

Mount Owen Continued Operations Project

Review Report

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The Mount Owen Continued Operations Project PAC Report ©
State of New South Wales through the NSW Planning Assessment Commission, 2016

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EXECUTIVE SUMMARY

The Mount Owen Continued Operations Project is a proposed expansion of the existing Mount Owen open cut coal mine complex, which is located approximately 20 kilometres northwest of Singleton, within the Singleton local government area. The proposal involves extending existing open cut operations to the south and mining deeper seams, and extracting up to 14 million tonnes of run-of-mine coal per year. Mining is proposed to continue to operate at the site until 2030.

On 19 November 2015, the Minister requested that the Planning Assessment Commission (the Commission) conduct a public hearing and review the merits of the project, with consideration of the likely economic, environmental and social impacts. The Commission was constituted of Ms Abigail Goldberg (chair), with Mr Garry West and Mr Roger Fisher. The Commission examined the documents referred to in the Terms of Reference set out by the Minister, including the Environmental Impact Statement, submissions and Response to Submissions. The Commission also received written submissions, held a public hearing, visited the site and surrounds, and met with the Applicant, the Department of Planning and Environment (the Department), Office of Environment and Heritage (OEH) and Singleton Council.

The Commission notes that the Secretary's Environmental Assessment Report (SEAR) for this project does not present a full assessment on a number of key areas including air quality impacts, biodiversity offsets and final landform. Outstanding issues that are material to the consideration of this proposal are flagged in the relevant sections of this report.

While acknowledging that complete information was not available at the time the SEAR was prepared, the Commission notes the community's frustration with the incomplete nature of the information provided and its concern that the Department appears to have drawn conclusions in the SEAR before complete information was available.

Overall, taking into the account the information available, views expressed at the public hearing and submissions received, the Commission has made a number of recommendations to progress assessment of this proposal. The Commission considers that key issues which require further information and consultation with relevant agencies include air quality, the proposed offsets package and regeneration measures, and the proposed mine plan, including final landform and rehabilitation.

In relation to air quality impacts, the Commission does not consider that it is in a position to undertake a proper review of the potential air quality impacts of the project at this stage due to the uncertainties arising from the peer review of the Applicant's submission, which was commissioned by the Department. The Commission understands that an updated peer review is currently underway and it has recommended that the Department ensure that residual issues regarding air quality impacts are resolved prior to determination.

With reference to the proposed offsets package, the Commission has recommended that the Department consider further offset opportunities, as well as a range of options to strengthen the preliminary conditions of consent, particularly in relation to regeneration measures.

In relation to the revised mine plan and final landform, the Commission has recommended minimising the impact of final voids, the incorporation of micro-relief, and further consideration of a range of post-mining land use options.

The Commission has also sought further information, and recommended further agency consultation, in relation to a number of matters, including biodiversity, the discharge of surplus water, and the cost benefit analysis.

As new information will be required to address the recommendations, the Commission has recommended that the community be provided with a further opportunity to review and comment on supplementary inputs and the Department's findings on these issues.

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1. INTRODUCTION

On 19 November 2015 the Minister for Planning, the Honourable Rob Stokes MP, requested the Chair of the Planning Assessment Commission (the Commission) to carry out a review of the Mount Owen Continued Operations Project Project, including the holding of a public hearing.

Ms Lynelle Briggs AO, chair of the Commission, nominated Ms Abigail Goldberg, Mr Garry West and Mr Roger Fisher to constitute the Commission for the review. Ms Goldberg chaired the Commission.

1.1 Existing Mine Operations

Mount Owen Pty Ltd, a subsidiary of Glencore Coal Pty Limited (the Applicant), owns and operates the Mount Owen mine complex, located about 20 kilometres northwest of Singleton, within the Singleton local government area. **Figure 1** shows the regional location of the existing Mount Owen mine complex, and its relationship to nearby mines, power stations and towns and villages.

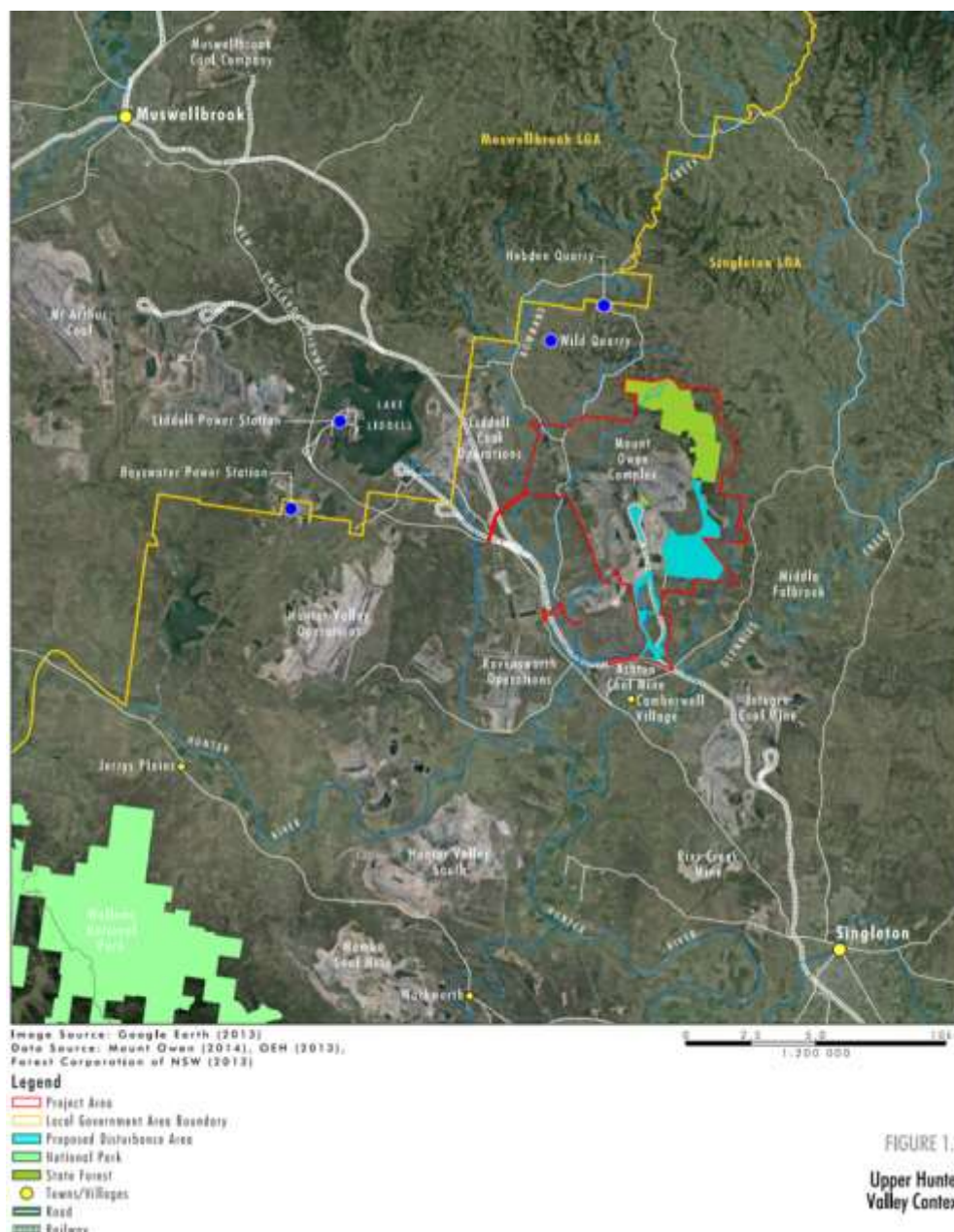


Figure 1: Regional Location of the Mount Owen Mine
Source: EIS, Umwelt

The mine complex comprises the existing Mount Owen, Ravensworth East and Glendell open cut coal mines, a coal handling and preparation plant (CHPP) and a rail loop that services the complex.

Despite being managed as an integrated mining complex, mining operations at each of the mines are governed by separate development consents. Overall, the Mount Owen consent is the dominant development consent as all of the coal mined at the complex is processed at Mount Owen's CHPP.

Together the three mines are approved to extract up to 18.5 million tonnes per annum (Mtpa) of run-of-mine (ROM) coal, process 17 Mtpa of coal (crushing and screening) at the Mount Owen CHPP, and transport the coal via an overland conveyor to local power stations or by rail to the Port of Newcastle for export.

The Mount Owen Mine currently operates under DA 14-1-2004, which was granted on 8 December 2004 by the then Minister for Planning and Infrastructure, under Part 4 of the *Environmental Planning and Assessment Act 1979* (the EP&A Act). This consent enabled the continuation of mining through a major extension to the North Pit and the consolidation of all previous development consents for the Mount Owen Mine. The consent has been modified twice and currently allows for mining operations to continue until 8 December 2025.

The existing Mount Owen Mine development consent allows for:

- mining of up to 10 Mtpa for ROM coal using a truck and excavator fleet;
- processing of up to 17 Mtpa of ROM coal at the Mount Owen CHPP;
- tailing disposal in approved voids;
- a private rail loop and rail loading facility, with capacity to transport up to 15 Mtpa product coal;
- a rail re-fuelling facility to service Glencore Rail trains arriving at the Mount Owen Mine; and
- a range of environmental management and monitoring systems (e.g. water management) and ancillary infrastructure.

1.2 Current Proposal

The Applicant proposes to expand its operations at the Mount Owen mine complex, which would involve extracting an additional 92 Mt of coal over a period of 21 years.

The Mount Owen Continued Operations Project (**Figure 2**) would involve:

- continuing to extract up to 10 Mtpa of ROM coal from Mount Owen Mine, including from:
 - the North Pit, extending southward beyond the current pit boundary;
 - the Bayswater North Pit (BNP), mining deeper seams; and
 - the Ravensworth East Resource Recovery (RERR) Pit, mining deeper seams;
- continuing to extract up to 4 Mtpa from Ravensworth East Mine;
- continuing to use the Ravensworth East voids for fine coal rejects (tailings);
- continuing to process coal at the existing Mount Owen CHPP facilities;
- continuing to truck ROM coal to the Mount Owen CHPP via internal haul roads;
- continuing to transport product coal via rail or via an existing overland conveyor; constructing an additional rail line and northern turn out, including the construction of a single span bridge over Bettys Creek;
- upgrading Hebden Road, including a rail overpass and bridge over Bowmans Creek; and
- upgrading the existing CHPP and mine infrastructure areas.

The proposal would also involve surrendering all existing consents relating to the Mount Owen and Ravensworth East mines, and consolidation of both operations under a single contemporary consent. The Glendell Mine is however excluded from the current development application.

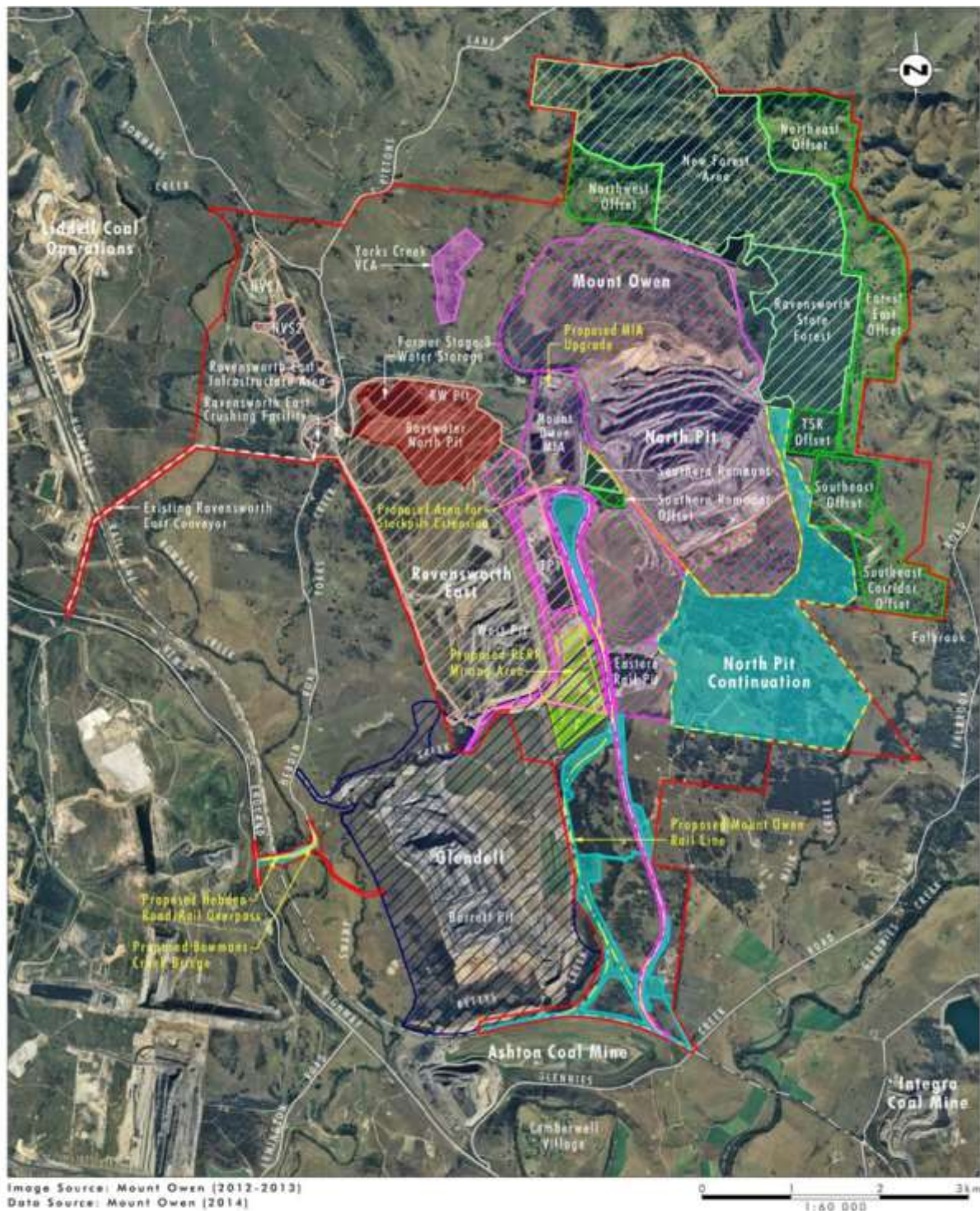


FIGURE 1.4
Proposed Mount Owen
Continued Operations Project

Figure 2: Mount Owen Continued Operations Project
Source: EIS, Umwelt

1.3 Strategic Planning Context

The Commission has considered the statutory requirements for assessment of the project under the EP&A Act, the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (the EPBC Act) and other relevant legislation, including all the environmental planning instruments that apply to the project.

Relevant local plans and policies have also been taken into account, including the *Upper Hunter Strategic Regional Land Use Plan* (SRLUP), which was introduced in September 2012. The Upper Hunter SRLUP was aimed at balancing the need to protect strategic agricultural land and water resources, while allowing for the creation of jobs and investment in the region. Specifically, the SRLUP identifies 'Biophysical Strategic Agricultural Land' (BSAL) and 'Critical Industry Clusters' (CICs), neither of which are present in the project area.

The Commission notes that there is also a *Draft Hunter Regional Plan (2015)* currently on exhibition. The Draft Plan prioritises the growth and diversification of the Hunter economy.

1.4 Social and Economic Context

The Commission has considered the proposal in the current social and economic context. The Mount Owen Mine Complex is situated within a landscape dominated by established mining and industrial operations. In addition to the three mines in the complex, several other coal mines are nearby, including the Liddell Coal Mine (open cut) to the northwest, Ravensworth Coal Mine (open cut and underground) to the southwest, Ashton Coal Mine (open cut and underground) to the south, and both Integra Coal Mine (open cut and underground) and Rixs Creek (open cut) to the southeast.

The land surrounding the Mount Owen Complex also supports a range of primary industries, including numerous agricultural enterprises, and rural and residential holdings located to the east of the mine. Agricultural activities in this area are largely associated with grazing, with some cropping on improved pastures associated with the alluvial soils of the floodplains. Camberwell Village is the nearest township, located approximately 4.5 kilometres from the southern boundary of the existing Mount Owen Mine. The nearest private, non-mine owned residences are located about 1 kilometre to the southeast and east, in the Falbrook area.

The Commission notes that the Division of Resources & Energy (DRE), within the Department of Industry, has identified that the 92 million tonnes of high quality coal proposed to be mined represent a significant coal resource both regionally and for the State. DRE asserts that the project would enable the optimised extraction of this resource from an area of the Hunter Coalfield with a long history of mining activities.

At the same time, an extension of mining activities in this area would have significant social and other costs, many of which would be borne by the residents of the Hunter Valley. The Commission has sought to carefully weigh the balance of the economic, social and environmental benefits and costs associated with the proposal.

The Commission also notes that a cross-governmental agreement on reducing Australia's air pollution (the *National Clean Air Agreement*) was reached between the State and Territory governments on the same day as the public hearing for this review. This follows the first-ever universal, legally binding global climate deal, which was signed by 195 countries at the 2015 United Nations Climate Change Conference in Paris. Submissions argued that these national and international agreements reflect changing social attitudes toward coal mining and the management of its impacts.

1.5 Secretary's Environmental Assessment Report

The Department has prepared a preliminary assessment of the merits of the project, and provided a Secretary's Environmental Assessment Report (SEAR), which has been considered by the Commission as part of the review process. The SEAR considered the merits of the proposal, its strategic and statutory context, public and agency submissions and the Applicant's response to submissions. The report identified air quality, noise, biodiversity, water, final landform and rehabilitation as key issues.

Speakers at the public hearing observed, and the Commission notes, that the SEAR for this project does not present a full assessment on a number of key areas including air quality impacts, biodiversity offsets and the final landform. The Commission acknowledges community dissatisfaction with the absence of complete information and community frustration that conclusions appear to have been drawn by the Department on the basis of partial information. In addition, the Commission observes that the Department has not finalised recommended conditions and refers to the proposed conditions as a "*preliminary suite of conditions*".

While the Department has noted the need for further information and assessment to be obtained, it has nevertheless concluded that the proposal is consistent with the aims, objectives and provisions of all relevant local, regional and State planning instruments.

2. THE COMMISSION'S REVIEW TASK

2.1 Terms of Reference

The Minister's request was made under section 23D of the EP&A Act 1979 and clauses 268R and 268V of the *Environmental Planning and Assessment Regulation 2000*.

The Terms of Reference are as follows:

1. Carry out a review of the Mount Owen Continued Operations Project, by:
 - a) Considering the EIS for the development, the issues raised in submissions, the formal Response to Submissions, and any other information provided on the development during the course of the review or as part of the public hearings;
 - b) Considering the likely economic, environmental and social impacts of the development in the locality, in the region and for the State;
 - c) Assessing the merits of the development as a whole, having regard to all relevant NSW Government policies and guidelines; and
 - d) Providing recommendations on any additional reasonable and feasible measures that could be implemented to avoid, minimise and/or manage the potential impacts of the development;
2. Hold a public hearing during the review as soon as practicable after the Department of Planning and Environment provides its preliminary assessment report to the Commission; and
3. Submit its final report on the review to the Department of Planning and Environment within 12 weeks of receiving the Department's preliminary Assessment Report, unless otherwise agreed with the Secretary of the Department.

2.2 Public Hearing and Submissions

As required by the Minister's Terms of Reference, a public hearing was held on Tuesday 15 December 2015 at the Singleton Diggers Club. A total of 19 verbal and 17 written submissions were made by individuals as well as various local businesses, special interest groups and employees of the mine. A list of speakers at the public hearing is provided in **Appendix B** of this report.

The Commission received a total of 31 written submissions from the community before and after the public hearing. A summary of the project specific issues raised at the public hearing and written submissions is provided in **Appendix C** of this Report.

The main concerns in submissions objecting to the proposal related to biodiversity, rehabilitation, final voids, post-mining land use options and air quality. A number of submissions also raised concern about the lack of information in the SEAR on various issues, particularly in relation to air quality impacts, biodiversity offsets and the final landform. There was some frustration that the Department appears to have drawn conclusions on the project despite having incomplete or partial information on the proposal.

There were also numerous submissions that supported the proposal and emphasised the potential benefits of the project, particularly in relation to employment opportunities and economic benefits to the region.

2.3 Meetings and Site Inspection

Table 1 (below) provides a summary of the meetings held during this review.

Table 1: *Summary of meetings*

Date	Attendees	Matters Discussed
8 December 2015	Commission and Department	<ul style="list-style-type: none"> • General briefing; • Description of the project; • Air quality and noise; • Biodiversity with particular focus on rehabilitation, regeneration and offsets; and • Final landforms and voids.
15 December 2015	Commission and Singleton Council	<ul style="list-style-type: none"> • Air quality and noise impacts; • Acquisition and mitigation rights of affected land owners; • Final landforms and voids; and • Role of the Upper Hunter Mining Dialogue, and community interest in post-mining land use options.
15 December 2015	Public hearing: Commission and registered speakers	<ul style="list-style-type: none"> • Key concerns raised by registered speakers included biodiversity, rehabilitation, final voids, post-mining land use options, air quality and health. • Supporters of the project noted employment opportunities and economic benefits for the region in particular.
16 December 2015	Commission, OEH, Department and Applicant (including a site inspection)	<ul style="list-style-type: none"> • Description of the project; • Previous offsets and regeneration works; • Community and Aboriginal consultation; • Noise and air quality; and • Final land form and rehabilitation.
16 December 2015	Commission, Department and OEH	<ul style="list-style-type: none"> • Applicability of different offsets policies; • Adequacy of survey effort; • Role of regeneration in offset package; and • Rehabilitation.
5 January 2016	Commission and Upper Hunter Mining Dialogue	<ul style="list-style-type: none"> • Brief history of the Upper Hunter Mining Dialogue; • Final voids and land uses adjacent to final voids; • Rehabilitation; and • Future land tenure, and increased community interest in post-mining land use options.
5 January 2016	Commission and Department	<ul style="list-style-type: none"> • Minister's announcement on reduced PM_{2.5} and PM₁₀ criteria; • Process for Aboriginal consultation; • Air Quality peer review; • Biodiversity impacts and proposed offsets; • Cost-benefit analysis; and • Water discharge impacts.

A summary of the matters discussed at each of the Commission's meetings is provided in **Appendix C** of this report.

Both Singleton Council and the Upper Hunter Mining Dialogue commented that they are observing greater interest in post-mining land use options from the community.

2.4 Documents and Correspondence

Table 2 provides an outline of the key reports that relate to the assessment of the Project.

Table 2: *Summary of Documents and Correspondence*

Date	Title and Comment	Prepared by
January 2015	Environmental Impact Statement (EIS)	Applicant
March 2015	Agency Submissions	Agencies
March 2015	Public and Interest Groups Submissions	Public and Interest Groups
June 2015	Applicant's Response to Submissions (RTS)	Applicant
September 2015	Agencies Comments on RTS	Agencies
September 2015	Economic Peer Review of the Cost-Benefit Analysis (CBA) and Economic Impact Assessment (EIA)	Centre for International Economics (CIE)
October 2015	Applicant's Updated Response to Agencies Comments on Response to Submissions	Applicant
October 2015	Applicant's Response to Peer Review of CBA and EIA	Deloitte Access Economics
November 2015	Applicant's Response to Queries Raised by Agencies in Response to Submissions	Applicant
November 2015	Air Quality Peer Review	Todoroski Air Sciences
November 2015	Secretary's Environmental Assessment Report (SEAR)	Department
December 2015	Applicant's Response to Air Quality Peer Review	Pacific Environment
December 2015 and January 2016	Public Submissions	Public and Interest Groups
January 2016	Briefing Note on Upper Hunter Mining Dialogue	Upper Hunter Mining Dialogue
January 2016	Applicant's Response to Submissions Made to the Commission at the Public Hearing	Applicant
January 2016	Additional information from the Department	Department
January 2016	Additional information on Aboriginal cultural heritage	OEH

3. COMMENTS AND FINDINGS

The Commission has considered a range of issues as part of the review process.

3.1 Biodiversity

3.1.1 Introduction

The EIS includes an Ecological Assessment prepared by Umwelt Pty Ltd based on targeted flora and fauna surveys undertaken between 2011 and 2014.

Concerns were raised at the public hearing and in written submissions about impacts on flora and fauna species, the appropriateness of the survey effort, the applicability of relevant offset policies, the adequacy of proposed offsets, and the potential re-establishment of a Flora and Fauna Interagency Advisory Group.

The Commission notes that the Commonwealth Department of the Environment (DotE) accredited the State's environmental assessment process, which means that any potential impacts on species listed under the EPBC Act should be assessed by the State.

3.1.2 Existing Environment

The existing biophysical environment within the project area and immediate surrounds has been largely disturbed by previous agricultural, forestry and mining uses. Those areas that have been less disturbed generally feature native grasslands on the flatter parts of the landscape, and woodlands along the creek lines and steeper slopes.

The mine's existing approval from 1994 includes seven offset areas with a total of 419 hectares (**Figure 3**), which are located mainly to the north and east of the site, plus a small offset in the centre of the site (the Southern Remnant Offset Area). Some of these offset areas have been disturbed by historical agricultural and forestry uses, and require regeneration in order to meet the purposes of offsetting.

The Mt Owen Complex abuts the Ravensworth State Forest, which is one of the largest areas of remnant woodland on the central Hunter Valley floor. The Forest is home to a number of threatened species, including the Green and Golden Bell Frog, Squirrel Glider, Spotted Tailed Quoll, and several bat and woodland bird species. The Ravensworth State Forest has been supplemented by the 'New Forest Area' consisting of regenerated land to the north of the site.

3.1.3 Total Disturbance

The Ecological Assessment in the EIS predicts that the project would result in disturbance of approximately 520 hectares of vegetation, of which 387 hectares of land is listed as endangered ecological communities (EECs) under the NSW *Threatened Species Conservation Act 1995* (the TSC Act) or the Commonwealth EPBC Act.

The 387 hectares of EEC are comprised of approximately 164 EEC woodlands, including 160 hectares of the *Central Hunter Ironbark – Spotted Gum – Grey Box Forest* (Central Hunter Ironbark) EEC and 4 hectares of other woodland EECs, and a further 223 hectares of native grasslands associated with the Central Hunter Ironbark EEC.

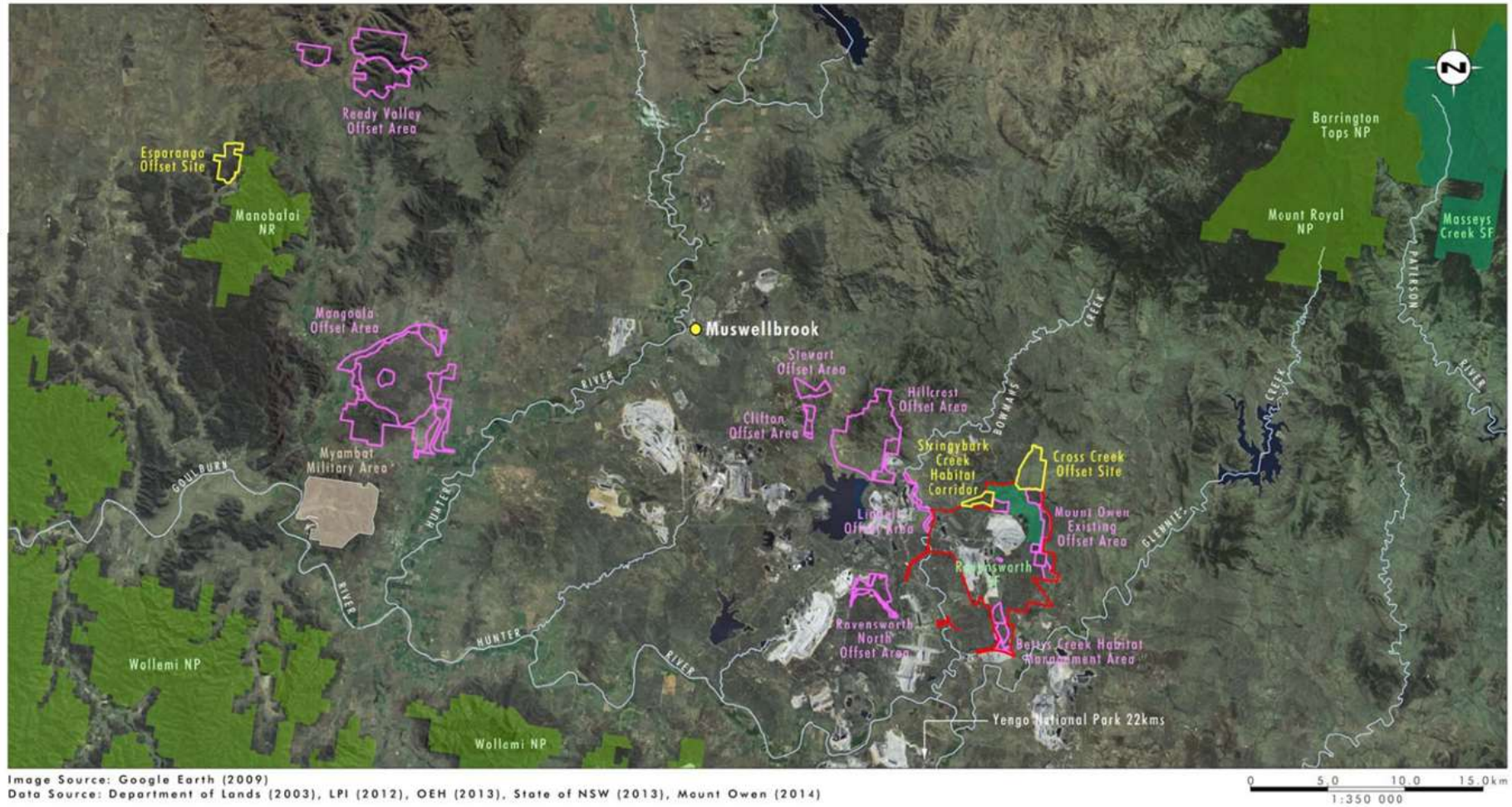


FIGURE 2.1
 Glencore Biodiversity Offset Areas
 Regional Setting

Figure 3: Existing and Proposed Offsets
 Source: EIS, Umwelt

3.1.4 Offsets

Concerns were raised at the public hearing and in written submissions regarding the quantum of disturbance of EECs. The Commission notes that a total disturbance of 387 hectares of EECs constitutes a significant impact on biodiversity and agrees that the most effective way to minimise impacts to biodiversity is to avoid direct clearing or disturbance of native vegetation insofar as possible. Where avoidance is not feasible however, the provision of offsets is a key means of mitigating impact.

Applicable policy

The Commission notes that concern was raised in submissions and at the public hearing regarding whether the new *NSW Biodiversity Offsets Policy for Major Projects* (the 2014 Policy) or the previous *Interim Policy on Assessing and Offsetting Biodiversity Impacts* (the Interim Policy) applies to this project.

In a meeting with the Commission on 16 December 2015, OEH confirmed that it is acceptable to use the Interim Policy because it was the relevant policy in place at the time the then Director-General's Requirements (DGRs) were issued.

The Commission has also sought internal legal advice that confirms that the Interim Policy may be used for this project.

Proposed offsets and ratio

The project includes three proposed land-based offsets, including 465 hectares of nearby land and 303 hectares of land in a western area of the Hunter Valley. The Cross Creek Offset site (367 hectares) and the Stringybark Creek Habitat Corridor (97.5 hectares) are located adjacent to the project area (**Figure 3**). These areas would require a significant amount of regeneration.

The Esparanga Offset site (303 hectares) is located approximately 60 kilometres to the northwest of the site, which means it is located within a different biophysical region. However, this site is located next to Manobalai Nature Reserve and two other offset areas. The Applicant argues that this would assist in establishing a strategic vegetation corridor between the elevated ranges to the west of the Hunter Valley.

The Commission notes that there are only 120.3 hectares of proposed upfront offsets for the 163.1 hectares of disturbed area of EEC woodland, which equates to an offset ratio of only 0.7 to 1. In addition, the like-for-like offset ratio for the key impacted Central Hunter Ironbark EEC is only 0.3 to 1. The relevant 2:1 offset ratio required in the Interim Policy is met by the addition of 465.5 hectares of regenerated offsets, which would increase the overall offset ratio to 3.6:1, though it is not like-for-like and requires that regeneration efforts will need to be successful over the long-term.

Further information and consultation

The Commission considers that the uncertainties regarding the adequacy of the proposed offsets require further attention. The Commission believes that the Department needs to seek further information in relation to the following matters in particular prior to determination.

Firstly, the Commission is aware that the Applicant has committed to investigating opportunities to link the Swamp Creek Corridor Offset and offsets at the Liddell Coal Mine. The Commission considers this potential east-west corridor to the north of the site would be an important contribution towards the protection of fauna habitat and movements. The Commission strongly encourages the provision of this linking corridor and recommends that the Department seek further information about the potential for this to be achieved.

Secondly, the Commission notes that DotE had previously stated that the offsets do not meet its requirements, particularly in relation to whether the offsets provide a suitable range and diversity of foraging resources. The Applicant has since provided further information to DotE on this matter, however the Commission considers the matter remains unresolved at this point. The Commission recommends that the Department seek further comments from the DotE about whether the proposed offsets meet its requirements, particularly in relation to the suitability of foraging resources.

Thirdly, the Commission notes that concerns have been raised in public submissions about the width and resilience of the corridors that would be affected by the proposed expansion of the North Pit. In its meeting with OEH on 16 December 2015, OEH indicated that the appropriate width is largely dependent on the particular species that is being supported, and that insufficient information had been provided for the adequacy of the corridor widths to be assessed in this regard. The Commission would also like more clarity around the nature of the north-south corridor available through the period of operation of the mine, to be confident that the effectiveness of the corridor link is maintained throughout the period of disturbance. The Commission recommends that the Department seek further information about this, particularly in relation to the habitat, movements and corridor requirements of individual threatened fauna species.

3.1.5 Flora Impacts

The Commission notes that six threatened flora species under the TSC Act or EPBC Act may occur within the project area, including three that are listed as 'vulnerable' and three that are listed as 'endangered'.

The Department has recommended preliminary conditions relating to the Biodiversity Management Plan that would require pre-clearance surveys and other management measures to deal with these threatened flora species, including salvaging, transplanting or propagating the species. The Department has specifically referred to orchid species in the recommended preliminary conditions, which covers two of the six threatened flora species that may occur in the project area. However, the Commission considers that salvaging, transplanting or propagating measures should explicitly apply to all six threatened flora species known to occur in the region.

There are also three groundwater dependent ecosystems (GDEs) located within the project area. The Commission is generally satisfied that the GDEs are unlikely to experience any observable impacts as they occur in the riparian corridors of the creeks that are largely ephemeral and already subject to natural variations in flow. The Commission also notes that in the SEAR, the Department has recommended that the Applicant be required to monitor and manage potential impacts on GDEs and include specific trigger levels for remedial action. While the Department has recommended preliminary conditions requiring the monitoring of GDEs as part of the Water Management Plan, there are no requirements relating to GDEs in the recommended Biodiversity Management Plan preliminary conditions.

3.1.6 Fauna Impacts

Concerns were raised in submissions from both the public and agencies about the potential impacts on threatened fauna species, particularly in relation to certain mammals and birds, including the Koala, Spotted-tailed Quoll, Green and Golden Bell Frog, Squirrel Glider, Swift Parrot and Regent Honeyeater. The key concerns relate to the potential loss of habitat or hunting and foraging areas, particularly including dead trees, fallen timber, rocky outcrops, feed trees and hollow-bearing trees.

The Commission notes that while some of the public submissions raised concern about the appropriateness of the survey effort, this was not raised in the relevant agency submissions from OEH and DotE. In a meeting with OEH on 16 December 2015, the Commission discussed the survey effort undertaken by the Applicant and OEH indicated that it is satisfied that it complies with the relevant 2004 guidelines. The Applicant has also provided a detailed response to these concerns in its *Response to Submissions Made to the Commission at the Public Hearing*.

The Ecological Assessment found that there are 29 threatened fauna species that have been recorded or have the potential to occur within the project area, including 5 mammals, 1 amphibian and a variety of bird and bat species. The Commission notes that while no Swift Parrots or Regent Honeyeaters were recorded within the project area as part of the EIS surveys, the Ecological Assessment has assumed that they occur, in line with the precautionary principle.

While the Commission is satisfied that there are unlikely to be any impacts on areas of core or potential Koala habitat, it is concerned that the removal of mature hollow-bearing trees and foraging resources may have adverse impacts on other fauna species, including the Spotted-tailed Quoll and Squirrel Glider. The Commission also notes that the loss of nesting sites may have adverse impacts on the Regent Honeyeater, and the loss of tree hollows and particular foraging resources may adversely affect the Swift Parrot.

In that regard, the Commission supports the recommended preliminary conditions requiring the biodiversity offset strategy and rehabilitation strategy to focus on the regeneration, enhancement and re-establishment of habitat for all significant threatened fauna species early in the project lifecycle. The Commission also supports the listing of specific threatened species in the recommended preliminary conditions and believes that this is an important step to ensure that the key species of concern are appropriately managed.

However, the Commission has some concerns about the enforceability of the recommended preliminary conditions, as they are generally broad in nature and the various measures described in the preliminary Biodiversity Management Plan conditions are not necessarily linked to the relevant species. Consequently, the Commission recommends that these preliminary conditions should be strengthened with more specific measures, timing requirements, and milestones that relate to individual species.

For example, the Commission notes that the Department has included some detailed requirements in the recommended preliminary conditions for the Biodiversity Management Plan, such as the introduction of naturally scarce fauna habitat features (*"i.e. den structures and nest boxes, where necessary"*). The Commission recommends that the Department consider linking these preliminary conditions to specific species and including an explicit performance measure to ensure their effectiveness.

The Commission also recommends that the Department consider the relocation and re-use of hollow-bearing trees, particularly in relation to providing habitat for the Squirrel Glider, Swift Parrot and Regent Honeyeater.

3.1.7 Regeneration

While the Commission acknowledges the difficulty in finding like-for-like options within the Hunter Valley, it agrees with the concerns raised by OEH and various public submissions about the proposed heavy reliance on the regeneration of EECs from equivalent derived grassland communities for offsetting purposes.

The Commission acknowledges that areas of regeneration may be considered areas of 'environmental gain' (as opposed to areas that require rehabilitation to repair damage from mining operations). However, overall the Commission believes, on the basis of current evidence and recent research, that there is considerable uncertainty about the ability to effectively regenerate offset areas, and rehabilitate other previously mined areas (Lamb et al, 2015). On its site inspection with the Applicant and OEH officers, for example, OEH emphasised, and the Commission observed, that while canopy and shrub species have been successfully re-introduced, a diversity of ground cover species is noticeably lacking.

In order to address the uncertainties around effective regeneration, the Department has recommended a preliminary condition requiring the development of a strategy for the regeneration of woodland areas within the offset areas as part of its biodiversity offsets management plan. The Commission notes that this is a unique condition and believes it is an important step towards ensuring effective regeneration. However, the Commission recommends that the Department consider including further details about the specific methods of regeneration, as well as relevant performance measures to assist in monitoring the effectiveness of regeneration.

For example, the Department has recommended preliminary conditions requiring the promotion of a range of canopy, sub-canopy, understorey and ground strata, and the direct seeding or planting of underrepresented vegetation species. The Commission believes these preliminary conditions could be strengthened and recommends that the Department should consider including further detail about the particular species that should be promoted, including species from different 'functional groups' such as cycads, ferns, geophytes, rushes and sedges.

3.1.8 Corridors

The Commission understands that the project aims to provide direct connections between remnant vegetation and both regenerated and rehabilitated areas in the long term. However, the Commission is concerned that the time lag for the regeneration of offsets may not provide adequate habitat protection for threatened fauna species in the short term. The Commission recommends that this matter be further investigated.

The Department has recommended preliminary conditions of consent that aim to actively manage regeneration to ensure that suitably complex habitat is established in a timely manner. In particular, the recommended preliminary conditions include requirements for periodic targets for the recovery of grassland areas to woodland communities. The Commission recommends that these preliminary conditions are strengthened by linking them to the preliminary condition relating to independent environmental audits, which would be required within a year of the commencement of development, and every 3 years thereafter.

3.1.9 Co-ordinated approach across mines

The Commission notes that the Applicant owns a total of 10 coal mining operations in the Hunter Valley, including a number of operations that are located adjacent to each other in the greater Ravensworth area. This presents a unique opportunity to take a more coordinated, regional approach to offsets across the various mines, and in relation to existing State Forest and remnant native vegetation.

The Commission recommends that the Department consider requiring further research, particularly in relation to regeneration activities proposed in this project, corridor linkages within the project area, and corridor linkages between this project and other nearby mines, in order to more fully exploit the opportunities for a more coordinated approach to regeneration across Glencore's various mine sites.

3.1.10 Interagency Advisory Group

The Commission understands that a Flora and Fauna Interagency Advisory Group was established in 1994 to guide the rehabilitation of the mine at that time. The Commission also notes that the Hunter Environment Lobby was previously an observer and later a member of the group.

The Commission acknowledges the important role that this group served in the early years of developing a rehabilitation strategy. However, the Commission also recognises that the mining approvals framework has improved significantly since 1994 and now involves a higher level of ongoing consultation with relevant agencies. This is reflected in the recommended preliminary conditions of consent, which outline the roles of relevant agencies, particularly the Department, EPA, OEH, DPI Water and DRE.

The Commission notes the concerns raised by interested parties, including the Hunter Environment Lobby, that they no longer have the same opportunity to discuss flora and fauna issues with the Applicant or the relevant agencies. The Commission believes the Community Consultative Committee (CCC) is the appropriate forum to raise these concerns and notes that the CCC should consider all relevant issues of concern about the mine in the community.

Consequently, the Commission recommends that the Department should review the current membership and operation of the CCC to ensure that it conforms with the *Guidelines for Establishing and Operating Community Consultative Committees For Mining Projects* (2007) (as updated), and that all relevant interests are represented, including those related to biodiversity, regeneration and rehabilitation.

3.1.11 Recommendations

1. That, prior to determination, the Department should progress discussions with, and seek additional information from, the Applicant about establishing supplementary offsets, including an east-west vegetation corridor linking the Swamp Creek Corridor Offset and offsets at the Liddell Coal Mine.
2. That, prior to determination, the Department should seek further comments from:
 - DotE about whether the proposed offsets meet its requirements, particularly in relation to the suitability of foraging resources; and
 - OEH about whether the proposed expansion of the North Pit would materially affect the proposed vegetation corridors, particularly in relation to the movement and habitat of individual fauna species.
3. That the Department considers requiring further research in the recommended preliminary conditions of consent, particularly in relation to regeneration activities in this project, corridor linkages within the project area, and corridor linkages between this project and other nearby mines.
4. That the recommended preliminary condition of consent relating to the Independent Environmental Audit should be linked to the preliminary Biodiversity Management Plan condition to ensure that regeneration is independently monitored and audited on a regular basis (i.e. within a year of the commencement of development, and every 3 years thereafter).

5. That the recommended preliminary condition of consent relating to the Biodiversity Management Plan should be strengthened to include:
 - salvaging, transplanting or propagating measures for all six threatened flora species known to occur in the region;
 - monitoring of potential impacts on groundwater dependent ecosystems and specific trigger levels for remedial action;
 - more specific performance measures and milestones linked to key individual fauna species (for example the relocation and re-use of hollow-bearing trees for the Squirrel Glider, Swift Parrot and Regent Honeyeater);
 - further details about the specific methods of regeneration, as well as relevant performance measures to assist in monitoring the effectiveness of regeneration; and
 - further detail about the particular vegetation species that should be promoted, including species from different 'functional groups', such as cycads, ferns, geophytes, rushes and sedges.
6. That the Department should review the current membership and operation of the CCC to ensure that it conforms with the *Guidelines for Establishing and Operating Community Consultative Committees For Mining Projects* (2007) (as updated), and that all relevant interests are represented, including those related to biodiversity, regeneration and rehabilitation.

3.1 Air Quality

3.2.1 Introduction

The EIS includes an Air Quality Impact Assessment (AQIA) undertaken by Pacific Environment Limited. The Department subsequently engaged Todoroski Air Sciences to undertake a peer review of the Air Quality Impact Assessment, which the Department considered in its SEAR. However, subsequent to the Department submitting its SEAR, the Applicant engaged Pacific Environment Limited to prepare a response to the peer review, which was provided to the Commission on 15 December 2015.

Concerns about potential air quality impacts were frequently raised in verbal and written submissions from the community, including the predicted impacts at specific receivers, potential health impacts, and cumulative impacts in the Hunter Valley. The latest submissions from EPA and NSW Health express concerns about diesel particulate and blast fume emissions, and the methodology for assessing cumulative impacts. Concerns were also raised that the Department's SEAR did not contain all the relevant information or a final position on the air quality impacts of this project.

The Commission notes that a cross-governmental agreement on reducing Australia's air pollution (the *National Clean Air Agreement*) was reached between the State and Territory governments on the same day as the public hearing for this review. This Agreement includes a work program that identifies proposed amendments to the *National Environment Protection Measures* (NEPM) in relation to air quality standards. While the various jurisdictions have agreed to various amendments, the Commission has been informed that the NEPM has not yet been updated, and the relevant criteria under the NSW VLAMP continue to apply to all current development assessments.

3.2.2 Peer Review

The peer review raised a range of concerns about the data and methodology used, and the assessment undertaken, in the AQIA. The key concerns raised include:

- the meteorological conditions used in the model;

- the application of calibration factors from other mines; and
- and non-conformance with EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (the Approved Methods).

The peer review concluded that there was a lack of certainty around the air quality predictions at specific receiver locations, particularly in the Middle Falbrook area. As a result of these uncertainties, the Department was unable to complete an assessment of mitigation or acquisition rights for specific landowners under the NSW *Voluntary Land Acquisition and Mitigation Policy* (VLAMP) or provide recommended conditions in that regard.

The Commission notes that the Applicant's response to the peer review has provided a range of additional information to address the concerns raised, including:

- further consideration of meteorological data;
- clarification on the calculation of background levels and model calibration with reference to various other mines in the region; and
- cumulative PM₁₀ concentrations in accordance with the EPA's Approved Methods.

The Commission understands that the Department has now engaged Todoroski Air Sciences to prepare an updated peer review. Following the preparation of this updated peer review, the Commission recommends that the Department forward a copy to EPA and NSW Health and seek further comments in relation to the residual issues raised in their previous submissions.

The Commission also recommends that the Department ensures that the key residual issues are resolved prior to determination, particularly in relation to the meteorological data used, the methodology for calculating background levels and calibrating with other mines, and the assessment of cumulative impacts.

In order to ensure that the community has all relevant information available to it, the Commission also recommends that the Department make the Applicant's response to the Department's peer review, and any other additional information, available online as soon as practicable.

3.2.3 Air Quality Impacts

The Commission has considered all the information available to it about the air quality impacts of the project, including the AQIA, RTS, public and agency submissions, the Applicant's response to submissions to the Commission, the peer review and the Applicant's response to the peer review.

The Commission acknowledges that the proposed extraction rate and method of extraction would remain largely the same as the existing mine operations, as a result of which the project would be expected to produce similar air quality impacts to the existing operations. This conclusion is supported by the peer review, notwithstanding the other concerns raised in the peer review. However, while the AQIA predicts that the project would mostly comply with the relevant air quality criteria, it also predicts that the project is likely to result in exceedances of the relevant PM₁₀ criteria at several private properties in Middle Falbrook.

The Commission does not consider that it is in a position to undertake a proper assessment of the potential air quality impacts of the project at this stage due to the uncertainties arising from the concerns raised in the peer review and agency submissions.

3.2.4 Mitigation and Management

The Commission notes that the Applicant has provided responses to three specific submissions made to the Commission about potential acquisition rights for particular residences. The Applicant has indicated that one of the residences (116) would experience exceedances of the relevant air quality criteria and be eligible for voluntary land acquisition, while four others (7A, 7B, 7C and 93) would only be eligible for inspections and cleaning of rainwater tanks.

However, given that issues related to air quality impacts have not yet been resolved, the Commission is not currently in a position to properly determine whether these predictions, and associated rights to mitigation or acquisition, are accurate.

3.2.5 Recommendations

7. That the Department should forward a copy of the updated peer review of the AQIA to EPA and NSW Health and seek further comments in relation to the residual issues raised in their previous submissions.
8. That the Department ensures that the key residual issues regarding air quality and the AQIA are resolved prior to determination, particularly in relation to the meteorological data used, the methodology for calculating background levels and calibrating with other mines, and the assessment of cumulative impacts.
9. That the Department make the Applicant's response to the peer review of the AQIA, as well as any updated peer review, and any other additional information, available online as soon as practicable.

3.2 Final Landform and Rehabilitation

3.3.1 Introduction

Concerns were raised in submissions from the public and various agencies (including the Department of Primary Industries – Water (DPI Water), OEH and DotE) about the conceptual nature of the final landform and the absence of a detailed rehabilitation mine plan.

3.3.2 Mine plan and final landform

The Commission understands that only a conceptual mine plan has been provided for this project, which creates a number of uncertainties in terms of the final landform and the effectiveness of rehabilitation (**Figure 4**). The Commission notes that the Department intends to seek further information about the mine plan and final landform prior to determination.

The Commission agrees with the Department that the mine plan needs to be more clearly articulated, that matters such as micro-relief should be addressed, and more detail provided regarding the final void shapes, including measures to ensure that they are more sympathetic to the surrounding landscape.

The Commission also notes that the mine appears to currently have approval for only two final voids, however the conceptual mine plan includes a total of four final voids. The Commission recommends that the Department clarifies the number of currently approved final voids and provides justification for any additional proposed final voids.

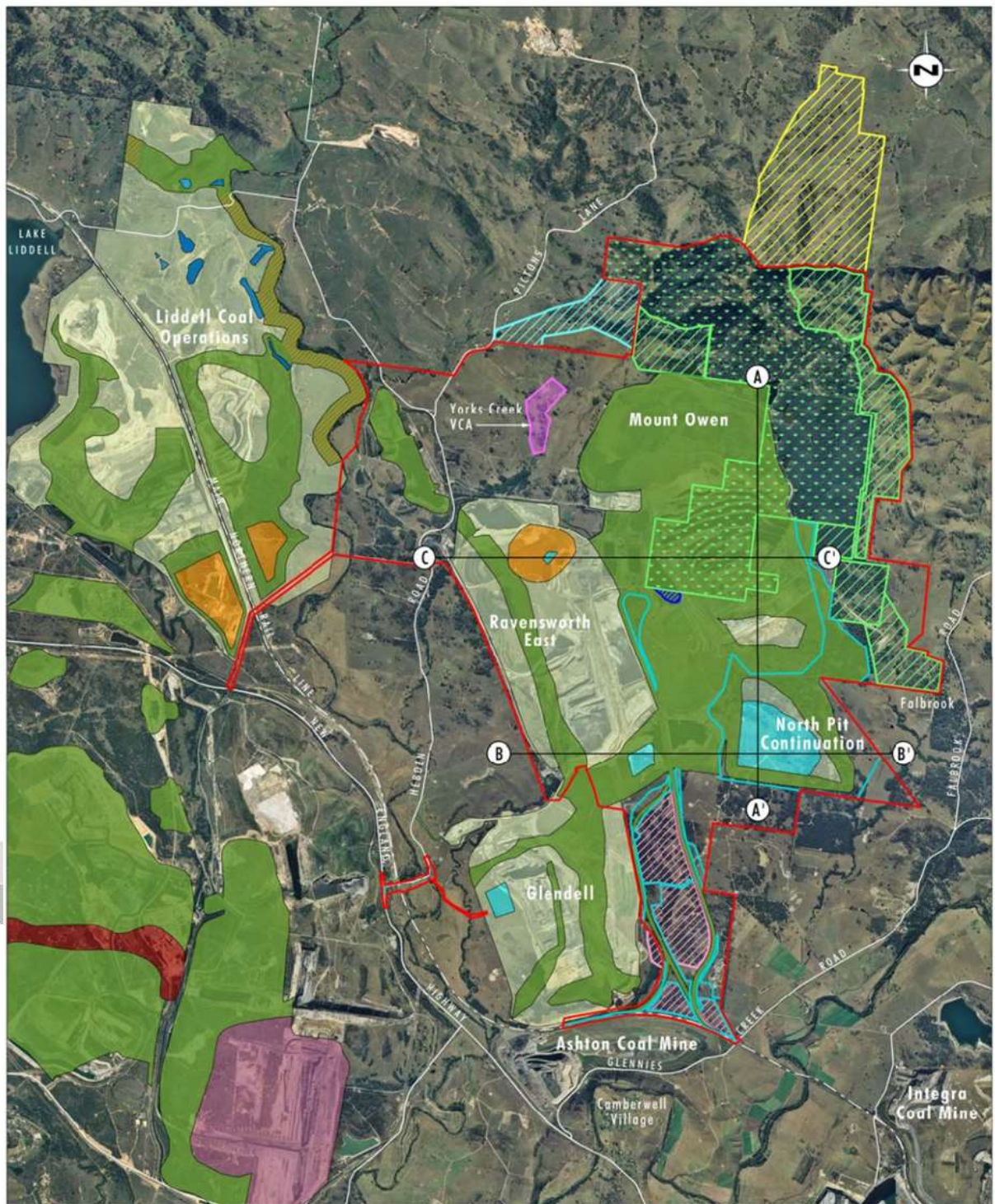


Image Source: Mount Owen (2012-2013)
 Data Source: Mount Owen (2014)
 Note: Refer to Figure 5.19.2 for A-A', B-B' and C-C' cross sections

0 1.0 2.0 4.0 km
 1:75 000

Legend

- | | | |
|--|---|--------------------|
| Project Area | Ravensworth State Forest | Grazing |
| Proposed Disturbance Area | Proposed Corridor Habitat Enhancement on Non-Mined land (Liddell Coal Operations) | Riparian / Wetland |
| Yorks Creek VCA | Existing Biodiversity Offset Area | Water Storage |
| Final Void Water Level | Proposed Cross Creek Biodiversity Offset Area | Section Line |
| Native Woodland | Bettys Creek Habitat Management Area | |
| Open Grassland (Potential grazing areas) with pockets of Native Vegetation | Southern Remnant Biodiversity Offset Area | |
| Grassland for Stabilisation | Stringybark Creek Habitat Corridor | |

Figure 4: Proposed Final Landform
 Source: EIS, Umwelt

FIGURE 5.54
Mount Owen Continued Operations Project Proposed Post Mining Land Use

The Applicant has argued against a reduction in final voids or the backfilling of voids on the basis that it would result in additional capital costs and increased air quality and noise impacts. However, the Commission notes that extremely large volumes of overburden material would be moved over the life of the project, and believes that more detailed, early consideration of the potential minimisation of final voids should be provided. The Commission is also aware that the NSW government is currently preparing a policy on final voids, which should be included as a matter for consideration in any recommended conditions.

The Commission notes that a considerable amount of industry research has been undertaken into mine closure planning and rehabilitation over the past decade. One of the key themes to emerge from this research emphasises the importance of early consideration and planning of rehabilitation and final landforms. Viewing mining as a temporary land use, and undertaking early planning for post-mining land uses has been shown to lead to the highest levels of long-term success (Lamb et al, 2015; Goodbody, 2013; and Gardner & Bell, 2007).

3.3.3 Alternative post-mining land use options

The Commission notes that both Singleton Council and the Upper Hunter Mining Dialogue commented that they are observing a greater focus on post-mining land use options from the community, and that some have expressed a preference for the inclusion of agricultural and grazing land in the final landform, rather than only woodland and forest areas.

The Commission believes that mine closure and rehabilitation should not only relate to biophysical rehabilitation, but should also ensure consideration of socio-economic factors, particularly given the interest in alternative post-mining land use options. The Commission supports the Department's suggestion in the SEAR that the Applicant consider increasing woodland rehabilitation on steeper slopes and focusing on agricultural species on the flatter areas of land to support grazing activities.

3.3.4 Rehabilitation

The Commission notes that the broad rehabilitation plan for this project involves previously mined areas being initially established as grassland communities and then progressively transitioned to woodland communities. The mine plan conceptually involves woodland communities across about 90% of the Mount Owen site and 30% of the Ravensworth East site.

The Commission acknowledges that effective mine rehabilitation is difficult to achieve and mine closure planning is still considered a relatively new science. While restoration of agricultural land has been successfully achieved, ecosystem restoration is certainly more difficult to achieve. Some of the key elements for success include a focus on progressive rehabilitation, the implementation of completion criteria and the establishment performance standards to measure success (Lamb et al, 2015).

The Department has recommended a set of stringent preliminary conditions that are largely based on these key elements, including requirements for both a rehabilitation strategy and a rehabilitation management plan, as well as a specific condition relating to progressive rehabilitation. However, the Commission recommends that these preliminary conditions are strengthened, for example by linking them to the condition relating to independent environmental audits (as described in **section 3.1.5** above in relation to regeneration).

The Commission notes that recent reports by the NSW and Queensland Auditors-General have identified the risks for taxpayers and communities arising from the failure of mining companies to successfully stabilize and rehabilitate former mining sites (Audit Office of NSW, 2012; and Queensland Audit Office, 2014). The Audit Office of NSW pointed to *“many thousands of hectares of degraded and contaminated land where mining companies abandoned mines without cleaning up or stabilising the sites.”* The Queensland Auditor-General noted that environmental rehabilitation at the expense of those in the mining industry whose activities cause the damage remains an *“unrealistic aspiration”*.

The Commission is concerned that some 100 hectares of previous rehabilitation are now proposed to be mined again. The Commission points to the increased uncertainty this causes regarding the long-term status of both existing and proposed rehabilitated areas. Indeed, submissions by the community suggest that the proposed ‘re-mining’ of rehabilitated land has reinforced the general lack of confidence and scepticism regarding the likely success of rehabilitation.

The Commission recommends that the Department investigate options to ensure that proposed rehabilitated areas are not disturbed in the future.

3.3.5 Recommendations

10. That, prior to determination, the Department clarifies the number of currently approved final voids and seeks further justification from the Applicant for any additional proposed final voids.
11. That, prior to determination, the Department seeks further information about alternative post-mining land use options, including the possibility of increasing woodland rehabilitation on slopes and focusing on agricultural species on the flatter areas of land to support grazing activities.
12. That, prior to determination, the Applicant provides a revised mine plan that:
 - includes more detailed consideration of the potential minimisation of final voids, with particular reference to the large volumes of overburden material that would be moved over the life of the project;
 - provides more detail about the final void shapes and how these are to be achieved;
 - incorporates micro-relief, with a focus on ensuring that the final landform will be more sympathetic to the surrounding landscape; and
 - includes a more refined composition of proposed vegetation within the rehabilitated areas in order to ensure a diversity of species and appropriate fauna habitat.
13. That the recommended preliminary conditions relating to the Rehabilitation Management Plan and/or Revision of Strategies, Plans and Programs are strengthened to take into account the outcomes of any review of the NSW Government’s current policy on final voids.
14. That the recommended preliminary condition of consent relating to the Independent Environmental Audit should be linked to the preliminary Rehabilitation Management Plan condition to ensure that rehabilitation is independently monitored and audited on a regular basis.
15. That the Department reviews intentions to mine existing rehabilitated land and considers options to ensure that proposed rehabilitated areas are not disturbed in the future, through conditions of consent or any other means.

3.3 Water

3.4.1 Introduction

The EIS includes a Surface Water Assessment undertaken by Umwelt and a Groundwater Impact Assessment undertaken by Jacobs (and peer reviewed by Noel Merrick). The Independent Expert Scientific Committee (IESC) was generally satisfied with the groundwater model used in the Groundwater Impact Assessment.

Some concerns were raised by the community and agencies about water impacts, particularly in relation to localised impacts on Glennies Creek and its tributaries. In particular, DPI Water requested that a range of additional information be provided about surplus water discharge, and EPA also initially raised some concerns about this.

There are two key water catchments located within the project area; the Bowmans Creek and Glennies Creek catchments, which drain in a southward direction to the Hunter River. Glennies Creek is a highly modified watercourse, and the tributaries of both Bowmans and Glennies Creeks are ephemeral streams. Two primary types of groundwater aquifers are present: the unconfined alluvial aquifers of Bowmans and Glennies Creeks (considered highly productive under the Aquifer Interference Policy (AIP)) and the hard rock aquifers associated with the Permian Coal measures (considered less productive under the AIP).

The Commission notes that there is an existing water management system at the mine complex that forms part of the Greater Ravensworth Water Sharing Scheme (GRWSS), which covers several other mines including the Ravensworth Underground Mine, Liddell Coal Mine, Ravensworth North Mine, the former Narama Coal Mine and the former Cumnock Coal Mine.

3.4.2 Groundwater

The Groundwater Impact Assessment predicts that there would be depressurisation in the hard rock aquifer due to the proposed open-cut mining on the site, which may affect groundwater flows in the alluvial aquifers of Bowmans and Glennies Creeks. However, the project would generally adhere to the AIP's 'minimal impact' criteria, except for a small 4.5 hectare area of the Main Creek alluvial aquifer (in the Glennies Creek catchment), which is predicted to result in drawdown greater than the 'minimal impact' criteria of two metres.

DPI Water has assessed these impacts and has not identified any major concerns. The Commission has some concern that the proposal breaches the minimal impact criteria, but notes advice that the drawdowns are unlikely to significantly impact nearby riparian communities or GDEs, and that there are no productive bores in those groundwater systems.

Concerns were raised in written submissions about the potential groundwater interactions between the Integra Underground Mine and the proposed mining operations in this project. The Commission notes that both mining operations were included in the groundwater model and understands it is difficult to distinguish the relative influence and impacts of the two mines. However, the Commission does not consider that this affects the integrity of the total predicted inflows into the proposed pits. Nevertheless, the Commission recommends that the operations of Integra Underground Mine and any associated impacts on groundwater should be considered in the Groundwater Management Plan conditions, should the project be approved.

3.4.3 Water quantity and flows

The Surface Water Assessment predicts that there would be a water deficit in the first years of the proposed mine operations, and a water surplus towards the end of mining after ten years. In particular, there is a predicted loss of flow in the Bowmans Creek catchment over the first five years, particularly in Swamp and Bettys Creek. However, the Commission notes that these predicted reductions are generally within natural variations, and that overall the flow impacts on Bowmans Creek, Glennies Creek and the Hunter River are expected to be negligible.

While the Commission notes that there are two private landowners downstream of the site, it is satisfied that there are unlikely to be any material impacts on flow for these landowners. The Commission also notes that there are standard recommended conditions ensuring compensatory water supply that is equivalent to any loss attributable to the project. The Surface Water Assessment also predicted a minor increase in the areas affected by any flooding impacts, particularly upstream of the Hebden Road Bridge over Bowmans Creek. However, these water levels would not affect any privately owned residences.

3.4.4 Water quality and discharge

The Surface Water Assessment predicted minor overflow of sediment dams in high rainfall events that may result in localised exceedances of total suspended solids, however the Commission is satisfied that these are likely to be sufficiently diluted by increased water flows associated with these events.

The Commission notes that the surplus water in the later years of the project is proposed to be transferred off-site as part of the GRWSS, in accordance with the existing consent conditions, the Environment Protection Licence (EPL) and the rules of the Hunter River Salinity Trading Scheme (HRSTS). However, the Commission is also aware that the Mt Owen mine is not currently permitted to discharge into the environment, due to a variation of its EPL in late 2014. The Commission also notes that there does not appear to be any consideration of the discharge of surplus water in the recommended preliminary conditions.

The EPA raised the discharge and management of this surplus water as a concern in its initial submission and has not provided any further comments in its more recent submission. The Commission recommends that the Department seek further comments from EPA about the discharge of surplus water from this project. The Commission considers that the discharge of any mine water that originates from the project must be considered and assessed as part of this project application, and addressed in the recommended preliminary conditions, where appropriate. The Commission also recommends that the Department include consideration of surplus water discharge in the recommended preliminary conditions relating to the Surface Water Management Plan.

Some concerns were also raised at the public hearing regarding the water quality in final voids. While none of the proposed voids are predicted to reach levels that would result in spills, the RERR Pit void is predicted to increase in salinity in the long term. The Commission notes that the recommended preliminary conditions require the development of criteria and trigger levels for investigating any seepage from final voids, and a program to monitor and report on any such incidents. In addition, the Commission has also recommended that a more detailed consideration of the potential minimisation of final voids should be provided.

3.4.5 Water management and licensing

The mine currently holds 1,056 high security entitlements and 858 general security entitlements under the *Water Sharing Plan for the Hunter Regulated River Water Source 2004* (the Hunter Regulated WSP), which is sufficient to manage the surface water take.

The Applicant also has sufficient groundwater licence entitlements for the predicted peak groundwater take of 6ML from Bettys Creek alluvial aquifer (in the Bowmans Creek catchment) under the *Jerry's Water Source*. While the Applicant did not previously have sufficient groundwater licence entitlements for the predicted peak take of 15ML from the Main Creek alluvial aquifer (in the Glennies Creek catchment) under the Hunter Regulated WSP, the Commission understands that the Applicant has since signed a binding agreement to purchase the Integra Underground Mine and its associated groundwater and surface water licence entitlements.

DPI Water has previously indicated that there is a need for further consideration on the surface water management system, further information about the significant volume of water proposed to be held in dams that would require licensing under Jerry's Water Source, and additional information on the reconstruction and rehabilitation of watercourses in the final landform. The Commission recommends that the Department seek further comments from DPI Water about water licensing and associated issues, as indicated in the SEAR.

3.4.6 Recommendations

16. That, prior to determination, the Department seeks further comments from:

- EPA about the discharge of surplus water from this project; and
- DPI Water about water licensing and associated issues, particularly in relation to the proposed surface water management system, the significant volume of water proposed to be held in dams that would require licensing under Jerry's Water Source, and the reconstruction and rehabilitation of watercourses in the final landform.

17. That the recommended preliminary condition of consent for the Groundwater Management Plan includes consideration of operations at Integra Underground Mine and any associated impacts.

18. That the recommended preliminary condition of consent for the Surface Water Management Plan should include consideration of the discharge of surplus water from this project.

3.5 Aboriginal Cultural Heritage

3.5.1 Introduction

The EIS includes an Aboriginal Cultural Heritage Assessment and an Aboriginal Archaeological Values Assessment, which were informed by consultation with Registered Aboriginal Parties and Knowledge Holders.

The Commission received a submission from Mr Scott Franks on behalf of Tocomwall Pty Ltd, which is an organisation representing the Plains Clan of the Wonnarua People (PCWP). It claims that under the relevant guidelines for consultation on Aboriginal cultural heritage, the right to consultation on Aboriginal heritage in relation to the project is exclusive to registered Native Title claimants.

3.5.2 Consultation process

The Commission forwarded this submission to the Department, which sought clarification from OEH regarding the issues that it raised. OEH responded in a letter dated 18 January 2016, stating that the PCWP claim is currently pending a Federal Court determination about whether native title exists over the claimed area. The OEH letter confirmed that while there is a requirement to consult with a registered native title claimant, a claimant does not have exclusive consultation rights. In addition, OEH also confirmed that it considers the Aboriginal consultation for the project has been undertaken in accordance with the relevant guidelines and conditions.

Based on the Commission OEH's response, the Commission is satisfied the consultation process on Aboriginal cultural heritage was appropriately undertaken for this project.

3.5.3 Aboriginal cultural heritage impacts

The Aboriginal Cultural Heritage Assessment has identified a total of 42 sites located within or near proposed disturbance areas. Of the 42 sites, 34 would be partially impacted, including 3 with a low to moderate significance and 31 with low significance. The EIS includes a variety of proposed mitigation and management strategies, including salvaging of directly impacted sites, constructing a long-term artefact storage facility at the Yorks Creek Voluntary Conservation Area (VCA) and continuing to work with Aboriginal stakeholders to improve the Yorks Creek VCA.

The Department has also recommended preliminary conditions of consent that would support the implementation of these mitigation and management measures through an Aboriginal Cultural Heritage Management Plan. The Commission notes that these recommended preliminary conditions of consent were based on OEH's recommendations, and OEH has stated that it has no residual concerns. Consequently, the Commission is generally satisfied that any potential Aboriginal cultural heritage impacts would be appropriately managed and mitigated.

However, the submission from Tocomwall also suggests that the findings in the recent court case, *Darkinjung LALC v Minister for Planning Infrastructure and Anor (re Calga Sand Mine)*, should be considered when determining the adequacy of the cultural heritage assessment for this project. The Commission understands that the key findings of this court case relate to the thoroughness of Aboriginal cultural heritage consultation and investigation processes in the development assessment process.

While the Commission is generally satisfied that the Aboriginal cultural heritage consultation and investigation processes were comprehensive for this project, the Commission recommends that Department also consider the findings and any potential implications of this court case.

3.5.4 Recommendations

19. That, prior to determination, the Department consider the findings and any potential implications of the recent court case, *LALC v Minister for Planning Infrastructure and Anor (re Calga Sand Mine)* in relation to the adequacy of the cultural heritage assessment for this project.

3.6 Socio-Economic

3.6.1 Introduction

The EIS includes a Cost Benefit Analysis (CBA) and Economic Impact Analysis (EIA) undertaken by Deloitte Access Economics. The Department subsequently commissioned a peer review of the CBA and EIA, which was undertaken by the Centre for International Economics (CIE). The Applicant's consultant, Deloitte Access Economics has provided a response to the peer review.

The Commission notes that various submissions raised concerns about the level of benefits predicted for the project, particularly in relation to employment, and the potential for adverse impacts that had not been considered in the cost benefit analysis. A number of submissions also argued that the costs of the proposal were borne disproportionately by residents of the Hunter Valley. Those concerns were confirmed in the peer review, which indicates that, because of their proximity to the project, residents of Singleton incur all costs excepting carbon pollution costs and rural and amenity costs.

3.6.2 Cost-benefit analysis

The CBA and EIA stated that the total net benefits of the project would be \$758 million, which includes \$258 million in royalties to the state of NSW. However, this includes the Bayswater North Pit, which has already been approved for operation. The Applicant has since provided a revised total net benefit of \$518 million, which excludes the expected benefits (but not the externality costs) arising from the already-approved operations of the Bayswater North Pit.

The CIE peer review concluded that the CBA and EIA were undertaken generally in accordance with the *NSW Government Guidelines for Economic Appraisal* (NSW Treasury, 2007). However, it also indicated that some areas of the CBA required clarification. The peer review noted that *the Guidelines for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals* (NSW Government, 2012) specify that the benefits and costs should be estimated as those that accrue to the residents of NSW. Adherence to this requirement would significantly lower the net benefits, given that the costs of the project occur in NSW and the benefits stream accrues more broadly.

Other submissions also observed that benefits of the project identified in the CBA mostly accrue to the Applicant's foreign shareholders, while the environmental and other costs of the project are borne by the residents of NSW, and the Hunter Valley in particular.

The Commission notes a number of differences in the approach to calculating the net benefits associated with the project adopted in the CBA and by the peer reviewer. The CIE suggested that expected royalty payments might provide a good estimate of the minimum benefits to the State, and on this basis suggests that the public benefit of the project, based on royalty payments, might be closer to \$235.4 million in net present value terms, which is 9 percent lower than the estimate in the CBA. To derive an overall net benefit or cost to the State, direct costs and externalities, such as carbon emissions, air pollution, health impacts and long-term environmental degradation, would need to be deducted from this total.

The peer review raised issues in relation to the calculation of a number of these costs in the CBA and the EIA.

The peer review also observed that the sensitivity analysis was not as transparent as it could have been and that the methodology used to conduct the sensitivity testing and rationale for the sensitivity ranges was not clear in the report. This is an important point, as the economic assessment has indicated that if coal prices were 30 percent lower than assumed in the central case, the project would have a net present value of -\$165 million, before including negative externalities. It would be useful therefore to understand how the various scenarios for coal prices, carbon prices and extraction volumes relate to one another and under what conditions the project would generate a zero net present value.

The Commission understands that the CBA is based on the EIS as it existed when the CBA was undertaken. As noted elsewhere in this report, the Commission has recommended that further advice be sought on a number of matters related to air quality, biodiversity, the proposed offsets package, surface water impacts and final landform. It would be reasonable to expect that the final advice on these matters should also be reflected in the CBA, as suggested in the peer review.

The Department has informed the Commission that it intends to seek further advice from CIE, taking into account additional information on air quality. The Commission agrees with this approach and also recommends that the CIE be provided an opportunity to comment on the Applicant's response to the peer review. In addition, the Commission recommends that, in the interests of greater transparency, additional information should be sought from the Applicant on the methodology

employed to produce estimates of the value of the project under alternative scenarios, including specific information on the sensitivity of individual variations against the base-line assumptions.

The Commission has sought clarification from the Department on a number of points related to the peer review and the CBA. Overall, the Commission is not yet satisfied that the concerns raised in the CIE peer review have been fully addressed. The Commission is therefore not in a position to express a final position about the likely economic benefits of the project until these issues have been resolved.

3.6.3 Voluntary Planning Agreement

The Commission notes that the details of a Voluntary Planning Agreement (VPA) have not yet been proposed to Singleton Council. However, the Commission had a discussion with Council on 15 December 2016 about the status of the VPA negotiations with the Applicant. Council informed the Commission that the negotiations were progressing and that the likely contribution to Council would be based on a percentage of the capital investment value. The Commission also understands that the Applicant has committed to providing a contribution towards upgrades and maintenance for local roads, particularly Forest Road.

Based on its discussion with Singleton Council, the Commission believes that the VPA is likely to provide an adequate contribution to the local government area. Nevertheless, the Commission recommends that the proposed VPA is finalised prior to determination.

3.6.4 Recommendations

20. That, prior to determination, the Department ensures that the cost-benefit analysis for the project has been prepared in accordance with the relevant guidelines, including the *NSW Government Guidelines for Economic Appraisal* (NSW Treasury, 2007) and the *Guidelines for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals* (NSW Government, 2012).
21. That, prior to determination, final advice on the EIS, including on air quality, biodiversity and final landforms should be reflected in the CBA.
22. That, prior to determination, the peer reviewer be given an opportunity to indicate whether the Applicant's response adequately addresses the issues raised in the peer review.
23. That, prior to determination, the Applicant provide additional information on the methodology employed to produce estimates of the value of the project under alternative scenarios, including the sensitivity of individual variations against the base-line assumptions, how the various scenarios for coal prices, carbon prices and extraction volumes relate to one another and under what conditions the project would generate a zero net present value.

3.7 Other Issues

3.7.1 Noise

The EIS included a Noise Impact Assessment undertaken by Umwelt, which was undertaken in accordance with the *NSW Industrial Noise Policy*, the *NSW Road Noise Policy*, the *Interim Construction Noise Guideline* and the *Rail Infrastructure Noise Guideline*.

A number of written submissions raised concerns about the potential increases in noise impacts at local residences, cumulative noise impacts and low frequency noise.

The Commission notes that some residences in Camberwell and Middle Falbrook currently experience mining-related noise from the existing mine and other nearby mines, while the residences in Hebden and Greenlands experience only limited impacts. The existing background noise levels are also significantly influenced by natural topographic features and the New England Highway. Notwithstanding the existing high levels of background noise levels, the Noise Impact Assessment predicts that the project would affect a number of receivers surrounding the mine in terms of operational noise exceedances of the Project Specific Noise Levels (PSNLs).

The VLAMP states if the noise generated by the development is equal or greater than 3dB(A) above the PSNLs, voluntary mitigations rights are applied. Voluntary acquisition rights are applied where noise is greater than 5dB(A) above the PSNLs.

It is predicted that 17 privately-owned residences and 4 vacant lots would experience exceedances, including:

- 11 residences with an exceedance of 0 to 2dB(A) above the PSNLs, which is considered a 'marginal exceedance' that is usually imperceptible and does not result in eligibility for mitigation or acquisition;
- 3 residences (13, 19 and 93) with an exceedance of 3 to 5dB(A) above the PSNLs, which results in eligibility for appropriate noise mitigation measures; and
- 3 residences (21, 22 and 23) with an exceedance of more than 5dB(A) above the PSNLs, which results in eligibility for voluntary acquisition rights.

The Noise Impact Assessment predicts that cumulative noise levels would comply with the relevant criteria. Furthermore, the Commission notes that the Applicant has committed to using a comprehensive network of continuous monitoring stations and supplementary attended monitoring to determine the contribution of the project to cumulative noise levels in the region and to guide the management of noise emission sources on site.

The Commission notes that the project is not predicted to result in excessive low frequency noise impacts and the recommended preliminary conditions require the implementation of all reasonable and feasible mitigation measures to minimise low frequency noise.

3.7.2 Blasting

The Commission notes that various concerns were raised by the community in regard to the impacts of blasting and vibrations on specific properties. The Commission notes that the EIS included a Blasting Impact Assessment (BIA) undertaken to model the potential ground vibration and airblast overpressure impacts of blast events at nearby receivers.

Four private residences are predicted to experience some minor exceedances of the airblast overpressure criteria for human comfort from the proposed mining operations. However, the Commission is satisfied that these impacts would comply with the relevant ANZECC amenity criteria guideline. The Commission also notes that no exceedances of the airblast overpressure or ground vibration human comfort criteria are predicted for any residential receivers as a result of blasting in the BNP or RERR Pit as residential receiver locations are distant from these two mining areas.

3.7.3 Climate change

The Commission notes that the community expressed concerns in relation to climate change and greenhouse gas emissions. The Applicant undertook a Greenhouse Gas and Energy Assessment, which estimated that the project would contribute approximately 491,000 tonnes of Scope 1 and Scope 2 carbon dioxide equivalent emissions each year, representing about 0.09% of Australia's annual average emissions under the Kyoto Protocol.

Carbon pollution costs were included in the CBA, though the Commission notes that the peer reviewer indicated that the range of prices over which the carbon emissions are tested were of concern. The Applicant has since provided additional information to suggest that at a carbon price of 30 euro/t, the expected total net benefits of the project would be some \$121 million lower than estimated in the central CBA.

The Commission notes that the Greenhouse Gas and Energy Assessment indicated that the project would not materially change the mine's annual average greenhouse gas emissions compared to the existing mine operations, however it would increase the total emissions generated over the life of the mine, in line with the 12 year extension in mine life. Nevertheless, the Commission supports the recommended preliminary conditions requiring the Applicant to investigate ways to minimise the release of greenhouse gases.

3.7.4 Land ownership

Concerns were raised in the verbal and written submissions from the public about the long-term ownership of the mine. While there is no guarantee that the Applicant will retain ownership of the mine over the long-term, the Commission notes that the requirements of any development consent run with the land, including any conditions of consent relating to post-mining rehabilitation. In addition, the proposed recommended conditions require that the Applicant lodges a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria in the Biodiversity Management Plan. If the proposed offset strategy is not completed in accordance with this Plan, then the Secretary would use the conservation bond to complete the relevant works.

3.8 Further Public Input

3.8.1 Insufficient or incomplete information

The Commission acknowledges that there is considerable community dissatisfaction about the lack of a full assessment on a number of key areas in the SEAR.

The three key issues that require further information and consultation with relevant agencies are air quality, the proposed offsets package and regeneration measures and the mine plan. The Commission has also found that there are some other residual concerns in relation to surface water impacts and the cost-benefit analysis.

As new information will be required to address the full range of recommendations in this report, the Commission has put forward an overarching recommendation that the community be provided with further opportunity to review and comment on supplementary inputs and the Department's findings on these issues.

3.8.2 Recommendation

That the Department should ensure that the community has a further opportunity to provide submissions on the Department's final findings prior to determination.

4 CONSOLIDATED RECOMMENDATIONS

Biodiversity

1. That, prior to determination, the Department should progress discussions with, and seek additional information from, the Applicant about establishing supplementary offsets, including an east-west vegetation corridor linking the Swamp Creek Corridor Offset and offsets at the Liddell Coal Mine.
2. That, prior to determination, the Department should seek further comments from:
 - DotE about whether the proposed offsets meet its requirements, particularly in relation to the suitability of foraging resources; and
 - OEH about whether the proposed expansion of the North Pit would materially affect the proposed vegetation corridors, particularly in relation to the movement and habitat of individual fauna species.
3. That the Department considers requiring further research in the recommended preliminary conditions of consent, particularly in relation to regeneration activities in this project, corridor linkages within the project area, and corridor linkages between this project and other nearby mines.
4. That the recommended preliminary condition of consent relating to the Independent Environmental Audit should be linked to the preliminary Biodiversity Management Plan condition to ensure that regeneration is independently monitored and audited on a regular basis (i.e. within a year of the commencement of development, and every 3 years thereafter).
5. That the recommended preliminary condition of consent relating to the Biodiversity Management Plan should be strengthened to include:
 - salvaging, transplanting or propagating measures for all six threatened flora species known to occur in the region;
 - monitoring of potential impacts on groundwater dependent ecosystems and specific trigger levels for remedial action;
 - more specific performance measures and milestones linked to key individual fauna species (for example the relocation and re-use of hollow-bearing trees for the Squirrel Glider, Swift Parrot and Regent Honeyeater);
 - further details about the specific methods of regeneration, as well as relevant performance measures to assist in monitoring the effectiveness of regeneration; and
 - further detail about the particular vegetation species that should be promoted, including species from different 'functional groups', such as cycads, ferns, geophytes, rushes and sedges.
6. That the Department should review the current membership and operation of the CCC to ensure that it conforms with the *Guidelines for Establishing and Operating Community Consultative Committees For Mining Projects* (2007) (as updated), and that all relevant interests are represented, including those related to biodiversity, regeneration and rehabilitation.

Air Quality

7. That the Department should forward a copy of the updated peer review of the AQIA to EPA and NSW Health and seek further comments in relation to the residual issues raised in their previous submissions.
8. That the Department ensures that the key residual issues regarding air quality and the AQIA are resolved prior to determination, particularly in relation to the meteorological data used, the methodology for calculating background levels and calibrating with other mines, and the assessment of cumulative impacts.
9. That the Department make the Applicant's response to the peer review of the AQIA, as well as any updated peer review, and any other additional information, available online as soon as practicable.

Final Landform and Rehabilitation

10. That, prior to determination, the Department clarifies the number of currently approved final voids and seeks further justification from the Applicant for any additional proposed final voids.
11. That, prior to determination, the Department seeks further information about alternative post-mining land use options, including the possibility of increasing woodland rehabilitation on steeper slopes and focusing on agricultural species on the flatter areas of land to support grazing activities.
12. That, prior to determination, the Applicant provides a revised mine plan that:
 - includes more detailed consideration of the potential minimisation of final voids, with particular reference to the large volumes of overburden material that would be moved over the life of the project;
 - provides more detail about the final void shapes and how these are to be achieved;
 - incorporates micro-relief, with a focus on ensuring that the final landform will be more sympathetic to the surrounding landscape; and
 - includes a more refined composition of proposed vegetation within the rehabilitated areas in order to ensure a diversity of species and appropriate fauna habitat.
13. That the recommended preliminary conditions relating to the Rehabilitation Management Plan and/or Revision of Strategies, Plans and Programs are strengthened to take into account the outcomes of any review of the NSW Government's current policy on final voids.
14. That the recommended preliminary condition of consent relating to the Independent Environmental Audit should be linked to the preliminary Rehabilitation Management Plan condition to ensure that rehabilitation is independently monitored and audited on a regular basis.
15. That the Department reviews intentions to mine existing rehabilitated land and considers options to ensure that the proposed rehabilitated areas are not disturbed in the future, through conditions of consent or any other means.

Water

16. That, prior to determination, the Department seeks further comments from:
 - EPA about the discharge of surplus water from this project; and
 - DPI Water about water licensing and associated issues, particularly in relation to the proposed surface water management system, the significant volume of water proposed to be held in dams that would require licensing under Jerry's Water Source, and the reconstruction and rehabilitation of watercourses in the final landform.
17. That the recommended preliminary condition of consent for the Groundwater Management Plan includes consideration of operations at Integra Underground Mine and any associated impacts.
18. That the recommended preliminary condition of consent for the Surface Water Management Plan should include consideration of the discharge of surplus water from this project.

Aboriginal Cultural Heritage

19. That, prior to determination, the Department consider the findings and any potential implications of the recent court case, *LALC v Minister for Planning Infrastructure and Anor (re Calga Sand Mine)* in relation to the adequacy of the cultural heritage assessment for this project.

Socio-Economic

20. That, prior to determination, the Department ensures that the cost-benefit analysis for the project has been prepared in accordance with the relevant guidelines, including the *NSW Government Guidelines for Economic Appraisal* (NSW Treasury, 2007) and the *Guidelines for the Use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals* (NSW Government, 2012).
21. That, prior to determination, final advice on the EIS, including on air quality, biodiversity and final landforms should be reflected in the CBA.
22. That, prior to determination, the peer reviewer be given an opportunity to indicate whether the Applicant's response adequately addresses the issues raised in the peer review.
23. That, prior to determination, the Applicant provide additional information on the methodology employed to produce estimates of the value of the project under alternative scenarios, including the sensitivity of individual variations against the base-line assumptions, how the various scenarios for coal prices, carbon prices and extraction volumes relate to one another and under what conditions the project would generate a zero net present value.

Further Public Input

24. That the Department should consider options to ensure that the community has a further opportunity to provide submissions on the Department's final findings prior to determination.

5 CONCLUSION

The Commission has carefully considered the proposal and the submissions made, including the issues raised in written submissions to the Commission, presentations at the public hearing, the submissions made on the EIS, the RTS, and various other documents provided by the Applicant and agencies (as outlined in **Table 2** of this report). The Commission has sought specific expert advice from, and arranged meetings with, OEH and Singleton Council. The Commission has also sought clarification on a number of issues from the Department, which provided a package of further information.

The Commission notes that the SEAR for this project does not present a full assessment or final position on a number of key areas, particularly in relation to air quality impacts, biodiversity offsets and the final landform. The Commission has also found that there are some other residual concerns in relation to surface water impacts and the cost-benefit analysis. In relation to all of these key issues, the Commission has made numerous recommendations to the Department to seek further information, and undertake additional consultation with relevant agencies, prior to determination.

The Commission has also considered the recommended preliminary conditions and made a number of recommendations for strengthening them, should the project be approved, particularly in relation to biodiversity impacts, regeneration measures, the final landform and rehabilitation.

In summary, the Commission considers that the recommendations of this report must be satisfactorily addressed before the project can be further considered.

REFERENCES

Audit Office of NSW (2012) *Focusing on Environment, Water and Regional Infrastructure*, Volume 6.

Gardner, J & Bell, D (2007) 'Bauxite Mining Restoration by Alcoa World Alumina Australia in Western Australia: Social, Political, Historical, and Environmental Contexts', *Restoration Ecology*, vol. 15:4, pp. S3-S10.

Goodbody, A (2013) 'Mine Design & Closure: Closing the deal', *Mining Magazine*, December 2013, pp. 38-53.

Lamb, D, Erskine, P & Fletcher, A (2015) 'Widening gap between expectations and practice in Australian mine site rehabilitation', *Ecological Management & Restoration*, vol. 16:3, pp. 186-194.

Queensland Audit Office (2014) *Environmental regulation of resources and waste industries*, Report 15: 2013-14.

APPENDIX A
LIST OF SPEAKERS AT THE PUBLIC HEARING

Date & Time: 12:30 pm, Tuesday, 15 December 2015

Place: Singleton Diggers Club, York Street, Singleton

1. Peter York (THEISS)
Kim Nguyen
Shane Kowald
2. Keith Hart (Nature Conservation Council)
3. Jan Davis (Hunter Environment Lobby)
4. Kristen Keegan (Hunter Business Chamber)
5. Steve Phillips (Lock the Gate Alliance)
6. Deidre Olofsson
7. Wayne Bartlett
8. Bev Smiles (Hunter Communities Network)
9. Wendy Wales (Denman Aberdeen Muswellbrook Scone Healthy Environment Group)
10. Graham Cheetham
11. Shane Wilson
12. David Paul (Hunter Community Environment Centre)
13. Chris Cork (Singleton Business Chamber)
14. Chris Madden
15. David Hinton
16. Wendy Bowman (Mine Watch & The Singleton Healthy Environment Group)
17. Scott Franks (Registered Native Title Group)
18. Judith Leslie
19. Alan Leslie

APPENDIX B

SUMMARY OF ISSUES RAISED IN SUBMISSIONS

Comments provided during the public hearing and in written submissions are synthesised and summarised below:

- Availability of information
 - Department taking a position in support of the mine when full information is not available and before outstanding concerns by other agencies have been resolved.
 - Community does not have full information on the application or its impacts.
 - Commission hearing underway when information is outstanding.
 - Lack of transparency.
 - Lack of information on Department's website and in SEAR; information on proposed conditions.
 - Uncertainty about owner's long-term intentions regarding mine operation.
- Biodiversity impacts
 - The project area is a biodiversity hot-spot and includes threatened species as well as EECs.
 - General concern about species loss, with particular concerns about Spotted-tailed Quoll, Green and Golden Bell Frog and Swift Parrot.
 - Survey effort inadequate.
 - Offset package over-reliant on regeneration and rehabilitation.
 - Offset methodology not current.
 - Inadequate offsets. Not like-for-like.
 - Narrowing of offset corridors affects habitat connectivity.
 - Lack of an east-west corridor fails to avoid species loss.
 - Transition to post-coal economy and landscape requires refusal or a different approach.
- Air quality impacts
 - Cumulative impacts not adequately addressed.
 - Climate change impacts not fully considered.
 - Acquisition rights not properly considered.
 - Impact on property values not properly considered.
- Amenity impacts
 - Blasting impacts and related air quality not properly considered.
 - Noise and sleep disturbance not properly considered.
 - Operations environmental management considered best practice
 - Low frequency noise impacts not properly considered.
- Water impacts
 - Loss of flow in Glennie's Creek not properly considered.
 - Risks of surface water spills and contamination.
 - Impact on aquifers not properly considered.
 - Impact on downstream water users not properly considered.
 - Impact on riparian corridors not properly considered.
- Climate change and ESD
 - Not properly addressed,
 - Intergenerational equity not properly considered.

- Final landform and voids
 - Leading edge and high level of performance of rehabilitation not apparent.
 - Final voids inadequately addressed.
 - Final voids a financial burden for the community.
- Socio-economic impacts
 - Local and regional economic benefits are exaggerated.
 - Underlying assumptions are optimistic.
 - Social benefits of local employment are significant.
 - Charity and donations of nearly \$100,000 made by mine owners and workers.
 - Employees spend money locally.
 - Adverse health outcomes in region arising from mining activities
 - Region needs to diversify business and economic opportunities.
 - Employment benefits exaggerated.
 - Long-term decline in coal industry.
- Other
 - Paris environmental agreements on climate change, and COAG Ministers' meeting on air quality point to changing social attitudes toward the effects of coal mining and the management of its impacts.

A number of documents were submitted at the public meeting and/or sent by email prior to, and following, the meeting. All relevant correspondence is on the Commission's web site at www.pac.nsw.gov.au.

APPENDIX C

SUMMARY NOTES OF MEETINGS AND SITE INSPECTIONS

Briefing from the Department of Planning and Environment		
Meeting note taken by Naomi Moss	Date: Tuesday, 8 December 2015	Time: 9:35am
Project: Mount Owen Continued Operations Project		
Meeting place: Commission office		
<p>Attendees:</p> <p>Commission Members: Ms Abigail Goldberg, Mr Garry West & Mr Roger Fisher</p> <p>Commission Secretariat: Naomi Cleaves & Clay Preshaw</p> <p>Department: Oliver Holm (Executive Director, Resource Assessments & Compliance), Howard Reed (Director, Resource Assessments), Matthew Sprott (Senior Planning Officer)</p>		
<p>A summary of key matters discussed is provided below.</p> <p><u>Proposal</u></p> <ul style="list-style-type: none"> • Proposal will combine the Mount Owen and Ravensworth East mines into a single contemporary consent. • No works are proposed at Glendell, which will not be incorporated into the new consent. <p><u>Air quality and Noise</u></p> <ul style="list-style-type: none"> • Topography around the Camberwell village creates an amphitheatre. • Evening background noise levels are higher than daytime background noise levels due to highway noise. • DPE split the area into two areas, based on topography - floodplain area (south) and ridge area (north). • Southern floodplain area around Middle Falbrook is impacted by Integra Mine operations. • Northern area (ridged and forested areas) is shielded from Integra Mine operations. • Acquisition and mitigation rights have not yet been finalised as there are some uncertainties relating to impacts. <p><u>Biodiversity</u></p> <ul style="list-style-type: none"> • Interim Biodiversity Policy was in place when the DGRs were issued, so the assessment should be under the Interim Biodiversity Policy and not the Framework for Biodiversity Assessment. • The transitional arrangements that are in place do not appear to have any retrospective provisions. • Offsets proposed are the minimal requirement under the Interim Policy. • Commonwealth Department of Environment requesting additional upfront offsets for foraging habitat for threatened fauna species. • Some of the rehabilitated and regenerated areas are foraging habitat for threatened species, according to the monitoring of these species. • Concern was raised about the reliance on rehabilitation and regeneration as part of the offsets package, and the time lag that will occur between the disturbance and the rehabilitation being established to support the threatened species. 		

Final landform and voids

- Final landform modelling has not been completed, however it is acknowledged that early planning is optimal considering that fill can start to be positioned in relation to final landform from the outset.
- Final void within the North Pit is to be 250m deep.
- Other two final voids are to be much shallower than the North Pit void.
- OEH prefer the surface water to infiltrate into the overburden emplacement areas, they want it to drain off these areas, though this will increase the number of water storages on site.
- Water management of both groundwater and surface water interplays with the planning for the final landform. Separating clean and dirty water is required.

Other

- Interrelationship with the Integra Underground mine will be most direct where there are workings under the North Pit. The Department considers that there is sufficient distance between the open cut and underground mine for both to occur safely.
- Rail line and loop – laydown and turn around areas will remain on the Mount Owen Complex site, off the main northern line.
- Water balance will be maintained by transferring water between the mines that are part of the collective water sharing scheme.
- Crushed rock will be transferred from Mount Owen mine to the Liddell Coal Operations for road base.

Documents tabled at meeting/to be provided: Glencore's response to Todoroski Air Sciences Peer Review; Interim Policy for Biodiversity Offsets

Meeting closed at 10:50am

Meeting with Singleton Council		
Meeting note taken by Naomi Moss	Date: Tuesday, 15 December 2015	Time: 11:05am
Project: Mount Owen Continued Operations Project		
Meeting place: Singleton Council Administration Building		
Attendees: Commission Members: Ms Abigail Goldberg, Mr Garry West & Mr Roger Fisher Commission Secretariat: Naomi Moss & Clay Preshaw Singleton Council: Lindy Hyam (General Manager), Mark Ihlein (Director Planning and Sustainable Environment Group)		
<p>A summary of key matters discussed is provided below.</p> <p>Generally Council does not have major concerns with the proposal. There are however several areas that are unclear, including:</p> <ul style="list-style-type: none"> • Air quality and noise impacts; • Acquisition and mitigation rights for air quality and noise impacts; and • Final landform and voids; <ul style="list-style-type: none"> ○ Council would like to see some flexibility in the final landform and final land use; and ○ Strategic planning is required for final landform and voids across the Hunter as mines close. <p>Community is concerned about the management of mines that are placed in care and maintenance, and is also increasingly seeking involvement with planning for the final landscapes of mines across the region. The final landscapes need to be both economically and environmentally sustainable, and be sensitive and tie into each other, to create a regional landscape.</p> <p>Council is satisfied with negotiations regarding the VPA, which are ongoing.</p> <p>Council raised the work that is being undertaken by the Upper Hunter Mining Dialogue, and their engagement with the community on a number of issues including water and final land use planning. Council supports the position that greater diversity of post-mining landscapes is required and that some land may be better suited to grazing than woodland.</p>		
Documents tabled to be provided after the meeting: comments on preliminary conditions if relevant.		
Meeting closed at 11:45am		

Briefing by Glencore and Thiess, and site visit		
Meeting note taken by Naomi Moss	Date: Wednesday, 16 December 2015	Time: 9:00am
Project: Mount Owen Continued Operations Project		
Meeting place: Mount Owen Mine		
<p>Attendees:</p> <p>Commission Members: Ms Abigail Goldberg, Mr Garry West & Mr Roger Fisher</p> <p>Commission Secretariat: Naomi Moss & Clay Preshaw</p> <p>Applicant: Ashley McLeod (Mt Owen Operations Manager), Bret Jenkins (Glencore Approvals Manager NSW), Shane Scott (Mt Owen Continued Operations Project Manager), Vicki McBride (Mt Owen Continued Operations Approvals Manager), Glenn Cook (Mt Owen Complex Environment & Community Manager), Peter York (Thiess Senior Environmental Advisor), Barbara Crossley (Umwelt Director), Travis Peake (Umwelt Associate (Ecology))</p> <p>OEH: Richard Bath (Senior Team Leader Planning) Robert Gibson (Regional Biodiversity Conservation Officer)</p> <p>Department: Matthew Sprott (Senior Planning Officer)</p>		
<p>Glencore and Thiess provided the Commission with a presentation and discussion outlining the following key topics:</p> <ul style="list-style-type: none"> • Current operations of the Mount Owen Mine and the broader Mount Owen Complex. • The proposal for continued operations at the Mount Owen mine. • The biodiversity offsets and regeneration works that have been currently undertaken, as part of previous consents. • The biodiversity offsets package for the continued operations project. • Community consultation and engagement, including with Registered Aboriginal Parties and Knowledge Holder groups. • Noise and Air Quality issues, the cumulative impact from a number of mines in close proximity to each other, many residences have existing acquisition and mitigation rights; and • Final landform and rehabilitation. <p>After the briefing the Commission along with OEH and DPE representatives were accompanied on a site visit including current regeneration and rehabilitation areas of the Mount Owen mine.</p>		
<p>Documents tabled at meeting/to be provided: hard copies of presentation material were provided to the Commission. The Commission invited the Applicant to submit a response to matters raised at the public hearing.</p>		
Meeting closed at 12:00pm		

Meeting with the Office of Environment & Heritage and Department of Planning & Environment		
Meeting note taken by Naomi Moss	Date: Wednesday, 16 December 2015	Time: 1:45pm
Project: Mount Owen Continued Operations Project		
Meeting place: Department of Planning & Environment Office, Singleton		
Attendees: Commission Members: Ms Abigail Goldberg, Mr Garry West, & Mr Roger Fisher Commission Secretariat: Naomi Moss & Clay Preshaw OEH: Richard Bath (Senior Team Leader Planning), Robert Gibson (Regional Biodiversity Conservation Officer) Department: Matthew Sprott (Senior Planning Officer)		
<p>A summary of the key issues raised & discussed is provided below.</p> <p><u>Current rehabilitation and regeneration</u></p> <ul style="list-style-type: none"> • Where ‘mulch’ from Ravensworth State Forest was used as part of the rehabilitation, results are much better than where the forest mulch was not used; • Regeneration has been more successful at re-establishing an EEC than rehabilitation; this may be due to the soil substrate; • While Mount Owen was considered best practice at regeneration, practice elsewhere, including in Western Australia, is now considered to be more advanced; and • Periodic reviews of regeneration as well as rehabilitation areas are required. Ideally definable, quantifiable KPIs should be set for each stage. Consents should also require multiple species. <p><u>Offset package</u></p> <ul style="list-style-type: none"> • Under the interim biodiversity offset policy, the quantum of offsets (which includes the regeneration) meets the Tier 3 requirements; • The offset package does not have to meet the Framework for Biodiversity Assessment under the transitional requirements; • The differences between upfront offsets and regeneration as part of the offset package relate to uncertainty regarding how successful regeneration will be; • The percentage of rehabilitation could be capped as part of the offset package; • Planting species of an EEC may not result in the establishment of an EEC, so might need to consider the use of functional groups rather than specific species; • Like-for-like offsets are available in the Hunter Valley, though these are small and isolated. However offsets need not be like-for-like because other factors are taken into account; • There is potential to develop an east-west link in the offsets package; and • The optimal width of a corridor for biodiversity purposes and to support threatened species is related to the intended ‘use’ of the corridor, i.e. the species that the corridor is being established for. <p><u>Threatened species</u></p> <ul style="list-style-type: none"> • Studies are adequate. Species such as Swift Parrots are migratory and diffuse and may not appear in particular studies but the correct assumptions have been made for these circumstances. 		

Final landform

- Benefits in considering upfront, not just prior to closure.

Documents to be provided: Papers regarding rehabilitation of mines in Western Australia; information regarding the vegetation within the regeneration area of the North Pit and the remanent species in the adjacent Ravensworth State Forest; Ravensworth State Forest flora report; Mt Owen Offset component MAP; and Mt Owen South East Offset plating – seeding MAP.

Meeting closed at 3:00pm

Meeting with the Upper Hunter Mining Dialogue		
Meeting note taken by Naomi Moss	Date: Tuesday, 5 January 2016	Time: 11:00am
Project: Mount Owen Continued Operations Project		
Meeting place: Commission's Office		
<p>Attendees:</p> <p>Commission Members: Ms Abigail Goldberg, Mr Garry West & Mr Roger Fisher</p> <p>Commission Secretariat: Naomi Moss, Clay Preshaw & Jorge Van Den Brande</p> <p>John Richards: Bloomfield Group (Chair of the Executive Oversight Committee of the Upper Hunter Mining Dialogue)</p> <p>Dave O'Brien – Glencore (Member of the Upper Hunter Mining Dialogue)</p>		
<p>A summary of the key issues discussed is provided below.</p> <p>Representatives of the Upper Hunter Mining Dialogue provided a brief history of the forum, including its establishment in 2011, the structure of the Dialogue, the working groups and projects that the Dialogue has been focussing on over the past few years.</p> <p>Representatives of the Dialogue reflected on a recent increase in interest by the community in the final land use of mines within the Hunter region broadly. This includes alternative uses for mine sites and rehabilitation, not just returning the sites to forests, including pasture for grazing and other uses. The quality of the rehabilitation is of increasing concern as are biodiversity offsets. The representatives that these interests are gaining more prominence than immediate impacts such as noise and dust in discussions – described by the Dialogue as a 'paradigm shift'.</p> <p>The Dialogue ran a workshop in late 2015 on final voids. Strategic planning across the Hunter is vital for planning what the region might look like as mines begin to close. This needs to cover land use planning including final voids and land adjacent to final voids. Strategic planning will require assistance and support from Government, to set principles for final landforms and voids, final land use and legal issues surrounding rehabilitation bonds and transfer of ownership of the land.</p>		
<p>Documents tabled at meeting/to be provided: A briefing note about the Upper Hunter Mining Dialogue and accompanying factsheet were provided in hard copy at the meeting and soft copy subsequently.</p>		
Meeting closed at 12:15pm		