

Mt. Pleasant Optimisation Project (*SSD-10418*)

Independent Expert Report

to

NSW Independent Planning Commission

On behalf of Environmental Defenders Office

Prepared by

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1. Preamble

This report has been prepared in response to a *Brief to Expert - Mount Pleasant Optimisation Project (SSD-10418) – NSW Independent Planning Commission Public Hearing* that was supplied to the author on the 15th June 2022 and which sought opinions on the following issues:

- was the assessment of environmental impacts, as far as it relates to your areas of expertise, appropriate and sufficient?
- has the assessment adequately considered any cumulative impacts arising from the Project?
- do the proposed offsets adequately account for the loss of habitat and biodiversity from this project, and
- what, if any, concerns do you have about the environmental impacts of Project, bearing in mind the mitigation measures proposed?

My responses to the preceding questions are detailed in the following sections. In responding to the brief, I acknowledge that I have read the Expert Witness Code of Conduct and agree to be bound by it.

2. Expertise & familiarity with assessment of biodiversity issues

I am a research scientist / consulting ecologist with extensive experience in natural area management and landscape-scale threatened entity assessment and monitoring. For the last 20 years I have been the Managing Director / Principal Ecologist of Biolink Ecological Consultants. In 2020 I handed my business to my senior staff with whom I continue to work as a mentor and advisor, while I focus more on specialist work relating to survey design, assessment, monitoring, and management of threatened ecological entities; this work in recent years has included projects across a range of threatened taxa, including:

- A contract in 2018/19 from NSW DPIE to design and deliver a 3-day intensive course on threatened entity management with a focus on matters of occupancy / detection probability, survey design and monitoring.
- Co-authoring two papers on occupancy, detection probability and population ecology of the threatened pale-headed snake [Shelton *et al.*, (2018); Shelton *et al.*, 2020)].
- Developing a standardised survey methodology for brush-trailed rock wallabies published in *Australian Mammalogy* (Phillips *et al.* 2021).
- Development and successfully trialling of a survey methodology for the threatened black-breasted button quail (Biolink 2021).

- Review of survey protocols and design a long-term monitoring program for the Critically Endangered Red-lored whistler, results of which were recently communicated at a scientific conference in central NSW (Bell *et al.* 2022).

A copy of my professional CV is attached.

3. Understanding of the proposed Project

Amongst a general escalation of activity and associated infrastructure upgrades / requirements, the proposed Project seeks approval to amend a previously approved footprint and development sequence of an existing mine near Muswellbrook, the essence of which in an ecological context involves an exchange of some land (hereafter referred to as the proposed Relinquishment Area) on which approvals to clear/disturb already exist, in exchange for other lands (hereafter referred to as the proposed Extension Areas) within more southern portions of the wider assessment area and which are located more proximal to the existing mining pits but not within existing approvals for mine expansion. The proposed Relinquishment Area varies between 484.9 - 509.8 ha in size depending on which of two road options are selected. The greater proportion of the Relinquishment Area supports derived grasslands / relic woodland areas, some of which qualify as Threatened Ecological Communities (TECs).

While it is acknowledged that further offsets resulting from the clearing of native vegetation within the proposed Extension Areas may be required should the proposal be approved (page 126 – 127 of the Biodiversity Development Assessment Report (hereafter referred to as the BDAR), the detail of precisely where such offsets might be located – beyond somewhere in ‘the region’ - has not been provided.

4. Purpose of this report

The purpose of this report is to examine issues regarding ecological aspects of the proposal and associated exchange of lands, specifically the extent to which the proposal has been adequately informed by the associated BDAR prepared by Hunter Eco (2021) which was submitted as Appendix 4 of the overall environmental assessment process.

5. The Biodiversity Assessment Method (BAM)

In my opinion the Biodiversity Assessment Method (hereafter referred to as the BAM) is a scientifically and methodologically flawed approach to resolving biodiversity conservation, a view that I believe is shared amongst both BAM practitioners and ecologists. The result of its application is a net loss of biodiversity at the local population / community level, with losses offset by

retirement of credits elsewhere and/or contribution to a Biodiversity Conservation Fund. I acknowledge that determining authorities have little choice but to be guided by the BAM process, but there is an onus to very clear about its shortcomings and the implications of decisions where the level of required assessment required by the process fails even basic tenets of population / community ecology.

6. Assessment of Threatened Entities

a) Threatened Ecological Communities

The presence of scattered remnant paddock trees in what are now mostly derived and/or shrubby grasslands remains sufficient to warrant recognition of two relic TECs within the assessment area covered by the BDAR, one of which (Central Hunter Grey Box – Ironbark Woodland) is listed as Endangered for the purposes of the *Biodiversity Conservation Act 2016* (NSW), the other (Box-Gum Woodland) as Critically Endangered for the purposes of the *Biodiversity Conservation Act 2016* (NSW).

It is not the intention of this report to challenge the veracity of the vegetation mapping, and hence the conclusions of the BDAR in this regard are accepted without prejudice. However, I do not support the associated Serious and Irreversible Impact (SII) - themed assessments that invariably conclude that further losses of Critically Endangered communities such as Box - Gum Woodlands are acceptable (page 114 of the BDAR refers). This happens because the potential loss is progressively discounted by using broader distribution scales (typically 1000 ha, 10,000 ha and bioregion) of the TEC in question, the outcomes of which sequentially reduce the loss until it appears mathematically trivial. By example, the BDAR estimates the reduction in extent of the critically endangered Box – Gum Woodland to be 34% when considered at the scale of the surrounding 1000 ha, 8% when considered in the context of the surrounding 10,000 ha, and 3.4% – 3.5% when assessed at bioregional scale (pages 113 – 114 of BDAR refer). It has been my experience that each planning decision that consequently approves further reduction of extent being convinced by this logic simply pushes the conservation status of SII-qualifying TECs closer to the localised extinction end of the conservation spectrum. Government failure to set thresholds for decision makers dealing with the notion of SII compounds this issue when in my opinion no further clearing of SII-qualifying entities such as Box - Gum Woodland that are already listed as Critically Endangered should be permitted, regardless of the spatial scale at which the assessments are being considered.

Given the preceding concerns, there is some merit in the proposal (as posited by the BDAR) because if approved it would result in a reduction in the amount of native vegetation that will potentially be

cleared, which in the case of the Box - Gum Woodland TEC is commendable because it lessens the amount that has already been approved for removal. However, this is not the only biodiversity matter that warrants prudent evaluation, nor – in my opinion – should it necessarily be considered in isolation and/or given a greater weight in the overall assessment process. My reasonings for this are detailed in the immediately following paragraphs.

Ninety-six vegetation integrity plots are reported by the BDAR, the detail of which is provided in Appendix 4 of that document. Unfortunately, it is not possible to make a direct comparison and/or compare vegetation integrity between the Relinquishment and Extension Areas because of the biased nature of site selection that the BAM, which is the approved approach for undertaking ecological assessment, enables. Regardless of the embedded bias and excluding the plantation assessments it is nonetheless possible to demonstrate mathematically (presuming the vegetation integrity plots are distributed equitably) using the available data that the relative proportions of Derived Native Grassland (both forms) that have been assessed for BDAR purposes do not differ significantly between the Relinquishment and Extension Areas (**Table 1**); This outcome directly challenges the BDAR’s assertion that the proposed Relinquishment Area is “... a large contiguous area of native vegetation.” because approximately half of the total area being proposed is predominantly a derived grassland that has resulted from extensive tree removal/ habitat modification in the past. It is also apparent from the integrity plot data that it is the Extension Areas that contain the greater diversity of Plant Community Types ($n = 6$) when compared to the Relinquishment Area ($n = 4$).

Table 1. Relative frequencies of 92 vegetation integrity plots carried out in areas of derived native grasslands and woodlands within the Mt. Pleasant Optimisation Project assessment area. Statistical analyses imply no significant differences in the relative frequencies of DNG and woodland areas (Chi-square: 0.2579; $df=1$; $P = . 611579$).

Category	Relinquishment Area	Extension Areas	
DNG / SG	14	34	48
Woodland / SG	15	29	44
	29	63	92

b) Stratification of the study area and site selection for assessment purposes

Amongst other things, the Secretary's Environmental Assessment Requirements (SEARS) required assessment of the land proposed for relinquishment. However, and as effectively illustrated in Figures 4a and 4 b of the BDAR, survey of the overall assessment area over time has not been systematic, while in the Relinquishment Area it remains mostly peripheral and restricted to trackside verges along the western edge. Because of this it would be my opinion that that the required survey of the Relinquishment Area does not satisfy SEARS requirements.

The BDAR states that 11 sites were initially selected for survey, but not how they were selected, and then adds a further 13 sites but does not explain either the basis for that number, the rationale behind site selection or indeed, why they were required. Also resurveyed are 2 sites previously assessed by other workers (Eco logical and Cumberland) but with no explanation as to why. These considerations detract from the scientific rigour and objectiveness of the survey protocol.

Threatened species

The BDAR partitions the threatened fauna species assessment into BAM-related categories of *ecosystem credit species* and *species credit species*, the former category only requiring a notion of presence which is then considered in terms of surrogacy (*i.e.* the presence of habitat presumed by the assessment to be suitable for the species), whereas the latter category requires formal field survey to identify an appropriate occupancy polygon (*i.e.*, the area of habitat within which the species actually occurs). To this end the filtering process identified the presence of two *species credit species* in the study area, striped legless lizard, and squirrel glider. A commentary of the assessment process for both species follows:

Striped Legless Lizard

Figure 9 of the BDAR alludes to the presence of only 2 localised populations of the striped legless lizard, one of which is located outside the assessment area, the other within the largest of the proposed Extension Areas. Again, and in common with that undertaken for the squirrel glider (see below), survey work for this species has been *ad hoc* rather than systematic. A further population of striped legless lizard is located to the east of Muswellbrook but is separated from that within the assessment area by a barrier in the form of the Hunter River. Because of this, the two populations must be considered separately.

Despite only one specimen of striped legless lizard being opportunistically detected by field survey, a species credit polygon of > 400 ha has been proposed by the BDAR, the extent of which is then used to imply negligible impact on the species within the assessment area. This claim is entirely based on

an assumption by the BDAR's author that the species is distributed homogeneously (*i.e.*, 100% occupancy) in areas identified as the species credit polygon when absolutely no data has been provided to support such a conclusion. Moreover, it is poor scientific practice to extrapolate presence across such a large area in the absence of support from survey, more so when there are not even historical records of striped legless lizard in the Relinquishment Area.

Knowledge of striped legless lizards in the assessment area is thus limited to a single individual from a single location towards the northern boundary of the largest of the proposed Extension Areas. Hence it is arguable that approval of the proposal in its current form will result in the loss of the only known population of this species that occurs within the assessment area. Without any further knowledge about the distribution of the species, and in the absence of an on-site offset that would conserve the population, there is a likelihood of a localised extinction event occurring.

Squirrel gliders

Figure 13 of BDAR implies that one/two local sub-populations of squirrel glider have historically been present within the assessment area, one (or part of which) is already likely to have been lost to mining activity, the other (or that remaining) being more centrally located within the assessment area in an area that will be impacted by the proximity of the largest of the proposed Extension Areas directly to the east. It is important to be aware that nowhere in any of the assessment documents is there any information regarding the extent of habitat being occupied by the squirrel glider population, the size of the population on-site and/or its capacity to absorb impact / maintain longer-term viability. These are fundamentally important matters requiring assessment and affecting survival of populations of threatened species such as this, yet they have not been addressed by the BDAR. The scale of impact arising from the proximity of the largest of the proposed Extension Areas is not possible to predict with accuracy because of the *ad hoc* nature of survey effort over time, neither – and perhaps more importantly – there is no data to indicate the presence of another local / sub-population of squirrel gliders in the Relinquishment Area. Again, the extent to which this outcome reflects poor survey design / effort is unknown.

Why is the potential for negative impacts on the squirrel glider so important? Pages 90 – 91 of the BDAR go to considerations of the cumulative impact of the proposal on biodiversity, concluding that '*... the Project would not result in a change to the nature or intensity of impacts on biodiversity values associated with the (already) approved Mount Pleasant Operation, as areas are already approved to be cleared and all additional clearance is assessed in this BDAR*'. I disagree with this conclusion for the following reasons:

Figures 13 and 14 of the BDAR imply the presence within the assessment area of two species of threatened forest owl – the Powerful Owl and the Barking Owl - both of which are known predators of arboreal mammals such as squirrel glider. That these are only database records does not discount the matter of presence because there has been no systematic survey for either, rather they have been surveyed historically on an *ad hoc* basis and now effectively discounted by the BDAR as ecosystem credit species by the BAM approach. Maintaining the presence of these forest predators in an area is contingent on maintenance of populations of their prey. Yet and in contrast to the owls, the squirrel glider has been assessed as a species credit species by the BDAR, thus creating an ecological disconnect / disregard of an important trophic relationship.

Given that the remaining squirrel glider population will be impacted if the development proceeds, and that there is no evidence to indicate the presence of another squirrel glider population within the assessment area (that is not already lost), much less the Relinquishment Area, then it is reasonable to argue that a critical cumulative impact has not been considered by the BDAR, specifically the flow-on impact on two species of threatened forest owls that will have lost a key food resource in the form of the squirrel glider population.

The only way to ensure that this flow on effect does not occur will be to quarantine the remaining extent of occurrence of squirrel gliders in the assessment area and/or include it within the proposed Relinquishment Area and reduce the western edge of the proposed Extension Areas to the east or remove it altogether.

I have noted a statement from the NSW Dept. of Planning & Environment that implies the presence of squirrel gliders in the Relinquishment Area. I am unaware where evidence for this statement comes from when Figure 13 of the BDAR does not indicate any records of squirrel glider in the Relinquishment Area. Hence the species polygon promoted by the BDAR is incorrect and thus overstates the extent of habitat occupied by the species, while the associated 7,679 credits generated by the assumption of presence cannot be applied, nor can the associated conclusion of a net reduction in impact.

Conclusions

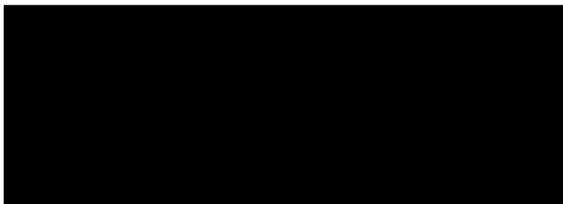
The application proposes exchanging some land parcels that we arguably know something about, for another parcel we demonstrably know very little about. Based on information contained in the BDAR, there is no evidence to sustain the argument that offering up the Relinquishment Area in favour of the Expansion Areas offers a superior ecological outcome for the site. While the Relinquishment Area offers a larger spatial extent and reduces the amount of Box – Gum Woodland

that might otherwise be removed, I am not convinced that this alone should be the primary consideration in any approval.

The proposal if approved will effect further impacts on the remaining squirrel glider population on the site, and the loss of the only locality in the assessment area where the striped legless lizard has been recorded, neither is there any evidence in the BDAR that populations of these two species occur in the Relinquishment Area, hence these populations will be lost if the development as currently proposed is approved, while flow on trophic effects have the potential to compound the losses. No monitoring has been proposed to document the impacts of the proposal (if approved) on either of these species.

Given the preceding considerations, I am not satisfied that the assessment of potential environmental impacts has been adequate to objectively inform the assessment process, neither has the potential for cumulative impacts been adequately assessed because of the ecological disconnect effected by the partitioning of threatened species into *ecosystem* and *species credit species* respectively.

No detail has been provided about the location of any additional offsets that may be required, aside from an underlying presumption that in common with other offset areas they will be located somewhere in the region rather than on-site / locally.



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References

- Bell, S., Lindsay, K., Geering, D., and Phillips, S. (2022). *Developing an acoustically based monitoring program for the red-lored whistler*. Presentation to Conservation in Action Symposium: Climate Bushfires Wildlife. Central West Councils Environment and Waterways Alliance. 2 – 4 May, 2022, Orange. NSW.
- Biolink. (2021). *Black-breasted Button-quail habitat prioritisation*. Final Report to Ipswich City Council. Biolink Ecological Consultants, Pottsville, NSW.
- Hunter Eco (2021) Mt Pleasant Optimisation Project – Biodiversity Development Assessment Report. Prepared for MACHEnergy Australia Pty. Ltd.
- Phillips, S., Howard, K., and Krause, J. (2021). Informing the space between zero and one: using a standardised, scat-based approach to monitor changes in habitat use by brush-tailed rock-wallabies *Petrogale penicillata*. *Australian Mammalogy*. <https://doi.org/10.1071/AM20056>.
- Shelton, M., Goldingay, R., and Phillips, S. (2018). Population ecology of a cryptic arboreal snake (*Hoplocephalus bitorquatus*). *Australian Journal of Zoology* **65(6)**, 338-390.
- Shelton, M., Phillips, S., and Goldingay, R. (2019) Habitat requirements of an arboreal Australian snake (*Hoplocephalus bitorquatus*) are influenced by hollow abundance in living trees. *Forest Ecology and Management*. <https://doi.org/10.1016/j.foreco.2019.117675>.
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