



Office of
Environment
& Heritage

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SSD 5850

Mr Thomas Watt
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Dear Mr Watt

RE: MOUNT OWEN CONTINUED OPERATIONS PROJECT (SSD 5850) - GLENCORE RESPONSE TO THE PLANNING ASSESSMENT COMMISSION REVIEW REPORT

I refer to your e-mail dated 1 June 2016 seeking comment from the Office of Environment and Heritage (OEH) in response to the Glencore comments to the Planning Assessment Commission's (PAC) report on the Mount Owen Continued Operations Project. OEH has reviewed the Glencore response to the PAC report and recommended conditions, and also OEH's previous correspondence on this project in 2015.

In summary, OEH is of the opinion that improving riparian vegetation along the lower reaches of Stringybark Creek (on land owned by Glencore) is of value for fauna movement on the valley floor, in particular for the Spotted-tailed Quoll. This may be more effective than the proposed 'East-West Corridor Management Area'. OEH agrees with the value of monitoring of revegetation and regeneration over a long timeframe to both measure how vegetation is tracking and allow for adaptive management. Further detailed comments are provided in **Attachment 1**.

If you have any enquiries concerning this advice, please contact Robert Gibson, Regional Biodiversity Conservation Officer, on 4927 3154.

Yours sincerely

17 JUN 2016

RICHARD BATH
Senior Team Leader Planning, Hunter Central Coast
Regional Operations

Enclosure: Attachment 1

ATTACHMENT 1: OEH COMMENTS ON THE GLENCORE RESPONSE TO PLANNING ASSESSMENT COMMISSION REVIEW REPORT: MOUNT OWEN CONTINUED OPERATIONS PROJECT (SSD 5850)

OEH notes that the Planning Assessment Commission (PAC) Report for the Mount Owen Continued Operations Project was finalised on February 2016 and contained 24 recommendations. Nine recommendations are within OEH's area of responsibility: biodiversity (6), final landform and rehabilitation (2), and Aboriginal cultural heritage (1).

BIODIVERSITY

The PAC report presented six biodiversity recommendations to the Department prior to any consent being issued for this project. The proponent's responses (Umwelt, 2016) to the recommendations for biodiversity are found in Sections 4.2 and 5.3.1 and Appendices 3, 4 and 5 of its report.

Following are OEH's detailed comments on the Glencore response report to the six biodiversity recommendations:

1. East-West Vegetation Corridor along Stringybark Creek

OEH notes that Glencore (p. 37) does not propose any additional restoration works of riparian habitat along Stringybark Creek between the Stringybark Creek Offset for the project and the planned restoration works along Bowmans Creek on the Liddell Mine site. Instead, Glencore has proposed the establishment of the 'East-West Corridor Management Area' which is located between the Mount Owen site offices and Yorks Creek on the northern side of the main entrance to the Mount Owen mine (p. 37, Figure 4.3). This Management Area contains scattered trees and shrubs and isolated woody patches and only a small area of riparian habitat (Yorks Creek). It is intended as a provisional means of protecting potential habitat and corridor areas used by Spotted-tailed Quolls and the habitat of that area would be maintained while opportunities to better connect Stringybark Creek to Bowmans Creek are investigated. While this management area will maintain beneficial habitat for at least the short term, it appears to be of limited use for Spotted-tailed Quolls which have been found to travel mainly down local creeks that arise from wooded hills immediately north of the Mount Owen Mine.

The proponent has offered an additional offset parcel, the Mitchell Hills Offset, which is about 10 kilometres northwest of the Mount Owen Mine. This offset was selected for its remnant woodland and forest with the Swift Parrot and Australian Government Department of the Environment comments in mind. This offset likely also contains habitat for the Spotted-tailed Quoll and forms part of a movement corridor for this species adjacent to the valley floor.

If this project is approved the upper half of Stringybark Creek will be included in offset lands for the Mount Owen Mine. Presently the lower stretch of the creek flows through cleared land before joining Bowmans Creek and does not appear to be managed to enhance riparian vegetation. In its current state Stringybark Creek serves as a movement corridor for the Spotted-tailed Quoll. However, with on-going and increasing revegetation activities in its upper reaches and hinterland, and similar works happening and proposed along Bowmans Creek for the Liddell Mine, the three kilometre stretch of Stringybark Creek that flows across four lots that are outside of any current or proposed offset is becoming a pinch point for movement between the Mount Owen and Liddell Mine sites. The current land ownership of those four lots is shown on Figure 1.2 of Glencore's response. This shows that Glencore owns two of those lots, while the other two lots are Crown Land.

OEH acknowledges that Glencore has offered a large offset package for the proposed project, which has grown in size in the response to the PAC report. OEH suggests that the proponent consider fencing the sections of Stringybark Creek on the two lots that it owns (Lot 96 DP 752470 and Lot 355 DP 867083), or otherwise facilitate passive regeneration of the riparian vegetation on those parcels while they continue to investigate ownership and mining constraints on the other two land parcels. A small investment of resources on Lots 96 and 355 would help reduce the pinch point between areas of active and effective revegetation and regeneration which would enhance the movement of Spotted-tailed

Quolls on the Hunter Valley floor. OEH suggests that these actions on Lot 96 and 355 should be undertaken in preference to the proposed 'East-West Corridor Management Area', or are undertaken as a conservation measure for any future consent issued for a Glencore mining project in the Hunter Valley.

2. Expanding North Pit and the reduction in the North-South corridor to its east

The proponent has provided additional information on the impact of mining on reduction in width of the vegetated corridor on the eastern side of North Pit. Further, Glencore has offered to increase the width of planned revegetation on the eastern edge of this woodland and replanted corridor, notably beside parts of the Southeast Offsets and the Southeast Corridor Offsets where the wooded corridor is at its narrowest. This would be further reduced in width by the expansion of North Pit. OEH notes that most of the land disturbance associated with the project, if approved, occurs in the first five years (Figures 4.3 & 4.4, Table 4.3) when any newly planted trees and shrubs in the new revegetation areas would still be small. However, given the range of local threatened fauna that would currently use corridor, OEH considers that the reduced width of the corridor at the start of the project is unlikely to contribute to the extinction of any local populations. OEH supports the proposed additional area of revegetation on the east side of this corridor, and that the revegetation works would be prioritised to commence in the first year of this project.

3. That any issued consent includes the requirement of further research into regeneration activities for this project, corridor linkages within the project area and corridor linkages between the Mount Owen Mine and adjacent mine areas.

The Proponent has facilitated on-going research on their revegetation and rehabilitation by staff and students from the University of Newcastle and CSER Research, and they present a summary of that research in Appendix 3 of the Report. OEH appreciates that the proponent has limited control over when work from this research will be written up and published. The Report would have been improved by the inclusion of a copy of, or a summary of the report titled '*Assessment of the Ecological Outcomes of Mine Rehabilitation, Regeneration and Revegetation at Mount Owen*' by Umwelt (2013) which deals directly with many of the key issues in relation to the nature, issues, timeframes, successes and challenges of rehabilitation of a post-mined landscape in the Hunter Valley. It is advantageous for the great work done at Mount Owen to be able to better inform revegetation at other mine sites in the Hunter Valley so that it can all be undertaken more effectively. Further, the release of the results of rehabilitation and revegetation through peer-reviewed papers and reports would help educate the broader community to help make this part of mine land management more transparent and foster greater appreciation of the work done to date.

OEH is aware of monitoring programs of the Spotted-tailed Quoll at the Mount Owen and Liddell Mine sites. These projects are yielding excellent new information on the movement of this species. Any coordination of such projects between adjacent mine sites would be beneficial, as well as general monitoring of which threatened species use corridors. These may be considered in any future consents for new mining projects.

As a general comment, OEH notes that Appendix 4 of the report contains summaries of local woody vegetation communities around the project area that have come from Peake (2006). OEH notes that most of the details come from Peake (2006) rather than from more recent fieldwork undertaken in and adjacent to the Mount Owen site. This section could have been improved if it was based more on the results of local survey work done on or adjacent to the Mount Owen site to highlight local variation in local vegetation communities.

4. That any issued consent ensures that the regeneration on the mine site is independently monitored and audited on a regular basis.

OEH agrees with this recommendation, and note that the proponent does as well.

5. Proposed changes to the Biodiversity Management Plan: (a) salvaging, translocating or propagating and planting threatened plants; (b) impacts and monitoring of Groundwater Dependent Ecosystems; (c) that more specific performance measures are set in relation to local threatened fauna; (d) that more details are provided on specific methods for regeneration, as well as relevant performance measures; and (e), that further details were provided on the different 'functional groups' in the local vegetation that may be used in regeneration.

- (a) OEH agrees with the proponent's assessment in relation to the unlikelihood that the project would directly impact any of the six local threatened plants species in the study area (Slaty Gum (*Eucalyptus glaucina*, *Ozothamnus tessellatus*, *Pterostylis chaetophora*, Tiger Orchid (*Cymbidium canaliculatum*) endangered population, Weeping Myall (*Acacia pendula*) endangered population, and River Red Gum (*Eucalyptus camaldulensis*) endangered population)). Thus it is unlikely that any plants of those species would require salvage and translocation or propagation for this project.
- (b) OEH notes that there are predicted changes to local Groundwater dependent ecosystems which would result in vegetation changes to dryland vegetation community's overtime. If this affected threatened species, populations or communities then those impacts would require offsetting in accordance with NSW biodiversity offsetting policy.
- (c) OEH agrees with the proposal by the PAC and most of the Proponent's response. OEH's only additional comments are that OEH supports monitoring of the species that use the nest boxes, and that plans are made for the upgrade or replacement of nest boxes as they age (they are not as durable as tree hollows).
- (d) The proponent provided more details on methods for regeneration and performance measures in section 5.3.1. of the report. In general what they have described in relation to plant community succession is general and well-known. OEH endorses the proposed on-going monitoring and Trigger Action Response Plan (TARP) which will alert managers to unexpected deviation from expected successional pathways (Report, p. 97) and thereby allow for adaptive management, if and when required to increase the likelihood of achieving required outcomes.

OEH acknowledges that new planting on an intact soil profile, with residual soil biota, soil seed bank, and existing nutrient recycling system is different to starting on moulded and variably ameliorated mine spoil. Thus in the a cleared area in an otherwise intact woody vegetation community in the Hunter Valley the early stages of succession would likely include moss and lichens; ferns, such as species of *Cheilanthes* and a variable combination of annual daisies (e.g. *Rhodanthe* sp.), tussock grasses (such as species of *Aristida*, *Eragrostis* or *Entolasia*), low-growing perennial daisies (e.g. *Vittadinia* sp., *Vernonia cinerea*), pioneering shrubs in the Fabaceae: Faboideae (e.g. *Daviesia ulicifolia*), Fabaceae; Mimosoideae (*Acacia* sp.), and in other plant families (such as Hop Bush (*Dodonaea* sp.), *Cassinia* sp., *Olearia* sp., *Exocarpos* sp. and *Bursaria spinosa*), and vines such as *Hardenbergia violacea*. In the case of post-mined land revegetation it is likely that representatives of many of these groups of plants would need to be physically added, and that some management actions may be required where aggressive weeds (particularly *Galenia pubescens*, Rhodes Grass (*Chloris gayana*) and Kikuyu (*Pennisetum clandestinum*) are present.

- (e) Appendix 5 of the report includes details of the functional roles and groups to which plant species in Central Hunter ironbark – Spotted Gum – Grey Box Forest in Ravensworth State Forest belong. This is an excellent summary which helps identify which local species may be used for which general roles in the landscape and that species that may contribute more to resilience of that vegetation community, measured by such things as resistance to weed invasion (e.g. Pokorny et al., 2005) and in which circumstances planted indigenous species may compete with each other (e.g. Kimball et al., 2014). Application of these concepts are relatively new in the Hunter Valley, and many aspects of local plant ecology, longevity and reproduction are poorly known. However, as this knowledge base improves it will become more useful in generating an appreciation of which suites of plants, in which environmental settings will have the best chance of achieving revegetation and regeneration outcomes.

Something for future consents to consider is the inclusion of measuring and monitoring the number of native plants in each functional role and group in quadrats or transects in regeneration and revegetation areas. This would require targeted numbers for each plant functional group to be set for each Plant Community Type. This type of monitoring has been considered before, such as in draft '*Hunter Valley Coal mines: Best Practice Guidelines for Biodiversity Offset Management Plans*' prepared by the Department. This approach offers the advantage of targets for each plant functional role or group to be measured for the Annual Monitoring project and to provide a clear indication of how each area is tracking against the target and thus where further actions may be required.

6. Make-up of the Community Consultative Committee

OEH agrees with the recommendation and the Proponent's response.

Other biodiversity issues.

The PAC raised the issue of planned regeneration and revegetation to create many wooded areas in the offset package for this project. As discussed in OEH's 2015 advice, the main areas of uncertainty come from revegetating a post-mined landscape. Regeneration of cleared land with an intact soil profile, and soil seed bank of indigenous species retain some resilience and thus retain the ability to more easily produce at least a modified version of the previous woody plant community.

OEH supports the monitoring of the success of revegetation and rehabilitation for this project and the setting of targets relating to 5, 10, 15 and 20 years (p. 54 of the Response Report) for areas where regeneration is proposed. The Response Report (p. 64) indicates that it has taken 50 odd years for vegetation to regenerate into a community that conforms to the description of the Hunter Central ironbark Spotted Gum Grey Box Forest Endangered Ecological Community (EEC) under the *Threatened Species Conservation Act 1995*. They state further that similar recovery can be expected in other cleared areas with the removal of grazing and management of invasive weeds. The regeneration of ECC will therefore take time and likely much longer than the 20 years.

FINAL LANDFORM AND REHABILITATION

Of the six recommendations proposed by the PAC in relation to the proposed final landform and rehabilitation, two are within OEH's area of responsibility. OEH comments on the Glencore response report to these recommendations are:

12. That the applicant provides a revised mine plan that covers minimisation of final voids, the creation of a more sympathetic post-mine landform; and the species composition of the proposed rehabilitation;

OEH supports the creation of more sympathetic post-mine rehabilitation and revegetation on development sites. Suggested means for this have been raised in comments on biodiversity (above).

15. That DP&E consider ways in which existing rehabilitation for other projects may be protected from future development.

OEH agrees that it is preferable for rehabilitation and revegetation associated with mining projects to be protected from further clearing. However, as highlighted by the Proponent, mechanisms exist under current NSW Biodiversity Offset policy for rehabilitation and revegetation to be cleared, and its biological values to be offset elsewhere.

ABORIGINAL CULTURAL HERITAGE

19. The PAC recommended that prior to any determination that DP&E consider the findings and any potential implications of the recent court case, *LALC v Minister for Planning Infrastructure and Anor* [<https://www.caselaw.nsw.gov.au/decision/564a9ec2e4b003c5681fabbe>] in relation to the Calga Sand Mine in relation to the adequacy of the cultural heritage assessment for this project.

OEH agrees with the proponent's response to this recommendation. OEH does not believe that the factors from the Calga Quarry decision are at play for the Mount Owen Continued Operations Project given the nature of the archaeological record at this site.

References

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- Pokorny, M.I.; Sheley, R.L.; Zabinski, C.A.; Engel, R.E.; Svejcar, T.J. and Borkowski, J.J. (2005) Plant Functional Group Diversity as a Mechanism for Invasion Resistance. *Restoration Ecology* **13**: 448-459
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OEH 17 JUNE 2016