NSW GOVERNMENT | Office of Environment & Heritage

Date: 11 July 2017
Your reference: SSD 7171 & 7112
Our reference: DOC17/326528
Contact: Calvin Houlison
4224 4179

Paul Freeman
Team Leader, Resource Assessments
Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001
E-mail: paul.freeman@planning.nsw.gov.au

Dear Mr Freeman

RE: HUME COAL & BERRIMA RAIL PROJECTS EIS EXHIBITION (SSD 7172 & SSD 7171)

Thank you for consulting the Office of Environment & Heritage regarding the above project. Our response addresses both the Hume Coal project (SSD 7172) and the associated Berrima Rail project (SSD 7171).

Our key issues are summarised below, and detailed comments are provided at Attachment A. Further detailed comments and analysis supporting our advice can be provided upon request.

- With regard to water management, we consider that further assessment is warranted on the issue of groundwater drawdown and subsequent baseflow loss, and water quality impacts upon streams and associated ecosystems.
- We have not identified any major issues with the proposal's direct impact upon biodiversity. However, some aspects of the biodiversity assessment against the NSW Framework for Biodiversity Assessment (FBA) require rectification. This primarily involves identification of vegetation types and will have implications for the proponent's biodiversity offset requirements.
- The Aboriginal cultural heritage assessment has complied with OEH guidelines. While many of the recorded Aboriginal cultural heritage sites within the impact area have been avoided, impacts to Aboriginal objects will still occur so mitigation is required. An Aboriginal Heritage Management Plan (AHMP) needs to be developed in consultation with Registered Aboriginal Parties (RAPs).
- We recommend the surface water assessment be updated to consider floodplain risk matters for the Berrima Rail Project.

Please contact Calvin Houlison, Senior Conservation Planning Officer on 4224 4179 or via e-mail calvin.houlison@environment.nsw.gov.au should you have any further queries.

Yours sincerely

11/07/17

MICHAEL SAXON
Director, South East Branch
Regional Operations Division

Enclosure: Attachment A OEH Detailed Comments, Hume Coal & Berrima Rail Projects

ATTACHMENT A – OEH DETAILED COMMENTS – HUME COAL & BERRIMA RAIL PROJECTS EIS – SSD 7172 & 7171

1. Terrestrial Biodiversity

Impact assessment

Overall, the design of the project avoids the majority of potential impacts upon biodiversity in what is now a largely cleared rural landscape. Where unavoidable biodiversity loss arises, residual impacts have been mitigated and offset requirements outlined. The layout of the project has led to minimal direct impacts upon native vegetation, and has restricted the impacts to degraded patches of vegetation. The remaining impacts on terrestrial biodiversity are proposed to be offset through the retirement of Biobanking credits from a nearby proposed offset site.

While it is considered there are no major issues with the proposal's direct impact upon biodiversity, there are some aspects of the biodiversity assessment against the NSW Framework for Biodiversity Assessment (FBA) that require rectification. These key issues are identified below, and will result in minor modifications to the information submitted in the EIS. Following these revisions, we would be in a position to assist with the drafting of any relevant offsetting conditions of consent if required.

Separate comments on impacts resulting subsidence and groundwater dependent ecosystems are discussed separately in later sections.

Recommendations:

1) OEH acknowledges there are difficulties in determining the best fit plant community type due to the highly cleared nature of the vegetation, however our opinion, the vegetation mapping for the Hume Coal project does not reflect the best fit plant community type (PCT). We suggest modifying to PCT 731 for Patches 1 & 2 and PCT 1191 for Patch 3 as identified at Figure 5.2 of the BAR (Appendix H, EMM 2017, p113). This is the same as vegetation mapping presented for the Berrima Rail project boundary.
2) We are of the opinion that the areas of PCT 1191 are representative of the "Tablelands Snow Gum, Black Sallee, Candlebark, and Ribbon Gum Grassy Woodland" Endangered Ecological Community (EEC) under the NSW Threatened Species Conservation Act 1995. We acknowledge that although in a degraded state, this vegetation is still representative of the EEC and we suggest that the BAR and FBA assessment be amended to rectify this.
3) There are some other minor and miscellaneous inputs into the FBA and associated online biodiversity credit calculator that should be rectified. These changes will have subtle implications for the final offset requirement. We can provide further details directly to the proponent upon request.
4) It should be clarified whether the BAR has considered clearing associated with a ventilation down-shaft in Belanglo State Forest. If not, the biodiversity impacts will need to be addressed.
5) We recommend a Statement of Commitment (SOC) for implementation of offsets identified in the Biodiversity Offset Strategy (BOS) within 12 months of approval.

2. Aboriginal Cultural Heritage

Archaeological assessment

Impacts to areas of high archaeological and cultural significance along Oldbury Creek have largely been avoided by moving much of the surface infrastructure away from this area. We note that direct impact to

identified grinding groove sites and a potential scarred tree will also be avoided. Test excavation has not been conducted at HC_179, which is within the finalised impact footprint (Hume Coal Project, Figure 7.1). It is important that testing is conducted where potential archaeological deposits (PADs) are recorded in the impact footprint to allow the impact of both projects on Aboriginal cultural heritage to be accurately assessed. This test excavation should occur as soon as possible and before project approval.

Test excavation in transects, in general, provides indication only of site extent on a single plane. Additional test excavation is required to determine the extent of the sites identified, especially those that appear to be larger artefact scatters or larger PAD areas, for example Transect 12. It is not accurate to argue that the site will be partially conserved when there is no evidence that the site extends to the mapped PAD.

Test excavation at HC_146 was also not conducted, after the location was re-evaluated and determined to have low archaeological potential. Excavation of this location could help determine the accuracy of the predictive model for site location. For example, test excavation at HC_146 or at other "non-PAD" locations could be considered when developing management protocols as a means of adding rigour to the modelling and mitigating the loss of sites through contributions to further research.

We are aware that no subsidence is predicted to occur. However, as this is only a prediction, the rock shelter sites above the underground mining area should be monitored. We recommend that baseline recording of all rock shelter sites is completed, and a monitoring program is developed as referred to by EMM. It is important that this occurs so that any unanticipated subsidence impacts on these significant sites can be identified and managed as required.

The proposed salvage excavations in alternative Option 2 north of Berrima Road require additional information. EMM has not conducted either survey or test excavation of this alternative option. This needs be conducted prior to salvage excavation. Recent archaeological investigations by Wingecarribee Shire Council and Associates Archaeology (Oliver Brown, 2017) has identified this area has having a low level of archaeological potential, however, the Associates Archaeology survey and report was prepared before the EMM report was available. EMM should consider these findings in a revision to the EIS.

Aboriginal heritage management plan

OEH supports the proposal to develop an Aboriginal Heritage Management Plan (AHMP). We suggest the AHMP includes:

- Detailed consultation protocol setting out how and when the registered Aboriginal parties (RAPs) will be consulted in both the construction and operational phases of the projects
- Detailed archaeological salvage excavation methodology
- Detailed methodology for monitoring rock shelter sites within the area of underground mining
- Detailed methodology for community collection of surface artefacts within the impact footprint.
- Detail of the mitigation and site protection works required
- Procedure for updating AHIMS site cards throughout the project
- Procedure to manage any newly identified Aboriginal cultural heritage sites
- Detail of the long term management of recovered Aboriginal objects
- Research into testing the predictive model of site location, for example through testing at HC_146.

For consistency and future reference, the AHMP should use AHIMS site numbers as well as site names to refer to sites. OEH requests that the draft AHMP is referred to us for comment before being adopted.

Long term management of Aboriginal objects

One of the registered Aboriginal parties (RAPs), Yamanda, has requested the long term management of the excavated Aboriginal objects. We support this request, provided that Yamanda submits a Transfer of Aboriginal Objects application to OEH, available at:

http://www.environment.nsw.gov.au/resources/cultureheritage/20110914TransferObject.pdf

The Transfer of Aboriginal objects to Yamanda, as recommended by EMM (2017), should be the first step taken in managing the Aboriginal objects found during the archaeological investigations. This should occur as soon as possible. Transfer of the Aboriginal objects to Yamanda does not prevent any future development of a keeping place as indicated in the Hume Coal Aboriginal Cultural Heritage Assessment Report (the ACHAR, EMM 2017, Appendix S, pp.22, 181 and 191). The ACHAR, however, is unclear on the nature of the proposed keeping place.

Recommendations:

1) Develop an Aboriginal Heritage Management Plan (AHMP) as noted above and reviewed by OEH before being finalised.
2) Archaeological test excavation occur at site HC_179 prior to project approval.
3) Review the recommendations for salvage excavation north of Berrima Road in alternate alignment Option 2 of the Berrima Rail Project. Conduct test excavation at this location before developing a salvage methodology.
4) Baseline recording of all rock shelter sites is completed, and a monitoring program is developed.
5) Submit a *Transfer of Aboriginal Objects* application form to OEH to allow Yamanda RAP to take care and control of the excavated Aboriginal objects. This should occur as soon as possible.
6) Clarification as to the proposed keeping place be provided.
7) Proponent to confirm that there are no further ancillary impact areas, temporary vehicle tracks, service installations, stockpile locations and lay down areas (as well as any new machine access routes required) to be assessed for Aboriginal cultural heritage impacts.

3. Water Resources

Impacts upon streams & watercourses

The project area is traversed by several drainage lines including Medway Rivulet and its tributaries, Oldbury Creek, Wells Creek, Wells Creek Tributary and Belanglo Creek. Long Acre Creek and Red Arm Creek originate from the north-west corner of the project area and are tributaries of Black Bobs Creek. Medway Rivulet and Black Bobs Creek discharge to the Wingecarribee River, located around 2km north of the project area.

The characterisation of Black Bobs Creek as an *ephemeral* stream is not supported by adequate flow data and is likely to be incorrect. According to early explorers in the area, Medway Rivulet was originally a "chain-of-ponds" system. Much of the vegetation has subsequently been cleared and Medway Rivulet now receives a continuous STP discharge via Whites Creek.

The Bulli Seam Planning Assessment Commission (PAC) (2010) recommended the following traits should be considered when characterising the significance of impacts on streams:

- Importance to catchment yield;
- Significance to water supply;
- Scale of the watercourse;
- Permanence of flow;

- Water quality;
- Ecological importance;
- Environmental quality (pristine, modified, severely modified);
- Visual amenity (eg cascades runs, pools etc);
- Community value (value the community attributes to protection);
- Regional significance

The EIS gives limited attention to these traits and their significance.

Groundwater drawdown and baseflow loss

The assumptions linking predicted groundwater drawdown and subsequent baseflow loss are not adequately described/explained in the EIS. It is noted that there has been no detailed assessment of the impact of baseflow losses on the majority of affected streams, particularly those in forested areas. Flow monitoring is also inadequate in many of these areas to assess how baseflow losses will affect flow exceedance and cease to flow probabilities for the affected streams (and their resulting ecological consequence).

The EIS has not defined either "*an appropriate reference system*" or systematically applied "*default regional trigger values*" as specified in ANZECC/ARMCANZ (2000). Assessment of water quality impacts and appropriate levels of treatment appear to be based largely on the water quality in Medway Rivulet and Oldbury Creek after they have already been impacted by STP discharges. This does not conform to the ANZECC/ARMCANZ (2000) approach to determining site specific guidelines using *"appropriate reference systems"*.

Ascertaining what are appropriate background levels in streams affected by the proposal needs far greater consideration than that provided in the EIS. A number of the "Guideline" values provided in Table 5.13 of the Water Assessment are not appropriate for the area. There are a number of uncertainties in the water management assessment and a clear reliance on untested assumptions about water make and volumes to be managed. The water treatment plant needs to be given greater status in the project infrastructure than a *provisional item,* as it needs to be capable of managing any unforeseen need to discharge waste water to the environment.

It is unclear what water extraction rules will be applied to the Hume Coal mine, given the existing embargo on processing groundwater licences in this area and the large amount of groundwater (and surface water) proposed to be extracted/lost from the catchment.

Recommendations:

1) The EIS be updated to provide predicted linkages between groundwater drawdown and subsequent baseflow loss.
2) Further assessment of appropriate background levels in streams affected by the proposal is required, having specific regard to the standards contained in ANZECC/ARMCANZ (2000).
3) The EIS include reference to the traits raised by the Bulli Seam PAC with regard to characterising impacts upon streams.
4) Medway Rivulet be re-categorised recognising that there is now a permanent flow.
5) We recommend that an appropriately sized water treatment plant be constructed.

4. Subsidence & groundwater dependent ecosystems (GDE's)

Subsidence

The proposed mining method as outlined in the EIS is first workings only, also known as a 'pine feather' system. Predicted subsidence for the project is much lower than what would occur with longwall mining configurations and this is considered important. Maximum subsidence is predicted to be less than 20mm across the project area using this method.

With this level of subsidence, it is anticipated that perceptible surface impacts are unlikely, however, one of the implicit caveats in these predictions is that mining around faults and geological structures will not lead to anomalous subsidence results. The subsidence assessment identified a number of inferred faults across the area of the proposed mine.

Impact on groundwater dependent ecosystems (GDE's)

We note that the EIS identifies a potential effect on threatened ecological communities and habitat for threatened species along Belanglo Creek and Wells Creek, due to groundwater drawdown in times of prolonged drought. If a greater than predicted drawdown in these areas occurs, noting there is no specified threshold level to quantify this, the management measure triggered is to *"assess ecosystem health, assess time for recovery of shallow groundwater, consider irrigating these areas".*

The proponent states that there will be monitoring and response if impact from groundwater drawdown is observed attributable to mining. A rigorous before-after control-impact (BACI) experimental design, including baseline monitoring of vegetation health for at least two years before a greater than predicted groundwater drawdown occurs, will be required at both control and impact sites to detect such a change relative to background environmental variation.

Monitoring of terrestrial vegetation along Belanglo Creek and south of Wells Creek needs to be commenced at the time of approval (or within 12 months) to establish baseline conditions for the "ecosystem health". Monitoring will also need to identify recovery following the cessation of drought. The details of the proposed monitoring design need to be carefully considered, yet we note they are not expected to be developed until a post-approval Water Management Plan.

There has not been an assessment of the ecological impacts of water loss/groundwater drawdown to the streams of the area. It is noted that while there are "*make good*" provisions for landholder bores, there are no "*make good*" provisions for any of the streams in the area. Depressurisation of shallow aquifers and subsequent baseflow loss is likely to have the greatest impact on surface water resources.

Recommendations:

1) Further detailed assessment of the effects of groundwater drawdown and baseflow loss on streams and Groundwater Dependent Ecosystems (GDEs) be provided.
2) A onitoring program be put in place to verify the predicted shallow groundwater drawdown and baseflow loss.
3) A subsidence monitoring program be put in place for mining in the vicinity of faults.

5. Floodplain Risk Management

Policy & Context

OEH consulted the Wingecarribee River Flood Study (2014) and formed the view that the Hume Coal proposal did not appear to occupy flood prone land. However the Berrima Rail Project does.

The implications of this are not assessed sufficiently. The degree or frequency of flooding that the rail infrastructure will experience is unclear. It is also not known what inconvenience or serviceability implications will arise for the rail project from the flooding regime. The implications of the rail infrastructure on flood behaviour are also not apparent.

Recommendations:

1) The following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) are mapped: (a) extent of probable maximum flood for the unnamed creek at Berrima Junction and the Wingecarribee River, (b) the area below the flood planning level for all watercourses, and (c) the hydraulic categorisation (floodways and flood storage areas) for all watercourses.
2) For all watercourses, a description of the 1 in 10 year design flood level is provided.
3) The effect of the Rail Project (including any fill) on the flood behaviour under the 1 in 200 and 1 in 500 year flood events for all watercourses as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change is assessed.
4) The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood and impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land be modelling for the unnamed creek at Berrima Junction and the Wingecarribee River.
5) An assessment of the impacts of the Rail Project on flood behaviour be provided for all watercourses. We recommend that this include: (a) whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure (b) compatibility with the flood hazard of the land, (c) compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land, (d) whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site and (e) whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.
6) That emergency management and contingency measures be fully considered including addressing risk to life, public amenities, property and infrastructure a consequence of flooding. It is recommended that this be based on consultation with the SES and Council.