

MOUNT OWEN CONTINUED OPERATIONS PROJECT

Clarification of Project and Assessment
Findings Report

FINAL

October 2016

MOUNT OWEN CONTINUED OPERATIONS PROJECT

Clarification of Project and Assessment Findings
Report

FINAL

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
Mt Owen Pty Limited

Project Director: Barbara Crossley
Project Manager: David Holmes
Report No. 3109/R25
Date: October 2016



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1.0 Responses

This Report consolidates a number of individual responses provided to the Department of Planning and Environment (DP&E), on behalf of Mt Owen Pty Limited (Mount Owen), over the course of the assessment of the development application for the Mount Owen Continued Operations Project.

The responses contained in this Report clarify the following aspects of the Mount Owen Continued Operations Project design and assessment and should be read in the context of the Response to PAC Review Report:

- Clarification of Hebden Road Upgrade Works – Correspondence to DP&E dated 6 January 2016 (**Attachment 1**)
- Legal approval status and location of approved final voids at the Ravensworth East mine – Information Provided by email on 27 June 2016 (**Attachment 2**) and Correspondence to DP&E dated 22 July 2016 enclosing legal advice dated 21 July 2016 (**Attachment 3**)
- Peer Review Report of Air Quality Assessment for the Refined Mount Owen Continued Operation Project - Correspondence from Jacobs to Umwelt dated 7 July 2016 (**Attachment 4**)
- Clarification of Water Licensing Issues – Correspondence to Department of Primary Industries (Water) dated 12 July 2016 (**Attachment 5**)
- Clarification of Predicted Noise Impacts – Information provided by email to DP&E dated 15 July 2016 (**Attachment 6**)
- Clarification of Mount Owen Continued Operations Rehabilitation commitments - Information provided by email 7 October 2016 (**Attachment 7**)



ATTACHMENT 1



Our Ref: 3109K/BC/DH/06012016

6 January 2016

Matthew Sprott
Senior Planning Officer
Department of Planning & Environment
Matthew.sprott@planning.nsw.gov.au

Dear Matthew

**Re: Mount Owen Continued Operations Project – EIS Figure amendment clarification –
Figure 2.15 Hebden Road Upgrade Works**

Following review of the draft conditions for the Mount Owen Continued Operations Project it has come to our attention that there has been some confusion in regard to the proposed Hebden Road Upgrade Works, and specifically we wish to clarify that there are no works proposed at the existing Hebden Road/New England Highway intersection. On reviewing this matter, we now understand that this confusion has arisen from an error on Figure 2.15 (Hebden Road Upgrade Works), provided with the EIS. We note that the text of the EIS, the supporting Traffic Impact Assessment (TIA) and Response to Submissions report all state that upgrade works to the Hebden Road / New England Highway intersection are not required for the Project. The relevant detail on this matter is provided below.

The Project seeks approval to construct an overpass over the Main Northern Rail Line that crosses Hebden Road and a new bridge over Bowmans Creek in order to improve road safety for all road users and to minimise traffic delays on Hebden Road that are a result of the existing rail level crossing and single lane Bowmans Creek Bridge (refer to Table 2.3 of the EIS). As discussed in the text of Section 2.5.4.2 of the EIS the proposed Hebden Road upgrade works include the construction of a new section of Hebden Road to the south of the existing alignment between the existing Hebden Road/New England Highway intersection, extending to just beyond the proposed Bowmans Creek Bridge. We note there is no reference to upgrading the existing Hebden Road / New England Highway intersection in the text of the EIS.

It is noted that the initial design for the proposed Hebden Road upgrade included the construction of a new intersection replacing the existing Hebden Road/New England Highway intersection. The assessment of the existing traffic volumes indicated the existing intersection (upgraded in 2013), is sufficient to provide the level of service required. Specifically, Section 2.3 of the TIA (Appendix 16 of the EIS) details an assessment of existing year 2013 peak hour operation of the New England Highway/ Hebden Road intersection. As outlined in Table 2.7 of the TIA, this intersection is currently operating at a Level of Service (LoS) A, with ample spare capacity, minimal delays and virtually no queues in peak times.

Accordingly, the proposed design was revised to remove all works to the existing intersection, apart from the works associated with the approach to the intersection on Hebden Road, associated with the proposed works described above.

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Further to this, Section 4.10.1.2 of the Response to Submissions report also referenced that earlier conceptual designs from 2013 had evolved and no longer included works on the intersection with the New England Highway. Notwithstanding the changed design and reduced impact on the New England Highway, Mount Owen provided RMS with the most recent designs for the roads in early May 2015 to enable them to provide an informed comment on the Project and, in particular, the proposed Hebden Road upgrade works.

The details provided in Figure 2.15 of the EIS erroneously included the relevant figure layers for the previous design option in addition to the currently proposed works and does not accurately reflect Project related works in this area. Accordingly, this figure has been revised and is attached. It is requested that the DPE assessment report refer to the attached corrected figure and this be reflected in relevant conditions of consent for the Project.

Please contact Vicki McBride, Mount Owen Continued Operations Approval Manager or myself if you require any further clarification in regard to this matter.

Yours sincerely

A handwritten signature in black ink, consisting of a circular scribble on the left and a long, horizontal, slightly wavy line extending to the right.

David Holmes
Principal Environmental Consultant

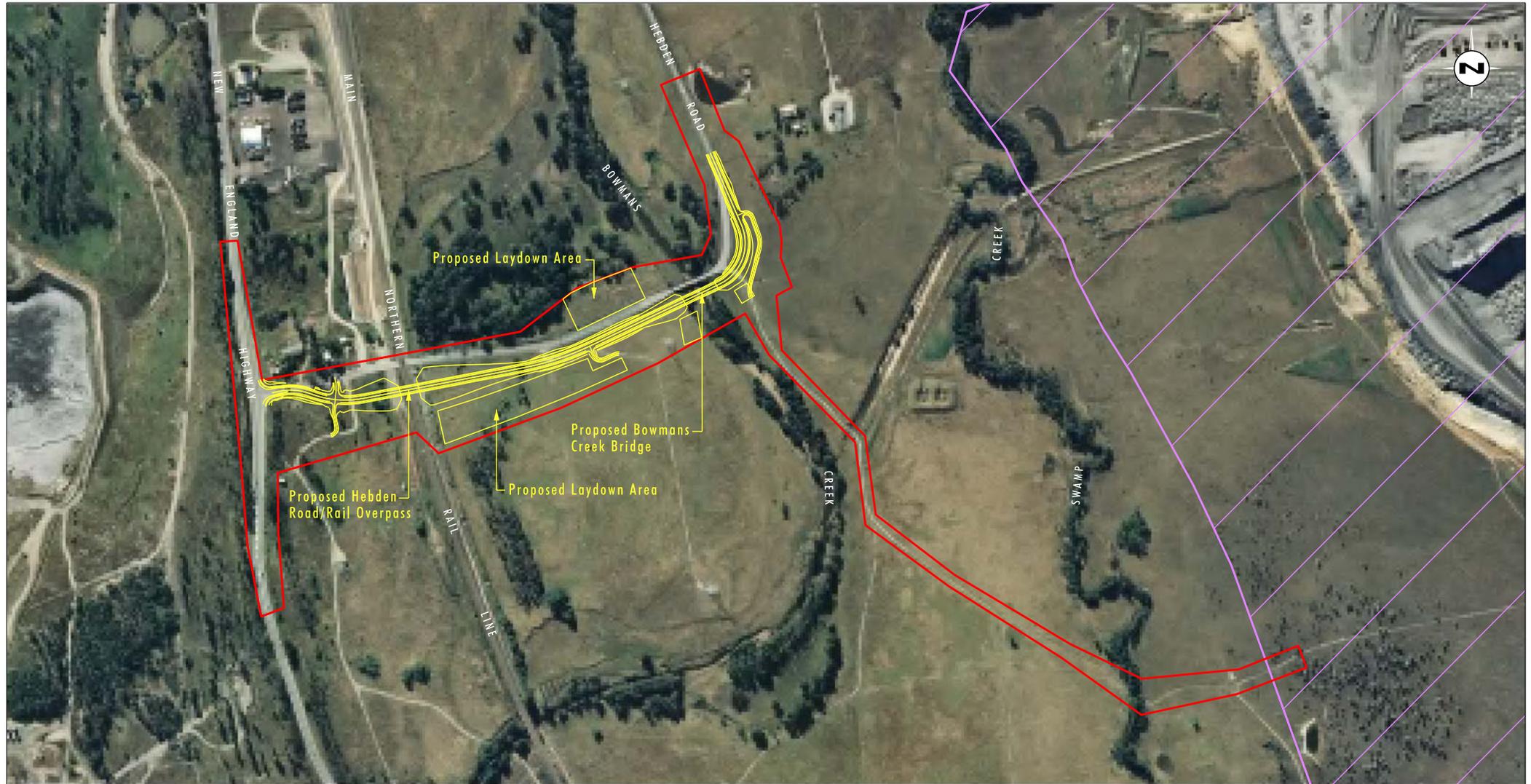


Image Source: Mount Owen (2013)
 Data Source: Mount Owen (2014)

0 100 200 400m
 1:7 500

Legend

- ▭ Project Area
- ▭ Proposed Hebden Road Upgrade Works
- ▨ Approved Glendell Disturbance Area

FIGURE 2.15

Hebden Road Upgrade Works
 Conceptual Design



ATTACHMENT 2

Email to Department of Planning and Environment Dated 27 June 2016

Subject: SSD5850 - MOCO - Ravensworth East Voids

In our meeting on the 7th June, 2016, you requested confirmation of the number of currently approved final voids. We confirm the information provided in previous documents, that is, that there are two approved final voids relevant to the Project, being one in the North Pit (Mount Owen), and one in the Bayswater North Pit (BNP, Ravensworth East). There is also another final void approved in the Mount Owen Complex, being the Barrett Pit in the approved Glendell Mine, but that is not relevant to this project.

In Part 7, of our Response to Queries Raised by Agencies Following Response to Submissions (November 2015), we confirmed this as follows:

The current approved Mount Owen Complex Mining Operations Plan (MOP, approved 25 June 2015), identifies that there will be three final voids across the Complex – North Pit (Mount Owen), Bayswater North Pit (BNP, Ravensworth East) and Barrett Pit (Glendell Mine).

The current development consents for Mount Owen (DA 14-1-2004) and Ravensworth East (DA 52-03-99) require that a Mine Closure Strategy and Final Void Management Plan be prepared 5 years prior to the cessation of mining. At that time, the depth and area of the final voids and options for the future use of the final voids are to be investigated.

Section 5.2 of our Response to PAC Review Report also confirms that:

The existing development consents applicable to the Project Area (DA 14-1-2004 (Mount Owen Consent) and DA 52-03-99 (The Ravensworth East Consent)) contemplate two final voids remaining in the final landform in the Project Area.

We understand that you are specifically seeking clarification in relation to the approved Ravensworth East void, and we provide the following further background details, in relation to the approval context for final voids associated with the Ravensworth East Consents, for your information.

The original Ravensworth East consent contemplated 2 voids, one at NVS1 (Swamp Creek) and a long strike void down the eastern edge of the Pit as shown in Figure 3.2 from the original 1999 EIS copied below. To put this in perspective, the main void was approximately 3 km long, and 250m wide; a very substantial final void. The 1999 EIS suggested that void may be able to be used in the future for reject and overburden emplacement from adjacent mines, garbage disposal, or flyash disposal from the power stations. If no satisfactory use of the void could be found by mine closure, it was proposed that the low wall of the void would be battered back and the area fenced off to prevent access. The Swamp Creek void was approved for tailings storage.

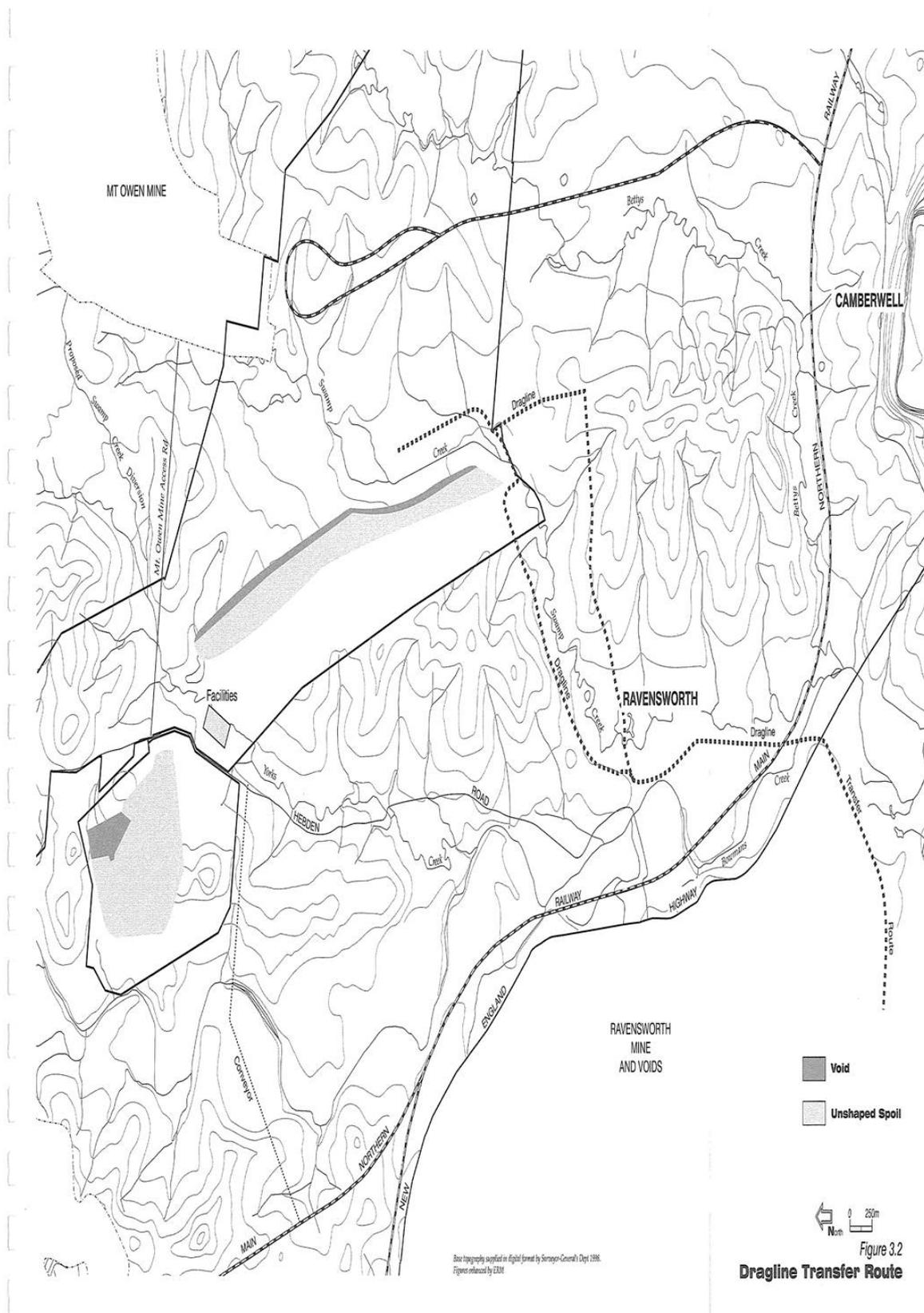


Figure 3.2
Dragline Transfer Route

Following purchase of the Ravensworth East Mine by Xstrata Coal in 2002, there was progressive improvement of the final landform in the Ravensworth East mine, through both mine plan optimisation and integration of overburden and tailings emplacement activities across the now Mount Owen Complex (Mount Owen, Ravensworth East and Glendell mines), now owned by

Glencore. Over time, through a series of modifications to the Ravensworth East and Mount Owen development consents, progressive tailings emplacement and optimisation of overburden emplacement strategies, the final landform at Ravensworth East was substantially improved.

We understand that you are specifically interested in the final void approval status in the current Bayswater North Pit area. The 2002 modification to the Ravensworth East consent sought approval for the Stage 3 Tailings emplacement area (refer to Figure 1.2 of the attached 2002 SEE) which is in the locality of the now BNP area.

The 2003 Modification sought approval for tailings to go into TP1 and TP2 and in relation to the Stage 3 area, specifically noted (Section 3.3.2):

*As described in **Section 2.1.6.2**, the volume of tailings within the current emplacement area is nearing capacity and at the current rate of tailings generation is expected to be full in early 2004. Development consent has recently been obtained for an additional emplacement area, known as the Stage 3 emplacement area, located within a northern void of Ravensworth East mine. This area will only be utilised as an emergency facility should the current emplacement area in the former Swamp Creek mine void reach capacity prior to establishment of emplacement in the Tailings Pits within Ravensworth East.*

*Two box cuts are being developed at Ravensworth East as part of currently approved mining operations (refer to **Figure 3.2**). A modification of consent has been granted for the transportation and processing of up to 1.4 Mt of ROM coal from the box cuts at the Mt Owen CHPP, at a rate of 1 Mtpa. The creation of the two box cuts at Ravensworth East, following the extraction of the coal, will result in two voids. It is planned to utilise these voids, known as the Tailings Pits, for emplacement of tailings from the Mt Owen CHPP. This will provide capacity for the emplacement of approximately 16 Mm³ of tailings, which equates to 8-10 years of tailings emplacement life, after which tailings will be emplaced into the final voids of Ravensworth East and in-pit at Mt Owen.*

This approved Stage 3 area effectively remained a void, and was used periodically for water storage, as other completed pit areas were prioritised for tailings emplacement. This is the area we refer to as the approved Ravensworth East void, relevant to the currently proposed Bayswater North Pit.



ATTACHMENT 3

MT OWEN
OPEN CUT

GLENCORE

22 July 2016

Howard Reed
Director, Resource Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Dear Howard

SSD 5850 – Mount Owen Continued Operations Project – Final Voids

I refer to your correspondence of 13 July 2016 seeking further information relating to existing planning approval for a final void at the Ravensworth East Mine. I understand from your correspondence that the Department disagrees with our position that the Bayswater North Pit (BNP) final void does have current planning approval and is instead of the view that the current Ravensworth East consent does not provide for a final void.

As outlined in Section 5.2 of our *Response to PAC Review Report* (Umwelt 2016) and my subsequent email of 27 June 2016, Glencore is *strongly* of the view that not only is there provision within the Ravensworth East consent for a final void, the current approval allows for a larger final void at Ravensworth East than what is proposed by the Refined Project.

As you know, Glencore has taken on board comments raised by the PAC in relation to final landform and final voids. In response to these comments, we have refined our Project to minimise final voids, by removing the previously proposed RERR Mining Area. We undertook this action despite our view that the current Ravensworth East consent allows for a final void in this area.

The void as proposed by the Ravensworth East consent (as modified) is approximately 3 kilometres by 250 metres in surface area, extending over both the BNP and RERR Mining Area. Given the Refined Project, the proposed BNP final void pit lake area is now proposed to be approximately 8 ha, with a catchment of approximately 60 ha, a significant reduction in final void area to that currently approved.

Following your correspondence, we sought external independent legal advice regarding whether a final void is currently approved at Ravensworth East. This advice has reaffirmed our position. A copy is appended for your consideration.

If you would like to discuss this matter any further, please contact me on phone 0438 646 286 or email Vicki.McBride@glencore.com.au.

Yours sincerely



Vicki McBride
Approval Manager
Mount Owen Continued Operations

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21 July 2016

Mr T Cregan
Glencore
Level 44, Gateway 1
Macquarie Place
SYDNEY NSW 2000

Email tom.cregan@glencore.com.au

Dear Tom

Mt Owen Continuation Project - Final Voids

- 1 We refer to your email dated 13 July 2016 in which you requested our advice regarding the number of currently approved final voids at the Mount Owen Complex (**Mt Owen Complex**), and in particular whether a final void is currently approved at the Ravensworth East Coal Mine which forms part of the Complex.

Summary of advice

- 2 The Mt Owen Complex is a combined facility of separately approved mining operations at Glendell Coal Mine (**Glendell**), Mt Owen Coal Mine (**Mt Owen**) and Ravensworth East Coal Mine (**Ravensworth East**).
- 3 In 2013, Glencore lodged a development application for the Mount Owen Continued Operations Project (**MOCO Project**) which seeks to integrate and continue the operations at Mt Owen and Ravensworth East.
- 4 The Planning Assessment Commission in its review of the MOCO Project (**PAC Report**) has asked the Department of Planning and Environment (**Department**) to confirm the number of currently approved final voids at the Mt Owen Complex, with a particular focus on Ravensworth East.
- 5 In our view, there are two approved final voids within the MOCO Project boundary, being:
 - (a) one in the North Pit as approved by the Minister for Planning pursuant to the Mount Owen Development Consent DA 14-1-2004 granted on 8 December 2004 (**Mt Owen Consent**); and
 - (b) one in the Bayswater North Pit (**BNP**) forming part of Ravensworth East which was approved by the Minister for Urban Affairs and Planning pursuant to the Ravensworth East Development Consent DA 52-03-99 granted on 2 March 2000 (**Ravensworth East Consent**).

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- 6 For the purposes of this advice we have not considered the status of any approved final void at Glendell as this mine is outside of the MOCO Project boundary. Nevertheless, we understand that the Department agrees that the Barrett Pit final void at Glendell is approved.
- 7 Furthermore, we understand that the approval for the final void at Mt Owen (being the North Pit) is not being questioned by the Department. Accordingly, our advice will only focus on the approval for the final void at Ravensworth East.
- 8 We have formed the view that a final void is approved pursuant to the Ravensworth East Consent (as modified) for the following reasons:
- (a) the various environmental assessment documents relating to Ravensworth East, being incorporated documents for the purpose of the Ravensworth East Consent, consistently indicate the existence of a final void at the site;
 - (b) Condition 30 in Schedule 4 of the Ravensworth East Consent expressly contemplates the need for a Final Void Management Plan (**FVMP**) and this condition would not be otherwise necessary if there was no approved final void at the mine;
 - (c) the current Mining Operations Plan was approved in 2015 (**2015 Approved MOP**) and shows three final voids at the Mt Owen Complex, including a void in the BNP at Ravensworth East; and
 - (d) whilst the current Mt Owen Complex Landscape Management Plan (**LMP**) (which incorporates the FVMP) indicates on the one hand that there will only be two final voids at the Mt Owen Complex, the LMP also provides that a conceptual final landform design, which includes final voids, is included in the sites Mining Operations Plans (which as noted above provides for three final voids consistent with the Ravensworth East Consent). The LMP also refers to three final voids across the Mt Owen Complex in the discussion of the mine closure domains. The apparent inconsistency between the LMP and the Ravensworth East Consent and 2015 Approved MOP is in the process of being updated in the revised LMP which is currently being prepared.

Development consent status – Ravensworth East

- 9 The Ravensworth East Consent was granted on 2 March 2000 and has been modified on a number of occasions, most recently in February 2016.
- 10 We have reviewed the Ravensworth East Consent and the documents referred to therein, being:
- (a) the Environmental Impact Statement titled *Ravensworth East Mine – Environmental Impact Statement*, dated January 1999, prepared by ERM Mitchell McCotter Pty Limited (**Ravensworth East EIS**);
 - (b) **Modification 1** - Statement of Environmental Effects titled *S96 Modification to the Ravensworth East Open Cut Coal Mine Consent*, dated May 2000, and prepared by Environment Resources Management Australia Pty Ltd (**MOD 1 EA**);
 - (c) **Modification 2** - Statement of Environmental Effects titled *Mount Owen Mine Stage 3 Tailings Emplacement Area*, dated November 2002, and prepared by Umwelt Environmental Consultants (**MOD 2 EA**); and
 - (d) **Modification 3** - Statement of Environmental Effects titled *Modifications to Coal Receival and Tailings Disposal System – Mt Owen and Ravensworth East Mines*, dated December 2003, and prepared by Umwelt Environmental Consultants (**MOD 3 EA**);

- (e) **Modification 4** - Modification application 52-03-99 MOD 4 and accompanying letter dated 8 April 2005 and attachment titled Overview and Justification for Proposed Modifications to DA 52-03-99 for Ravensworth East Mine (**MOD 4 EA**); and
- (f) **Modification 6** - Modification application 52-03-99 MOD 6 and accompanying documents titled Greater Ravensworth Tailings Pipeline 4 Modification Environmental Assessment, dated November 2015, including the response to submissions dated December 2015 (**MOD 6 EA**).

11 We note that MOD 1, MOD 2 and MOD 6 do not have any impact on this advice and MOD 5 was withdrawn. Each of the other documents that are relevant for the purposes of this advice are discussed in further detail below.

Ravensworth East Consent

12 Conditions 2 and 3 in Schedule 3 of the Ravensworth East Consent provide that:

2. The Applicant shall:

(a) carry out the development generally in accordance with the EIS, MOD 1 EA, MOD 2 EA, MOD 3 EA, MOD 4 EA and MOD 6 EA; and

(b) comply with the conditions of this consent and the Tailings Pipeline Development Layout Plan.

Notes: The Tailings Pipeline Development Layout Plan is shown in Appendix 2.

3. If there is any inconsistency between the documents in condition 2(a), the most recent documents shall prevail to the extent of the inconsistency. The conditions of this consent shall prevail over documents in condition 2(a) to the extent of any inconsistency.

13 The above conditions therefore provide that:

- (a) the conditions of the Ravensworth East Consent will prevail over the EIS and EA documents to the extent of any inconsistency; and
- (b) the most recent EA documents will prevail over the earlier EA documents to the extent of any inconsistency.

14 With regards to final void management, Condition 30 in Schedule 4 of the Ravensworth East Consent specifically contemplates a final void at Ravensworth East:

Final Void Management

30. At least 5 years before the cessation of mining, the Applicant shall prepare a Final Void Management Plan for the development, in consultation with the DRE, and to the satisfaction of the Secretary. This plan must:

(a) investigate options for the future use of the final void;

(b) assess the potential interactions between the diversion of Swamp Creek and the final void; and

(c) describe what actions and measures would be implemented to:

- *minimise any potential adverse impacts associated with the final void; and*
- *manage and monitor the potential impacts of the final void over time.*

The Applicant shall implement the approved management plan as approved from time to time by the Secretary.

- 15 In essence, there would be no need for a final void condition if no final void formed part of the approved mining operations at Ravensworth East. As this condition prevails over all EA documents to the extent of any inconsistency, the overriding position provided by the Ravensworth East Consent is that a final void is approved at Ravensworth East.

Final Void Management Plan

- 16 The FVMP for Ravensworth East forms part of the overall LMP for the Mt Owen Complex dated September 2014. We are instructed that the current LMP is under review to make it consistent with the Ravensworth East Consent (as modified) and the 2015 Approved MOP.
- 17 With respect to final voids at Ravensworth East, the current LMP provides as follows:

The final landform at the MOC will contain two final voids, associated with the Mount Owen and Glendell Mines.

....

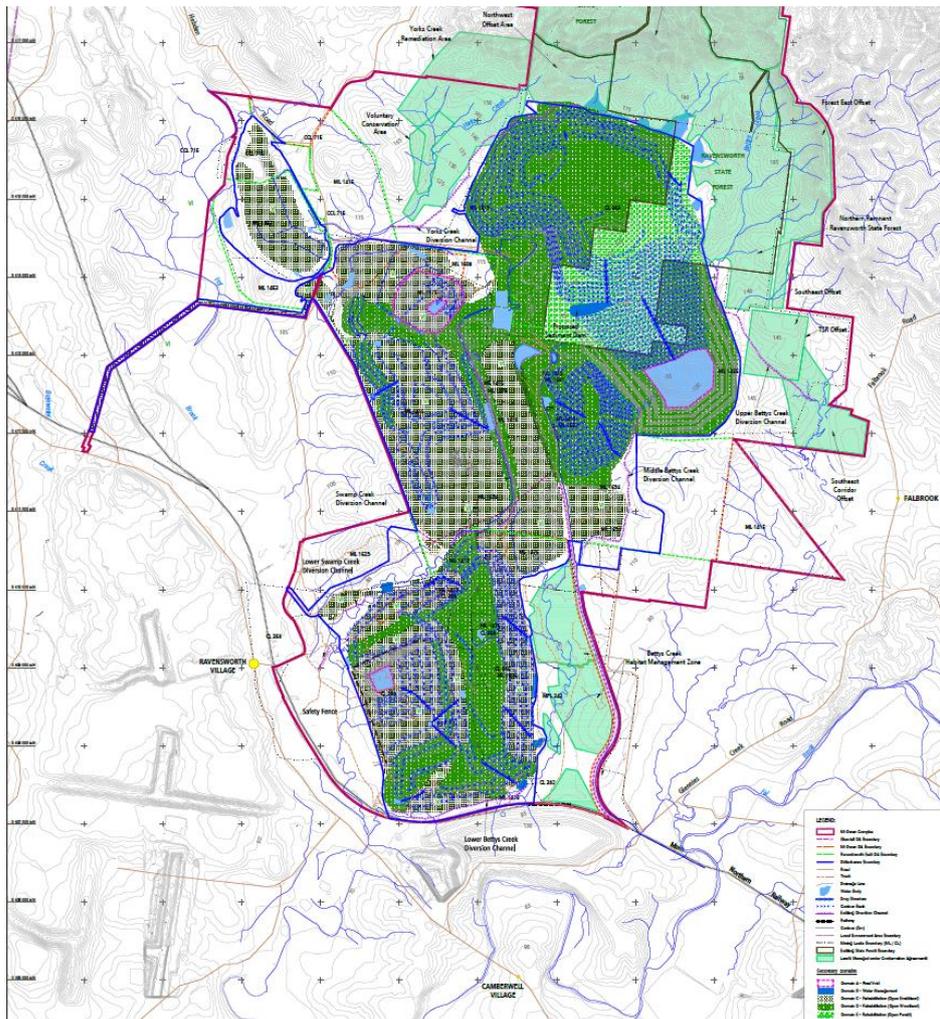
A conceptual final landform design which includes final voids is included in the sites Mining Operations Plans.

(Our emphasis)

- 18 The conceptual final landform design includes three final voids across the Mt Owen Complex. This is discussed further below.
- 19 Additionally, Table 2 in the LMP outlines the planned mine closure domains and activities and identifies three final void sub-domains across the Mt Owen Complex. As such, there appears to be an inconsistency in the current LMP which we understand will be addressed as part of the current review process.

2015 Approved MOP

- 20 As noted above, the LMP also makes reference to the inclusion of a conceptual final landform design, including final voids, in the 2015 Approved MOP.
- 21 The following figure (MOC MOP V7) is the final landform plan extracted from the 2015 Approved MOP which clearly shows three final voids across the Mt Owen Complex, including a final void within the vicinity of the BNP at Ravensworth East:



22 As such, it is evident that the current conceptual final landform design in the 2015 Approved MOP (as referred to in the approved LMP) provides for three final voids across the Complex, including a final void at Ravensworth East.

Ravensworth East EIS

23 There are a number of references to a final void at Ravensworth East throughout the Ravensworth East EIS.

24 In the context of visual impacts from the final landform at the mine, the Executive Summary at page S-3 refers to a remaining void:

The final landform has been designed with several peaks and a saddle. This final landform will be constructed and rehabilitated to restrict views of the remaining void.

25 Section 3.3.4 of the Ravensworth East EIS specifically contemplates a final void at the Ravensworth East Mine:

There is potential to mine east of the Mt Owen Mine rail loop and it is anticipated mining will continue beyond the planning period considered in this EIS. If mining does not continue beyond 20 years, the final stages of the mine plan will be modified to reduce the size of the void and to stabilise the batters. Future uses of the void could include disposal of reject or overburden

material from adjacent mining operations, garbage disposal, and disposal of power station ash. If no satisfactory use can be found for the void formed at the conclusion of mining, the low wall will be battered to a safe angle and the area fenced off to prevent access (our emphasis).

26 Section 3.11.5 of the Ravensworth East EIS relates to the Landform Design and provides:

The proposed final landform is shown in Figure 3.5. The effect of mining will be to slowly alter the topography as the mine face moves from west to east. By Year 19, the final landform will slope upwards from the eastern boundary to two distinct plateaus, which will each be at approximately 150 metres Australian Height Datum. These peaks will be separated by narrow valleys containing access ramps to the final void.

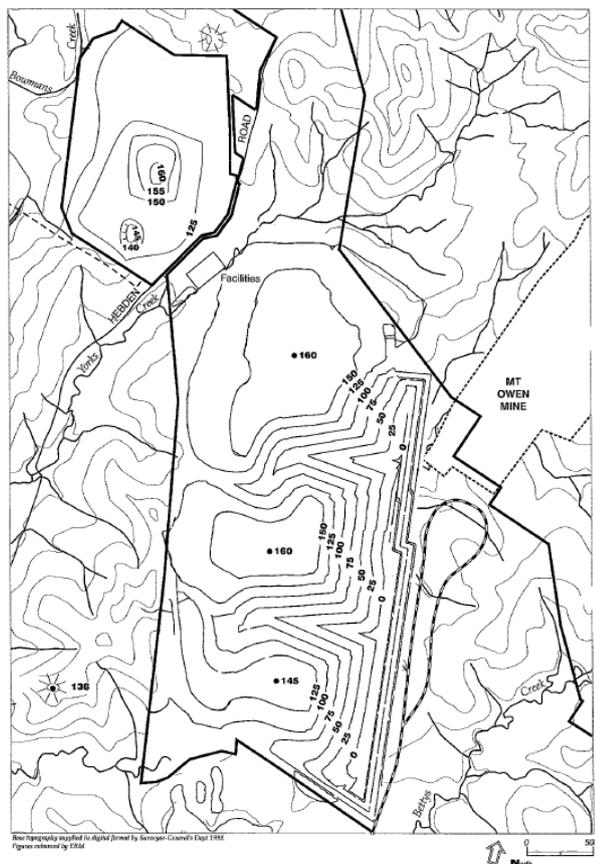


Figure 3.5
Final Landform

- 27 In the context of 'post-mining land capability', section 5.5.2 of the Ravensworth East EIS also refers to a void that will remain on the eastern side of the study area following completion of mining, as shown in Figure 3.5 above and section 5.5.3 concludes that the '*final void will be Class VIII*' land capability.
- 28 It is clearly apparent from these multiple references in the Ravensworth East EIS that a relatively large final void was approved at Ravensworth East as part of the original Ravensworth East Consent. With reference to Figure 3.5 above, we understand that the original final void was approximately 3.2 kilometres in length and 650 metres wide, covering an area of approximately 208 hectares.
- 29 Separately, we also refer to Figures 6.3 and 6.4 of the Ravensworth East EIS which shows the location of the Proposed Swamp Creek Diversion to the north of the BNP. This is relevant as Condition 30 in the

Ravensworth East Consent makes reference to 'potential interactions between the diversion of Swamp Creek and the final void':

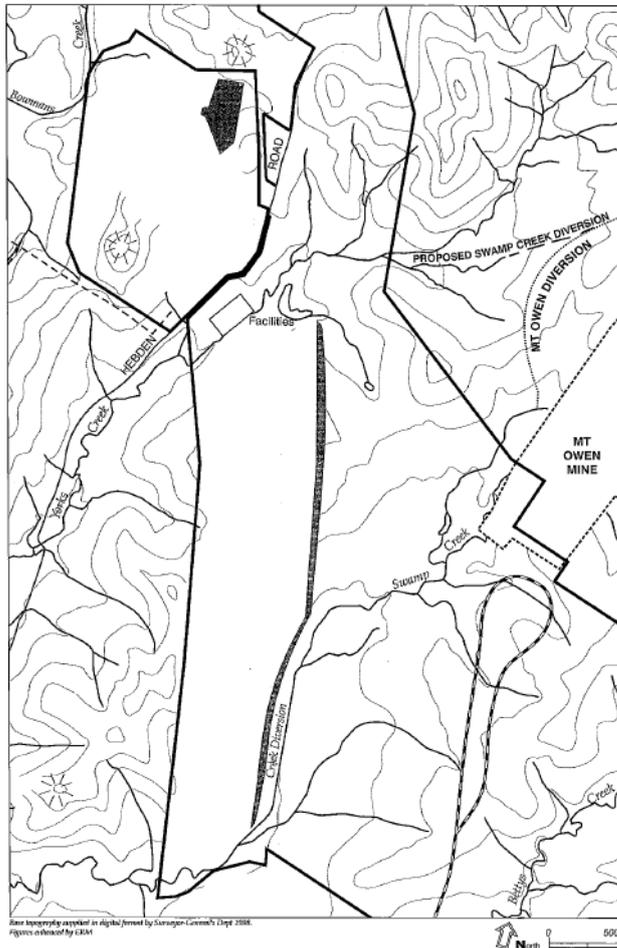


Figure 6.3
Proposed Swamp Creek Diversion

30 On this basis, it is evident that the final void was contemplated to be in the proximity of the BNP area as there was identified a possibility for interactions between the Swamp Creek diversion and the final void.

MOD 1 EA

31 The MOD 1 EA (dated May 2000) resulted in amendments being made to the Ravensworth East Consent in July 2000 (**MOD 1**). MOD 1 related to construction of a new portion of Hebden Road by passing the mine to the west and the intersection between the new Hebden Road and the old Hebden Road. MOD 1 is not relevant for the purposes of this advice.

MOD 2 EA

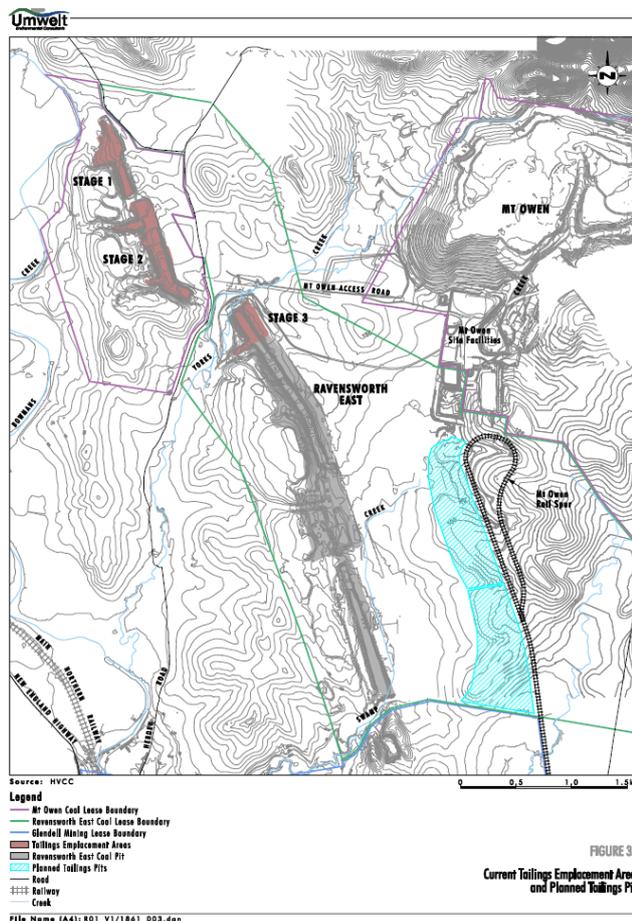
32 The MOD 2 EA (dated November 2002) resulted in amendments being made to the Ravensworth East Consent in June 2003 (**MOD 2**). MOD 2 provided approval for the transport of up to 1.4 million tonnes of ROM coal from Ravensworth East to the Mt Owen CPP and for tailings emplacement from the Mt Owen CPP in a void area of Ravensworth East referred to as Stage 3.

- 33 Whilst MOD 2 relates to the emplacement of tailings in the northern area of the Ravensworth East void (being the operational void in existence at that time), it does not relate to or provide further context in relation to the location of the final void. Therefore the final void as identified in the Ravensworth EIS is unaffected by the Mod 2 EA.

MOD 3 EA

- 34 The MOD 3 EA (dated December 2003) resulted in amendments being made to the Ravensworth East Consent in May 2004 (**MOD 3**). MOD 3 sought approval for tailings to go into TP1 and TP2 which would be created following the extraction of coal from two box cuts at Ravensworth East. As shown on Figure 3.2 in the MOD 3 EA, the TP1 and TP2 areas were partially within the area of the final void as originally depicted and described in the Ravensworth East EIS. This was also described in section 3.3.2 of the MOD 3 EA:

Two box cuts are being developed at Ravensworth East as part of currently approved mining operations (refer to Figure 3.2). A modification of consent has been granted for the transportation and processing of up to 1.4 Mt of ROM coal from the box cuts at the Mt Owen CHPP, at a rate of 1 Mtpa. The creation of the two box cuts at Ravensworth East, following the extraction of the coal, will result in two voids. It is planned to utilise these voids, known as the Tailings Pits, for emplacement of tailings from the Mt Owen CHPP. This will provide capacity for the emplacement of approximately 16 Mm³ of tailings, which equates to 8-10 years of tailings emplacement life, after which tailings will be emplaced into the final voids of Ravensworth East and in-pit at Mt Owen.



- 35 As previously noted, the Ravensworth East EIS originally contemplated there being a final void at Ravensworth East and this position is not changed by MOD 3 which provided for the storage of tailings (and associated capping and rehabilitation) in only part of, but not all of the original void area. Specifically, if Figure 3.2 from the MOD 3 EA is overlaid with Figure 3.5 from the Ravensworth East EIS, it is clear that the final void continues a moderate distance to the north of the rail loop (shown on the eastern side of the void) and beyond the area utilised as TP1 and TP2. It is within this area that an approved void still remains at the northern extent of the original main void at Ravensworth East.

MOD 4 EA

- 36 The MOD 4 EA (dated April 2005) resulted in amendments being made to the Ravensworth East Consent in August 2005 (**MOD 4**). MOD 4 related to streamlining and consolidating environmental management processes across Mt Owen and Ravensworth East Mines, to ensure the implementation of best practice technology and environmental standards across both operations.
- 37 The MOD 4 EA is a relatively short document which essentially provides a list of amendments to conditions in the Ravensworth East Consent that were required to streamline the environmental management processes with Mt Owen.
- 38 In the context of conditions relating to surface and groundwater monitoring, the MOD 4 EA provides:

In addition to current approvals to place tailings from the Mt Owen CHPP into the Stage 3 void and Tailings Pits 1 and 2 at Ravensworth East Mine, HVCC are also seeking the option of disposing of tailings from the Mt Owen CHPP into the main void at Ravensworth East. The Mt Owen EIS (Umwelt, December 2003) provided reference to this particular option.

- 39 Condition 30 in Schedule 4 of the Ravensworth East Consent with respect to final void management was inserted as part of MOD 4. Although the condition does not respond to a specific matter raised in the MOD 4 EA, it must have been considered appropriate by the Department to include this condition when MOD 4 was granted and in the context of the mining operations at that point in time.

MOD 6 EA

- 40 The MOD 6 EA (dated November 2015) resulted in amendments being made to the Ravensworth East Consent in February 2016 (**MOD 6**). The MOD 6 approved tailings from both the CHPP at Ravensworth Operations and Liddell, to be pumped via a network of pipelines and emplaced within a void at Ravensworth East. Specifically, the MOD 6 EA provides for the emplacement of tailings within the west pit void at the southern extent of Ravensworth East. MOD 6 does not address or have implications for the approved final void at the northern extent of Ravensworth East.

Conclusion

- 41 We have formed the view that a final void is approved pursuant to the Ravensworth East Consent (as modified) for the following reasons:
- (a) the various environmental assessment documents relating to Ravensworth East, being incorporated documents for the purpose of the Ravensworth East Consent, consistently indicate the existence of a final void at the site. This final void is contemplated as being generally located along the eastern extent of the mining area at Ravensworth East;

- (b) Condition 30 in Schedule 4 of the Ravensworth East Consent expressly contemplates the need for a FVMP and this condition would not be otherwise necessary if there was no approved final void at the mine;
- (c) the current 2015 Approved MOP and shows three final voids at the Mt Owen Complex, including a void in the BNP at Ravensworth East; and
- (d) whilst the current Mt Owen Complex LMP(which incorporates the FVMP) indicates on the one hand that there will only be two final voids at the Mt Owen Complex, the LMP also provides that a conceptual final landform design which includes final voids is included in the sites Mining Operations Plans (which as noted above provides for three final voids). The apparent inconsistency between the LMP and the Ravensworth East Consent and the 2015 Approved MOP is in the process of being updated in the revised LMP which is currently being prepared.

We note that the MOCO Project (as revised in the Response to the PAC Review Report) includes two final voids located in the North Pit Continuation at Mt Owen and the BNP at Ravensworth East. Therefore the MOCO Project does not involve any increase in the number of currently approved final voids at the Mt Owen Complex.

Please do not hesitate to contact us if you require further advice in relation to this matter.

Yours sincerely



Samantha Daly
Partner



ATTACHMENT 4

7 July 2016

Attention: David Holmes
Umwelt (Australia) Pty Ltd
75 York Street
Teralba NSW 2284

Dear David

Review of Mt Owen Continued Operations Refined Project Air Quality Assessment

I have completed a review of the air quality impact assessment report, prepared by Pacific Environment Limited. The document reviewed was titled:

- “MOUNT OWEN CONTINUED OPERATIONS – REFINED PROJECT”. Document Control Number AQU-NW-004-21206.

This letter provides a brief background to the Project, and the review outcomes.

1. Background

Mt Owen Pty Ltd is seeking approval for the “Mount Owen Continued Operations Project” which involves the continuation of the existing mining operations at the Mount Owen North Pit, and the Ravensworth East Mine (the Project). An Environmental Impact Statement (EIS) was published in 2015 (Umwelt 2015) and Pacific Environment Limited (PEL) prepared the accompanying air quality impact assessment (PEL 2014).

The Project has since been modified, and is now referred to as the Refined Project. In summary, the modifications are as follows:

- Coal will not be extracted from the Ravensworth East Resource Recovery (RERR) mining area.
- The final landform treatments for the Bayswater North Pit (BNP) void will no longer involve the haulage of any waste material from North Pit or adjacent emplacement areas.
- Dump batters surrounding the void will be flattened using bulldozers and the high wall may be blasted.
- The BNP void will be used as a water storage and supply dam to the CHPP or a contingency tailings emplacement area later in the Project life.

The main objective of the PEL assessment was to determine whether the Project modifications would result in any material differences to the outcomes of the 2014 assessment. This was done by reviewing the current Project information, updating air quality monitoring data that were collected since the EIS, and carrying out dispersion modelling to quantify the differences between the original and refined Project.

7 July 2016

The main conclusions of the PEL assessment were as follows:

- One property (R23) is now no longer predicted to experience 24-hour average PM₁₀ concentrations above the air quality criterion.
- Inclusion of monitoring data collected since the EIS does not change the outcomes of the original assessment.
- Outcomes based on annual average PM₁₀ concentration predictions remain unchanged.
- Consideration of the proposed Rixs Creek Continuation of Mining Project and removal of the Ashton South East Open Cut Project does no change the outcomes of the original assessment.

A draft report was provided to Jacobs for comment. Recommendations were made and these were adopted by PEL. The final report has been reviewed.

2. Review Outcomes

In summary, I support the conclusions of the PEL assessment. My reasons for supporting these conclusions are as follows:

- The removal of the RERR mining area from the Project will lead to lower Project PM₁₀ emissions, driven mainly by reduced material handling quantities (overburden and coal) and a reduced extent of areas susceptible to wind erosion. In addition, no haulage of waste from North Pit to BNP will be required, which will reduce Project PM₁₀ emissions. Total dust emissions from the refined project have been calculated to be in the order of 20% lower than for the original project.
- Analysis of the monitoring data collected since the EIS shows that the adopted non-mining background annual average PM₁₀ concentration level used for the cumulative annual average PM₁₀ assessment retains some conservatism.

Yours sincerely



Shane Lakmaker

Senior Associate (Air Quality)



ATTACHMENT 5

MT OWEN OPEN CUT

GLENCORE

Our Ref: 3109/BC/110716

12 July 2016

Mr Mitchell Isaacs
Director
Planning Policy & Assessment Advice
NSW Department of Primary Industries
Level 11
323 Castlereagh Street

Dear Mitchell

**Re: Mount Owen Continued Operations Project (SSD 5850)
Comment on the Response to Planning Assessment Commission Review Report**

We provide the following response to the matters raised in your letter of 28th June 2016 to the Department of Planning and Environment (DP&E). We also note that in accordance with your recommendation in the letter, representatives from Glencore (Vicki McBride) and Umwelt (David Holmes), met with DPI Water representatives (Graeme White, Allison Collaros, Hannah Grogan, and Brendan Mee) on 5th July to discuss the matters raised in the abovementioned correspondence.

Broadly, the issues raised in your latest correspondence relate to the following matters:

- Clarification of detail in calculation of Maximum Harvestable Right;
- Review of available water access licences in the Glennies Water Source; and
- Further information to clarify the future water licensing requirements relating to the final landform.

Prior to dealing with each of these issues specifically, we provide the following context, for confirmation of our approach in relation to these matters, all of which relate to the future water licensing for the potential dams and final voids that are currently proposed to remain at the end of the mine life.

As discussed in our previous responses on this matter, and in the recent meeting, it is important to recognise that there may be further refinements to final dam configuration, and final landform as it relates to the void catchment, that could alter the licence requirements that may be required during the later stages of the mine progress, and for the final closure phase. Further we note our general concern that there appears to be 'assessment creep' in relation to these matters, and in our opinion, a need for DPI Water to prioritise consistent, documented guidance on expectations for assessment of licensing requirements for major mining projects, particularly in relation to these final landform matters.

Essentially, DPI Water are seeking that water licensing accounting for the final landform for this project be largely resolved upfront as part of the approval process. You will recall that in our

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Response to Submissions, we addressed this request in a similar manner as was accepted for the recent Bulga Optimisation Project approval. That is, with the suggestion that this matter is most appropriately dealt with as part of detailed mine planning and closure planning process. This approach is consistent with the current DP&E proposed draft conditions for this Project and Schedule 3 Condition 21 of the recent Bulga Project Approval, which states that *the Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of mining to match its available water supply. Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain necessary water licences for the development.*

At the time of preparation of our Response to the PAC Review, we understood that a 450 ML Water Access Licence (WAL) in the Glennies Water Source was available to Glencore as part of the recent acquisition of Integra underground operations. That is, whilst we still advocated that this is an issue that should be resolved later in the process, at that time we believed we had sufficient water access licence allocation available to resolve any potential issue on this matter. DPI Water recently advised that 450 ML WAL has been cancelled but has no record of notification of that cancellation, as discussed further in Section 3 below.

The following sections provide clarification in relation to the matters raised in your letter of the 28 June, 2016 and discussions at the meeting of 5th July 2016.

1.0 Regulatory Context

In terms of the regulatory context for this Project, it is important to note that the Project lies within two water sources of the *Hunter Unregulated and Alluvial Water Sources Water Sharing Plan* (WSP) (2009): Jerrys water source; and Glennies water source. In regards to the Project, Jerrys water source is water flowing to Bowmans Creek; and the Glennies water source is water flowing to Glennies Creek (this includes both surface and alluvial waters, but does not include the surface water within the main channel of Glennies Creek which forms part of the *Hunter Regulated River Water Sharing Plan 2004*).

The licensing provisions of the *Water Management Act 2000* came into effect in the water sharing plan area, once the water sharing plan (WSP) commenced (*Water Sharing Plan – Hunter unregulated and alluvial water sources: Guide, DWE, 2009*). The *Hunter Unregulated and Alluvial Water Sources Water Sharing Plan* (2009) commenced on 1 August 2009.

In our meeting on 5th July, DPI Water also advised that the catchment boundary that has been used in our water accounting calculations should be checked against the DPI Water GIS file of the boundary that was adopted in the Jerrys and Glennies Water Source in the WSP. In checking this file, it is clear that as relevant to this Project, the WSP adopt the boundary between the two water sources which matches the catchment divide prior to the Bettys Creek Diversion to Main Creek (i.e. the boundary appears to relate to the landform that was in place prior to the 2004 Mount Owen Approval (DA 14-1-2004)). We have adopted the GIS boundary provided by DPI Water in the following updated water licence accounting provided in this response.

We understand that licensing of water take should be relative to the water take associated with the Approved Final Landforms that were either in place or approved as at 2009 (i.e. at the commencement of the WSP). This is consistent with verbal advice provided to the Project team from yourself during early consultation for the Project. That is, only the incremental water take beyond that already approved by 1 August 2009, needs to be licensed. We seek written confirmation from DPI Water on this position, but in the meantime, we have adopted this approach for the updated assessment outlined below.

2.0 Maximum Harvestable Right calculations

Umwelt had previously consulted with DPI Water, on our behalf, in relation to the Figure 6.1 Conceptual Final Landform Water Licensing and Accounting Framework, and email correspondence on 20th June, DPI Water advised that: *'The DPI Water consider the proposed approach is consistent with the requirements of the Water Management Act 2000 (WMA). As you are aware the water supply approval provisions under the WMA do not apply to major projects. Approval provisions and requirements under harvestable rights will apply once the project approval expires'*

We note that DPI Water has now made further comment on the flow chart, advising that stock and domestic dams built prior to 1 January 1999 and dams less than 1 ML on a property approved for subdivision prior to 1 January 1999 must be included in the calculations of Maximum Harvestable Right when calculating licensing requirements and additional storage construction.

The flow chart has been updated again based on this most recent advice provided by DPI Water, and the updated Figure 6.1 Conceptual Final Landform Water Licensing and Accounting Framework is included as an attachment to this letter.

Using the DPI Water supplied catchment boundary, and the method outlined in the flow chart to calculate licensing requirements for Dams, the detailed breakdown provided in Table A of **Attachment 1** is applicable to the currently proposed Project Final Landform.

Table A in **Attachment 1** indicates that all of the dams on the Mount Owen landholdings are within the Maximum Harvestable Rights Dam Capacity (MHRDC) for the landholding. For the Forestry Corporation land, similar to the previous analysis, the MHRDC is exceeded with the proposed final landform dams. Dams 5 and 6 are already associated with the existing 200 ML WAL (calculations indicate an average take of 192.5 ML). This updated analysis also assumes that as part of the closure process the final configuration of the water management system for the final landform is modified such that Dams 1, AD and NP1 act as flood detention only in the final landform. That is, these three dams will not store any permanent water. This approach would resolve the MHRDC and associated potential licensing deficit for dams on Forestry Corporation Land in the final landform. The final detail of dam configuration and associated licencing would need to be further investigated and resolved in the detailed closure planning process, but this analysis demonstrates that the Maximum Harvestable Rights associated with

the proposed final landform can be readily managed in accordance with current relevant requirements.

3.0 Review of Available Water Access Licences in Glennies Water Source

In December 2015, Glencore Coal acquired the Integra Underground Mine (formerly Glennies Creek Underground Mine) and all assets associated with it. This included a number of water access licences (WALs) as listed on an asset register provided by the then Integra Underground Mine owners. This listing included WAL 17999 which was noted in the register to have an allocation of 450 ML in the Glennies Water Source.

The first that Glencore was made aware that this WAL 17999 had been cancelled was in a telephone conversation to Vicki McBride, Glencore, by Hannah Grogan of DPI Water on 22nd June 2016. Following further enquiry, Hannah subsequently advised at our meeting of 5th July 2016 that WAL 17999 was incorrectly converted in August 2009. This mistake was subsequently realised and WAL 17999 was cancelled in March 2011, however, there is no record of correspondence with the former Integra Underground Mine owners of the cancellation of this WAL. Unfortunately, it appears that both the previous owners of Integra Underground Mine and Glencore were unaware of this mistake and the subsequent cancellation of this WAL. Consequently, acting in good faith, Mount Owen identified that WAL 17999 would be available for consideration as part of the updated water licence accounting provided in our Response to the PAC Review Report.

We note that in our recent meeting with DPI Water, reference was made to the available WAL capacity in the Glennies Water Source being held by other mines and irrigators. Since that meeting, we have completed an updated search of relevant titles, and from this analysis there are 446 units allocated, of which only 11 units are held by mining companies (Four Mile Pty Limited and Bloomfield Collieries, both related to Rix's Creek Mine). The remainder are held by a variety of private landholders, in addition to 75 units allocated to a company listed as Nerium Pty Limited. At this stage, we have not approached any of these current unit holders in relation to potential to acquire any additional allocation.

Further information to clarify future water licensing requirements relating to the final voids

Umwelt has updated the catchment analysis for the final landform, based on the updated catchment boundary and by calculating water take to be licensed relative to the 2009 approved landforms. **Table 1** outlines the catchment changes (hectares) (diversions and final voids) and estimated water take (ML) relevant to the approvals history and considering the currently proposed Project Final Landform.

Table 1 – Catchment Change and Voids Summary – Jerrys and Glennies Water Sources (ha)

Date	2000	2004	2016	Comparison	
Water Source	Rav East Approval (2000), Mount Owen Extension Approval (1994)	Mount Owen Continued (2004)	Mount Owen Continued Operations Project (2016)	from WSP (2009) to Project	
Take From Jerrys	-694.2	-956.3	-1099.6	-143.3	ha take from Jerrys
				-100.3	ML take from Jerrys
Addition to Glennies	0.0	639.6	685.6		
Take From Glennies	0.0	0.0	-137.6		
Net Take From Glennies	0.0	639.6	548.0	-91.6	ha take from Glennies
				-64.1	ML take from Glennies

Based on this updated assessment, and consideration of the outcomes of the groundwater assessment, the following potential water accounting outcome applies for the currently proposed final landform:

- Licence 107 ML (i.e. 100 ML surface water and 7 ML alluvial water) to account for water take in the Jerrys water source
- Licence 79 ML (i.e. 64 ML surface water and 15 ML alluvial water) to account for water take in the Glennies water source.

The Jerrys water source allocation is likely to be readily sourced by Glencore in this catchment, given the volume of entitlement available, and nature of land use in the catchment. The Glennies water source is more constrained, but a 79 ML allocation will not necessarily be unattainable given the current spread of allocation. Based on our preliminary desktop analysis, we believe that there is potential in the future to purchase this allocation from existing holders, without placing any major constraints on existing land use in this catchment.

As discussed in the recent meeting with DPI Water, there is potential for the alluvial water take estimates to be refined as there is iterative refinement of the groundwater model, consistent with the draft approval conditions, as the model is periodically calibrated against groundwater monitoring results. The groundwater modelling process at the EIS phase is considered to be conservative (i.e. worst case predictions) and there is potential for the projected alluvial water

take to decrease prior to the final landform phase. Further, we expect that there is opportunity to further optimise the final landform as mine planning progresses, in terms of reducing the potential surface water catchment associated with the final void, in particular that associated with the Mount Owen North Pit void.

We note that the current draft approval conditions for the Project require:

The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations on site to match its available water supply.

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain all necessary water licences for the development.

On this basis, we have further investigated potential final landform alternatives that may be necessary in order to meet water licence requirements if sufficient allocation is not available in the Glennies Water Source in the future. We provide the following as an example of how the final landform may be further optimised to reduce the catchment of the final void, but note that the detail of such an option would require further investigation and confirmation as detailed mine planning progresses, consistent with the intent of the draft approval condition outlined above. For example, there is potential to reduce the catchment area of the North Pit final void by up to approximately 170 hectares (i.e. from 471 hectares to 300 hectares). In this scenario, the area shaded in the attached proposed final landform figure (reproduced from our Response to the PAC Review) would need to be reshaped. If this option was adopted it would result in progressively reshaping of the southern portion of the overburden emplacement area. The area removed from the void catchment would be reshaped to flow to the east and a minor tributary of Main Creek, and direct water from the final landform into the Glennies water source.

For this scenario, in regards to impacts, drainage flows would need to be controlled to minimise potential of scour/erosion in the downstream channel but this could be readily achieved by the construction of a flow detention dam within the currently proposed disturbance area (this dam would be for flood/flow control and as such not hold water permanently and not required to be licensed). Other impacts are expected to not be increased as there is no increase in overall overburden elevations of the proposed final landform. **Table 2** provides the catchment analysis for this scenario.

This scenario demonstrates that in terms of Net Take, the final landform configuration could potentially be optimised such that there would be a net gain from the Glennies Water Source, such that no additional water allocation would be required. Obviously there will be a need to further investigate and optimise the final landform design, and to consider the evolving WAL capacity in the Jerrys and Glennies water sources, but this scenario demonstrates that it is feasible to manage this Project to meet the draft condition proposed by DPE in relation to future water licencing requirements.

Table 2 – Alternative Final Landform Scenario - Catchment Change and Voids Summary – Jerrys and Glennies Water Sources (ha)

Date	2000	2004	2016	Comparison	
Water Source	Rav East Approval (2000), Mount Owen Extension Approval (1994)	Mount Owen Continued (2004)	Mount Owen Continued Operations Project (2016)	from WSP (2009) to Project	
Take From Jerrys	-694.2	-956.3	-1099.5	-143.2	ha take from Jerrys
				-100.2	ML take from Jerrys
Addition to Glennies	0.0	639.6	831.9		
Take From Glennies	0.0	0.0	-113.2		
Net Take From Glennies	0.0	639.6	718.7	79.1*	ha take from Glennies
				55.4*	ML take from Glennies

*Note: Positive value indicates net additions to Glennies Water Source and no licence required.

We seek your review and feedback on the approach outlined in this letter as soon as possible, and specifically request your confirmation that DP&E’s currently proposed draft approval condition is appropriate for application to this Project.

Yours sincerely



Vicki McBride
Approval Manager
Mount Owen Continued Operations

Attachments:

- Attachment 1 – Table A – Dams –Licensing Accounting for Final Landform
- Figure 1 – Mount Owen Continued Operations Project Conceptual Final Landform
- Figure 2 – Conceptual Final Landform Water Licensing Accounting Framework

Attachment 1 – Table A – Dams –Licensing Accounting for Final Landform

							Harvestable Rights		Water Access Licences		Exempt
							Volume (ML)	Volume (ML)	Take (ML/yr)	Take (ML/yr)	
							Mount Owen	Forestry	Jerrys	Glennies	
Harvestable Rights Provisions							343.9	61.7			
Water Access Licences									200		
Dams					Catchment Area (2009)						
Name	Surface Area (ha)	Volume (ML)	Land Ownership	Comments	Jerrys	Glennies					
ECD3	3.95	44.8	Forestry	1st order, to be reshaped for flood detention storage in final landform	x			-44.8			
Dam 5	10.04	149.8	Part Forestry, Part MTO	≥ 3rd order	x			-127.0			
Dam 6	5.18	41.1	MTO	≥ 3rd order	x			-65.5			
Dam J	0.42	1.3	Forestry	catchment - no watercourse		x		-1.3			
Dam K	1.34	11.3	Forestry	catchment - no watercourse		x		-11.3			
Dam 1	0.28	18.8	Forestry	WMS, change to flood detention in final landform		x				x	

							Harvestable Rights		Water Access Licences		Exempt
							Volume (ML)	Volume (ML)	Take (ML/yr)	Take (ML/yr)	
							Mount Owen	Forestry	Jerrys	Glennies	
Harvestable Rights Provisions							343.9	61.7			
Water Access Licences									200		
Dams					Catchment Area (2009)						
Name	Surface Area (ha)	Volume (ML)	Land Ownership	Comments	Jerrys	Glennies					
Dam 2	0.44	3.52	MTO	flood detention only - not a dam	x					x	
Dam NP1	4.5	45.1	Forestry	WMS, only flood detention in final landform	x (final void)					x	
Dam AN	0.2	1.6	MTO	1st order		x	-1.6				
Dam BA	0.05	0.4	MTO	drainage diversion	x		-0.4				
Dam A	0.134	1.1	MTO	drainage diversion	x		-1.1				
Dam B	0.02	0.16	MTO	WMS	x		-0.16				
Dam C	0.77	6.2	MTO	WMS	x		-6.2				
Dam D	0.25	2	MTO	WMS	x		-2				
Dam G	0.075	0.6	MTO	catchment - no watercourse	x		-0.6				

							Harvestable Rights		Water Access Licences		Exempt
							Volume (ML)	Volume (ML)	Take (ML/yr)	Take (ML/yr)	
							Mount Owen	Forestry	Jerrys	Glennies	
Harvestable Rights Provisions							343.9	61.7			
Water Access Licences									200		
Dams					Catchment Area (2009)						
Name	Surface Area (ha)	Volume (ML)	Land Ownership	Comments	Jerrys	Glennies					
Dam H	0.065	0.52	MTO	catchment - no watercourse	x		-0.52				
Dam I	0.09	0.72	MTO	catchment - no watercourse	x		-0.72				
Dam BB	0.25	2	MTO	WMS	x		-2				
Dam AB	0.23	1.84	MTO	WMS	x		-1.84				
Dam AM	0.6	10.2	MTO	WMS	x		-10.2				
Dam 22	1.26		MTO	WMS, turkeys nest	x						x
Dam SD5	2.01	61.9	MTO	WMS, sediment dam	x						x
Dam TP1	2.47	38	MTO	WMS, sediment dam	x		-38.0				
Dam AV	1.05	18.1	MTO	WMS	x		-18.1				
Dam AW	0.33	2.64	MTO	WMS	x		-2.64				
Dam AX	0.28	2.24	MTO	1st order	x		-2.24				
Dam AL	0.13	1.04	MTO	WMS	x		-1.04				

							Harvestable Rights		Water Access Licences		Exempt
							Volume (ML)	Volume (ML)	Take (ML/yr)	Take (ML/yr)	
							Mount Owen	Forestry	Jerrys	Glennies	
Harvestable Rights Provisions							343.9	61.7			
Water Access Licences									200		
Dams					Catchment Area (2009)						
Name	Surface Area (ha)	Volume (ML)	Land Ownership	Comments	Jerrys	Glennies					
BNP1	1.08	8.8	MTO	WMS	x		-8.8				
BNP2	1.4	42.4	MTO	WMS	x		-42.4				
Dam X	0.07	0.56	MTO	WMS	x		-0.56				
MIA Dam	0.2	2.4	MTO	WMS, turkeys nest	x					x	
Dam P	0.09	0.72	MTO	WMS	x		-0.72				
Industrial Dam	0.29		MTO	WMS, flood control	x					x	
Rav East Area	0.22	1.76	MTO	WMS	x		-1.76				
Rav East Area	0.14	1.12	MTO	WMS	x		-1.12				
Rav East Area	0.07	0.56	MTO	WMS	x		-0.56				
Rav East Area	0.15	1.2	MTO	WMS	x		-1.2				
Dam AF		0.4	MTO	WMS, pre 1999	x		-0.4				
Dam W	0.05	0.05	MTO	WMS, pre 1999	x		-0.05				

							Harvestable Rights		Water Access Licences		Exempt
							Volume (ML)	Volume (ML)	Take (ML/yr)	Take (ML/yr)	
							Mount Owen	Forestry	Jerrys	Glennies	
Harvestable Rights Provisions							343.9	61.7			
Water Access Licences									200		
Dams					Catchment Area (2009)						
Name	Surface Area (ha)	Volume (ML)	Land Ownership	Comments	Jerrys	Glennies					
Dam AD	2.18	32.7	Forestry	Forestry, WMS, change to flood detention in final landform	x						x
Dam AG	0.65	0.65	MTO	WMS, pre 1999	x		-0.65				
NVS1	0.63	0.63	MTO	WMS, pre 1999	x		-0.63				
NVS2	1.45	1.45	MTO	WMS, pre 1999	x		-1.45				
Decant pond	0.28		MTO	WMS, turkeys nest	x						x
TOTAL Dams							-149.7	-57.4	-192.5	0.0	
Net Dams							194.2	4.3	7.5	0.0	



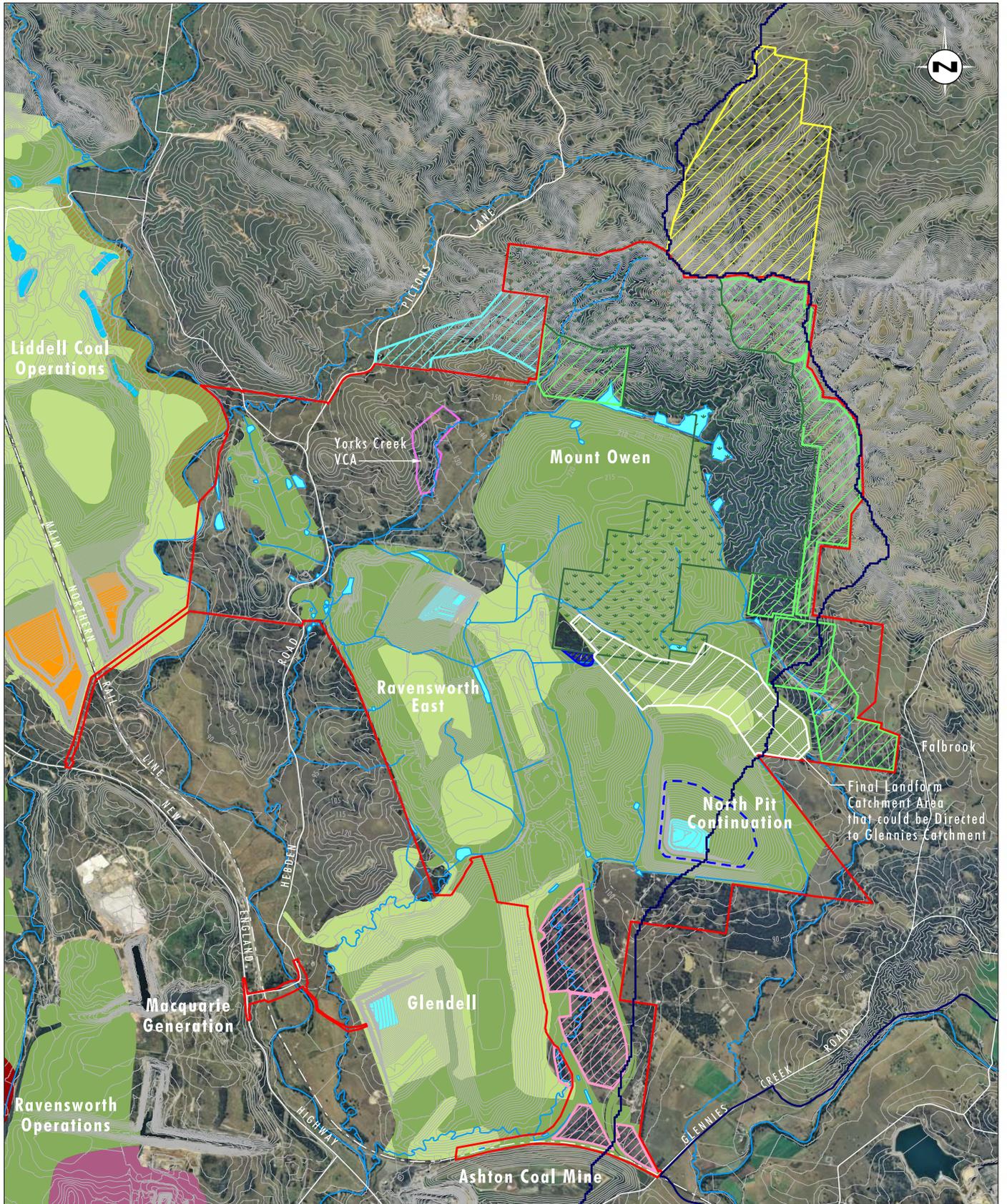
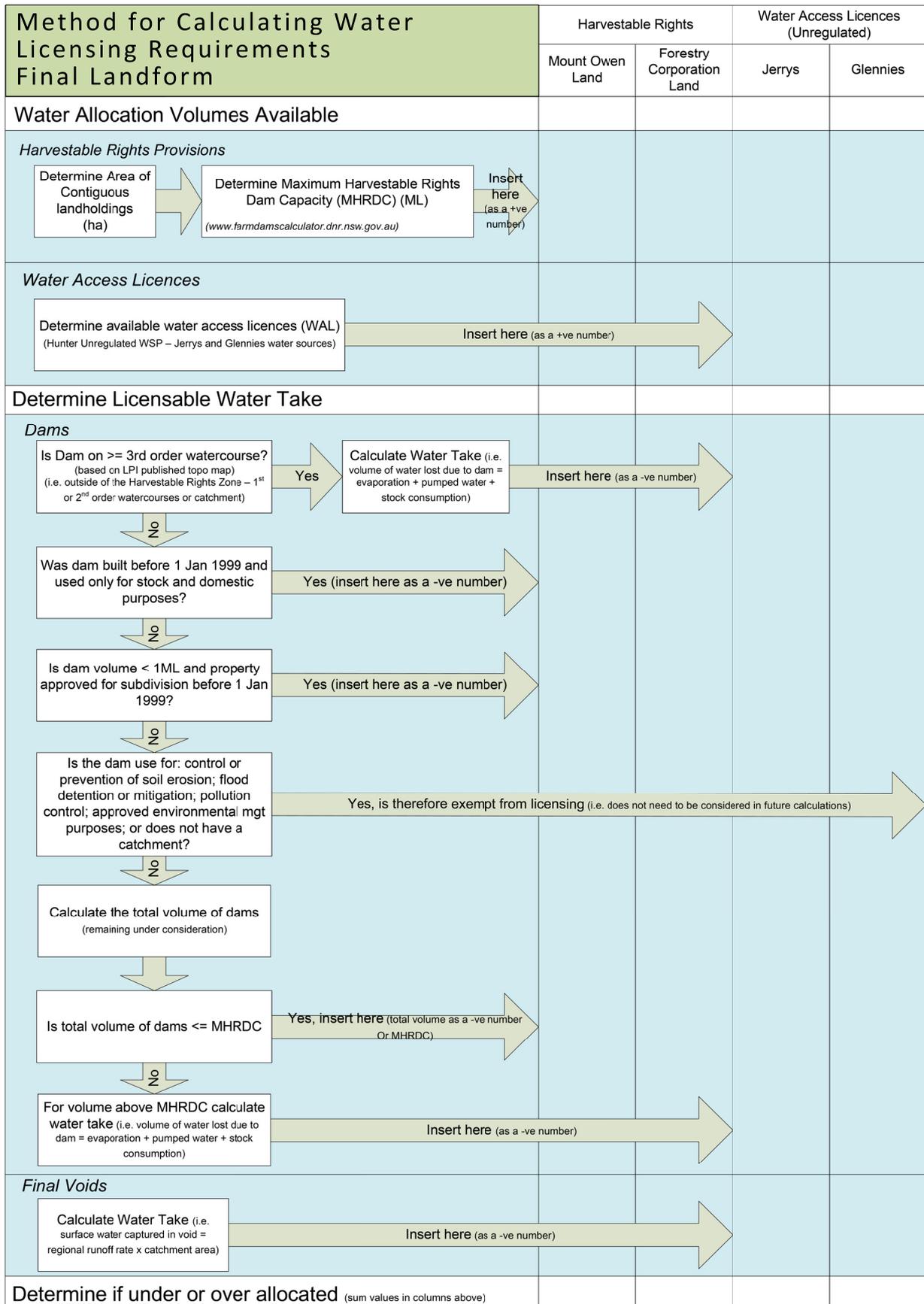


Image Source: Mount Owen (2012-2013)
 Data Source: Mount Owen (2014), Ravensworth Operation Vegetation: Umwelt (2010),
 Liddell Coal Operations Vegetation: Umwelt (2016)
 Note: Contour Interval 5m(AHD)

Legend

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

FIGURE 1
Mount Owen Continued Operations Project Conceptual Final Landform



References:

Water Management Act 2000 Section 53 - Harvestable Rights and Section 54 Harvestable Rights Order
 Water Management Act 2000 -Order Under Section 54, Harvestable Rights – Eastern and Central Division- [NSW Government Gazette 40 dated 31 March 2006](#) (pages 1628 to 1631)

FIGURE 2

Conceptual Final Landform Water Licensing and Accounting Framework



ATTACHMENT 6

Email to Department of Planning and Environment Dated 15 July 2016

Subject: Clarification - Noise Impacts

Please see answers to your questions below (in black font).

Information Request

Can you please confirm that properties 15c, 174 or 13 will not experience exceedances of the 45dB(A) criteria identified in Table 2.1 of the INP over more than 25% of these contiguous lots over the life of the project (I note that Appendix I to the Noise Impact Assessment indicates that these properties are not predicted to exceed 45dB(A) on winter nights in Years 1 and 5)?

An assessment has been completed in accordance with the above interpretation of the VLAMP requirements. This assessment has confirmed that properties 15c, 174 and 13 will not experience exceedances of the 45dB(A) criteria identified in Table 2.1 of the INP over more than 25% of these contiguous lots over the life of the Project.

Can you also clarify which receivers comprise the 24 properties identified in Glencore's response to PAC review as exceeding the PSNLs? (NB: the above three dot points total 19 residences, which by my count brings the total predicted exceedances to 21 properties when you include receivers 15c and 174).

Table 10.3 of the Response to PAC Report (May 2016) provided a consolidated list of residences and properties presented in the EIS, Response to Submissions Report and the updated assessment for the Refined Project predicted to exceed the relevant PSNL. This table listed 22 residences and properties predicted to exceed the relevant PSNL. The additional note of Residences 154 and 155 exceedances of PSNL (which were not included in Table 10.3 on account of being located in acquisition zones for surrounding mining operations) equates to the total of 24 residences and properties predicted to exceed relevant PSNLs as stated in the Response to PAC Report. Please see below for details on revised assessment for Residences 154 and 155 in response to the Department's question below.

In order to consolidate and confirm the Department's assessment with that presented in the Response to PAC Report – an amended Table 10.3 is provided below

Table 10.3 Summary of Predicted Noise Impacts

Noise Prediction Outcome	No. of Properties	Properties	Comment
Residences where noise levels are predicted to exceed PSNL's by up to and including 2 dB	13	R004 , R041, R048, R010, R011, R012, R014, R091, R092, R094, R095, R112, R115, R122 ¹	R004 previously exceeded PSNL presented in EIS; however does not exceed DP&E Adjusted PSNL for Area 7 of 40/40/38
Residences where noise levels are predicted to exceed PSNL's by 3 dB, up to and including 5 dB and located in management area	4 3	R013, R019, R093, R122 ²	R122 predicted to exceed DP&E Adjusted PSNL of 40/40/40 by up to 2dB as noted in above row
Residences within Noise Affection Zone (exceedance of greater-than 5 dB above relevant PSNL)	5 ² 3	R021, R022, R023, R015c , R174	R015c and R174 will not experience exceedances of the 45dB(A) criteria identified in Table 2.1 of the INP over more than 25% of these contiguous lots over the life of the Project
Total	19		

Note: 1) R122 is subject to acquisition under Glencore's Glendell Mine.

2) ~~R015c, and R174 are vacant land predicted with greater than 25% affected by noise from the Project~~

I would also like to confirm the comment made in Glencore's Response to the Commission review report, that Receivers 154 and 155 would exceed the refined PSNLs by up to 2 dB in Year 1 of the project. Can you please confirm this, as the operational noise levels in Appendix G of the EIS noise assessment appear to be well within the adjusted PSNLs for Area 8 - West (which are 44/44/42).

The statement in the Response to PAC Report was based on comparison of the predicted levels at these residences against the more stringent DP&E Area 8 – East criteria. As the Department notes above R154 and R155 are located in Area 8 - West and as such the predicted levels at these residences are below the DP&E adjusted PSNL for Area 8 – West of 44/44/42. As noted in the Response to PAC report these residences are subject to acquisition for surrounding mining operations.



ATTACHMENT 7

Email to Department of Planning and Environment Dated 7 October 2016

Subject: MOCO response on rehabilitation woodland issues and conservation commitments

Please see below response to queries raised in emails regarding the rehabilitation commitments under the Mount Owen Continued Operations Project. Your queries below shown in bold italic with the response following.

=====

I refer to Table 5.2 of your response to the Commission’s Review of the MOCO Project.

This table and the subsequent paragraph identify that the project would result in approximately 1452 ha of additional rehabilitated woody vegetation in the final rehabilitated landscape, when compared with the approved development (presumably this relates to the Ravensworth East and Mt Owen mines). The original EIS identified that the project would involve 518 ha of woodland rehabilitation (namely Central Hunter Ironbark – Spotted Gum – Grey Box Forest).

Can you please confirm if the above figures are correct and if the rehabilitation component of the project involves the establishment of an additional 1452 ha of woodland (or whether this includes other biodiversity offsets and regeneration). Can you also provide a single figure for the rehabilitated woodland to be established on post-mining areas across the Mt Owen and Ravensworth East sites (ie excluding grassland and excluding Glendell).

The paragraph preceding **Table 5.2** in the Response to PAC Review Report is as follows:

‘Table 5.3 ... compares the areas of the different landscape features that will be present in the final landform under the currently approved Mount Owen Complex development and the Refined Project (including Glendell). The calculations include existing offset regeneration and revegetation commitments and include the proposed offset regeneration and revegetation commitments.’ (emphasis added)

Table 5.3 (incorrectly referred to as Table 5.2 in the final paragraph on pg. 76 of the Response to PAC Review Report) provides a full breakdown of the landscape features which are present in each area in the Rehabilitated Landform where the area of woodland vegetation may be affected by the Project (i.e. rehabilitated mined areas and offsets). The second to last row in **Table 5.3** provides the total of each landscape feature across all areas but excludes Glendell. The calculations in **Table 5.3** are based on the Potential Land Use Options identified in **Figure 5.6** of the PAC Review Report (copy attached). The Glendell area calculations in **Table 5.3** in the Response to PAC Review Report apply to the areas of the Mount Owen Complex located outside the Project Area (refer to **Figure 5.6**).

Table A below provides a breakdown of the area of each landscape features in the currently approved final landform of each of the proposed mined areas as well as the existing vegetation present in the Proposed Disturbance Area.

Table A Landscape features in approved rehabilitated final landform on mined land (existing approved development) and Proposed Disturbance Area.

Project Component	Woodland/Open Forest (Ha)	Grassland (Ha)	Treed Rehab (Ha)	Pit Lake (Ha)
Mount Owen (existing approved impact area)	1103 [#]	193 [#]	N/A	44 ⁺
Mount Owen Proposed Disturbance Area	228 [*]	224 [*]		
Ravensworth East (including TP1, TP2 and stage 3 and RW pit)	102 [#]	564 [#]	N/A	2 ⁺
Glendell (excludes TP2)	N/A	435 [#]	344 [#]	12 ⁺

[#] Existing approved rehabilitation commitment

⁺ Modelled final pit lake area in approved conceptual final landform

^{*} Existing vegetation located within Proposed disturbance area. The Biodiversity Offset Package developed for the Mt Owen Continued Operations Project is designed to offset the removal of this woodland vegetation within this area.

Table B identifies the area of woodland and grassland feature within the Project Area (excluding offset areas) that will exist in the approved disturbance areas in Ravensworth East and Mount Owen (including the proposed disturbance area) following rehabilitation of the Refined Project. **Table B** also identifies the existing approved rehabilitation commitments in these areas and the difference between existing and proposed.

Table B Area of woodland and grassland in rehabilitated final landforms of disturbance areas within Project Area (existing approved disturbance areas and Proposed additional disturbance area)

Project Component	Woodland/Open Forest (Ha)	Grassland (Ha)
Existing approved development*	1433	981
Refined Project	2037	341
Difference	+604	-640

* Calculation includes Proposed Disturbance Area and assumes existing vegetation in this area remains at current areal extent

As can be seen from **Table B**, the conceptual rehabilitation strategy for the Refined Project results includes the establishment of 2037 hectares of woodland on existing and proposed disturbance areas at Mount Owen and Ravensworth East. This is an additional 604 hectares of woodland vegetation relative to the currently approved final landform (rehabilitated mined areas and existing vegetation in the Proposed Disturbance Area) in the same area. It should also be noted that the biodiversity offset strategy also includes the long term conservation and establishment of an additional 911.5 hectares of forest and woodland within the 4 land based offset sites (Cross Creek Offset – 367 ha, Stringybark Creek Habitat Corridor Offset – 97.5 ha, Esparanga Offset – 303 ha and Mitchell Hills Offset – 144 ha).

Of the 2037 hectares of land within the disturbance area that are to be restored to woodland, 518 hectares will be subject to long term protection arrangements consistent with other components of the biodiversity offset strategy (this is discussed further below). A further 249 hectares of the rehabilitation woodland is located with Ravensworth State Forest and will be returned to State Forest management when rehabilitation in this area has reached a standard which allows release of security. The remaining 1270 hectares of the woodland area committed to being established will be managed as native woodland ecosystems.

As discussed below, the 1270 hectares of established woodland, outside of the RSF and the 518 hectares forming part of the biodiversity offset strategy, would not be subject to specific conservation measures such as establishment as a biobanking site or voluntary conservation agreement. However, any future development that may affect this woodland would be subject to further approval requirements which would necessarily have regard to the biodiversity impacts associated with the removal of this woodland. Any impacts on this rehabilitation woodland would require consideration against NSW legislation and policy with all but minor impacts associated with 'routine agricultural activities' requiring offsetting such that there is no net loss of biodiversity values meaning the establishment of this woodland area has the practical effect of permanently conserving at least 1270 hectares of equivalent quality woodland community.

To help inform the finalisation of the conditions of consent, it would be appreciated if Glencore could provide further clarification regarding the intended final land use for the total 2037 ha of rehabilitated woodland to be established across the site. I note that the EIS for the MOCO Project and recent correspondence from Glencore identifies that 518 ha of this land forms part of the Biodiversity Offset Strategy. I also note that the EIS for the previous Mt Owen Operations project referred to the establishment of rehabilitated woodland for conservation purposes and the protection of woodland rehabilitation associated with the final land use and long term biodiversity outcomes of the project.

Section 5.1.1.1 details the project commitments in regards to rehabilitation of the Mt Owen (and Ravensworth East) sites upon completion of mining.

Section 5.1.1.1 Project Commitments

*Section 5.19.6 of the EIS details the rehabilitation objectives and post mining land use design for the Project. These commitments also apply to the Refined Project, however the regeneration and revegetation commitments regarding the offset areas have been further clarified in **Section 4.2**. As detailed in Section 5.19.6 of the EIS, the commitment to rehabilitate areas disturbed by mining activities back to woodland communities will focus on the re-establishment of Central Hunter Ironbark – Spotted Gum – Grey Box Forest and, in selected areas, grassland for grazing. The rehabilitation strategy will also include the establishment of other communities in appropriate parts of the terrain such as Hunter Lowland Red Gum Forest, primarily along drainage lines and potentially areas of dry rainforest or wetter variants of Central Hunter Ironbark – Spotted Gum – Grey Box Forest with dry rainforest species in more sheltered areas of the final landform.*

This commitment includes a total of 2037 hectares of rehabilitation woodland comprising:

- the establishment of 518 hectares of Central Hunter Ironbark – Spotted Gum – Grey Box Woodland EEC which would be subject to long term protection
- the restoration of approximately 249 hectares of woodland and forest communities in the areas of Mt Owen which are located within Ravensworth State Forest (excepting areas with dams which have been established and now comprise aquatic habitat values) (refer to **Figure 5.6** in the Response to PAC Review Report – Attached))
- the restoration of an additional 1270 hectares of woodland community (predominately Central Hunter Ironbark – Spotted Gum – Grey Box Forest but will also include the establishment of other communities in appropriate parts of the terrain such as Hunter Lowland Red Gum Forest, primarily along drainage lines and potentially areas of dry rainforest or wetter variants of Central Hunter

Ironbark – Spotted Gum – Grey Box Forest with dry rainforest species in more sheltered areas of the final landform) within the disturbance areas within the Mount Owen Continued Operations project area.

Long Term Conservation Commitment

Section 5.7.8 of the EIS sets out the Biodiversity Offset Strategy. All calculations shown in Table 5.7.4 of the EIS refer solely to offset value in the land based offsets of Cross Creek, Stringy Bark Creek and Esparanga which were to be subject to Long Term Conservation. The intent of showing rehabilitation in Table 5.7.5 of the EIS was to provide an overview of the cumulative value of the proposed biodiversity offset package (i.e. long term conservation + rehabilitation (with a 50% discount applied to rehabilitation)). Further, we note that the Response to PAC Review Report (in particular Section 5.3.2) clearly indicates that long term conservation of the entire area of rehabilitation woodland was never intended.

The Rehabilitation Woodland commitment in the EIS is based on 518 hectares of woodland vegetation being returned to Central Hunter Ironbark – Spotted Gum – Grey Box Woodland– See Section 5.19.6 of the EIS. This is reinforced in Section 5.1.1.1 of the Response to PAC Review Report. Glencore’s long term protection of rehabilitation woodland commitment remains consistent with that identified as part of the Biodiversity Offset Strategy in the EIS, and applies to 518 hectares of rehabilitation woodland as discussed in the EIS. The areas within the disturbance area that would be subject to long term conservation measures will be defined during the project in consultation with the Secretary of Planning and OEH.

In addition to the 518 hectares of rehabilitation woodland that will be subject to long term conservation measures, approximately 249 hectares of the rehabilitation woodland is located within Ravensworth State Forest which will be returned to management under the *Forestry Act 2012*. Based on the correspondence from Forestry Corporation dated 18/9/2015 (attached), we understand that the Forestry Corporation view the most appropriate long term management of this area as being a National Park or State Conservation Area. In all, 767 hectares of the rehabilitation woodland established as part of the Project will be subject to long term conservation measures which would prevent future development in these areas.

The biodiversity offset strategy also includes the longterm conservation and establishment of an additional 911.5 hectares of forest and woodland within the 4 land based offset sites (Cross Creek Offset – 367 ha, Stringybark Creek Habitat Corridor Offset – 97.5 ha, Esparagna Offset – 303 ha and Mitchell Hills Offset – 144 ha). In total, the Biodiversity Offset Strategy includes the long terms conservation of 1429.5 hectares of remnant, rehabilitated and regenerated woodland. This represents an offset ratio of 6.2:1 relative to the additional woodland disturbance proposed as part of Project. This is in addition to the existing long term conservation commitments in relation to the disturbance areas in Ravensworth State Forest and the existing offset areas.

The above commitments are consistent with the biodiversity offset strategy described in Section 5.7.8 of the EIS and the biodiversity offset package identifying as being suitable by the Office of Environment and Heritage in their correspondence to DP&E dated 11 March 2015 and 17 June 2016.

Additional Woodland Rehabilitation Commitment

As detailed above, in addition to the 767 hectares of woodland rehabilitation that will be subject to long term conservation protection, a further 1270 hectares will be established/retained within areas approved for disturbance as part of the Mount Owen Continued Operation Project and past activities associated with approved operation at Mt Owen and Ravensworth East. This revegetation will be predominately Central Hunter Ironbark – Spotted Gum – Grey Box Forest but will also include the

establishment of other communities in appropriate parts of the terrain such as Hunter Lowland Red Gum Forest, primarily along drainage lines and potentially areas of dry rainforest or wetter variants of Central Hunter Ironbark – Spotted Gum – Grey Box Forest with dry rainforest species in more sheltered areas of the final landform.

As discussed in Section 5.3.2 of the Response to PAC Review Report, the Mount Owen site has a number of attributes that make it suitable to a variety of end land uses. However, as mining at Mt Owen will not be completed until approximately 2031, it is not possible, or even appropriate, to identify the optimal end land use for this site at this time and potential uses of this land post mining may not even be recognised at this time. The development application must, nonetheless, identify defined end land uses that the mine site will be rehabilitated to. The EIS identified the end land use for the site as being a combination of rehabilitated woodland and grazing land but identified that alternative post-mining land uses may be investigated as part of the detailed mine closure process (refer to Section 5.19.5 of the EIS). The conceptual final landform and rehabilitation strategy identified in Figure 5.6 (attached) and detailed in Section 5.3.2 of the Response to PAC Review Report is the same as that identified in the EIS but has adopted the comments from the PAC Review Report (Recommendation 11) and includes an increase in the area of proposed rehabilitation woodland (predominately on slopes) relative to that originally proposed. As discussed in Section 5.16.5 of the EIS and Section 5.3.2, the rehabilitation strategy has been developed to identify a feasible end-of-mine land-use scenario that is also amenable to other uses in the future. The establishment of a total of 2037 hectares of woodland in this landform is a commitment of the project irrespective of any alternative land uses that may be identified during the detailed mine closure process.

The detailed mine closure process described in Section 5.19 of the EIS will be implemented at least 5 years prior to mine closure. This process will include discussions with all key stakeholders on final land uses. This will necessarily include consideration of employment generating opportunities that will replace the loss of employment associated with the cessation of mining. This development application does not seek approval for any final land uses other than agricultural land and the establishment of woodland communities in the final landform.

As discussed above, any proposed change to the approved final land use detailed in the EIS and Response to PAC Review Report (i.e. low intensity agriculture and woodland vegetation) will be subject to further approval and assessment requirements. Under existing NSW legislation and policy, any impacts on this rehabilitation woodland would require offsetting such that there is no net loss of biodiversity values meaning the establishment of this woodland area has the practical effect of permanently conserving at least 1270 hectares of equivalent quality woodland community. The security required under the terms of the Mining Leases will remain in place until such time as this quantum of rehabilitation is established to the standard committed to (i.e. self-sustaining native woodland characteristic of vegetation communities found in the local area)

There is a firm and enforceable commitment to establishment of 1270 hectares of additional woodland rehabilitation as part of the Project.- As discussed in Section 5.3.2 of the Response to PAC Review Report, from a long term planning perspective, there are significant advantages for not imposing long term conservation requirements on the additional defined areas of rehabilitation woodland. Future, higher value, land uses which optimise the attributes of the post mining landform may require clearance of some areas of rehabilitation woodland outside the long term conservation areas. These developments would require planning approval in the future and any impact on the rehabilitation woodland and associated biodiversity values would need to be considered at the time of any proposal; based on existing legislative requirements, the loss of biodiversity value in areas of rehabilitation woodland disturbed as a result of any such development proposal would need to be offset as part of the conditions of approval on that development. If these areas of rehabilitation woodland were subject to long term conservation restrictions, this may unreasonably constrain

future land use options at the site which may, perversely, result in the development clearing areas of remnant vegetation which was not subject to such a protection.

In summary, the Project commitment to including at least 2037 hectares of woodland in the approved disturbance area results in the practical conservation of this quantum of woodland. A defined area of 767 hectares will be subject to long term protection measures, the remaining 1270 hectares will be subject to the project approval requirements to be established to meet relevant completion criteria, that is, there is an enforceable requirement to establish this woodland. Legislative considerations which, based on existing legislation and policy, result in the effective long term conservation of this area or an equivalent area of woodland vegetation and effective biodiversity outcomes.

Consistency with Previous Rehabilitation Commitments

The proposed rehabilitation strategy and proposed conceptual landform and land uses result in an additional 604 hectares of woodland vegetation relative to what is currently approved and/or present in the landform. The commitment to the type of woodland established in the Mount Owen Project Area remains largely identical to that currently approved however the proposed rehabilitation commitments for the Ravensworth East area under the Project are significantly better in terms of biodiversity outcomes than is currently required under the existing development consent.

Table C below compares the areas of woodland rehabilitation proposed in each approval area relative to existing commitments.

Table C – Comparison of Woodland under Project Commitments Relative to Existing approved commitments

	Woodland Area (Ha)	
	Existing/Approved	Proposed
Mount Owen (existing approved impact area)	1103 [#]	1170
Mount Owen Proposed Disturbance Area	228*	372
Ravensworth East (including TP1, TP2 and stage 3 and RW pit)	102 [#]	495
	1,433	2037

[#] Existing approved rehabilitation commitment

* Existing vegetation located within Proposed disturbance area. The Biodiversity Offset Strategy developed for the Mt Owen Continued Operations Project is designed to offset the removal of this woodland vegetation within this area.

As can be seen from **Table C**, the conceptual rehabilitation strategy for the Project shown in **Figure 5.6** of the Response to PAC Review Report will result in significantly more woodland in the Ravensworth East development consent area than is currently approved. The area of woodland in the existing Mount Owen development consent area is also slightly larger than is currently approved and there will also be more woodland established in the Proposed Disturbance Area than is currently present.

The establishment of Central Hunter Ironbark – Spotted Gum – Grey Box Forest and other communities in appropriate parts of the terrain such as Hunter Lowland Red Gum Forest, primarily along drainage lines and potentially areas of dry rainforest or wetter variants of Central Hunter Ironbark – Spotted Gum – Grey Box Forest with dry rainforest species in more sheltered areas of the final landform, will require careful management of the rehabilitation process. This will necessarily include the exclusion of grazing during the rehabilitation establishment phase. These commitments are consistent with the commitments under the existing Mt Owen development consent (as detailed

in the approved Rehabilitation Management Plan for the Mount Owen Complex which incorporates the Flora and Fauna Management Plan and Offset Management Plan) and the protection afforded to the 518 hectares of woodland rehabilitation area, reversion of 249 hectares to State Forest management and existing legislative restrictions on harm to woodland communities of the type being established.

The approved Landscape Management Plan for the Mt Owen Complex summarises the existing rehabilitation commitments for the site:

Mount Owen mine initially included a substantial area of the Ravensworth State Forest (RSF). The requirement of the rehabilitation strategy for Mount Owen is to re-establish a forest community within the mined areas of the RSF to a similar forest community structure as the remnant forest and to rehabilitate the adjacent freehold area outside the forest to a forest community. Details of the proposed schedule and type of rehabilitation works during the life of Mount Owen mine are included in the MOC Flora and Fauna Management Plan and BOS.

Ravensworth East and Glendell Mines each had an extensive disturbance history prior to mining. The rehabilitation strategy for these operations aims to emulate the pre-mining grazing areas, enhanced by local and regional ecological linkages and provide for a sustainable final land use option. The pre-mining land use was primarily agricultural with areas of remnant native vegetation. The rehabilitation strategy of Glendell and Ravensworth East therefore combines primarily pasture with habitat corridors which have been designed to provide a functional link between remnant vegetation areas. Habitat corridors consisting of trees, shrubs and groundcover are being established in visually prominent areas in order to reduce the visual impact of the mining operations.

As noted in the Landscape Management Plan actual commitments under the existing Mt Owen and Ravensworth development consents are those contained in the Rehabilitation Management Plan. Section 2.2 of the Rehabilitation Management Plan describes the rehabilitation commitments for Mount Owen and Ravensworth East:

MOC is committed to the ongoing rehabilitation of disturbed areas to native woodland and forest to expand on existing local vegetation communities and provide habitat for endangered and threatened fauna known to occur in the area. At a very early stage in the mine's life, Mt Owen identified a need to develop specialised rehabilitation techniques if it were to achieve its rehabilitation objectives and in 1996 established a research relationship with the Plant Science Group at the University of Newcastle.

Mt Owen places a great deal of emphasis on the standard of rehabilitation. The primary aim is to pursue a proactive rehabilitation strategy and maximise the amount of rehabilitation that can be undertaken on an annual basis, thereby reducing the impact of the operation upon the surrounding landscape.

The end land use objective for rehabilitation at Mt Owen is to create a conservation area comprising dry sclerophyll forest and open woodland that will complement the remnants of the RSF and Biodiversity Offset Areas being created in surrounding pasture lands. Mt Owen is committed to rehabilitating native forest communities to the maximum extent practical in the Rehabilitation areas at the Mt Owen Mine site. This will be through both replicating local dry sclerophyll communities to the extent found to be practical, and through the creation of more open eucalypt woodland with pasture communities. The latter is restricted to areas being rehabilitated with topsoil from previous pasture lands, which contains competitive species that restrict germination and establishment of many of the forest species. Biodiversity management for the Ravensworth East area is largely restricted to maintaining existing

rehabilitation and rehabilitating disturbed areas in accordance with the approved Mining Operations Plan (MOP). However, there is opportunity to develop corridor linkages with the rehabilitation at Mt Owen to maximise the benefits of native vegetation establishment and provide for an overall expanded woodland area.

As described above, the end land use objective for Mount Owen includes a combination of open woodland, which contemplates grazing, and dry sclerophyll communities. The description of this end land use objective reflects the description of the pre 2003 approved rehabilitation commitments for Mt Owen as described in Section 2.1.5.2 of the 2003 Mount Owen EIS. As detailed in Section 6.3 of the Rehabilitation Management Plan, the commitment to long term security only applied to the offset areas identified in the Rehabilitation Management Plan, which do not include the rehabilitation woodland areas. Accordingly, the reference to conservation area in the Rehabilitation Management Plan should be interpreted as being for conservation or biodiversity management purposes. This interpretation is consistent with the description of rehabilitation contained in other parts of the 2003 Mt Owen EIS as extracted below.

Executive Summary 'Flora and Fauna' (pg 7)

A comprehensive Biodiversity Offset Strategy has been developed, in consultation with the Department of Infrastructure, Planning and Natural Resources (DIPNR) and the National Parks and Wildlife Service (NPWS). The Biodiversity Offset Strategy compensates for the disturbance of vegetation communities through the conservation of 415 hectares in offset areas including 100 hectares of Central Hunter Spotted Gum/Grey Box/Ironbark Woodland. The offsets provide immediate protection for a slightly greater area of woodland and riparian vegetation than is lost through the project.

It is proposed to actively plant approximately 133 hectares of pasture within the offset areas with woodland species to increase the habitat value of the areas. All remaining areas of pasture not actively planted will be managed to enhance natural regeneration. It is also proposed to rehabilitate mining areas to a woodland community which will provide further habitat, increasing the long term ratio of conserved or rehabilitated woodland to woodland disturbed by the project to 5:1.

The reference to conserved woodland in this context applies to the 415 hectares of woodland in the offset areas.

'Land Use' (pg 8)

Impacts on land use within the project area include disturbance through mining of 35 hectares of Ravensworth State Forest in addition to the 240 hectares already approved. The project includes transfer of use of the TSR to State Forest as part of the Biodiversity Offset Strategy. Future grazing of HVCC land within the project area will be reduced due to mining in Pit C, Eastern Rail Pit and overburden emplacement in the West Dump. Rehabilitation of these areas will involve establishment of woodland for conservation purposes with the exclusion of grazing.

Section 1 Introduction

Section 1.8.3 Conservation of Biological Diversity (pg 1.11),

The project involves the disturbance of 35 hectares of Ravensworth State Forest and an additional 59 hectares of woodland in surrounding areas. A number of threatened fauna species have been recorded within the project area. There have been no threatened flora species or endangered ecological communities recorded within the project area. The fauna impact assessment for the project indicates that there is potential for a significant impact in the short to medium term on five threatened species as a result of the project. The proposed Biodiversity Offset Strategy will assist to ameliorate the impact on threatened species in the medium to long term and enhance the long term value of this woodland, providing a ratio of approximately 5:1 including mine rehabilitation, of woodland protected and established through active planting and regeneration, to that disturbed by the project.

Section 2 Existing Operations

Section 2.1.5 Rehabilitation (pg 2.5-6)

Section 2.1.5 describes the rehabilitation commitments under the 1998 development consent for the Mount Owen project:

The existing consent requires that all areas disturbed within the boundary of Ravensworth State Forest are rehabilitated to similar woodland community. A Plan of Management for Revegetation and Wildlife Management (POM), was developed following the grant of consent for Mt Owen in 1994. The POM reflects the requirements of the Consent and was developed by a working group consisting of representatives from NPWS, NSW State Forests, DIPNR (then Department of Conservation and Land Management) DMR and the Hunter Environment Lobby to guide flora and fauna management and rehabilitation and revegetation practices at Mt Owen. The POM was formally adopted on 21 February 1995 and implementation of the POM is a requirement of Mt Owen's current development consent. Implementation of the POM is overseen by the Mt Owen Advisory Group, which is comprised of the previously listed bodies plus HVCC. The Advisory Group is formally constituted under the existing development consent. The principal goal of the POM is to "re-establish and improve the ecological values of Ravensworth State Forest and specified adjoining area" (POM, 1997). Other goals include the following:

- re-establish effective, stable land forms and surfaces;*
- maintain the diversity and genetic resource of the flora currently existing within the locality;*
- maintain and enhance habitat for native fauna (including aquatic species) to ensure species survival in the area over the long term;*
- provide necessary access for the suppression of fires, control of noxious animals and weeds and ecosystem monitoring; and*
- provide the basis for an expanded, woodland ecosystem which is self sustaining in the long term.*

The POM stipulates that areas outside the State Forest boundary be rehabilitated back to woodland community to the maximum extent practical. It is a requirement that only species found in the local area be used and that local provenance seed be used where feasible. Conservation has been adopted as the end land use for the current operations and existing rehabilitation has utilised local forest species.

Topsoil has been used on all rehabilitation, placed to a nominal depth of 100 mm. Where topsoil from the existing forested areas is used, the rehabilitation is mimicking the local community. Where topsoil from previous pasture areas has been used the rehabilitation is recreating an open woodland using local species. Rehabilitation design and implementation is consistent with the Synoptic Plan: Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley of NSW (the Synoptic Plan).

Section 3.0 The Project

Section 3.16 Rehabilitation and Decommissioning (pg 3.14)

Section 3.16 described the Rehabilitation and Decommissioning process for the 2003 Mt Owen Project.

Existing methods of rehabilitation at Mt Owen, as discussed in Section 2.1.5, have proved to be successful and are reported to the DMR as well as other government departments annually in the AEMRs. Mt Owen's commitment to the current reforestation and rehabilitation programs has shown Mt Owen's ability to undertake successful rehabilitation efforts using recognised industry best practice. Further, Mt Owen's past and current efforts in supporting rehabilitation research demonstrates HVCC's commitment to not only reestablishing, but improving, the native species habitat in the Mt Owen mining area. Rehabilitation and associated research opportunities for Mt Owen will continue in accordance with current practice.

Upon completion of the tailings emplacement, the pits will be capped using appropriate overburden material from Ravensworth East or Mt Owen Mines. Topsoil will then be spread on top of the capping material to an appropriate depth (as already approved and carried out at Ravensworth East). The area will then be seeded with a range of grass species and native trees consistent with the end land use and biodiversity corridor design. HVCC will be responsible for the rehabilitation of the tailings emplacement pits....

....The final landform after the rehabilitation of the area, as illustrated in Figure 3.9 will include a drainage pattern capable of conveying runoff from the newly created areas whilst minimising the risk of erosion and sedimentation. Disturbed areas will be re-seeded with woodland species in accordance with existing rehabilitation practices, as described in Section 2.1.5. The area will also be appropriately fertilised.

A final void will remain at Mt Owen, as illustrated in Figure 3.9, in the southern extent of the mining area. As illustrated in Figure 3.9, the slopes leading into the final void will be rehabilitated where practicable. The highwall on the eastern and southern sides of the void will be stabilised in accordance with DMR requirements. A detailed final void management plan will be developed five years prior to mine closure. An assessment of the final void water quality is contained in Section 8.1.2.

The total area of mine rehabilitation at the end of mine life is approximately 968 hectares. The Biodiversity Offset Strategy discussed in Section 9 will result in the regeneration and protection of 376 hectares of woodland and 39 hectares of riparian vegetation. Combined with the existing New Forest area of 430 hectares, the total woodland at the end of the mine life will be approximately 1774 hectares.

The 2003 EIS clearly articulates that the rehabilitation strategy for the 2003 Project included the establishment of approximately 968 hectares of woodland community comprising both dry sclerophyll communities similar to those in Ravensworth State Forest and open woodland communities which would include grazing communities. The delineation between these two types of woodland area is delineated by the source material for topsoil with areas rehabilitated using soil from existing forested areas to be rehabilitated to woodland communities mimicking those which existed pre-mining and other areas being returned to open woodland. In the pre-mining landscape, only small areas of the proposed disturbance footprint located outside of Ravensworth State Forest were forested meaning the commitment in the EIS in relation to areas outside Ravensworth State Forest was to return it largely to open woodland. The commitment to rehabilitation in the Ravensworth State Forest area was to restore this to woodland similar to that in the adjoining areas of Ravensworth State Forest not impacted by mining. There is no commitment in either the EIS or the currently approved Rehabilitation Management Plan to long term security over the woodland established as part of the rehabilitation of areas disturbed by mining operations approved under the 2004 development consent or the earlier 1998 consent.

The 2003 Mt Owen Project was the subject of a Commission of Inquiry held in 2004. The offset strategy and rehabilitation commitments which were proposed for the 2003 Mt Owen Project are summarised in The 2004 Commission of Inquiry Report at pages 47 – 49:

The location of existing offsets and proposed offset areas is illustrated in Figure 6. According to the applicant the offsets are to compensate for the disturbance of vegetation communities through the conservation of 415 hectares in offset areas, including 100 hectares of Central Hunter Spotted Gum/Grey Box/Ironbark Woodland. The offsets provide immediate protection for a slightly greater area of woodland and riparian vegetation than is lost through the project.

The applicant also proposes to actively plant woodland species to increase the habitat value of approximately 133 hectares of pasture within the offset areas early in the project. All remaining areas of pasture not actively planted will be managed to enhance natural regeneration. Furthermore, the applicant proposes to rehabilitate mining areas to a woodland community which would provide additional habitat, increasing the long term ratio of conserved or rehabilitated woodland to woodland disturbed by the project to 5:1. Specifically that its revised proposal for biodiversity and woodland area would:

- *Deliver a significantly larger ultimate area of native woodland, comprising 1,800ha as opposed to the total forested area envisaged under the 1994 approval of 1,292ha;*
- *Enhance the biodiversity area by extending it to the upper catchment boundaries of Swamp Creek, Bettys Creek and Yorks Creek, and provides a conservation reserve of greater ecological integrity by encompassing entire upper catchments; and*
- *Provide a better integration with the Synoptic Plan for Integrated Landscapes for Coal Mine Rehabilitation in the Hunter Valley (1999) by providing a linkage through to the Glennies Creek corridor to the southeast.*

A range of management strategies would also be implemented to reduce the impact of continued mining on endemic flora. As noted above the strategy proposed to mitigate the loss of regionally significant vegetation communities is the formal conservation of woodland communities through the Biodiversity Offset Strategy. Also included is the

rehabilitation and remediation of pasture and isolated remnants adjacent to currently vegetated areas which would enhance the long term viability of Ravensworth State Forest and surrounds.

Additional strategies for the ongoing management of flora and vegetation communities at Mt Owen would include:

- *Rehabilitation of disturbed areas and the western dump with endemic species, in accordance with the existing Mt Owen rehabilitation strategies;*

...'

The Commissioner's comments on the proposed ecological impacts of the Project and the proposed offset and rehabilitation strategy are set out at pages 53 -56 of the report

The applicant proposes to clear a further 94 hectares of an important woodland community which has already been extensively cleared from the floor of the Hunter Valley, including sections of Ravensworth State Forest. The remnant woodland proposed for clearing is comprised of 35 hectares (of a total of 45 hectares) within the Southern Remnant of Ravensworth State Forest, 13 hectares within the West Overburden Dump area, 3 hectares in the Eastern Rail Pit area, 15 hectares for the upper and lower Bettys Creek diversion works, and 28 hectares within the mine extension area outside Ravensworth State Forest. The applicant recognises that removal of the 94 hectares of remnant woodland is a significant loss of vegetation from the area. The 29 hectares of regenerating woodland and 8 hectares of riparian vegetation which would be cleared are also significant locally. In addition 294 hectares of pasture would be cleared.

...

A fundamental question which must be addressed is whether an offset strategy is entirely appropriate in situations where there are likely to be significant impacts on both flora and fauna of high conservation significance, as is the case with the applicant's proposed development. Particular matters which need to be considered are the maturity and habitat value of the vegetation to be cleared, the relative abundance of similar habitat in the same topographic locality, and the potential long-term ecological impacts of clearing the subject vegetation.

It is generally acknowledged that the ecological value of the woodland community proposed to be cleared is significant and that it has been extensively cleared on the floor of the Hunter Valley. As part of its rehabilitation plans the applicant proposes to revegetate a substantially increased area with relevant species to recreate woodland communities similar to those which formerly existed. However, as pointed out in a number of submissions, the time for a comprehensive ecology to develop could take from 40 to 150 years or more.

...

The Commission acknowledges the importance of protecting offset areas of mature and/or regenerating woodland over the long-term. It supports the DEC's recommendation that the TSR, Northeastern, Northwestern, Forest East, Southern and Southeast Corridor offset areas be subject to Voluntary Conservation Agreements. The Commission finds the offset areas should be managed for conservation and that further consultation between the applicant and government agencies is required before the final level of protection is agreed.

The area of the Southern Remnant and other woodland communities which would be cleared if the proposal were approved have important ecological values due to the limited amount of woodland on the floor of the Hunter Valley and the significant fauna species which inhabit the remaining areas. The proposal would have an adverse impact on a number of threatened fauna species.

The Commission has reviewed the information relating to flora and fauna as well as the Biodiversity Offset Strategy. For the areas proposed for clearing it has considered the relative location, size and canopy cover of each area of the various vegetation communities; the fauna surveys and the recorded location of threatened species; the time-frame for effective revegetation of the disturbed areas; the improved levels of protection for offset areas; and the potential for fauna survival and recruitment in remnant areas. It has also considered the timeframe for establishing effective habitat on relatively undisturbed pasture lands as proposed.

The proposed extension to the Mt Owen mine would result in the clearing of important areas of woodland vegetation and have a significant impact on the flora and fauna in the immediate area. Due to the limited areas of woodland vegetation remaining on the floor of the Hunter Valley some regional effects could also be expected. The applicant proposes to set aside substantial offset areas and to rehabilitate the other areas affected by mining activities. Nevertheless, there would be losses of woodland vegetation, the rehabilitated areas would take considerable time to mature, and as a result some threatened species would be adversely impacted.

...

The Commission recognises that the extensive offset areas proposed by the applicant to compensate for allowing mining would, over time, provide substantial additional habitat for locally and regionally important fauna species. This would otherwise be unlikely given long standing land use in the area. However, if these areas cannot be afforded a suitably high level of protection over the long term then approval of the proposed Mt Owen extension project would be difficult to justify.

The Commission acknowledges and supports the applicant's ongoing commitment to rehabilitation research. It considers the continuation of the Advisory Group or formation of a similar body to oversee and offer advice on rehabilitation and regeneration activities would be essential. The applicant's regular revision of the Flora and Fauna Management Plan on the recommendations of the Advisory Group would need to occur if the project is approved.

The Commission is satisfied that provided a long-term view is taken the applicant's biodiversity offset strategy and proposed mine rehabilitation works could be considered to adequately address the ecological impacts of the proposed mining activities subject to:

- *Early revegetation of the proposed offset areas;*
- *The offset areas and rehabilitated areas are integrated and managed for conservation;*
- *Ecological values of the offset and rehabilitated areas being protected over the long-term through a deed of agreement or similar long-term security protocol;*

- *The retained area of the Southern Remnant being not less than 25 hectares;*
- *The ongoing management of habitat and breeding programs for the green and golden bell frog;*
- *The continuation of the Advisory Group or formation of a similarly constituted body;*
- *Regular revision of the Flora and Fauna Management Plan, on the advice of the Advisory Group or similarly constituted body; and*
- *Annual public reporting of revegetation and rehabilitation activities.*

As detailed above, 2037 hectares of the Mt Owen and Ravensworth East areas mining disturbance areas will be rehabilitated to self-sustaining native woodland ecosystems characteristic of vegetation communities found in the local area. This is a 604 hectare increase in the amount of woodland that would be present in the same area relative to the rehabilitation commitments in the existing approvals. The conceptual rehabilitation strategy identified in **Figure 5.6** of the Response to PAC Review Report, together with the additional measures proposed for the East-West Corridor Management Area and the South East Corridor Offset Area will significantly improve habitat connectivity through the landscape.

518 hectares of this rehabilitation woodland will be permanently conserved through long term security measures similar to those applicable to the land based offset areas. Woodland vegetation will also be re-established in the entire 249 hectares of Ravensworth State Forest located within the disturbance area and be returned to the management of the Forestry Corporation. The Forestry Corporation have indicated that their preference is to transfer the reservation status of Ravensworth State Forest to either National Park or State Conservation Area following the cessation of mining. The commitment to restore the remaining 1270 hectares of woodland to self-sustaining native woodland ecosystems characteristic of vegetation communities found in the local area will have the practical effect of establishing biodiversity values in these rehabilitated areas which would require offsetting future impacts on these woodland areas as a result of any future development that may be proposed. The conservation outcomes proposed under this offset strategy are therefore considered to be entirely consistent with the recommendations contained in the Commission of Inquiry Report into the 2003 Mount Owen Project and the existing approved commitments in relation to the rehabilitation of areas disturbed by mining operations at Mt Owen and Ravensworth East. While not all of the rehabilitated woodland will be protected through long term security arrangements, the NSW legislation and policy approach to the protection of vegetation of a quality that the Project is committing to has progressed significantly since 2004. The practical effect of these policies (such as the FBA) and legislation is that the commitment to restoring 2037 hectares of rehabilitation woodland means this additional quantum of vegetation will remain in the landscape irrespective of whether it is all subject to long term conservation security arrangements. Importantly, this objective is achieved without unnecessarily constraining future development on the site.

The conceptual rehabilitation strategy shown in Figure 5.6 in the response to PAC Review Report has deliberately identified the areas which are most suitable for alternative land uses as being grazing land; this includes the existing mine infrastructure areas. The flatter infrastructure areas and final voids are the areas considered most likely to be the most suited to alternative land uses. The removal of infrastructure will only occur on the cessation of mining. The rehabilitation of voids and infrastructure areas will only commence following the cessation of mining. Should an alternative land use(s) be identified during the mine closure planning process, the detail regarding the locations where rehabilitation woodland is established in and around these areas can have regard to the likely

footprint of these potential future uses. This significantly limits the likelihood of future development in the area impacting on the larger remnant areas of rehabilitation progressively established through the life of the Project. These alternative land uses may however require some (likely minor) clearing of rehabilitation (eg, access roads, transmission lines or pipelines). This would be unnecessarily constrained though the establishment of permanent offset requirements for all areas identified in the rehabilitation strategy as being woodland. The approval process for any future development will require consideration of any impacts on the biodiversity values of the rehabilitated vegetation impacted and, based on current policies, any residual impacts on biodiversity values would need to be fully offset on a maintain or improve basis. This approach is consistent with the principles of ecologically sustainable development.

Can you also please review and confirm the hectares shown against the existing Mt Owen offset areas listed in Table 9 [of the Draft Conditions]. The hectares shown have been updated to reflect the size of approved biodiversity offsets identified in Glencore’s response to the Commission’s Review Report. However, these figures differ from two other sets of figures provided in the EIS Ecological Assessment and Glencore’s Biodiversity Management Plan. It would be appreciated if you could confirm that the figures accurately reflect the approved offset areas.

Under the current consent condition, the Biodiversity Offset Strategy is described in the Flora and Fauna Management Plan (Condition 45). The Flora and Fauna Management Plan is incorporated as part of the Biodiversity Management Plan. Section 2.1 (Table 1) of the Biodiversity Management Plan details the approximate size (rounded to nearest whole number) of the approved offset areas. The Table below has been updated to reflect the area of the offset areas identified in the Biodiversity Management Plan (accurate to 0.1 hectares). A check of the spatial data used to identify the offset areas shown in Appendix 5 of the Draft Conditions confirms the areas identified below.

Table 9: Summary of the Biodiversity Offset Strategy

Area	Offset Name^a	Size hectares (ha)
On-site Offsets	Northwest Offset	71.4
	Northeast Offset	83.6
	Southeast Offset	58.3
	TSR Offset	25.1
	Forest East Offset	110.9
	Southeast Corridor Offset	74.1
	Southern Remnant Offset	4.0
	Cross Creek Offset	367.0
	Stringybark Creek Habitat Corridor Offset	97.5
	Rehabilitation Woodland	518.0 ^b
Off-site Offsets	Esparanga Offset	303.0
	Mitchell Hills Offset	143.7
Total Area		1856.6

Notes:

^a To identify the areas referred to in Table 9, see the applicable figures in Appendices 5 and 7.

^b The Rehabilitation Woodland must be rehabilitated to a level that meets the EEC listing criteria for the Central Hunter Ironbark – Spotted Gum – Grey Box Forest EEC.



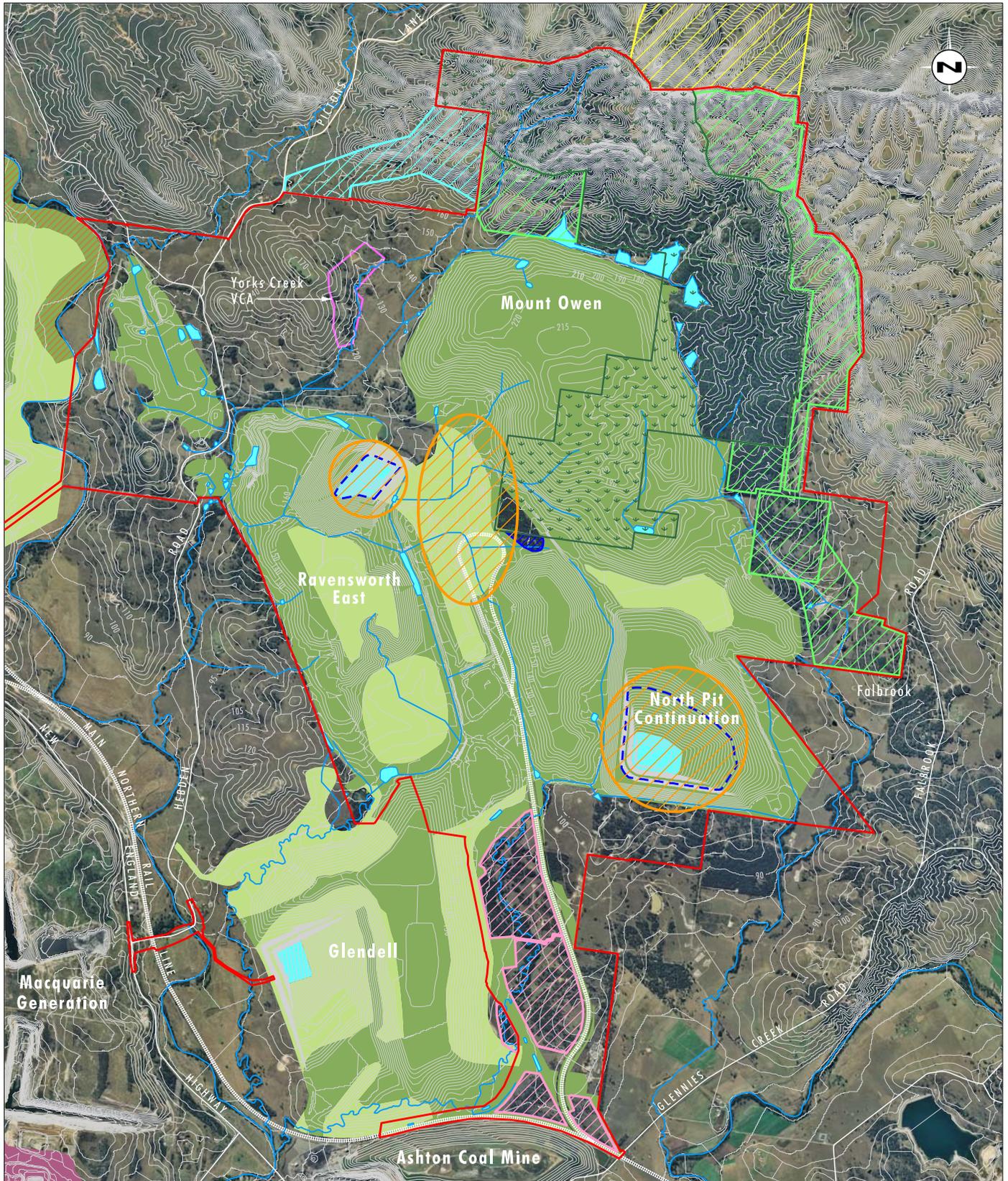


Image Source: Mount Owen (2012-2013)
 Data Source: Mount Owen (2014), Ravensworth Operation Vegetation: Umwelt (2010),
 Liddell Coal Operations Vegetation: Umwelt (2016)
 Note: Contour Interval 5m(AHD)

0 1.0 2.0 3.0 km
 1:55 000

Legend

- Project Area
- Yorks Creek VCA
- Pit Lake
- Native Woodland
- Open Grassland (Potential grazing areas) with pockets of Native Vegetation
- Grazing
- Maximum Pit Lake Water Level
- Ravensworth State Forest
- Proposed Corridor Habitat Enhancement on Non-Mined land (Liddell Coal Operations)
- Areas with Highest Potential for Industrial or Intensive Agriculture Uses in Post Mining Landform
- Existing Biodiversity Offset Area
- Proposed Cross Creek Biodiversity Offset Area
- Southern Remnant Biodiversity Offset Area
- Bettys Creek Habitat Management Area
- Stringybark Creek Habitat Corridor
- Drainage Line

FIGURE 5.6

Mount Owen Continued Operations Project Potential Final Land Use Options



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Mount Owen Continued Operations Project – Forestry Corporation Response

Forestry Corporation (previously the Forestry Commission of NSW) has had a long association with the Mt Owen Complex of mines. Beginning with the rehabilitation of the Swamp Creek mine in the early 1990's and ongoing since the consultation in relation to clearing and the commencement of mining of Ravensworth State forest in 1995.

The current proposed continued operations project avoids disturbance of the remaining pre-existing forested section of Ravensworth State forest. Forestry Corporation has no objections to the proposed final rehabilitation land form, as the progressing rehabilitation will alleviate any concerns in relation to a void being left on the state forest following mining.

On completion of the continued operations proposal, following final rehabilitation, Forestry Corporation is of the opinion that serious consideration should be given to the dedicated State forest area being reserved under another tenure such as National Park or State conservation area to preserve the remanent spotted gum forest contained within the forested section of Ravensworth state forest.



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