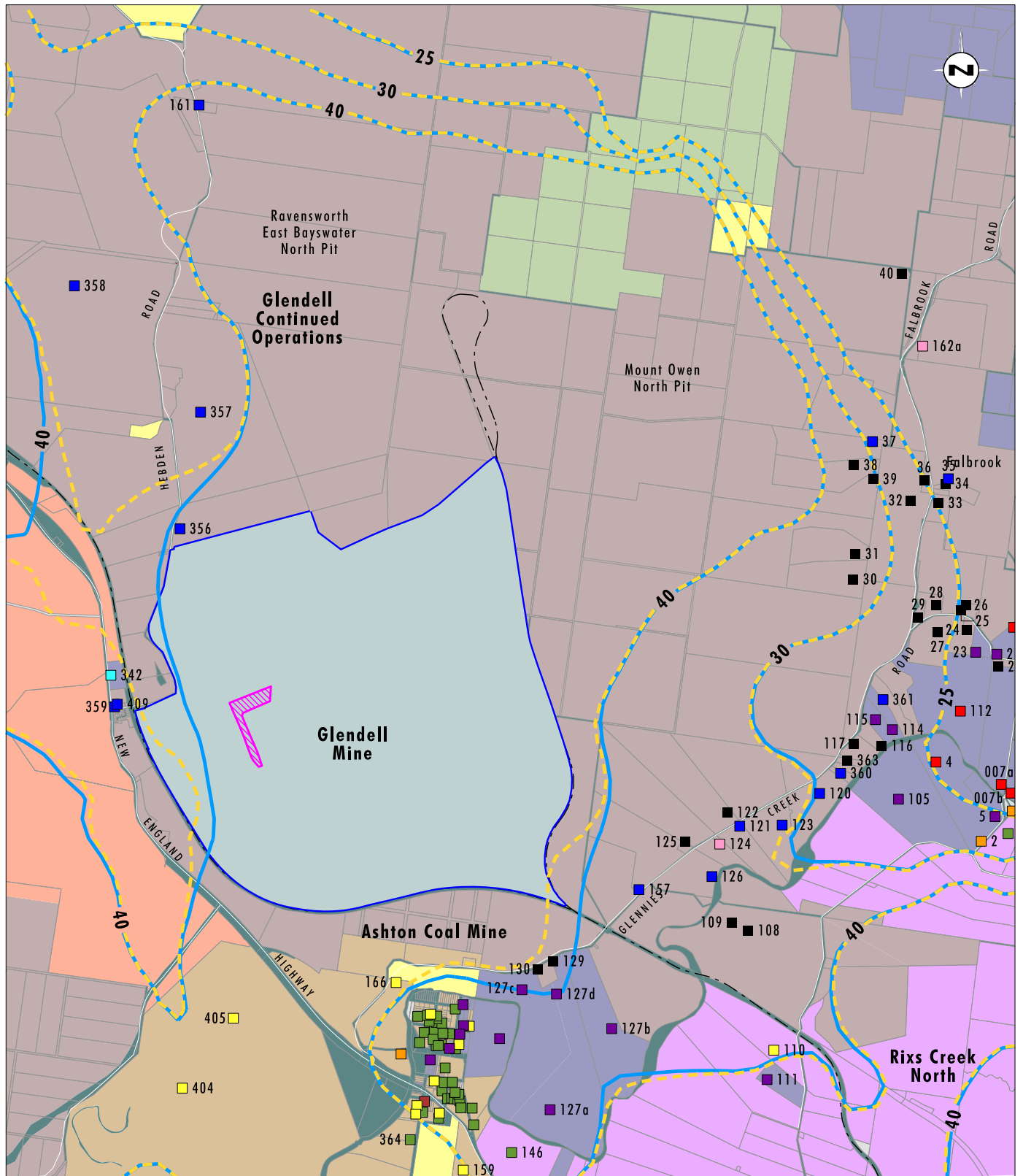
0 1 2 4 km
Scale 1:90 000

Legend

- | | | |
|---|--|--|
| Glendell Consent Boundary (DA 80/952) | Community Infrastructure | Proposed Annual Average PM ₁₀ Contour - 25µg/m ³ |
| Proposed Mining Area | Glencore Owned | |
| Ashton Coal | Glencore Owned - Demolished | |
| Bloomfield Collieries | Glencore Owned - Vacant | |
| AGL Macquarie | Other Mine Owned | |
| Crown Land | Other Mine Owned - Demolished | |
| Glencore | Other Mine Owned - Vacant | |
| Government Authority | Private | |
| Hunter Valley Operations | Private - Subject to Acquisition Rights | |
| Private | Private Infrastructure | |
| State Forest | Approved Annual Average PM ₁₀ Contour - 25µg/m ³ | |

FIGURE 6.2

Annual Average PM₁₀
Project Only



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

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 PM₁₀ Contour - $\mu\text{g}/\text{m}^3$

FIGURE 6.3
Annual Average PM₁₀
Cumulative

Particulate Matter PM_{2.5}

The predicted maximum 24-hour average and annual average PM_{2.5} concentrations due to the Proposed Modification are shown on **Figure 6.4** and **6.5**. As previously discussed, PM_{2.5} predictions for the Approved Operations are not available for comparison as the PM_{2.5} levels were not modelled at the time of the 2007 AQIA as the criteria were not applicable at the time, however there is no exceedance of the current criteria predicted as a result of the Proposed Modification.

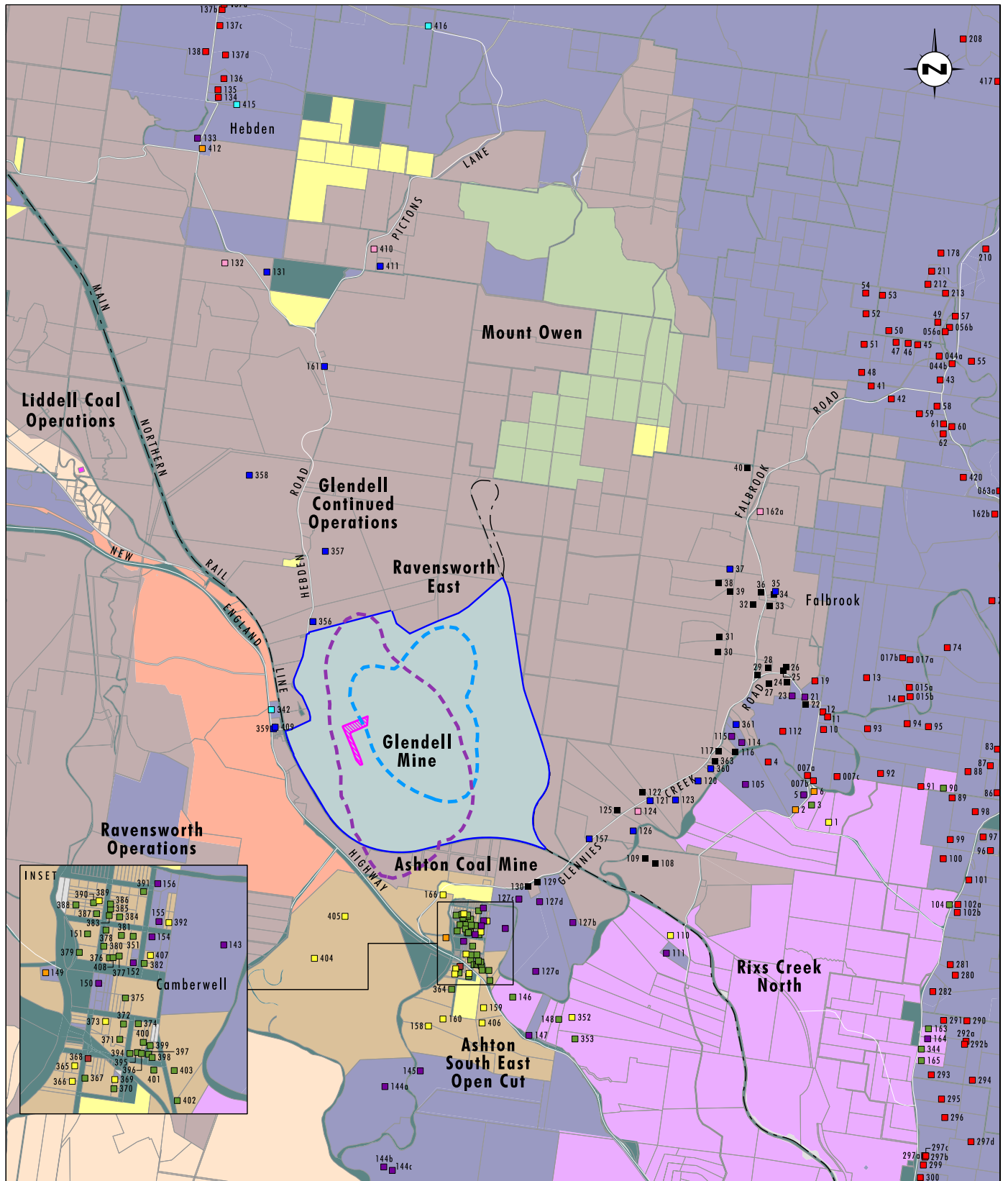
The predicted cumulative annual average PM_{2.5} concentrations due to Glendell Mine and other sources is shown on **Figure 6.6**. As for PM₁₀, the cumulative PM_{2.5} concentrations under the Proposed Modification have been compared to the predicted cumulative PM_{2.5} concentrations for the recent Mount Owen Modification 2 (2020 modelled year). These results highlight that the Proposed Modification will not lead to an increase in PM_{2.5} concentrations in Camberwell or at other sensitive receptor locations relative to the Approved Operations.

Table 6.4 provides a comparison of the predicted contribution of Glendell Mine to PM_{2.5} levels in Camberwell for the Proposed Modification scenario. Predictions of PM_{2.5} were not available for the Approved Operations however a comparison to the recent cumulative PM_{2.5} modelling undertaken for the Mount Owen Modification 2 is provided demonstrating that the relative PM_{2.5} contribution from Glendell Mine (as modified) is considered relatively low at just 1.0 µg/m³, (refer to **Table 6.3**). Additionally, although the PM_{2.5} contributions associated with the Approved Operations are unknown, given the PM₁₀ predictions have decreased, the Proposed Modification is unlikely to result in an increase in the currently approved contribution of Glendell Mine to PM_{2.5} levels in Camberwell.

Table 6.4 Model predictions of PM_{2.5} in Camberwell

Parameter	Scenario	Predicted contribution of Glendell Mine µg/m ³
Annual average PM _{2.5} (µg/m ³)	Approved Operations	Not available
	Approved Operations as predicted in Mount Owen Modification 2, 2020 modelling	1.0
	Proposed Modification	1.0

The PM_{2.5} predictions, both 24-hour and annual average, provide additional confirmation that the changes due to the Proposed Modification are unlikely to result in an increase in the currently approved air quality of Glendell Mine.



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

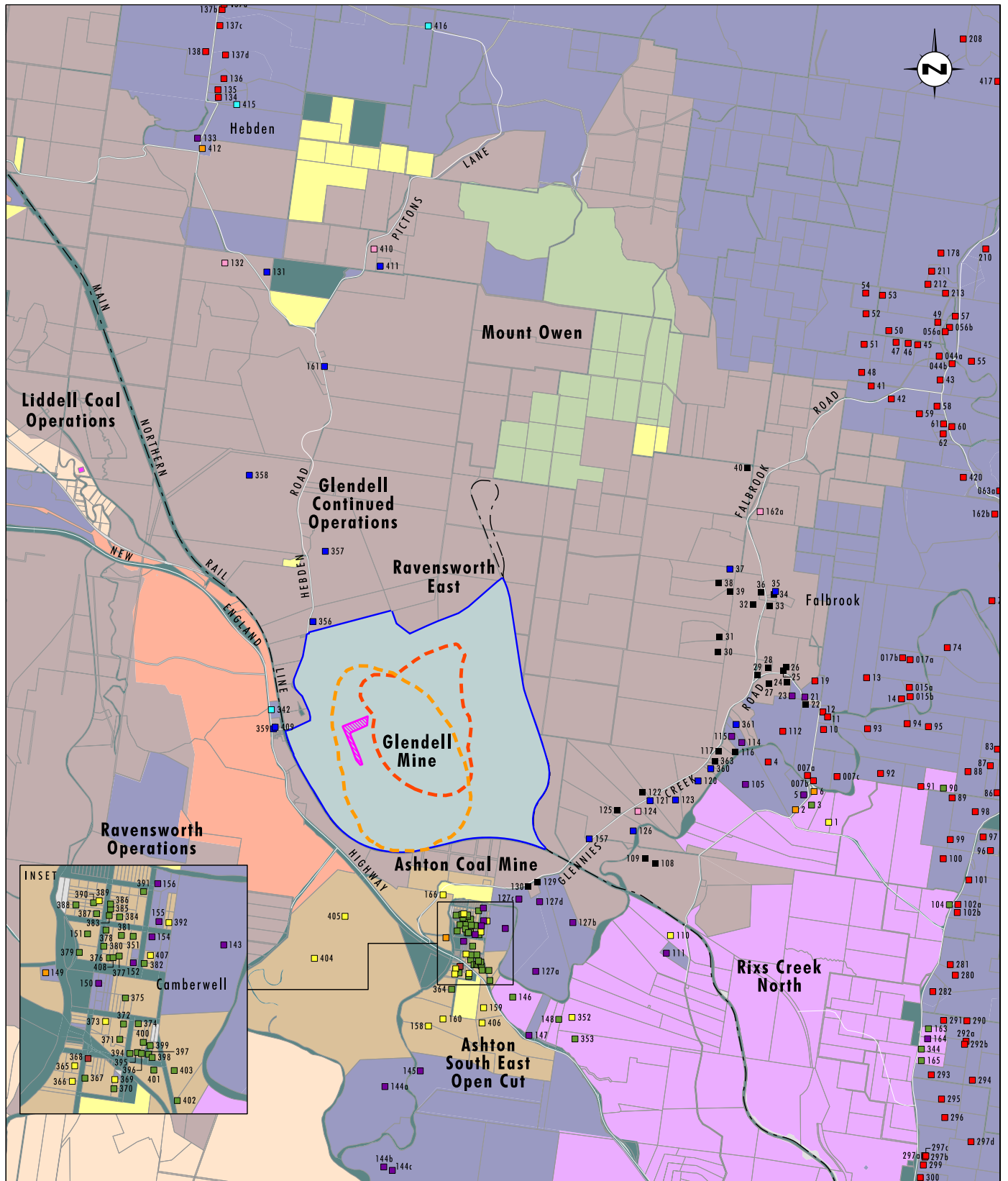
0 1 2 4 km
Scale 1:90 000

Legend

- | | | |
|---|--|--|
| Glendell Consent Boundary (DA 80/952) | Community Infrastructure | Proposed Maximum 24 hour $PM_{2.5}$ Contour - $8\mu g/m^3$ |
| Proposed Mining Area | Glencore Owned | |
| Ashton Coal | Glencore Owned - Demolished | |
| Bloomfield Collieries | Glencore Owned - Vacant | |
| AGL Macquarie | Other Mine Owned | |
| Crown Land | Other Mine Owned - Demolished | |
| Glencore | Other Mine Owned - Vacant | |
| Government Authority | Private | |
| Hunter Valley Operations | Private - Subject to Acquisition Rights | |
| Private | Private Infrastructure | |
| State Forest | Approved Maximum 24 hour $PM_{2.5}$ Contour - $8\mu g/m^3$ | |

FIGURE 6.4

Predicted Maximum
24-hour Average $PM_{2.5}$
Project only



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

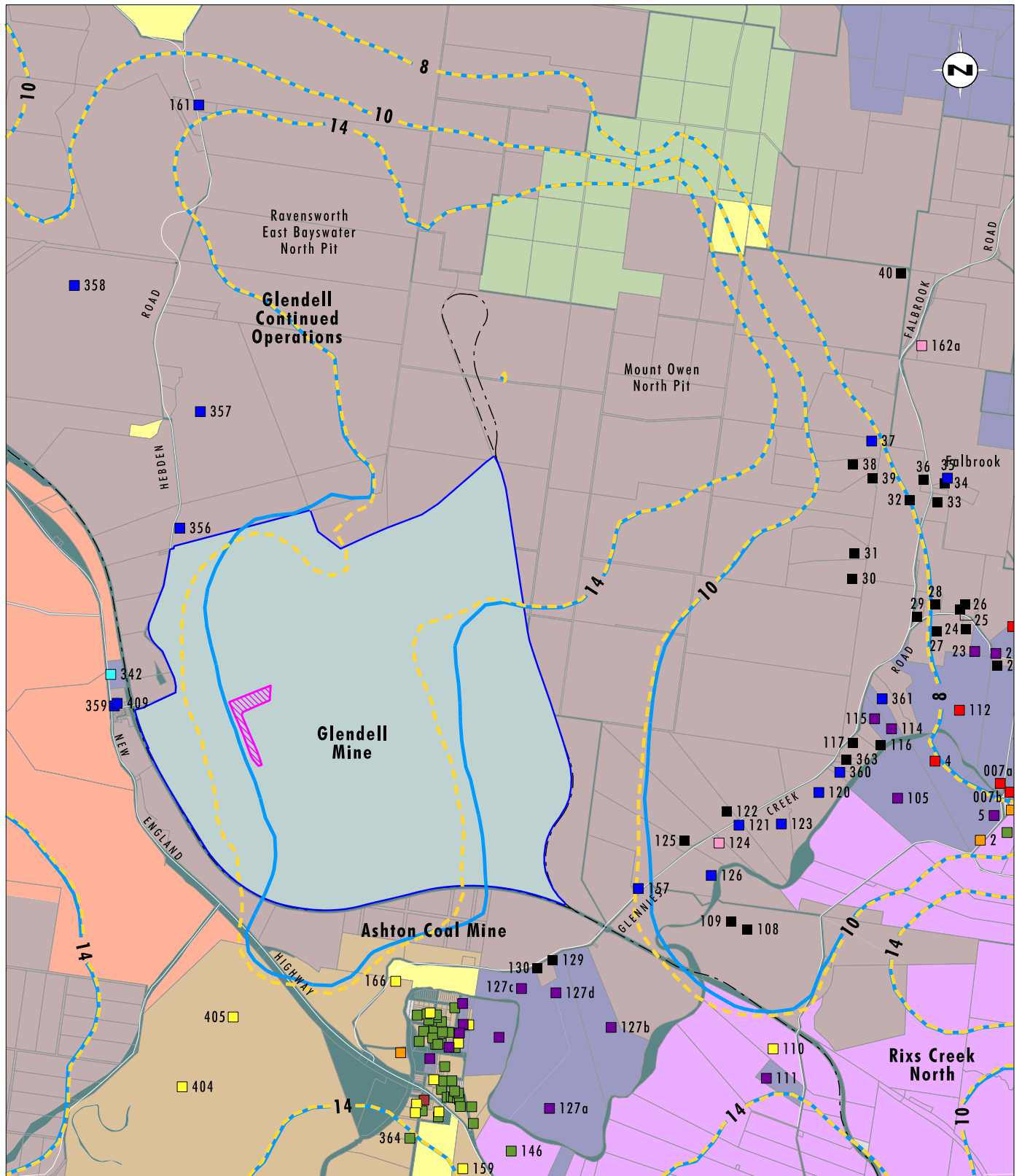
0 1 2 4 km
Scale 1:90 000

Legend

- | | | |
|---------------------------------------|--|--|
| Glendell Consent Boundary (DA 80/952) | Community Infrastructure | Proposed Maximum Annual Average PM _{2.5} Contour - 8µg/m ³ |
| Proposed Mining Area | Glencore Owned | |
| Ashton Coal | Glencore Owned - Demolished | |
| Bloomfield Collieries | Glencore Owned - Vacant | |
| AGL Macquarie | Other Mine Owned | |
| Crown Land | Other Mine Owned - Demolished | |
| Glencore | Other Mine Owned - Vacant | |
| Government Authority | Private | |
| Hunter Valley Operations | Private - Subject to Acquisition Rights | |
| Private | Private Infrastructure | |
| State Forest | Approved Maximum Annual Average PM _{2.5} Contour - 8µg/m ³ | |

FIGURE 6.5

Predicted Maximum
Annual Average PM_{2.5}
Project only



Data Source: Glencore (2018), Department of Finance & Innovation (2017)

0 1.0 2.0 3.0 km
1:55 000

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

Air Quality Management and Mitigation

Mining operations will continue to be managed in accordance with the existing Mount Owen Complex Air Quality Management Plan (AQMP). As discussed in the SEE, recent monitoring data demonstrates that the Glendell Mine has complied with relevant impact assessment criteria from DA 80/952.

The AQIA includes a detailed summary of the standard emission management measures from the currently approved Mount Owen Complex Air Quality Management Plan and provides a comparison to the measures outlined in the “NSW Coal Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining” (Donnelly et al, 2011), refer to **Appendix 2** for further detail. The review indicates that the majority of the existing air quality management measures are consistent with best practice dust mitigation measures. In addition to the measures included in the AQMP, Mount Owen implements both proactive and reactive dust control strategies. Proactive air quality management includes engineering controls (mine plan design) and source specific controls such as progressive rehabilitation and water spraying of haul roads. Reactive air quality management include the modification or progressive suspension of activities in response to the visual, meteorological or ambient air quality triggers, and the increased frequency of watering of roads and other trafficked areas. These triggers are defined in the AQMP and are linked to specific actions for managing dust at both private and mine owned residences.

The existing Mount Owen Complex meteorological and air quality monitoring network is suitably established to measure the key air quality parameters, compliance with air quality criteria, and to allow for the contribution of mining activities to be determined. This air quality monitoring network will continue to be operated to monitor the mining operations (as modified).

As discussed, the modelling undertaken for the AQIA includes proactive air quality controls however modelling does not include reactive management measures that can be undertaken by Mount Owen in the event that elevated dust levels are identified which can occur during adverse weather conditions. Reactive management measures are implemented on site in order to maintain compliance with relevant air quality criteria. In practice these reactive management measures, which will vary on a daily basis, will lead to lower emissions to air than for unconstrained activities. Consequently, the estimated emissions in the AQIA represent conservative estimates, as these further operational controls are not included in the modelling, and it follows that the predicted impacts of the Proposed Modification will therefore be conservative. That is, the predicted impacts is likely to over-state actual impacts to some extent.

Any potential air quality impacts associated with the Proposed Modification will continue to be managed in accordance with relevant approval conditions and the existing proactive and reactive management processes currently implemented at the Mount Owen Complex.

6.1.1.2 EPA

The EPA did not have any specific issues or matters to raise in relation to the Proposed Modification. It was noted in the EPA submission that *given the minor nature of the modification, with no changes to the existing mining processes and equipment used and noting that there will be an overall reduction in the disturbance area, the operation can be adequately regulated through the existing licence conditions applicable to the Glendell Coal Mine Environmental Protection Licence (EPL 12840).*

6.1.2 Interest Group Submissions

6.1.2.1 Hunter Communities Network

HCN objects to the proposed modification to Glendell Mine because it will add to the excessive cumulative impacts of the intensive open cut coal mining operations in this area of the Hunter.

The village of Camberwell suffers regular air pollution from surrounding coal mining operations that is well above the national air quality standards and at critical levels for human health impacts.

The Upper Hunter Air Quality Monitoring Network monitor situated at Camberwell regularly measures background levels of air quality that breach the national standards for PM₁₀ dust levels. There have been 12 alerts of high air pollution since the beginning of November.

The air quality assessment for this proposed modification has not been conducted under current NSW policy guidelines and has failed to apply the new National Environmental Policy Measures.

These new measures have not been used in the administration of the Voluntary Land Acquisition and Mitigation Policy particularly in regard to the cumulative impacts at a regional level.

As discussed in **Section 6.1.1**, Jacobs has completed an updated air quality impact assessment (AQIA) to support the Proposed Modification in accordance with *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016*. The modelling confirms the conclusions of the qualitative assessment attached to the SEE, in that from an air quality perspective, the Proposed Modification is considered to be minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, or the cumulative impacts in surrounding areas, relative to the Approved Operations.

As discussed in **Section 6.1.1**, the relevant cumulative criteria in assessing PM₁₀ has been revised since DA 80/952 was determined and exceedances of the current cumulative PM₁₀ criteria (25 µg/m³) is attributed to the change in neighbouring mining operations and reductions of the relevant criteria rather than an increase in emissions associated with the Proposed Modification. It is also noted that when Glendell Mine was originally approved in 1983 and modified in 2008, HVO was the only operation approved at the time, and included in the model, that would have remained operational in 2023. All other currently operating (and approved) mines considered in the cumulative model, which are currently impacting on Camberwell have been approved following the approval and modification of the current Glendell Mine consent DA 80/952.

Notwithstanding the above, the modelling results indicate that the cumulative annual average PM₁₀ concentrations are predicted to exceed the 25 µg/m³ approved methods criterion and the current 30 µg/m³ cumulative PM₁₀ criteria in the Glendell Consent (DA 80/952) in Camberwell in the modelled years. However, the modelling results indicate that there will be no increase in impact relative to the approved operations and Glendell Mine is not the main contributor to PM₁₀ levels in Camberwell.

In relation to the application of the VLAMP to modifications of consent, the VLAMP states:

The policy commences from the date that it is gazetted, and applies to:

- Modification applications that involve increases in the approved dust or noise impacts of a development.

The AQIA demonstrates that the Proposed Modification is not predicted to result in an increase to air quality impact on sensitive receptors relative to the Approved Operations. No additional (current) private sensitive receptors (without existing acquisition rights) will be impacted, than that identified under DA 80/952 for the Approved Operations. Accordingly, the VLAMP 2018 does not apply to the assessment of the Proposed Modification.

Any potential air quality impacts associated with the Proposed Modification will continue to be managed in accordance with relevant approval conditions and the existing AQMP currently implemented at the Mount Owen Complex.

6.1.2.2 Hunter Environment Lobby

We note that the air quality assessment failed to apply the new NEPM standards as well as failing to apply the EPA 2017 guidelines of assessing air quality. This will impact on the health of Hunter people who already suffer severe impacts of mining and coal fired power generation.

We note that the air quality assessment failed to identify cumulative ambient air quality at Camberwell and surrounding districts. In the last five years the area has had critical levels of air pollution impacting on human health, if measured under the new national standards.

There is a systemic failure to administer new NEPM standards to acquisition rights especially in relation to cumulative impacts - this leaves the impacted residents and farmers in a no win situation - they have ended up with stranded assets.

A gross failure to identify water concerns for the residents on tank water, with less rain fall and climatic changes in weather patterns, is a negligent oversight that the department needs to rectify.

As discussed above, an updated AQIA has been prepared to support the Proposed Modification in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016*. The modelling confirms the conclusions of the qualitative assessment attached to the SEE, in that from an air quality perspective, the Proposed Modification is considered to be minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

The modelling results indicate that there will not be an increase in the potential air quality impacts associated with the Proposed Modification, or the cumulative impacts in surrounding areas, relative to the Approved Operations.

In relation to rain water tanks, under the existing SSD-5850 consent for the Mount Owen Continued Operations Project, Mount Owen inspects rainwater tanks at privately owned residences within 4 km of the approved mining limit at Mount Owen at least every 2 years, with cleaning being carried out should the inspection identify that this is required. There is no current requirement under the DA 80/952 for the approved Glendell Mine to inspect and clean rainwater tanks.

Notwithstanding this, as reported in the original AQIA (Holmes Air Sciences, 2007), the modelling undertaken for the Approved Operations predicted that there would be no exceedance of the annual average dust deposition above the 2 g/m²/month criterion, particularly in the later years of the approved operations. As previously discussed, the Proposed Modification is considered to be minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

6.1.2.3 Climate Change Balmain-Rozelle

As the health impacts become more understood, annual average limits of PM₁₀ and PM_{2.5} set around the world trend downwards. The consent document is anachronistic in omitting mention of the smaller particles.

Authority	µgm ⁻³ PM ₁₀		µgm ⁻³ PM _{2.5}	
	1 year average	24 hour average	1 year average	24 hour average
EU (2018)	40	50	25	Unspecified
WHO (2005)	20	50	10	25
Victoria	20	50	8	25
COAG	25	50	8	25
Glendell Consent Document	30	50	Unspecified	unspecified

Table 1: Particulate limits

The annual average PM₁₀ limit should be reduced to 25µgm³. PM_{2.5} limits of 10µgm³ annual and 25µgm³ in 24 hours should be included.

Relevant revisions to the existing conditions of DA 80/952 will be undertaken by DPE as required, consistent with relevant NSW policies, should the Proposed Modification be approved. An updated AQIA has been undertaken to support the Proposed Modification in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales 2016* which confirms the conclusions of the qualitative assessment attached to the SEE, in that from an air quality perspective, the Proposed Modification is considered to be minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

Any potential air quality impacts associated with the Proposed Modification will continue to be managed in accordance with relevant approval conditions and the existing AQMP currently implemented at the Mount Owen Complex.

6.1.3 Community Submissions

The community submissions included objections to the Proposed Modification in relation to the adequacy of the AQIA, comments included:

The New NEPM standards have not been considered in the air quality assessment and previous assessment of air quality has been lax.

The air quality assessment is completely inadequate and does not comply with current NSW policy guidelines.

The air quality assessment failed to apply the new NEPM standards, the air quality assessment failed to apply the EPA 2017 guidelines of assessing air quality

The assessment has failed to identify cumulative ambient air quality, failed Camberwell and surrounding districts where in past 5 years has had critical levels of air pollution impacting on health and well being when measured under new national standards

As discussed in **Section 6.1.1** an AQIA has been prepared to support the Proposed Modification in accordance with the *Approved Methods of the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2016) refer to **Appendix 2**. The model predictions for the Proposed Modification are expected to be within maximum levels estimated for the Approved Operations. From an air quality perspective, the Proposed Modification will be minor in nature and there will not be an increase in the potential air quality impacts, over and above that currently approved. Consistent with the findings of the qualitative assessment presented with the SEE. The results of the AQIA are summarised in **Section 6.1.1**.

The community submissions included the following comments in relation to cumulative air quality impacts and acquisition rights:

Failure to administer new NEPM standards to acquisition rights especially in relation to cumulative impacts.

Camberwell is heavily impacted by Glencore operations and there is no provision in the consent conditions for acquisition on request, knowing the area in this village is exposed to the highest levels of PM₁₀ possibly in that state.

The cumulative air pollution from intensive open cut coal mining in the Camberwell area of the Hunter region is at very high levels and causing critical health problems.

Camberwell already experiences frequent (massive) breaches of PM₁₀ pollution as shown by the Upper Hunter Air Quality Monitoring network. The addition of ANY mining activity can only worsen the situation.

The air quality assessment failed to identify cumulative ambient air quality at Camberwell and surrounding districts. In the last five years the area has had critical levels of air pollution impacting on human health when measured under the new national standards.

Camberwell air quality has not improved in the last number of years, the mitigation controls have not improved the air quality in the village.

As previously discussed, the relevant cumulative criteria in assessing PM₁₀ and PM_{2.5} has been revised since DA 80/952 was determined and exceedances of the current cumulative PM₁₀ criteria (25 µg/m³) is attributed to the change in neighbouring mining operations and to the relevant criteria rather than an increase in emissions associated with the Proposed Modification. It is also noted that when Glendell Mine was originally approved in 1983 and modified in 2008, HVO was the only operation approved at the time, and included in the model, that would have remained operational in 2023. All other currently operating (and approved) mines considered in the cumulative model, which are currently impacting on Camberwell have been approved following the approval and modification of the current Glendell Mine consent DA 80/952.

Notwithstanding the above, the modelling results indicate that the cumulative annual average PM₁₀ concentrations are predicted to exceed the 25 µg/m³ approved methods criterion and the current 30 µg/m³ cumulative PM₁₀ criteria in the Glendell Consent (DA 80/952) in Camberwell in the modelled years. However the modelling results indicate that there will be no increase in impact relative to the approved operations and Glendell Mine is not the main contributor to PM₁₀ levels in Camberwell.

The Mount Owen AEMRs (see references) include all relevant air quality monitoring data for determining compliance with the impact assessment criteria from DA 80/952. The AEMRs from 2013 to 2018 inclusive, indicate that Glendell Mine has complied with the impact assessment criteria from DA 80/952. Any potential air quality impacts associated with the Proposed Modification will continue to be managed in accordance with relevant approval conditions and the approved existing AQMP currently implemented at the Mount Owen Complex.

We live with a cloud of dust over us. The latest mine approval at Mt Pleasant has left us with a huge exposed area. The valley is subject to high temperatures, high wind and low rainfall. Please, if you have any sort of moral fibre don't keep approving these mines. There will be nothing left, there is almost nothing now. I'm sick of people saying to me "oh the lovely Hunter Valley" when I tell them where I live. And I have to say well it's not lovely anymore

The Proposed Modification is a minor expansion of the existing Glendell mine. Air quality model predictions for the Proposed Modification are expected to be within maximum levels estimated for the existing Approved Operations. From an air quality perspective, the Proposed Modification will be minor in nature and there will not be an increase in the potential air quality impacts, over and above that currently approved.

Already the air, from the mining and burning of coal is well known for its effect of increasing respiratory illness way beyond the national average. Muswellbrook was recently voted the worst polluted town in Australia in an Australian Conservation Foundation survey of air quality in Australia due to mining and burning of coal

The model predictions for the Proposed Modification are expected to be within maximum levels estimated for the Approved Operations. From an air quality perspective, the Proposed Modification will be minor in nature and there will not be an increase in the potential air quality impacts, over and above that currently approved. There are no additional impacts predicted for the township of Muswellbrook as a result of the Proposed Modification.

The community submissions raised concern in relation to the impacts of deposited dust and decreased rainfall in relation to the impact to rain water tanks, comments included:

- Failure to identify water concerns for the residents on tank water, with less rain fall and climatic changes in weather patterns
- failure in the proposal concerns water for those residents on tank water. This is a huge worry with the changing climatic conditions i.e. more heat and less reliable rainfall but there is no acknowledgement of this being a problem
- Tank water has been severely impacted from poor air quality
- The landholders water supply provided by tank water collected from rooves is a health concern related to the high level of pollution in the area, with Singleton Council refusing to supply town water and Glencore consent conditions does not cover Camberwell at all for tank cleaning, that the residents must decide to buy bottle water is appropriate avenue for drinking.
- Rain fall is lower now than ever, possibly due to burning coal, and no attention has been paid to local residents concerns about contamination of tank water from this mine, which they are entirely dependent on.
- The tank water which we require for drinking, is continually grey in colour from the amount of dust collected on the roof and as explained to us that Glencore is not responsible to clean our tank as it is not a part of the consent conditions.

Under the existing SSD-5850 consent for the Mount Owen Continued Operations Project, Mount Owen inspects rainwater tanks at privately owned residences within 4 km of the approved mining limit at Mount Owen at least every 2 years, with cleaning being carried out should the inspection identify that this is required. There is no current requirement under the DA 80/952 for the approved Glendell Mine to inspect and clean rainwater tanks.

Notwithstanding this, as reported in the original AQIA (Holmes Air Sciences, 2007), the modelling undertaken for the Approved Operations predicted that there would be no exceedance of the annual average dust deposition above the 2 g/m²/month criterion at any private residences, particularly in the later years of the Approved Operations. As previously discussed, the Proposed Modification is considered minor in nature and there will not be an increase in the potential air quality impacts associated with the Proposed Modification, relative to the Approved Operations.

The drought we are experiencing should be a warning that anticipated water for dust suppression may well not be available.

The water management system (WMS) at the Mount Owen Complex is an integrated system, that is, the water from the Glendell, Mount Owen and Ravensworth East Mines is managed together within the integrated WMS. The WMS includes mine-dewatering systems, water storages, sedimentation and retention basins, settling and tailings ponds, diversion drains, levee banks and earth bunding around coal stockpiles, laydown hardstand and fuelling areas. Water will continue to be shared within the WMS to provide for water requirements associated with the mining operations, including the use for dust suppression. The Proposed Modification is a minor expansion of the existing Glendell mine, and is not expected to result in any change to current water demands associated with the approved operations and no additional water licences will be required, this includes the consideration of the effects of drought.

In addition, the Mount Owen Complex forms part of the Greater Ravensworth Area Water and Tailings Scheme (GRAWTS) with Ravensworth Operations, Integra Underground and Liddell Coal Operations. The GRAWTS allows greater flexibility in the management of water by Mount Owen and other participating operations, allowing increased recycling of water between operations, which limits the requirement to extract water from surrounding watercourses and provides for sharing of water resources between operations as required.

6.2 Climate Change and Greenhouse Gas and Energy Assessment

Comments in relation climate change assessment, climate change effects of coal mining, the IPCC guidelines and the Paris Agreement were included in interest group and community submissions. The comments from the submissions is included below in **Sections 6.2.1** and **6.2.2** and a consolidated response to the comments is provided in **Section 6.2.2**.

6.2.1 Interest Group Submissions

6.2.1.1 Climate Change Balmain-Rozelle

The implications of the IPCC's Global Warming Report (2018) could not be starker. The world must desist from digging up and burning coal as quickly as possible and cease developing new coal sources immediately. Anyone who assists in such developments, whether by providing finance, engineering or legal expertise, labour, or administrative or bureaucratic services, needs to consider his or her complicity in bringing on the looming disaster. The world neither needs nor can afford another source of coal.

Peer-reviewed research has found that the economic impact ("Social Cost of Carbon") of current CO₂ emissions is over USD400/tCO₂e for the world as a whole. For typical Australian black coal, that roughly equates to USD400/t coal burnt. The impact on individual countries varies greatly, but for Australia it is put at USD1-USD10 per tonne. The proposed mine extension is to recover 2.5Mt. This translates to a direct long-term economic impact on Australia of \$3.5m-\$34m and over \$1bn for the world GDP. Even then, the pure economics do not measure the misery, pain and suffering the peoples of the world face.

No new coal mines or extensions to existing coalmines should be contemplated, anywhere.

A response to these issues is provided in **Section 6.2.2**.

6.2.1.2 Climate Action Newcastle

Mining and combustion of coal is the leading cause of climate change, and that these new mine workings would contribute yet more carbon emissions to the escalating atmospheric pollution that is increasing temperatures on Earth - via the mining and downstream combustion of this coal. Earth's climate is increasingly unstable and dangerous due to atmospheric warming from carbon pollution. This mine proposal is irresponsible and out of step with what is now required by government, private corporations and civil society, toward reducing carbon emissions and mitigating climate change at the fastest possible rate.

A response to these issues is provided below in **Section 6.2.2**.

6.2.2 Community Submissions

At a time when IPCC guidelines show the necessity of reducing Air Pollution and GHG emissions, even a minor extension of mining is another 'nail in the coffin' of addressing Climate Change and the severe impacts of Particle pollution on health and longevity. Climate change is supposed to be considered in the assessment of projects. Since the change in that requirement it seems it has always been "considered" and dismissed. When Climate Change represents the most existential threat to ALL nations for intelligent people like this commission to rate it unimportant is a travesty.

Beyond that, today, Sir David Attenborough, well known international naturalist appealed to the international community to stop burning fossil fuels or face man made climatic catastrophe, if global temperature increases exceed 1.5c in only a few years. It is simple insanity to continue burning coal when we know it's result. These predictions are in line with the recent IPCC report.

If we are to meet our targets under the Paris agreement, we must cut back on coal.

At a time when IPCC guidelines show the necessity of reducing Air Pollution and GHG emissions, even a minor extension of mining is another 'nail in the coffin' of addressing Climate Change.

There is no assessment related to Climate change and the impacts on health and how this threatens their lives.

We desperately need to reduce our carbon emissions, not increase them. This coal needs to stay in the ground.

Burning more coal is exacerbating the problem of climate change when we actually need to be keeping sequestered carbon secure.

Climate change is supposed to be considered in the assessment of projects. Since the change in that requirement it seems it has always been "considered" and dismissed. When Climate Change represents the most existential threat to ALL nations for intelligent people like this commission to rate it unimportant is a travesty.

I object to the Glendell Mine expansion and draw your attention to the burgeoning legal cases around the world that are taking governments to court for failing to act on climate science and protect natural resources from destruction and pollution. NSW residents will be left vulnerable to huge damages costs as a result of class actions and urge you to consider the turning international tide towards any form of fossil fuel mining and it's impact on the environment.

Rather than address each specific submission concerning climate change impacts and GHG emissions above and in **Section 6.2.1**, Mount Owen proposes to:

- identify the common themes or elements of the submissions made concerning climate change impacts, coal demand and GHG emissions; and
- state, in response, its position on those common themes or elements.

Mount Owen considers that the following common themes or elements emerge from the submissions which opposed the Proposed Modification on the basis of climate change and GHG emissions impacts:

Theme 1: anthropogenic climate change is a real phenomenon that is occurring;

Theme 2: there is a need for action to be taken to reduce GHG emissions globally in order for the "well below 2°C" goal of the Paris Agreement to be realised;

Theme 3: coal is one of, if not the, major source of human-induced GHG emissions;

Theme 4: no new fossil fuel developments should be approved, and those existing, already approved fossil fuel developments should be rapidly phased out;

Theme 5: the approval of the Proposed Modification would be inconsistent with existing climate change laws and policies, particularly Australia's NDC and the NSW Climate Change Policy Framework; and

Theme 6: climate change has adverse health impacts for human populations;

Each of these themes or elements will be addressed in turn below.

Theme 1: Anthropogenic climate change is a real phenomenon that is occurring

The submissions describe, at a high level, the science of climate change and the impacts that can be caused to the world's and Australia's climate and environments as a result of anthropogenic climate change.

Mount Owen considers that comments about the effects of anthropogenic climate change generally, which are not tied or made referable to the determination of the development application for the Proposed Modification, are of little to no assistance to the consent authority's decision-making task.

Theme 2: Need for steps to be taken globally to meet the goal of the Paris Agreement

Mount Owen does not dispute that action needs to be taken to reduce GHG emissions globally in order for the "well below 2°C" goal of the Paris Agreement to be realised.

However, in circumstances where:

1. the existing climate change frameworks make clear that:
 - a. the development of new coal mines, or the continuation of existing coal mines, is not prohibited by the operation of international, Australian or NSW laws;
 - b. the prohibition of coal mines is not one of the many measures or mechanisms that Australia has adopted for the specific purpose of meeting its NDC under the *Paris Agreement*;
 - c. indeed, to the contrary, NSW planning laws recognise that the carrying out of coal mining projects (including the Proposed Modification) is permitted with development consent under the Mining SEPP; and
 - d. the objects of the Mining SEPP include:
 - i. to facilitate the orderly and economic use and development of land containing mineral resources (such as coal); and
 - ii. to promote the development of significant mineral resources.
2. failure to approve the Proposed Modification would not result in a net decrease in GHG emissions globally due to market substitution of the Proposed Modification's coal with coal from other markets,

The Applicant considers that any suggestion put in submissions that the refusal of the development application would demonstrate a commitment on the consent authority's part to take action to achieve the goal of the *Paris Agreement* is both misconceived and places at risk the realisation of the social and economic benefits that the Proposed Modification will deliver at a local, regional and State level.

In relation to the submission that *"even a minor extension of mining is another 'nail in the coffin' of addressing Climate Change."* This submission seems to suggest that it does not matter whether a given development that is reliant on fossil fuels for energy is large or small: no matter what size the development is, it will contribute GHG emissions and these emissions matter in the context of seeking to reduce GHG emissions worldwide. This position has legal and practical problems.

Legally, it is problematic because NSW planning laws do not prohibit or restrict (as distinct from regulate, pursuant to development consent conditions) the carrying out of fossil fuel development, including coal mines (nor, for that matter, does any other climate change law or policy applicable to the Proposed Modification). More specifically, the carrying out of the proposed Modification here is permissible with development consent under the Mining SEPP. The objects of the Mining SEPP include:

- to facilitate the orderly and economic use and development of land containing mineral resources (such as coal); and
- to promote the development of significant mineral resources.

If the approach of no new fossil fuel development is adopted by the consent authority as a decision-making practice, it would mean that all development applications for fossil fuel developments would be rejected without being assessed on their own merits and such decisions would almost certainly be invalid in that:

- a. the EP&A Act, the Mining SEPP and the Mining Act all contemplate that fossil fuel developments may be carried out with lawful authority in NSW; and
- b. a failure to entertain a development application for such fossil fuel development on its merits would amount in numerous legal errors rendering the consent authority's decision invalid, including:
 - i. a failure to have regard to all relevant considerations set out in s 4.15 of the EP&A Act;
 - ii. a failure to accord the proponent of the proposed project with procedural fairness;
 - iii. a constructive failure to exercise its decision-making power or jurisdiction; and
 - iv. rigid adoption and application of a decision-making practice or policy without due regard to the circumstances or merits of the development application before it.

Indeed, the Court in the recent *Rocky Hill* case did not go so far to accept the “no fossil fuel development” argument that were put before it and remarked that:

[552] ... It gives priority to existing and approved fossil fuel developments, along the lines of “first in, best dressed”. It also frames the decision as a policy decision that no fossil fuel development should ever be approved.

[553] I consider the better approach is to evaluate the merits of the particular fossil fuel development that is the subject of the development application to be determined. Should this fossil fuel development be approved or refused? Answering this question involves consideration of the GHG emissions of the development and their likely contribution to climate change and its consequences, as well as the other impacts of the development ...

Thus, Mount Owen suggests that the “no fossil fuel development” position fundamentally sits at odds with the decision-making framework set out by NSW planning laws.

Further, the “no fossil fuel development” position also has practical problems. If the approach is to be adopted that any form of development – new or existing – that is to be, or is, reliant on fossil fuels for energy should be refused or halted, this could have crippling and devastating consequences for human populations that rely on fossil fuels as a reliable, affordable and efficient means for energy or electricity. It could result in many different forms of development, such as schools and hospitals, being without electricity, which would, in turn, have flow-on effects for human development globally. Such consequences would give rise to distributive injustice to different human populations and undermine the achievement of intra-generational equity, which is one of the principles of ecologically sustainable development. Moreover, as the Department of Planning recognised in its Addendum Report on the Wallarah 2 Coal Project in considering the principle of inter-generational equity:

[The Department] recognises that there remains for the foreseeable future a clear need to continue to mine coal deposits to meet society's basic energy needs ... The Department also acknowledges that the downstream energy and other socio-economic benefits generated by the amended project would benefit future generations, particularly through the provision of international energy needs.

Theme 3: Coal is a major source of GHG emissions

Mount Owen readily acknowledges that coal mining projects, like many forms of development, generate GHG emissions. However, it is considered that the submissions mis-characterise the nature in which coal may cause GHG emissions.

The submissions characterise the burning of coal (generation of scope 3 GHG emissions) from the Proposed Modification as being direct consequences of coal mining activity. This is not an accurate characterisation. Coal is currently, and will continue to be for several decades, vital to the provision of affordable, reliable energy worldwide. It is the world's demand for coal-fired electricity generation that is the main cause of Scope 3 GHG emissions that may be said to be generated by coal mining projects.

This point was recognised by Member Smith of the Queensland Land Court, in the context of considering the Alpha coal mine, in the decision of *Hancock Coal Pty Ltd v Kelly & Ors and Department of Environment and Heritage Protection (No 4)* [2014] QLC 12, where he relevantly observed:

[230] ... [I]t is the demand for electricity to the extent that it is met by coal-fired generators that causes the Scope 3 emissions, and the facts as set out in this case clearly show that Alpha is but one of a myriad of suppliers, both local and around the world, who will seek to meet this existing demand.

[231] ... I must on the evidence of this case determine that it is the demand for coal-fired electricity, and not the supply of coal from coal mines, which is at the heart of the problem.

[232] ... the clear and unambiguous facts of this case show that there will be no reduction of GHGs if the Alpha mine is refused, and, indeed, depending on the source of replacement coal, such replacement coal may well, on the evidence, result in an increase in GHG emissions.

Mount Owen considers that the observations made by Member Smith are equally applicable to the Proposed Modification the consent authority is considering here, and would submit that it is both open to, and appropriate for, the IPC to adopt the same approach to consideration of Scope 3 emissions that Member Smith did in the *Hancock Coal* case.

Theme 4: No new fossil fuel developments should be approved and existing fossil fuel developments should be rapidly phased out

For the reasons set out in the discussion of Theme 2 above, this position sits at odds with the NSW planning law framework. It also seeks to invite the consent authority to engage in policy debates that are inappropriate to engage with in the decision-making context: i.e. to determine whether or not, on the merits, the Proposed Modification should be approved or refused, having regard to all relevant matters, of which GHG emissions is only one such matter.

Theme 5: Approval of the Proposed Modification would be inconsistent with existing climate change laws and policies

Again, this theme has already been addressed in the context of discussing Theme 2 above. As pointed out there:

- there is nothing in existing climate change laws and policies which prohibits the approval of new coal mining development; and
- the prohibition of new coal mines is not one of the specific mechanisms or measures that Australia has adopted for the specific purpose of meeting its NDC under the *Paris Agreement*; and
- indeed, to the contrary, NSW planning laws recognise that the carrying out of coal mining projects (including the Proposed Modification) is permitted with development consent.

Theme 6: Climate change has adverse health impacts for human populations

Mount Owen rejects any suggestion that the scope 1 GHG emissions from the Proposed Modification and associated downstream Scope 2 and 3 GHG emissions, in and of itself, will cause unacceptable health impacts for people living in the local community.

As discussed in the SEE and this RTS, the environmental impacts of the Proposed Modification remain consistent with the level of impact predicted for the Approved Operations. Additionally, the Proposed Modification does not increase the current approved mine life and provides for the continuation of mining operations in the immediate future in order to supply an existing demand for coal.

6.3 Aboriginal Archaeology

6.3.1 Agency Submissions

6.3.1.1 OEH

OEH has reviewed the information supplied with respect to Aboriginal cultural heritage for the Glendell Mine Modification 4. Modification 4 comprises an area of 12 hectares, a 2 km x 100 m strip along the length of the western boundary of the current approved disturbance area. The proposed modification area is within 200 metres of Swamp Creek, which is a tributary of Bowmans Creek and a major watercourse in the local area. OEH considers that this is an area of archaeological sensitivity.

OEH notes that the Aboriginal Due Diligence Archaeological Assessment: Glendell Mine Modification 4, Mount Owen Complex was undertaken for Modification 4 (OzArk EHM, November 2018). Please note that the due diligence process is not sufficient to support a state significant development modification project. Due diligence is a legal defence against harm under the National Parks and Wildlife Act 1974. Accordingly, OEH does not review or comment on the due diligence process undertaken by proponents. OEH considers that a due diligence process is inadequate to assess the impacts of this proposal on the Aboriginal archaeological and cultural heritage values of the subject land.

OEH notes that three new sites were recorded during the due diligence survey:

- *AHIMS 37-3-1499 Swamp Creek OS1*
- *AHIMS 37-3-1508 Glendell North OS28*
- *AHIMS number pending Glendell North OS31*

OzArk EHM (2018) asserts that these sites will be impacted and therefore harmed by the proposed modification. As only a portion of these sites lie within the modification boundary, only partial salvage is required with the remainder of the artefacts outside of the Modification 4 boundary requiring protection by a No-Go Zone Barrier Fence.

A fourth new site was also identified, directly to the east of the modification boundary within the approved disturbance boundary. OEH is unable to determine from the information provided if it is likely to be impacted.

The Aboriginal archaeological and cultural heritage values of the Glendell Mine Modification 4 proposed disturbance area should be documented in an Aboriginal cultural heritage assessment report. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The Aboriginal cultural heritage assessment report should assess any impacts on Aboriginal cultural values. The Aboriginal cultural heritage assessment report should demonstrate attempts have been made to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the Aboriginal cultural heritage assessment report must outline measures proposed to mitigate impacts.

OEH recommends that an Aboriginal archaeological cultural heritage assessment report is prepared to adequately identify any Aboriginal cultural heritage items or cultural values present within the Glendell Mine Modification 4 footprint. The Aboriginal cultural heritage assessment report should be prepared in accordance with the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011) and the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW).

The Due Diligence process was considered appropriate for the original assessment presented in the SEE as the Proposed Disturbance Area is:

- Is within the existing boundary for the current Mount Owen ACHMP. The approved ACHMP was developed in consultation with OEH. As stipulated in the ACHMP, there is on-going consultation with the Aboriginal community, both through the mechanism of the Aboriginal Cultural Heritage Working Group, and through the quarterly site condition monitoring which includes a roster of representatives from the Aboriginal community (ACHMP Section 5.7).
- has been previously assessed in its entirety in Umwelt 2004 for the purposes of the current approval DA 80/952, and partially in OzArk 2014, and had been walked over during the quarterly monitoring program.
- within the proposed GCOP Project Area and covered by the survey undertaken for the ACHAR for GCOP which has been subject to extensive consultation in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)*. The consultation process for the ACHAR for GCOP commenced in December 2017, consultation has included the review of the survey and test excavation fieldwork methodologies, field survey and excavation works and two cultural values workshops. The draft ACHAR is planned to be issued to the RAPs for review in Q3 2019.

However, as requested by OEH an ACHAR has been prepared in accordance with the Aboriginal Cultural Heritage Consultation Requirements for Proponents so that the cultural values of the Proposed Disturbance Area can be identified, refer to **Appendix 1**. As discussed in **Section 4.1**, this consultation included an initial review (on 6 February 2019) of a background document, and providing further detail regarding the Proposed Modification and survey results. The ACHAR was then circulated to the RAPs for review and comment on 12 March 2019, with comments requested by 18 April 2019, no feedback requiring incorporation into the ACHAR was received.

Three low density artefact scatter sites will be impacted by the Proposed Modification (recorded during the 2018 survey (Swamp Creek OS1: 37-3-1499; Glendell North OS28: 37-3-1508; Glendell North OS31: 37-3-1545). Only one site, Glendell North OS28: 37-3-1508, will be totally impacted, while the remaining two sites will only have a small portion of their site extent impacted by the Proposed Modification (refer to **Figure 6.6**). As all sites liable to be harmed by the Proposed Modification are in highly disturbed contexts and have a low scientific value, an appropriate mitigation is considered to be the recording and collection of all low-density surface artefacts within the Proposed Disturbance Area.

Note that only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area would be subject to the collection of surface artefacts. The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area would be fenced to ensure they are conserved within the landscape.

Aboriginal heritage is of great value to many people and the site therefore has social value. Any assessment of social or cultural value is typically determined through consultation with the Aboriginal community. During consultation with the RAP's, submissions were received, however no feedback requiring incorporation into the ACHAR was received.

The existing Mount Owen Complex ACHMP will be updated to include the management and mitigation measures recommended in the ACHAR (refer to **Appendix 1**), in consultation with the Mount Owen Complex Aboriginal Cultural Heritage Working Group.

As noted in **Section 6.3.2.1**, the PCWP application under Sections 9 and 10 of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984, in relation to the GCOP, is under review by DoEE.

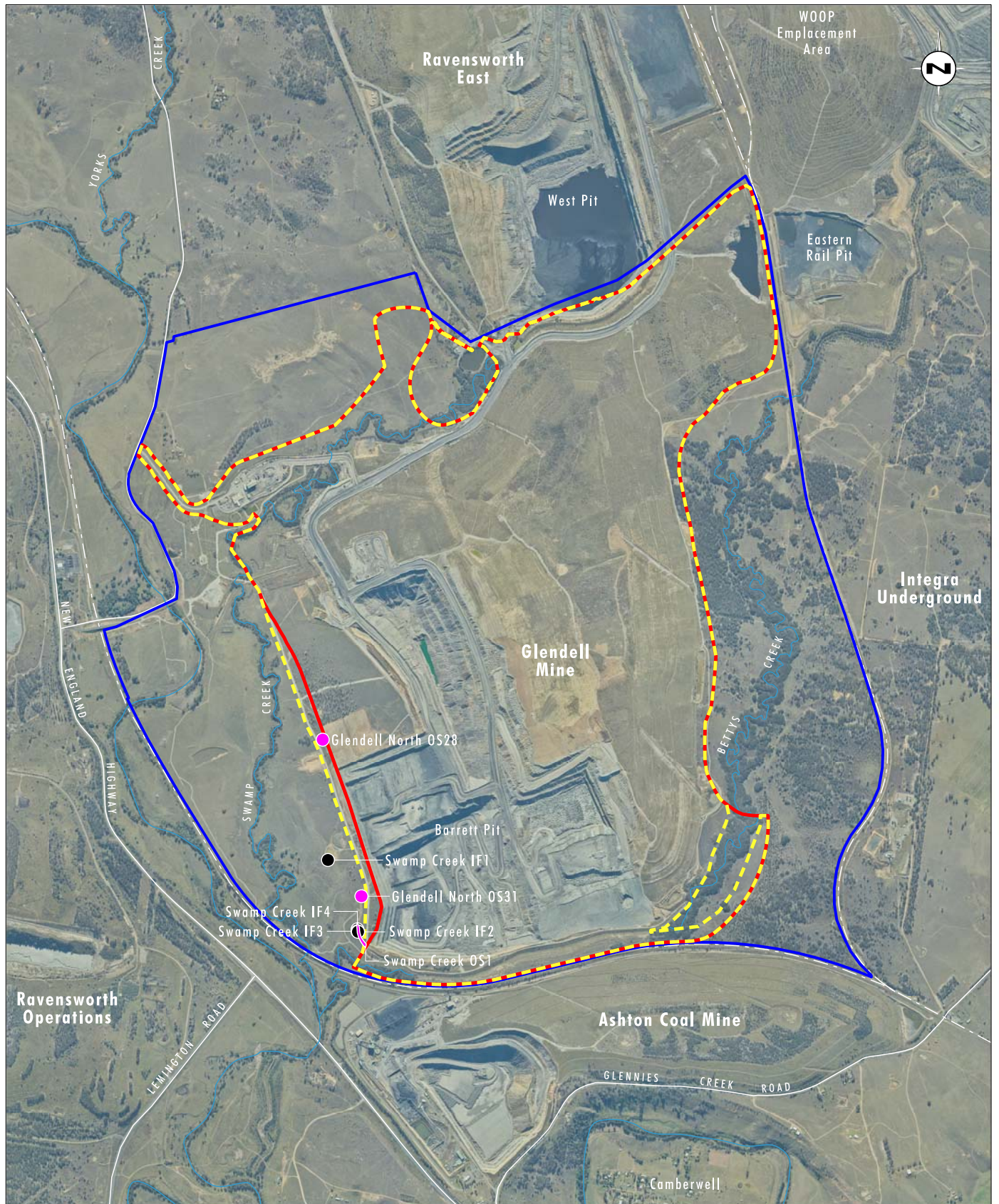


Image Source: Glencore (Jul 2018)
Data Source: Glencore (2018), OzArk (2018)

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Legend

- Glendell Consent Boundary (DA 80/952)
- - - Approved Disturbance Area (DA 80/952)
- - - Proposed Disturbance Area
- Artefact scatter
- Isolated Find

FIGURE 6.7

Recorded Sites

OEH notes that OzArk EHM intends to combine the following three previously recorded sites (identified in August 2017 and outside of the Modification 4 boundary):

- ***AHIMS 37-3-1492 (Swamp Creek IF-2)***
- ***AHIMS 37-3-1493 (Swamp Creek IF-3)***
- ***AHIMS 37-3-1490 (Swamp Creek IF-4)***

OzArk EHM intends to amalgamate these sites with another site within the boundary:

- ***AHIMS 37-3-1499 (Swamp Creek OS1)***

OzArk EHM proposes total salvage at all these sites as part of Modification 4, even though some of the artefacts lie outside the modification boundary. There is no evidence of consultation with the Aboriginal stakeholders on this matter.

OEH recommends that only Aboriginal objects that occur within the Modification 4 proposed disturbance boundary should be salvaged as part of the project. The portion of Aboriginal sites that occur outside the Modification 4 proposed disturbance boundary should not be salvaged as part of the project.

The above comments and recommendations have been considered in the preparation of the ACHAR. As a result, the recommendations of the ACHAR have been updated which include:

- Should the Proposed Modification be approved, the ACHMP will be updated to stipulate that the recording and collection of surface artefacts occur at three sites: Swamp Creek OS1 (37-3-1499); Glendell North OS28 (37-3-1508); and Glendell North OS31 (37-3-1545). The collection of surface artefacts will follow the procedure set out in the ACHMP Section 6.2.1.1.
- Only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area would be subject to the collection of surface artefacts.
- The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area would be fenced to ensure they are conserved within the landscape.

OEH has reviewed the Aboriginal Cultural Heritage Management Plan (ACHMP) for the Mount Owen Complex (OzArk 2018). OEH recommends that the existing ACHMP (OzArk 2018) be updated to manage the Aboriginal objects within the proposed Glendell Mine Modification 4 Consent Boundary. The proposed modification boundary must be updated on all relevant figures in the ACHMP.

Noted, should the Proposed Modification be approved, the ACHMP will be updated to reflect the modified operations.

6.3.2 Interest Group Submissions

6.3.2.1 Plains Clan of the Wonnarua People (PCWP)

The application, falls short of compliance under the NPW Acts for protecting Aboriginal heritage. Contained in the documents page 24 of the Oz ark assessments makes the following statement. No Aboriginal community members accompanied the visual inspection of the study area during the August 2017 assessment. However, Aboriginal community were present during the April/May 2018 GCOP assessment that included the study area and no specific cultural values pertaining to the study area were raised.

The registered Native title party were not consulted with regard to this Modification. The Department of the Environment and Energy has received our applications under section 9 and section 10 of the Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth) (the ATSIHP Act). The area we are seeking protection is contained within the application lodged with ATSIHP. This further demonstrates that no consultation was done with the registered native title claim group. The Bowmans Glenies creek area is of significant cultural importance to Wonnarua people.

As summarised in **Section 6.3.1**, the Due Diligence process was followed for the original Aboriginal Archaeological assessment given the nature of the Proposed Modification and it was considered that an assessment methodology following the Due Diligence guidelines was appropriate in this instance.

In addition to the consultation with the RAPs, including the Registered Native Title Party, undertaken in relation to the ACHAR for GCOP, all registered Aboriginal parties under the GCOP were provided with a consultation letter in November 2018 providing an overview of the Proposed Modification and results of the survey and due diligence assessment.

The ACHAR requested by OEH, refer **Section 6.3.1.1**, has been prepared in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW)*, refer to **Appendix 1**. The consultation process undertaken in relation to the Proposed Modification and outcomes of that process is also summarised in **Section 4.1** and **6.3.1**.

The application under Sections 9 and 10 of the *Aboriginal and Torres Strait Islander Heritage Protection Act 1984* referenced in the submission is noted. This application is under review by DoEE.

Also contained on page 24 of the Ozark report in the following statement: A search of the OEH administered AHIMS database was not completed over the study area as the Mount Owen Complex maintains an up-to-date, accurate GIS system of recorded sites within the MOC ACHMP boundary. The sites on the Mount Owen Complex GIS heritage database have been verified against the AHIMS data, as well as being inspected on the ground to verify current site conditions and the accuracy of the AHIMS data at particular sites. As such, there is a high degree of confidence in the data held on the Mount Owen Complex GIS heritage database. Mount Owen Complex is not the regularity regulator for AHMIS that is the Office of Environment and Heritage this statement confirms that proper current search of the AHIMS system was not completed as a requirement under the NPW Acts. I cannot believe the OEH have not reviewed this document before it was submitted to your department and if it was reviewed by OEH Newcastle serious questions need to be asked as to what this department are in fact doing when it comes to ensuring these applications are in compliance with the NPW Acts dealing with Aboriginal heritage.

While Mount Owen have taken considerable and recent steps to ensure the accuracy of its heritage database including engaging consultants to verify the database and to undertake ground-truthing of sites where any doubt was raised regarding location, an AHIMS search has been undertaken (refer to Section 5.3.2 of **Appendix 1**). The results of this search did not change the understanding of the archaeological context of the Proposed Disturbance Area presented in the original due diligence assessment or the ACHAR.

I would like to point out that crown land 58/D752499 is still registered on the crown lands data base as a crown reserve and conformation should be court weather Native title under a section 29 would need to be granted before this land could be destroyed.

Lot 58 DP752499 is contained within the approved Glendell Mine Development Consent boundary however does not form part of the Proposed Disturbance Area associated with the Proposed Modification. Furthermore, Lot 58 DP752499 is located within the approved mining area and is subject to coal lease 385 (CL 358). CL 358 was granted in 1990 and pre-dates the *Native Title Act 1993*.

6.3.3 Community Submissions

In relation to the article in the Saturday, 1st December 2018 Newcastle Herald on the aboriginal history and diary of the Garrison, that the assessment has not taken account of the recent information of massacre of aboriginal people in the area.

The newspaper article referred to in this submission, post-dates the finalisation of the SEE and original Aboriginal Archaeology assessment for the Proposed Modification and therefore was not specifically discussed.

This article recounts the events surrounding Ravensworth area between 1825 and 1826. In particular, the documented account where 18 Aboriginals were reported killed in August 1826. This is the subject of the AHIMS site 37-3-0390 (Ravensworth Massacre Site).

The subject of AHIMS site 37-3-0390 was discussed in *Archaeological Values Assessment* for the Approved Operations (Umwelt, 2004) for Glendell Mine, and also in the 2013 ACHAR for the adjacent Mount Owen Mine. An extract from the Mount Owen Continued Operations ACHAR (ACHM, 2013) in relation to this issue is provided in **Appendix 3**. This concluded that the particular event referenced in AHIMS site 37-3-0390 was likely some distance from the area of disturbance associated with the Proposed Modification.

It should be noted that the Proposed Modification does not propose any moving of the Ravensworth Homestead. This is the subject of SSD-9349 (GCOP), which is currently compiling a detailed history of the Homestead and surrounding area and an associated ACHAR, as part of the EIS for that separate project.

6.4 Noise

6.4.1 Interest Group Submissions

6.4.1.1 Climate Change Balmain-Rozelle

Noise limits are generous compared with wind farms: LAeq,15min values around 40dBA, compared with 35 for wind farms. For industry generally in NSW8, night-time rural intrusiveness is limited to LAeq,15min =35dBA. Further, there is a risk of bracket creep. The impact of new proposals is usually judged partly against existing noise levels. Thus, repeated extensions of existing works may be allowed successively higher noise limits. It would be more equitable to compare with historic levels experienced by long-term residents. The document continues in para 6:

Upon receiving a written request ... the Applicant must implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner. These additional mitigation measures must be reasonable and feasible. Who determines such feasibility? The consequences of the developer determining that such additional measures are infeasible need to be clarified. Does it excuse the developer from achieving the noise limit?

Noise limits should be tightened in line with NSW EPA's policy. Moreover, the baseline used should reflect the multidecadal experience rather than that resulting from current mining operations. Clarify who determines whether proposed mitigation measures are reasonable and feasible, and the consequences of no such measures being identified.

The requirement to provide additional noise mitigation measures is regulated by DA 80/952 Schedule 3, condition 6. Condition 6 states that the applicant must implement additional noise mitigation measures for identified properties such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the land owner. These additional measures must be reasonable and feasible.

Additionally, if within 3 months of receiving a request from the landowner, the applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

6.5 Mine Closure and Rehabilitation

6.5.1 Agency Submissions

6.5.1.1 Resources Regulator

The Resource Regulator has determined that sustainable rehabilitation outcomes can be achieved as a result of the project and that any identified risks or opportunities can be effectively regulated through the conditions of mining authorities issued under the Mining Act 1992.

The Resources Regulator requests a review of the draft development consent conditions prior to finalisation and any granting of development consent.

Noted.

It should be noted that this review does not represent the Resources Regulator's endorsement of the proposed rehabilitation methodologies as presented in the SEE. Under the conditions of a mining authority granted under the Mining Act 1992, the Resources Regulator, requires an authority holder to adopt a risk-based approach to achieving the required rehabilitation outcomes. The applicability of the controls to achieve effective and sustainable rehabilitation is to be determined based on the site specific risk assessments conducted by an authority holder. This risk assessment should be used to not only establish a basis for managing risk when planning an activity, but it should also be used and updated (as required) to continuously evaluate risk and the effectiveness of controls used to prevent or minimise impacts. An authority holder may also be directed by the Resources Regulator to implement further measures, where it is considered that a risk assessment and associated controls are unlikely to result in effective rehabilitation outcomes.

Noted

6.5.2 Interest Group Submissions

6.5.2.1 Hunter communities Network

The retention of a large final void that will lower the productive value of agricultural land in the region is not acceptable. All open cut mining operations in the Hunter Valley must be required to backfill all mining pits and restore the landscape to the same agricultural class soils present pre-mining.

The Glendell Mine site prior to mining primarily consisted of class V land with areas of class II and IV land associated with the Swamp and Bowmans Creek floodplains, as well as a minor area of class VI land. As discussed in Section 6.7.1 of the SEE, rehabilitated topsoiled areas will have a nominal land capability class IV or V depending on the slope and landscape position. Areas rehabilitated without topsoil will have an end land capability of Class VI.

It is important to note that the approved final landform for the Glendell mine includes a final void and the Proposed Modification would result in only very minor changes to the approved final landform and maintains the commitments and strategies developed for the approved operations to maximise the visual and ecological benefits of the rehabilitation. It is considered that a minor modification of this extent does not warrant significant change to the approved final landform. No additional voids are proposed as part of the Proposed Modification.

As discussed in the SEE, should the GCOP be approved, the proposed final landform will not be implemented and the closure of the Glendell Mine will not occur following completion of mining under the Proposed Modification, mining will continue in accordance with the development consent granted for GCOP.

As part of the rehabilitation and decommissioning of the wider Mount Owen Complex, the Glendell Mine site would be included in a detailed assessment and planning process in preparing a final land use strategy for the Complex. The proposed end land use for the existing Glendell Mine includes a combination of grazing land and bushland, no change is proposed to the proposed end land use however, other potential employment generating land uses including ancillary mining infrastructure, water storage, industrial/intensive agriculture, waste recycling, re-use and emplacement, will be considered closer to the closure of the Mount Owen Complex and will be dependent on demand at the time.

6.5.2.2 Hunter Environment Lobby

HEL has been protesting to this department for over ten years about the allowance of final voids in the coal industry. This project leaves a final void and lowers the class of agricultural land in the final landform from class 1V or V down to class V111. This lowers the land value and productivity for future users. It has always been our policy to push for no final voids - if the project cannot afford to back fill them, it is not a viable project.

As discussed in **Section 6.5.2.1**, the Glendell Mine site prior to mining primarily consisted of class V land with areas of class II and IV land associated with the Swamp and Bowmans Creek floodplains, as well as a minor area of class VI land. As discussed in Section 6.7.1 of the SEE, rehabilitated topsoiled areas will have a nominal land capability class IV or V depending on the slope and landscape position. Areas rehabilitated without topsoil will have an end land capability of Class VI. Given the very minor changes proposed to the approved final landform required for the Proposed modification, any significant changes to the landform design (including backfilling the approved void) are not considered appropriate, particularly for a modification of this minor nature.

As part of the rehabilitation and decommissioning of the wider Mount Owen Complex, the Glendell Mine site would be included in a detailed assessment and planning process in preparing a final land use strategy for the Complex. The proposed end land use for the existing Glendell Mine includes a combination of grazing land and bushland, no change is proposed to the proposed end land use however, other potential employment generating land uses including ancillary mining infrastructure, water storage, industrial/intensive agriculture, waste recycling, re-use and emplacement. These potential land uses will be considered closer to the closure of the Mount Owen Complex and will dependent on demand at the time.

6.5.3 Community Submissions

The project leaves a final void and lowers the class of agricultural land in the final landform from class 1V or V down to class V111. This lowers the land value and productivity for future users. A final void lowers the value of the land and the productivity for future users.

This comment is addressed in **Section 6.5.2**.

The community submissions included concern in relation to the final void and the impacts the final void will have on future land use and rehabilitation:

Once again, a final void is proposed. The rosy predictions of rehabilitation and re-use of voids all predict outcomes similar to much smaller voids elsewhere in temperate climates and with high rainfall. Australia is a very hot and very dry country and such favourable outcomes will never be achieved.

Despite promises to define an effective “Final Void Policy” nothing has been done and nothing can be done when, by proponent’s own assessments doing something that would make the land useable for worthwhile purpose would cost so much that projects would be economically unsustainable ergo; such projects ARE economically unsustainable.

It is horrifying that the Department Of Planning supports mines that leave massive final voids when there is no official Policy on final voids. Because there are very few mine closures we are on unknown territory here as far as what strategies must be in place and implemented. Astoundingly there are no problems with the Planning Department accepting any mine site in the Hunter Valley that leaves a final void. And in reality, we are going to be left with massive voids of toxic, unproductive land.

The Glendell extension is intending to leave a final void, and to reduce the agricultural land from grade 4 to grade 8. A resource which is harmless, sustainable, productive and employs people; utterly wiped out forever, in favour of a hole in the ground and a wasteland. Moreover for a product which helps kill the earth and pollutes the air.

This project should not be allowed to leave a final void for future generations to deal with. If the land form cannot be restored then the mine is not viable.

Rehab in these conditions is highly unlikely

As discussed in **Section 6.5.1**, it is important to note that the approved final landform includes a final void and the Proposed Modification would result in only minor changes to the approved final landform and maintains the commitments and strategies developed for the approved operations to maximise the visual and ecological benefits of the rehabilitation. As discussed above, given the very minor changes proposed to the approved final landform required for the Proposed modification, any significant changes to the landform design (including backfilling the approved void) are not considered appropriate, particularly for a modification of this minor nature.

As discussed in the SEE the intended future use of the land is for mining purposes, should the GCOP be approved, In this case, the closure of the Glendell Mine will not occur following completion of mining under the Proposed Modification and mining will continue in accordance with the development consent granted for GCOP. The final landform of the GCOP will then be implemented in accordance with the development consent for GCOP.

As part of the rehabilitation and decommissioning of the wider Mount Owen Complex, the Glendell Mine site would be included in a detailed assessment and planning process in preparing a final land use strategy for the Complex. The proposed end land use for the existing Glendell Mine includes a combination of grazing land and bushland, no change is proposed to the proposed end land use however other potential employment generating land uses including ancillary mining infrastructure, water storage, industrial/intensive agriculture, waste recycling, re-use and emplacement will be considered during planning for the closure of the broader Mount Owen Complex. Given the Mount Owen Mine life extends to 2037, these potential land uses will be considered closer to closure and will dependent on demand at the time.

Rehabilitation and revegetation techniques will be continually developed and refined over the life of the mining operations through a continual process of research, trialling, monitoring and improvement. This will provide for adaptation of techniques to any challenges that may arise. Rehabilitated areas are subject to routine inspection to ensure rehabilitation standards are maintained and continually improved.

No mention of the rehabilitation in which the use of OGM has been stopped by EPA and the concerns the material has been stopped in the USA in few areas due to health concerns and water pollution

Glendell Mine does not propose to use mixed waste organic material as a soil ameliorant for rehabilitation at the Glendell Mine and will continue to use topsoil and other ameliorants consistent with its Environment Protection Licence and approved Rehabilitation Plan.

6.6 Consultation

6.6.1 Interest Group Submissions

6.6.1.1 Hunter Communities Network

HCN is also very concerned about Glencore's attitude to open and transparent information exchange with the Community Consultative Committee across the Mount Owen complex.

The Proposed Modification was presented to the Mount Owen Complex Community Consultative Committee (CCC) on the 11 October 2018. The presentation included an overview of the Proposed Modification, the intended approval pathway and the associated timeframe. Mount Owen also advised the Proposed Modification may not be exhibited due to the minor nature of the proposal, but ultimately this was a matter for the DPE. This was confirmed following the CCC meeting and the minutes updated accordingly and distributed to the CCC members. Following submission of the SEE it was exhibited from 22 November 2018 to 6 December 2018.

6.6.1.2 Hunter Environment Lobby

We believe that Glencore has misled the Community Consultative Committee on the matter of public exhibition for this modification - there should have been more time for community members to prepare submissions and gain expert assistance.

A response to this issue is provided above.

6.6.2 Community Submissions

The community submissions included the following comments in relation to consultation between Mount Owen and the community in relation to the Proposed Modification:

Glencore misled the Community Consultative Committee on the matter of public exhibition for this modification.

Glencore misled the Community Consultative Committee on the matter of public exhibition for this modification.

The fact Glencore made statement at recent CCC that the department stated the modification would not go out on public exhibition raises concerns of what was the actual stated between the department and Glencore, was it a done deal.

At the CCC meeting on the 11th October 2018, Glencore presented the Approved Glendell Mine operations Vs Proposed modification and upon questioning the company about the modification and when will go out for public exhibition. The response was as stated in the minutes "Advised by DPE that the Mod would not be placed on public exhibition due to it being a minor change" "raised concerns with the Mod not being advertised and was informed by Ned Stephenson that this was a matter for the department". The matter was raised with the department for an explanation, but the concern is the fact Glencore made this statement which would give the perceived perception that the department had possibly made an agreement in secret and the potential of a tick in the box for the approval to go ahead. The perceived perception of events related to the statements by Glencore that the process of assessment is compromised.

The Proposed Modification was presented to the Mount Owen Complex CCC on the 11 October 2018. The presentation included an overview of the Proposed Modification, the intended approval pathway and the associated timeframe. Mount Owen also advised the Proposed Modification may not be exhibited due to the minor nature of the proposal, but ultimately this was a matter for the DPE. This was confirmed following the CCC meeting and the minutes updated accordingly and distributed to the CCC members. Following submission of the SEE it was exhibited from 22 November 2018 to 6 December 2018.

6.7 Biodiversity

6.7.1 Agency Submissions

6.7.1.1 OEH

OEH reviewed the Biodiversity Development Assessment Report, the Biodiversity Assessment Method calculator file, and the Geographic information shapefiles for this project and is satisfied with assessment undertaken. The proponent has not identified which of the offsetting options available under the NSW biodiversity offsets policy for major projects will be used to meet the 109 ecosystem credits generated if this development is approved. OEH is satisfied with the biodiversity assessment conducted and no further biodiversity assessment of the impact area is required.

Noted.

6.8 Water Resources

6.8.1 Agency Submissions

6.8.1.1 OEH

OEH is satisfied with the flood impact assessment provided OEH has reviewed the surface water assessment provided by Umwelt (Modification 4 Statement of Environmental Effects, 2018) and is satisfied the proposed modification will have no significant off-site flooding impacts. No further flooding assessment is required for this project.

Noted.

6.8.1.2 DoI Water

The department provides the following comments and recommendations for consideration in assessment of the proposal:

- *Groundwater monitoring should continue in accordance with the approved groundwater management plan and reported annually.*
- *Vibrating wireline piezometer GNP1 should be replaced as soon as possible after impact by mining operations.*
- *Impact monitoring bores should be reported in the annual groundwater report.*

Noted.

6.9 Social Impacts

6.9.1 Interest Group Submissions

6.9.1.1 Climate Change Balmain-Rozelle

Projects such as this seek to garner local public support by emphasising the job prospects. Coal is moribund. An urgent task for governments in coal-producing regions is to plan a smooth and equitable transition. Approving yet more coal developments delays the inevitable and leads to a more savage collapse in the future.

The Proposed Modification would provide for the continuation of the employment of the existing Glendell Mine employees (around 300 FTE) in the immediate future, for an additional approximately 8 months which is within the existing approved mine life.

6.9.1.2 Community Submissions

The Department of Planning and Environment could assist in this transition to a renewable energy economy and leave something for future generations by refusing to approve this application.

I strongly object to any new coal mines or extensions to existing ones, we do not need new areas to be dug up, there is more than enough coal in existing mines to supply our needs until renewables replace or make up the shortfall in coal production.

Response to these matters are discussed in **Section 6.2.2.**

6.10 Landuse

6.10.1 Agency Submissions

6.10.1.1 DoI

Crown land and Crown Roads subject to the Proposed Approval Area require any existing or proposed occupation to be authorised under the Crown Land Management Act 2016 or Roads Act 1993.

The exception to the above condition applies where the Crown Land and Crown Roads are located within a mining lease. All Crown Land and Crown Roads within a mining lease must be subject to a Compensation Agreement issued under Section 265 of the Mining Act 1992, to be agreed and executed prior to any mining activity taking place and within 12 months of Project Approval. The Compensation Agreement may include conditions requiring the mining lease holder to purchase crown land impacted on by mining activity.

There is no crown land or crown roads located within the Proposed additional Disturbance Area.

One parcel of crown land (Lot 58 DP752499) is located within the approved mining area (not within the area of the Proposed Modification) and is subject to coal lease 385 (CL 358). This lot has been the subject of ongoing consultation with DoI. Further consultation will be undertaken with DoI to determine the appropriate requirements in relation to this lot.

6.11 Project Justification

6.11.1 Agency Submissions

6.11.1.1 DRG

The Division has reviewed the information supplied in relation to the Project. Given the constraints outlined in the Proponent's SEE, the Division considers the Project to be an efficient development and utilisation of coal resources which will provide an appropriate return to the state.

Noted

As coal is a prescribed mineral under the Mining Act 1992, the proponent is required to hold appropriate mining titles from the Division in order to mine this mineral. Based on current title information the Division advises that the Proponent holds the appropriate titles as required and raises no issues of concern.

The Division has determined that identified risks or opportunities can be effectively regulated through the conditions of mining authorities issued under the Mining Act 1992.

Noted

6.11.2 Interest Group Submissions

6.11.3 Hunter Communities Network

HCN also objects to the proposed extension of time for the mine by six months to the end of 2024. Glencore has access to a range of mines and a large volume of coal in the Hunter Region and does not need this modification to Glendell Mine for any economic justification.

As stated in the SEE, there is no change to the approved mine life as part of the Proposed Modification.

The Proposed Modification provides economic benefit through the continuation of employment of the existing Glendell Mine employees and additional economic efficiencies will also be achieved in relation to the GCOP through the continuation of existing operations and implementation of early mine plan changes to provide for efficient advancement of mining should the GCOP be approved.

6.11.4 Community Submissions

The life of mine should not be extended by six months to the end of 2024. The sooner this mine closes down, the better for a just transition to other cleaner industries in the region.

As discussed in the SEE, there is no change to the approved mine life as part of the Proposed Modification.

The ESD principle of intergenerational equity needs to be applied to any new decisions on mine expansion in the Hunter Region.

The principles of ESD have been considered in the assessment of the Proposed Modification which is discussed in **Section 7.3** of the SEE. To justify the Proposed Modification with regard to the principles of ESD, the benefits of the Proposed Modification in an environmental and socio-economic context should outweigh any negative effects.

There will be no material increase in affects from the Proposed Modification relative to the Approved Operations. The design of the Proposed Modification and Mount Owen's continued commitment to the management of environmental issues will maintain the currently approved management practices used to address the health, diversity and productivity of the environment for future generations.

Regardless of so called stringent conditions, those who are affected most from this mine have already witnessed how the conditions can be manipulated by the Applicant.

The Approved Operations are undertaken in accordance with the environmental management plans, strategies and monitoring programs currently implemented at the Mount Owen Complex. 2017 and 2018 monitoring results indicate that the operations have complied with current air quality, noise, blasting and water management conditions under DA 80/952. It is considered that through the continued implementation of the management, mitigation and offset measures proposed by Mount Owen, the Proposed Modification will result in a minimal incremental environmental affect, relative to the current operations.

I object to this modification because this part of the Hunter is over-saturated with open cut coal mines and residents must not be subjected any more adverse impacts.

The Proposed Modification is a minor modification to an existing mining operation, and would not result in a new mining operation being approved in the Hunter Valley. As discussed above the Proposed Modification has been designed to minimise the associated affects compared to the approved operations. Should the Proposed Modification be approved, the development (as modified) will remain substantially the same as the development that is currently approved. Additionally there will be no extension to the currently approved mine life.

7.0 Revised Environmental Management and Monitoring Measures

The approved operations at Glendell Mine are undertaken in accordance with the environmental management plans and strategies developed in accordance with the Glendell Mine development consent DA 80/952 and the associated Environment Protection Licence. Should the Proposed Modification be approved, minor updates will be undertaken to incorporate the management requirements resulting from the Proposed Modification. This will include general changes to reflect the modified operations as well as specific revisions to reflect updated and revised management commitments required as a result of the Proposed Modification.

The management commitments identified in Section 2.3 of the SEE are reproduced below as well as amendments to those management commitments identified as part of the preparation of this RTS (shown as italicised):

- Revisions to the Water Management Plan (Surface Water Management and Monitoring Plan) to include operational updates to the approved Water Management System (refer to Section 6.4).
- Revisions to the Biodiversity and Offset Management Plan to include the revised disturbance limit boundary and the proposed Biodiversity Offset Strategy for the Proposed Modification, once finalised (refer to **Section 6.5**).
- Revisions to the Aboriginal Cultural Heritage Management Plan, to include the recording and collection of surface artefacts recorded at *three sites (Swamp Creek OS1 (37-3-1499); Glendell North OS28 (37-3-1508); and Glendell North OS31 (37-3-1545))*.
- *Only the portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) within the Proposed Disturbance Area would be subject to the collection of surface artefacts.*
- *The portions of Swamp Creek OS1 (37-3-1499) and Glendell North OS31 (37-3-1545) outside of the Proposed Disturbance Area would be fenced to ensure they are conserved within the landscape.*

8.0 References

Australian Cultural Heritage Management (ACHM) (2013) *Mount Owen Continued Operations Project, Volume 1, Aboriginal Cultural Heritage Assessment Report and Consultation Records*

DEC (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*.

Department of Environment Climate Change and Water (DECCW) (2010). *Code of Practice for the Investigation of Aboriginal Objects in New South Wales*.

Department of Planning and Environment (2018), *Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments*

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Glencore (2018). *Mount Owen Complex Air Quality Management Plan*

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Holmes Air Sciences (2007). *Air Quality Impact Assessment: Proposed Glendell Mine Modification to Development Consent*.

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