



Our ref: DOC21/72048-16

Your ref: SSD 10418

Ms Lauren Evans

Team Leader
Energy Resource Assessment
Department of Planning, Industry and Environment
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Dear Ms Evans

Mount Pleasant Optimisation Project (SSD-10418) – Review of Environmental Impact Statement

I refer to the e-mail dated 2 February 2020 in which the Energy and Resources Division (ERD) of the Department of Planning, Industry and Environment (the Department) invited Biodiversity and Conservation Division (BCD) of the Department for advice in relation to the Mount Pleasant Optimisation Project. BCD have reviewed the Environmental Impact Statement for this project in relation to impacts to biodiversity and flood risk. BCD undertook a site inspection on 2 March 2021 to review details of the biodiversity assessment.

At your request BCD's comment are restricted to a review of the assessment of the impact areas for the optimisation project. I understand that the offset strategy for the project is being discussed with the proponent and BCD will have an opportunity to comment on the offset strategy at a later date.

BCD's recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Steven Cox, Senior Team Leader Planning, on 4927 3140 or via email at huntercentralcoast@environment.nsw.gov.au

Yours sincerely

A handwritten signature in black ink that reads 'Joe Thompson'.

JOE THOMPSON
Director Hunter Central Coast Branch
Biodiversity and Conservation Division

Date: 23/03/2021

Enclosure: Attachments A and B

BCD's recommendations

Mount Pleasant Optimisation Project (SSD-10418) – Review of EIS

Biodiversity

1. BCD recommends that further details are provided on the survey effort for *Cryptostylis hunteriana*, *Cymbidium canaliculatum*, *Cynanchum elegans*, *Eucalyptus pumila*, *Ozothamnus tessellatus*, *Prostanthera cineolifera*, *Prostanthera cryptandroides* ssp. *cryptandroides*, *Pomaderris bodalla*, *P. queenslandica*, *P. reperta*, and *Thesium australe*.
2. BCD recommends that the proponent lists all Plant Community Types considered as potential matches to on-ground vegetation and describes the selection process for biotic and abiotic factors.
3. BCD recommends that the Expert Report is updated to acknowledge the persistence of the population of *Prasophyllum petilium* beside Thomas Mitchell Drive.
4. BCD recommends the 'number of trees with hollows' for BAM plot 200331P5 is changed from zero to one, and that the BAM calculation files are re-run.
5. BCD recommends that additional data is provided to ensure that all requirements of the BDAR are met.

Matters of National Environmental Significance

6. BCD recommends that additional information on the assessment of Matters of National Environmental Significance is provided in Chapter 7 of the BDAR.

Flooding and flood risk

7. The impact on the local tributary catchment of Sandy Creek should be determined in addition to the impact on the total catchment. Mapping showing existing water courses and disturbed area should be of adequate scale to highlight this disturbance.

The impacts of changes to surface and groundwater flows to Sandy Creek on town water supply, riparian ecology, freshwater mussels, agricultural land uses and drought resilience should be assessed.

8. The modelling of overflows to Sandy Creek needs to be reviewed. Placement and management of fines storage end environmental dam 2 need to be managed to ensure that surface and seepage flows are contained on site.
9. Further testing is required outside of areas currently impacted by Mount Pleasant mining operations and infrastructure. Trigger values should be based on levels which will provide adequate protection to the ecology and users of Sandy Creek.
10. More detail is required regarding direction of flow from MWD2 and HWD3 in the event of spillway overflow or failure. Dam Safety NSW may need to be consulted regarding design and management criteria for these new dams.

Design criteria for sediment and environmental dams and required spillways should include risk assessment for downstream flooding.

BCD's detailed comments

Mount Pleasant Optimisation Project (SSD-10418) – Review of EIS

Biodiversity

1. Further details are required of survey effort for eleven threatened plants

The BDAR does not provide enough detail about how the targeted survey effort for eleven threatened plant species meets BCD's threatened plant survey guidelines (Surveying threatened plants and their habitats: NSW survey guide for the Biodiversity Assessment Method', April 2020). Chapters 5 and 6 of the 'Mount Pleasant Optimisation Project Baseline Flora Report' by Hunter Eco (dated December 2020), presented as Attachment A of the BDAR, summarise previous flora surveys on the mine site, and new surveys conducted for the optimisation project.

The later included random meander surveys for threatened ground orchids in areas of likely suitable habitat and 20 metre wide spaced transects in most of the appropriate vegetation zones for threatened shrubs, herbs and *Cymbidium canaliculatum* (p. 28 of Attachment A). Twenty metre spaced transects do not meet BCD's flora survey guidelines (EES, 2020) for several potentially occurring threatened plants, where dense vegetation was present. Several of the photographs from the flora plots show dense grasslands or areas of dense shrub layer vegetation.

Trees, mallee trees and tall shrubs (6 metres) – transects up to 40 metres apart in open vegetation or up to 20 metres apart in dense vegetation.

- *Eucalyptus pumila* – details of the survey effort in PCT 1655 are required.

Medium shrubs (1-6 metres) – transects up to 20 metres apart in open vegetation, or up to 10 metres apart in dense vegetation.

- *Ozothamnus tessellatus* – transects too far apart in any areas of dense vegetation
- *Prostanthera cineolifera* – transects too far apart in any areas of dense vegetation. Details of survey effort in PCT 1655 are required.
- *Prostanthera cryptandroides* ssp. *cryptandroides* – transects too far apart in any areas of dense vegetation. Details of survey effort in PCT 1655 are required.
- *Pomaderris bodalla* - transects too far apart in any areas of dense vegetation.
- *Pomaderris queenslandica* – transects too far apart in any areas of dense vegetation. Details of survey effort in PCT 1655 are required.
- *Pomaderris reperta* – transects too far apart in any areas of dense vegetation. Details of survey effort in PCT 1655 are required.

Herbs and forbs – transects up to 10 metres apart in open vegetation or up to 5 metres apart in dense vegetation.

- *Thesium australe* – transects too far apart

Orchids, epiphytes and climbers – transects up to 10 metres apart in open vegetation or up to 5 metres apart in dense vegetation.

- *Cynanchum elegans* – transects too far apart.
- *Cryptostylis hunteriana* – transects too far apart. Details of survey effort in PCT 1655 are required
- *Cymbidium canaliculatum* – transects too far apart in any areas of dense vegetation. Details of survey effort in PCT 1655 are required.

The description of the survey effort for *Acacia pendula*, *Eucalyptus glaucina* and *Monotaxis macrophylla* satisfies BCD's survey requirements.

BCD recommends that further information on threatened flora survey effort is provided that describes how BCD's threatened plant survey guidelines have been met, particularly in relation to width of survey transect, the density of the vegetation, survey methodology, and the dates of the surveys. If BCD's survey guidelines have not been met, further survey may be required, or an Expert Report may be prepared, or the species may be assumed to be present.

Recommendation 1

BCD recommends that further details are provided on the survey effort for *Cryptostylis hunteriana*, *Cymbidium canaliculatum*, *Cynanchum elegans*, *Eucalyptus pumila*, *Ozothamnus tessellatus*, *Prostanthera cineolifera*, *Prostanthera cryptandroides* ssp. *cryptandroides*, *Pomaderris bodalla*, *P. queenslandica*, *P. reperta*, and *Thesium australe*.

2. Further details are required for matching on-ground vegetation to a PCT

Section 6.1 'Identifying Native Plant Community Types', Section 7.3 'Plant Community Type Assignment', and Table 8 'Plant Community Type Assignment' of Attachment A of the BDAR (pp. 198 to 201, 217 and 218) describe the detailed process of analysing Vegetation Integrity Plots and Rapid Data Points during the determination of the Plant Community Type (PCT) present. Table 8, in particular, states that the process of PCT identification was primarily based on the canopy species present, rather than the consideration of other elements of a PCT. Table 8 of Attachment A of the BDAR should be updated to include the list of all Plant Community Types (PCTs) considered, the closeness of fit in relation to floristic composition, vegetation structure, soils, position in landscape, substrate, geographic location, and the overall confidence of the match.

Recommendation 2

BCD recommends that the proponent lists all Plant Community Types considered as potential matches to on-ground vegetation and describes the selection process for biotic and abiotic factors.

3. *Prasophyllum petilum* records near Muswellbrook remain valid

Plants of *Prasophyllum petilum* persist near Muswellbrook and should be considered in the 'Expert Report – Expected Presence of Threatened Terrestrial Orchids (*Diuris tricolor*, *Prasophyllum petilum*, *Pterostylis chaetophora*): Mount Pleasant Optimisation Project', (the Expert Report) by Eastcoast Flora Survey (dated December 2020) - presented in Attachment D to the BDAR. Paragraph 21 of the Expert Report documents the decline in observed *Prasophyllum petilum* plants beside Thomas Mitchell Drive near Muswellbrook between 1999 and 2005, and of no confirmed sighting plants at the site since then.

This included a site visit by Dr Stephen Bell in October 2020. The paragraph concluded that the population there may now be extinct. However, a local orchid expert showed BCD a *Prasophyllum petilum* plant at the site on 10 October 2015. That likely same plant was again observed by BCD, on 18 October 2020.

The records of *P. petilum* beside Thomas Mitchell Drive occur in forested land, rather than grassland, and the orchids may not flower as often due to the locally high levels of competition for light and water. The records of this orchid at the Thomas Mitchell Drive site are considered to represent an extant population.

Recommendation 3

BCD recommends that the Expert Report is updated to acknowledge the persistence of the population of *Prasophyllum petilum* beside Thomas Mitchell Drive.

4. A tree hollow was identified in a BAM plot

During the site inspection a hollow bearing tree was observed in BAM plot 200331P5 where none had been previously recorded. BCD recommends that 'number of hollow-bearing trees' in the BAM calculator is updated from zero to one, and that the BAM calculations associated with that BAM plot are re-run, and the BDAR is updated.

Recommendation 4

BCD recommends the 'number of trees with hollows' for BAM plot 200331P5 is changed from zero to one, and that the BAM calculator files are re-run.

5. Further information is required to meet the full requirements of a BDAR

The BDAR was checked against the minimum information requirements in Table 25 of the *Biodiversity Assessment Method 2017*, and the following details were not found:

1. Figure 7 and 7a (Vegetation Maps) are presented at 1:50,000 scale. Coarser than the 1:10,000 scale required (section 5.1.1.4 of the BAM). New maps at the 1:10,000 scale should be provided.
2. Weather conditions at time of flora surveys have not been provided. Instead, the general climate of the area has been described (Attachment A, Section 4.6 'Climate' (pp. 194 & 195 of 739)), and the dates of each survey have been provided (Attachment A: Table 3 'Floristic Survey Days') (p. 198 of 739). The minimum and maximum temperatures, rainfall, and notes of any weather event that may have affected the flora survey (e.g. hail, strong winds, or frost) for each day of survey should be provided.

Recommendation 5

BCD recommends that additional data is provided to ensure that all requirements of the BDAR are met.

Matters of National Environmental Significance

6. Further information is required on the assessment of Matters of National Environmental Significance

Chapter 7 of the BDAR is the Commonwealth Assessment of the impacts of the Northern Link Road component of the project; which cover 29.3 hectares (Option 1) or 23.8 hectares (Option

2) of the project area. The remainder of the project area is already covered by the EPBC Act Approval (EPBC 2011/5795) for Development Consent DA 92/97, and so no further assessment is required.

BCD will undertake a bilateral assessment of Matters of National Environmental Significance (MNES) for the Northern Link Road area for the Commonwealth Department of Agriculture, Water and the Environment (DAWE). Some information is presented in Chapter 7 however, additional information specific to the assessment of MNES for the Northern Link Road component of the project is required in Chapter 7. Chapter 7 should contain the following information:

- Identification of all EPBC Act-listed matters, which may include threatened species, threatened communities, migratory species, and other environmental matters listed under the Act (as per DAWE's Referral Decision dated 26 August 2020), that occur or are predicted to occur on the proposed development site and in the vicinity. This includes a copy of the MNES Protected Matters Search results and any other EPBC Act-listed matters, such as threatened species, threatened communities and migratory species identified by the proponent from desk-top analysis or site surveys.
- Details are required of how survey effort for EPBC Act-listed threatened species met BAM requirements, and, where available, Commonwealth survey requirements – such as the Draft Survey Guidelines for Australia's Threatened orchids: Guidelines for detecting orchids listed as 'threatened' under the *Environment Protection and Biodiversity Conservation Act 1999* (DoEE, 2013). This is required for *Cryptostylis hunteriana*, *Cynanchum elegans*, *Eucalyptus glaucina*, *Ozothamnus tessellatus*, *Prostanthera cineolifera*, *Prostanthera cryptandroides* ssp. *cryptandroides*, and *Thesium australe*.
- The proponent must provide a statement about the potential impact (i.e. likely significant, low risk of impact or not occurring) to any of the matters listed in the Referral Decision (dated 26 August 2020), such as threatened species and communities that occur or are predicted to occur on the proposed development site and in the vicinity.

For those species, communities and other matters that the Commonwealth have determined are likely to be significantly impacted by the project, but that the proponent considers will not be impacted, the proponent must provide robust evidence in support of their conclusion, e.g. maps of habitat or known distribution in relation to the project area. For all other species and communities with potential to be impacted by the project, but are considered not likely to be impacted, then justification is required for why those species are not being further assessed.

- Provide a summary of the results of the BAM assessment of the impacts or likely impacts of the project on MNES. This includes direct, indirect, facilitated and downstream impacts. Measures to avoid and mitigate impacts must be provided. The assessment must include a description of the quantum and nature of these impacts on each affected MNES matter, such as threatened species and community listed in the referral decision, plus any added by the proponent, and the consequences on those impacts on the species and communities. The nature and significance of the impacts must be discussed in the context of any relevant Conservation Advice Recovery Plans and Threat Abatement Plans.
- A copy of the assessment of 'significant impact criteria' for each threatened species and ecological community will be required. These criteria are provided in the 'Matters of National Environmental Significance: Significant impact guidelines 1.1 *Environment Protection and Biodiversity Conservation Act 1999* (DoE, 2013).

- For threatened species and communities and migratory species, identify whether any EPBC Act-listed species have not been assessed by the BAM, i.e. migratory species, and described how they have been assessed in accordance with the SEARs.
- Details of any offsets proposed in relation to residual significant adverse impacts, how they provide a like-for-like outcome, and how any land-based offsets will be secured. This must include an analysis of how the proposed offsets will contribute to the conservation and long-term protection of the species and communities. This must include an assessment of any indirect impacts that may require offsetting. The assessment of the adequacy of impacts for this project will require the route of the Northern Link Road to be decided, and for the offset land to be assessed by the BAM.

Recommendation 6

BCD recommends that additional information on the assessment of Matters of National Environmental Significance is provided in Chapter 7 of the BDAR.

Flooding and flood risk

The proposed modification involves significant additional site and catchment disturbance. BCD has reviewed the following documents supporting the proposed modification:

- Surface Water assessment 2020 prepared by HEC (referred to as SWA in comments)
- Mount Pleasant Optimisation Project, SIA Scoping report prepared by Just Add Lime dated Dec 2019 (referred to as SIA in comments)
- Scoping Report prepared by Resource Strategies dated Dec 2019 (referred to as SR in comments).

The proposed modification would have relatively fewer impacts on the Hunter River, Dry Creek and Rosebank Creek as these areas are already subject to existing mining impacts. BCD's comments focus on the Sandy Creek Catchment which to date has had limited mine affectation.

7. Impacts to Sandy Creek and downstream areas have not been adequately assessed

The Sandy Creek catchment has not been subject to mining to date. Some mine infrastructure, Environmental Dam 2 (ED2) and the fines emplacement area are located in the Sandy Creek Catchment. Figure 2.1 of Appendix C (Groundwater Assessment) shows that the fines emplacement area and ED2 are located over a tributary of Sandy Creek and that Sandy Creek is the Muswellbrook water supply downstream of the mine.

Sandy Creek is an ephemeral waterway with relatively low flows and many small branches. Impacts to such a system from catchment disturbance and interception of water can be significant and the proposed modification would increase interception over three times of that already approved.

Table 34 in Section 8.1.2 lists baseflow reduction to Sandy Creek as 2 megalitres per year. The groundwater assessment, Appendix C, indicates that total indirect take is 4 megalitres per year when intake from alluvium is included. It is stated that 6 megalitres per year baseflow reduction continues post-rehabilitation of the mine. These base flow reductions are considered significant in a non-perennial creek system. Sandy Creek is used for town water supply, farm water supply and by the local indigenous community. The Wanaruah Local Aboriginal Land Council note the importance of Sandy Creek for water supply and as home to freshwater mussels. Local landholders have also noted significant reductions in water availability due to mine infrastructure.

Baseflow is considered critical in agricultural land as it provides water for perennial crops and pastures, and assists in drought resilience. Permanent removal of baseflow on an ongoing basis, continuing post-mining can have a significant impact on the hydrological cycle, productivity and drought resilience of the land.

Figure 3 of Appendix I of the EIA (Agricultural Impact Assessment) shows that the Sandy Creek Catchment includes strategic agricultural land, strategic equine land and strategic viticulture land. However, the consideration of the impacts on agriculture has been restricted to the Hunter River area and the mine footprint. Impacts to downstream areas such as the GILGAI property and town water supply have not been considered.

Recommendation 7

The impact on the local tributary catchment of Sandy Creek should be determined in addition to the impact on the total catchment. Mapping showing existing water courses and disturbed area should be of adequate scale to highlight this disturbance.

The impacts of changes to surface and groundwater flows to Sandy Creek on town water supply, riparian ecology, freshwater mussels, agricultural land uses and drought resilience should be assessed.

8. Modelling outputs of overflow from environmental dam 2 (ED2) in the surface water assessment are inconsistent with water quality monitoring results and issues raised by stakeholders

Section 8.3.2 of the surface water assessment outlines that no overflow to Sandy Creek is expected to occur from environmental dam 2 (ED2) and that flows from the fines emplacement area will be intercepted by this dam. Stakeholder feedback provided in Table 9 of the SIA Scoping Report indicates that water quality and quantity impacts have occurred in the northern catchment of Sandy Creek, downstream of the tailings dams.

The salinity (EC) values monitored at monitoring point W12, above the dam, when compared to W11 which is below the dam indicates that overflows from the dam may have occurred during the monitoring period or that seepage flows have impacted water quality. Testing results in ED2 also indicate high EC values. Sandy Creek has low flows and is unable to dilute overflow runoff to an acceptable standard when it occurs.

Section 8.5 of the groundwater assessment indicates that water quality impacts were predicted to Sandy Creek from seepage discharge from the fines emplacement area. Overflow from the fines emplacement area and environmental dam 2 are also directed to Sandy Creek.

Recommendation 8

The modelling of overflows to Sandy Creek needs to be reviewed. Placement and management of fines storage end environmental dam 2 need to be managed to ensure that surface and seepage flows are contained on site.

9. The proposed threshold water quality trigger limits for Sandy Creek are too high

Table 17 of the surface water assessment outlines that a threshold electrical conductivity (EC) level of 6,420uS/cm be adopted for Sandy Creek. This has been derived from water quality monitoring at site W12 over the period of October 2017 to May 2020. During this time the area experienced an extensive drought and only 12 samples were taken due to limited flow in the creekline. It is stated in the surface water assessment that the adopted value is suitable because it is derived from a period before mining had commenced and is therefore representative of a baseline.

The fines placement area and ED2 were present throughout the monitoring period however. Stakeholder feedback provided in the scoping study (SIA) indicates that dust is a constant issue for adjoining landholders and material from the fines emplacement area may have been blown into the Sandy Creek catchment resulting in elevated EC levels when flows occurred. The likelihood of seepage flow from the fines emplacement is also noted in the groundwater assessment, Appendix C.

The default EC trigger value established under the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC 2000) for upland rivers in NSW is 350uS/cm. The trigger value adopted for the proposed modification is over 10 times higher than this and based on data collected during a drought, after water quality impacts from the mine had commenced. BCD does not consider the adopted trigger value to be justified and recommends that it be reviewed. Changes to management of fines emplacement and ED2 may be required to ensure that a more realistic trigger values is not exceeded.

Recommendation 9

Further testing is required outside of areas currently impacted by Mount Pleasant mining operations and infrastructure. Trigger values should be based on levels which will provide adequate protection to the ecology and users of Sandy Creek.

10. Flood risks from new dams have not been considered

The proposed modification includes additional sediment dams with a combined total of 121.8 ML capacity; the largest of which is 52.2 ML. Sediment dams are generally temporary structures and are only intended to store water for short periods before being pumped to restore capacity. Sediment dams for this proposal are shown to be in place to 2047 and therefore will require improved design and build specifications to ensure that they are safe for the extended period of operation. Dams are located close to the perimeter of the mine managed area and risk management to downstream environment would need to consider the size of the dam and the downstream landholdings.

Table 24 of the surface water assessment indicates the design criteria for the proposed dams is taken from the 'Blue Book' (Landcom 2004) which was developed to guide general construction activities. This may not give sufficient protection given the size and duration of use of these dams. Environmental Dam 2 also forms a sediment retention function and the surface water assessment does not disclose the design criteria used for this dam, rather it simply states that the dam has been sized to minimise spill risk.

There are currently a number of prescribed dams on site and the new HWD3 and MWD2 may also meet this criteria. Failure of the new dams would likely cause flows towards Sandy Creek which is not currently impacted by any existing prescribed dams. The risk to properties and people downstream of these dams need to be considered.

Recommendation 10

More detail is required regarding direction of flow from MWD2 and HWD3 in the event of spillway overflow or failure. Dam Safety NSW may need to be consulted regarding design and management criteria for these new dams.

Design criteria for sediment and environmental dams and required spillways should include risk assessment for downstream flooding.