

Appendix E

Agency and Council Submissions

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Department of Primary Industries

OUT15/34461

Mr Hamish Aiken
Resource Assessments
NSW Department of Planning and Environment
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Dear Mr Aiken,

Rix's Creek Mine Extension Project (SSD_6300) Response to exhibition of Environmental Impact Statement

I refer to your email dated 2 November 2015 requesting advice from the Department of Primary Industries (DPI) in respect to the above matter.

No comment is provided from DPI Fisheries or DPI Lands.

Comment by DPI Agriculture

DPI Agriculture advise that there are no outstanding issues of concern. The following comments are provided.

Specific Agricultural Issues arising from the Agricultural Impact Statement

1. Biophysical Strategy Agricultural Land (BSAL)

NSW DPI notes that sampling and mapping protocol undertaken on the mining lease extension site (170 hectares) and the site verification, endorsed by the Office of Environment and Heritage, indicates that no BSAL is present.

2. Loss of Land for Agricultural Production

The loss of 78 hectares to the overburden emplacement area will still allow the rest of the land to be used for beef cattle production. The rehabilitation of this site for a posting mining grazing land use is noted.

3. Rehabilitation

Although the AIS claims that the reinstalment of this disturbed area will be of the same land and soil capability it is noted that more rehabilitated land will be allocated

to Class 5 land rather than Class 4. Whilst there will be a reduction in land of higher quality the mine rehabilitation work should result in greater agricultural productivity provided the Company complies with its stated methodology and applies its research findings. Rix's Creek is actively engaged in rehabilitation programs including work with the Australian Coal Association Research Program using biosolids on rehabilitated land. The mine has established 375 ha of land across the mine site. The results of the grazing trial on rehabilitated land involving NSW DPI at other mine sites shown to increase beef production also supports the approach at this mine site.

Hence the attention to the rehabilitation of land to agriculture as described in the AIS should go some way to ameliorating any production impacts.

For further information please contact Mary Kovac, Resource Management Officer (Dubbo Office) on 6881 1250 or at mary.kovac@industry.nsw.gov.au.

Comment by DPI Water

DPI Water has reviewed the EIS for the Rix's Creek Mine Extension Project SSD6300 and provides the following recommendations. Detailed comments are provided in Attachment A.

Groundwater

The broad impacts of the project are likely to be within acceptable bounds given the location in this brownfield mining area, however the information and management measures should be improved to allow for proper understanding and management of the impacts of the project.

- As required under the Aquifer Interference Policy (AIP), an independent review of the groundwater model is required to ascertain in the expert's opinion if the groundwater model is:
 - o Calibrated against suitable baseline data, and in the case of a reliable water source, over at least two years;
 - o Consistent with the Australian Modelling Guidelines; and
 - o Independently reviewed, robust and reliable, and deemed fit for purpose.
- A number of data & information gaps are noted in attachment A, and these are requested to be addressed prior to preparation of the Water Management Plan. This information should be provided within (or attached to) the Water Management Plan.

Water Licensing

- The proponent must provide a consolidated water licensing table, listing all water licenses and approvals under the *Water Act 1912* and the *Water Management Act 2000* (WMA) for both surface and ground water (hard rock and alluvial) related to the site. Table 15-4 in the EIS could be expanded to achieve this.
- The consolidated license table should correct errors in the licensing tables presented in the EIS. These errors are detailed in Attachment A.
- The proponent must confirm the quantity of the increased volume of water to be taken from both the alluvial and hard rock water sources as a result of the

proposed expansion, and demonstrate that sufficient licensed entitlement is held or can be obtained to account for the maximum predicted take. The proponent would need to apply and obtain an increase in entitlement from the porous rock aquifer to address the peak predicted take of groundwater from this water source

- The proponent must quantify the loss of run-off as a result of the loss of catchment detailed in Table 15-3 and must demonstrate that the loss is accounted for via an appropriate Water Access Licence.

Diversion of Stonequarry Gully

Insufficient information has been provided to allow DPI Water to assess the impacts of the proposed diversion of Stonequarry Gully. The following recommendations are made in relation to the proposed diversion:

- The proponent must undertake an impact assessment of the proposed diversion of Stonequarry Gully. This must include assessment of impacts on water quality and quantity, dependent ecosystems, hydrology and geomorphology.
- The proponent must provide proposed diversion design, and must demonstrate that the diversion is appropriately designed to mimic natural hydraulic, hydrologic, geomorphic and ecological functions of the water course.
- The above assessment should be conducted in accordance with standard hydrologic and geomorphologic assessment and design standards, including Rutherford I. D., Jerie K., Marsh N. (2000) *A Rehabilitation Manual for Australian Streams*. Cooperative Centre for Catchment Hydrology. Land and Water resources Research and Development Corporation Canberra.

For further information please contact Alison Collaros, Senior Water Regulation Officer, [Newcastle Office], on 4904 2527 or at alison.collaros@dpi.nsw.gov.au.

Yours sincerely



Mitchell Isaacs
Director, Planning Policy & Assessment Advice
7/12/2015

Attachment A

Rix's Creek Extension project (SSD 13_6300) Response to exhibition of Environmental Impact Statement DPI Water – Detailed Comments

Groundwater

These points described here are requested to be addressed in the development of the Water Management Plan, should this project be approved.

General Comments

1. There is uncertainty about how groundwater is hydraulically connected between the various pits and underground workings. Specifically it is not understood via which aquifers (or via weathering, fracturing or faults) and which part of the old underground mine workings, groundwater is flowing. There is therefore uncertainty as to how groundwater will behave during:

- a. Pit 3 expansion and attainment of final void depth
- b. rehabilitation by filling of mine voids
- c. once mining ceases and re-equilibration occurs.

2. Further clarification and details should be provided as to how underground dewatering of the underground works (via a single production bore screened over all aquifers) and maintenance of the water level in the North Pit at 78m AHD, results in no seepage into Pit 2 from the underground workings.

3. The proponent has stated that:

“the Permian coal measures form confining aquifers at the end of mining”

It is not fully understood what the Proponent means by this as it was not described. It should be clarified if all aquifers on site would be unconfined due to the final void depth causing all confined aquifers on site to drain, despite infilling, and if they are suggesting this will be a permanent situation.

4. The Proponent should improve the description of the aquifers and aquicludes on site according to the detailed stratigraphy. The Proponent tends to combine all groundwater into a two aquifer conceptual description of either Alluvials or consolidated Permian rock coal seam aquifers. The Proponent does not consider multiple, confined water levels in their conceptual model. This is despite providing evidence for a multiple aquifer and aquiclude conceptualisation with confinement that is not restricted exclusively to the coal seam aquifers within the Permian rocks.

5. The proponent provided borehole log information for only 5 monitoring bores (1 bore has since been destroyed by mining). There are other bores on site and during model calibration other sites were calibrated against, but these were not described nor were their spatial locations provided. Further detail should be provided.

6. In general for a site of such complexity, additional groundwater monitoring bore sites are recommended. Information should be provided about temporal monitoring of pit water levels. Further information on water quality monitoring from the site, and analysis for organic water chemistry should be provided to form a baseline standard.

7. The proponent in their report refers to the discharge of unknown volumes of tailings water to the south. This information cannot be considered to be insignificant if it provides uncertainty to

the site water balance and the discharge is towards the Rix's Creek Alluvials or Hunter River, and should be considered in greater detail in the Water Management Plan and site water balance:

"The tailings dam embankments comprise undisturbed ground to the north, east and west and uncompacted mine spoil to the south. The mine spoil does allow some seepage to the south, which is unmeasured and hence a source of uncertainty to the site water balance."

Comments on Modelling

1. Many of the report conclusions and outputs were based on the modelling outputs and not on real field derived data. The vast majority of the modelling output figures, including contour maps, hydraulic conductivity maps, drawdown impact maps and calibration hydrographs were illegible and could not be used in the review. No units were provided for hydraulic conductivity maps and a table.

2. The model was not calibrated. A scaled root mean squared error (SRMS) of 16% was achieved. The Australian Groundwater Modelling Guideline recommends ~10%. The calibration hydrographs were not legible so no analysis of the calibration was performed by DPI Water.

3. The model was not independently peer reviewed prior to submission. A review should be required, along with implementation of any findings of the reviewer through revised modelling and incorporation within the Water Management Plan, prior to commencement of the project.

4. The method for calculating recharge relied on several assumptions in creating an artificial average rainfall dataset. A multiplication factor was applied to the rainfall datasets and it is uncertain what the resulting data set represents. The multiplication factor was not justified with a description of whether it was accounting for overland flow, transpiration or error in the spatial and temporal rainfall datasets. Further consideration is requested in the Water Management Plan.

5. The method for calculating evaporation should be further justified or refined. A Pan Factor was applied to the top layer of the model but no justification for doing so or for applying certain values was provided. Pan evaporation rates applied, to the top layer of the model are usually only justified if constrained to be within the top 10 cm of the model. Evaporation decreases highly non-linearly with depth to evaporation extinction depth.

"Evaporation was incorporated into the model using the EVT module and was applied to Top Layer only. The evaporation rate (Class A Pan) was obtained from long-term monthly average of the BOM Station Scone SCS (No. 061089) with a Pan Factor of 50% across the model domain. An exception was during the recovery simulation where the Pan A Factor was set at 70% over the extent of the final void."

6. There is uncertainty if the adopted parameters for Van Genuchten's and Brooks-Corey are representative for the soils found on site and there is little detail about the how these equations were applied within the model, and this should be considered further.

7. A general head boundary condition was applied to layers 3 and 4 of the model based on a linear extrapolation from bore GW080963. A conductance of 100 m³/day was applied to this fixed head. This feature provides an infinite supply of water into the model and it is uncertain whether this approximation is hydrogeologically justifiable in representing the long-term impact of mining activity in the south-west corner of the model domain. The effects that the feature may have on the model domain in maintaining water level elevations is unknown without inspection of the model.

8. The calibration dataset type should be better described and it is unclear where the calibration points are situated as no legible map has been provided.

9. The monthly stress periods that were adopted in the model overly simplify the complexity inherent in groundwater/surface water modelling and it is more usual for the daily time step to be utilised which has a stabilising effect on the model.

10. In Section 8.7.3 it was stated that, the model predicted inflow to pits, was calibrated against unmeasured, anecdotal observations. It is uncertain how this can be used to justify calibration.

11. It is recommended that the reviewer consider given the current model calibration how meaningful the results, reporting groundwater contribution to Rix's Creek, are.

12. An uncertainty analysis was performed by using the 10th percentile and 90th percentile of the rainfall applied over a 24 year dry period and another 24 year wet period. It is uncertain how relevant an analysis of uncertainty this provides given that:

- a. the fixed head applied in the model has not been hydrogeologically justified.
- b. recharge and evaporation have not been represented in a physically meaningful manner and applied at monthly time steps with both these values temporally and spatially averaged over the 24 year periods.
- c. a multiplication factor that minimises the impact of rainfall has been applied, and
- d. the model is poorly calibrated to only a few bores.

13. There is uncertainty why the model experiences such instantaneous, rapid increases and declines in inflows into the pits as shown in Figures 8.11; 8-16 and 9.1 and discussed in Sections 8.7.3; 8.8.2 and 9.2.1 respectively. Clarification is sought from the proponent to show that these artefacts are indeed related to the progressive implementation of the mine plan, pit development and back filling and are not related to model instability.

14. In regard to figures 8.19.5 and 8.19.6. These are the only legible drawdown figures, which depict drawdown in the Hebden seam, presumably confined, as this seam is the lowest stratigraphically elevated coal seam aquifer. However in Section 8.8.2 - Prediction Results, the text describes this drawdown as being in the uppermost water table and does not refer to the Hebden seam whatsoever. Clarification should be provided by the proponent.

15. Again in regard to figures 8.19.5 and 8.19.6. Clarification of uncertainty is sought regarding the shape of the drawdown contours. There is uncertainty about whether the steep contours observed on the western side of the Hebden seam drawdown figure are simply not an artefact of the applied fixed head boundary condition. If this is the case then the 2 m drawdown contour could extend past the boundary of the mine site and could impact on the assessment against the NSW Aquifer Interference Policy if the fixed head was removed.

"From Figure 8.19, the predicted decline in the uppermost water table is more than 50 m within the active mining area. However, at the boundary of the site the predicted decline in the uppermost water table is less than 2 m the site at all extracted time stamps."

16. Table 8.15 and Table 8.16 refer to the, "prediction model", "null case" (no extension to Pit 3) and the "cumulative impact null case" (no Mine) models. It is not clear what constitutes the prediction model and how it differs to the other two models.

Comment on off-site impacts

1. In the discussion on inflows into Integra pits as a result of Rix's Creek operations it is stated:

"From Table 8.16, the predicted difference to inflows at Integra due to continuation of Rix's Creek Colliery is negligible. The explanation of this finding is due to the hydrogeological divide between the two sites"

It is unclear why the Proponent suggests that such a divide exists and clarification is sought utilising real field data. Furthermore in Section 4.6.2 Local Hydrogeology it was stated that:

"The Integra Mine is extracting coal measures within the Rix's Creek syncline and represents significant dewatering of the coal measures up hydraulic gradient of the Project. This operation is considered to create a groundwater sink for the majority of the southerly trending groundwater within the coal measures".

However the cross-section provided (Figure 3) shows coal seam aquifers dipping towards the south. It would be expected however that if impermeable layers are present as overburden between the coal seam aquifers, that groundwater would continue to flow towards the south, down dip, against an impermeable base. Clarification is therefore sought regarding the location of the groundwater divide.

2. Further detail should be provided of the impacts to or by
"Surrounding developments with potential to impact on the hydrogeological system within the study area are depicted in Figure 1.1, and include:

- Integra South Pit and its Western Extension. This development is located immediately to the north of Pit 1. The Integra Pit accesses coal from the Pikes Gully to Upper Hebden Seams*
- The Ashton Coal Underground Mine. Located to the north-west of the mine and on the eastern side of Glennies Creek*
- Ashton access coal from the Pikes Gully to Lower Barrett Seam."*

Recommendations for addressing Groundwater Issues

With regard to the AIP 'minimal impact considerations', the following is recommended:

- A number of data limitations were identified with the model leading to concerns with robustness of the model predictions for water take. An independent model review as required under the AIP was not submitted. The model has not yet been deemed 'fit for purpose' and warrants further improvements for a project of this size.
- Proponent to provide a site water balance for the entire site that includes the detailed hydrogeology, creeks and pits and accounts for the partitioning of rainfall into recharge, evapotranspiration and overland flow.
- The proponent to provide estimates of water flows into each of the pits post 2038 from individual water sources and account for ongoing evaporative losses.
- It is recommended that proper aquifer pump testing (not slug tests or rising head tests) of sufficient duration and that include monitoring at nearby bores, be conducted in each individual aquifer in order to confirm the hydrogeology.

With regard to aquifer conceptualisation, the following is recommended:

- Provide a hydrogeological conceptual model as a series of surfaces and including sufficient legible hydrogeological cross-sections showing all the pit, top and bottom elevations and water levels and include the underground mine workings, to understand groundwater flow at the site. Provide details about changes to the flow regime as the mine plan progresses and hydraulic gradients change.
- Provide a detailed hydrogeological description of each individual aquiclude and aquifer on site that is aligned with the known detailed geological stratigraphy.
- Supplement the monitoring network by drilling additional nested bores (with site supervision and logging by a suitably qualified and experienced professional hydrogeologist), between the pits to various depths, to understand the groundwater flow within each individual aquifer of the multiple aquifer system:
 - o between Camberwell Pit and Pit 1

- o between Pit 1 and North Pit
- o between North Pit and underground workings
- o between underground workings and Pit 2
- o between Pit 2 and Pit 3
- o between Pit 3 and Pit 1
- o between Pit 3 and North Pit
- o between Pit 3 and Camberwell Pit

The locations of monitoring sites and depths to be discussed with DPI Water.

- Provide groundwater contour maps for each of the individual various aquifers.
- Provide a detailed bore log for production bore 20BL170864 and all other bore logs from site not provided with the EIS application and including their surveyed spatial coordinates.

With regard to the groundwater model, it is recommended:

- The proponent to implement future improvements to the groundwater modelling by incorporating data from future drilling and monitoring of bores. It is recommended that a physics based calculation of the partitioning of rainfall into overland flow, recharge infiltration to the water table and evapotranspiration be performed. Alternate modelling codes could be considered for this purpose. It is recommended that future modelling extends the western and southern boundary of the model to the Hunter River.
- That the updated model be submitted to a suitably qualified independent reviewer.
- Provide recharge maps showing aquifer outcrop (subcrop) within existing pits to understand how water is expected to move between pits and to inform monitoring bore locations.
- Perform quarterly groundwater quality (including organic chemistry) for an initial 12 months and monthly water level monitoring at all monitoring sites (including recommended nested bore sites and all dams and pits plus including underground mine workings). It is recommended that water level loggers be installed within bores and a single barometric pressure logger to also be installed.
- Proponent to install an A Class evaporation pan and rain gauge on site.

Water Licensing

Licensing Table

Water licensing information is not clearly presented in the EIS. It is recommended that the proponent include a consolidated licensing table, listing all water licenses and approvals under the *Water Act 1912* and the *Water Management Act 2000* for both surface and ground water (hard rock and alluvial) related to the site. The table should identify the licence/approval number, linked licenses/approvals, entitlement, water source and licensed purpose. Table 15-4 could be expanded to achieve this.

The following errors in Tables 8-1 and 15-4 should also be corrected:

- Licenses 20SL049786, 20SL048955 and 20SL050160 are listed in Table 8-1 in the EIS however these licenses have been converted and replaced by *Water Management Act* licenses and approvals as per the table below:

Prior License	Replaced By Work Approval	Linked to Water Access Licence
20SL049786	20WA209902	20AL209901 (300 units, Singleton water

		source)
20SL048955	20WA209900	20AL209899 (150 units, Singleton water source)
20SL050160	20WA207389	20AL207388 (5 units, Glennies water source)

It is therefore requested that the prior licenses be removed from the project documentation as they are no longer current.

- Table 8-1 in the EIS refers to “Licenses 11917 – 11919, 11084, 17992, 19024 and 19027”. It is requested that the term ‘licenses’ in relation to these be replaced by the correct terminology “Water Access Licence” or ‘WAL’ to ensure accuracy of information.
- Water Access Licence WAL19035 (20AL209919 linked to 20CA209920) has been omitted from Table 15-4.

Diversion of Stonequarry Gully

Insufficient information has been provided for DPI Water to assess the impacts of the proposed diversion of Stonequarry Gully. The EIS states incorrectly that the proposed diversion would require a Water Supply Works Approval under the WMA from DPI Water. It is noted that the proposed diversion should be detailed in the full project application and therefore covered by a Planning Approval (if granted). This negates the requirement for a Water Supply Works approval under the *Water Management Act 2000* pursuant to s89J of the *Environmental Planning & Assessment Act 1979*.

The EIS should assess the impacts of the proposed diversion, including assessment of the impacts on water quality and quantity, dependent ecosystems, hydrology and geomorphology. The proponent must also provide concept design of the proposed diversion, demonstrating that the proposed diversion is appropriately designed to mimic natural hydraulic, hydrologic, geomorphic and ecological functions of the water course.

End Attachment A



BN15/8578

Mr Hamish Aiken
Team Leader
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Email: hamish.aiken@planning.nsw.gov.au

Dear Mr Aiken

**Rixs Creek Mine - Continuation of Mining Project (SSD 6300)
Review of Environmental Impact Statement**

I refer to your email of 2 November 2015, regarding Bloomfield Collieries Pty Ltd's application for the Rixs Creek Mine - Continuation of Mining Project in the Singleton Council local government area.

NSW Department of Industry, Division of Resources & Energy (the Division) has reviewed the Rixs Creek Mine - Continuation of Mining Project Environmental Impact Statement (EIS), dated October 2015.

The Division supports the Rixs Creek Mine - Continuation of Mining Project (the Project) as a responsible utilisation of the State's coal resources that will, if approved, provide continued employment for around 150 personnel in a typical year of production and up to 225 personnel at full production and bring economic benefits to the local region and the State as a whole.

The following comments are directed at specific areas of the Division's responsibility for this proposal.

MINING TITLE

As coal is a prescribed mineral under the *Mining Act 1992*, the proponent is required to hold appropriate mining titles from the Division in order to mine this mineral. The Proponent holds mining titles; Coal Lease 352, Mining Lease 1432 and has lodged Mining Lease Application 487 (MLA 487) for mining purposes on 23 February 2015.

The proponent has demonstrated that the proposal has sufficient title over the project area to satisfy the requirements of section 380AA of the *Mining Act 1992*.

Under the *Mining Act 1992*, mining and rehabilitation are regulated by conditions included in the mining lease, including requirements for the submission of a Mining Operations Plan (MOP) prior to the commencement of operations, and subsequent Annual Environmental Management Reports (AEMR).

REHABILITATION

The Division notes that the EIS has identified general rehabilitation strategies and objectives and adequately describes the functional domains of the project. Specific performance objectives and standards of each domain have been satisfactorily described.

The Division requires final landform design to be consistent with the surrounding topography and the EIS has provided objectives and criteria to which they will be implemented.

ASSESSMENT OF THE RESOURCE

While amendments to the State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (Mining SEPP) have removed the provision that made the economic significance of the resource the principle consideration when determining mining projects and requires the NSW Department of Industry to assess the significance of the resource, the Division considers that an analysis of the resource utilisation and its economics will assist the consent authority in considering the efficiency or otherwise of the development in terms of resource recovery (cl15(1) of the Mining SEPP).

This analysis concentrates on geological, mining and economic aspects of the project and the Division makes the following assessment:

Size, quality and availability of the resource

Bloomfield Collieries Pty Ltd is a subsidiary of the Bloomfield Group, which owns and operates the Rixs Creek Mine. The Proponent is seeking approval for the Rixs Creek Mine Continuation of Mining Project which will allow the continuation of the existing multi-seam open cut mining operations.

If approved, the Project will allow the mine to continue operations and utilisation of existing infrastructure until approximately 2038. The Project includes a new mining lease application (MLA 487) to the west of the existing mining lease to accommodate a proposed new overburden emplacement area. The life of the Project will be around 25 years, and approval is being sought to extract at a rate of up to 4.5 million tonnes per annum (Mtpa) of run-of mine (ROM) coal that would produce up to 2.7 Mtpa of product coal.

The Division has verified that the Project will provide approximately 46 million tonnes (Mt) of ROM coal and approximately 25 Mt of product coal. The Proponent has completed resource and reserve estimation for the Project in accordance with the Australasian Code for Reporting Exploration Results, Mineral Resources and Ore Reserves 2012 "the JORC Code".

Two export quality coal products, a semi-soft coking product and a thermal product are proposed to be sold by the Proponent. It is expected that 60% of production would be sold on the export coking coal market and 40% on the export thermal market. The Division has examined the coal quality data of the seams to be mined

from the Project and is of the opinion that the quality of the coal from the Project area will allow these products to be sold on the export market. The majority of product coal is expected to be sold to established markets mainly to Japanese customers.

Over the life of the Project, the value of the coal produced would be worth around \$3 billion in current dollars, based on the expected split between export thermal and coking coal products. The net present value of this revenue stream has been estimated by the Division at approximately \$1.7 billion.

Export income is vital for the health of both the NSW and Australian economy. Export income contributes to the Nation's balance of trade, which provides positive benefits to both the NSW and Australian credit rating.

Of the 13 open cut coal mines which currently operate in the Hunter coalfield, the Project if approved, producing at its maximum ROM production rate of 4.5 Mtpa would rank twelfth of the mines operating in the region. The Project would be ranked 21st out of the 43 producing NSW coal mines as at September 2015 based on saleable coal production. The Project producing at its maximum ROM rate would be considered slightly above a small to medium sized mine when compared to other operating coal mines in NSW, i.e. the average size of currently operating coal mines in NSW in 2014-15 was around 5 Mtpa of ROM coal.

The Project is vital for the continuation of the existing Rixs Creek Mine, as without approval the current mine has a limited life that would see it close in the short term, given the low coal price environment, limited remaining coal resources and also overburden dumping issues that would be solved with Project approval.

Resource Recovery

Pit design at the Project is constrained to the south and west by the outcrop of the target coal measures (Lemington to Hebden seams). Exclusion zones adjacent to Rixs Creek and the New England Highway constrain pit design boundaries to the south and east. In the north, pit design necessarily excludes coal resources to ensure geotechnical stability of the open pit. All coal seams within the open cut are proposed to be extracted.

Given these constraints and those outlined in the Proponents EIS, DRE considers the Project mine plan to adequately recover coal resources.

Coal Royalty

The Project is a proposed open cut mine and as such a royalty rate of 8.2% applies to the net disposal value. Net disposal value is the price received per tonne minus any allowable deductions. The main allowable deduction is for coal beneficiation which is either; \$3.50 per tonne for coal subjected to a full washing cycle, or \$2.00 per tonne for coal subjected to a simple washing process, or \$0.50 per tonne for coal that is washed and screened.

As all product coal from the Project will be subjected to a full washing cycle, a deduction of \$3.50 per tonne from the value of coal produced applies. A deduction for levies also applies which would amount to no more than \$1.00 per tonne. Hence allowable deductions for royalty for the Project would amount to \$4.50 per tonne.

One of the most important assumptions in the calculation of future Royalty for a coal proposal is the estimate of a future coal price over the life of a project. Coal from the Project is expected to be sold into the export coking and thermal markets. Due to the existing Rixs Creek Mine having a long history of firm coal contracts with customers in Japan it is expected that these same customers will continue to purchase coal from the Project.

From June 2014 to June 2015 (Coal Services data) export thermal coal prices from NSW were around A\$80 per tonne. The bottom of the price cycle (in A\$ terms at least) may have occurred over this period, as the falling Australian dollar has stemmed prices falling further. Therefore the Division has assumed a price of around A\$80 per tonne for the Project in the short term for export thermal coal.

Coal price forecasting is inherently difficult and over the long term time frame of the Project there will be many variations in coal prices. However, there is a growing consensus in the coal industry that coal prices will improve in the medium to long term, over the current five year lows. For its royalty calculation, the Division uses the current low short term export thermal coal prices, and medium to long term export thermal prices (in real terms) in the range of A\$75 to A\$110 per tonne.

In regard to export semi soft coking coal prices, from June 2014 to June 2015 (Coal Services data) coal prices from NSW were in the range A\$100 to A\$110 per tonne. Therefore the Division has assumed a price of around A\$100 per tonne for the Project in the short term for the export of coking coal.

For its royalty calculation, the Division uses the current low short term export semi soft coking coal prices, and medium to long term export semi soft coking coal prices (in real terms) of around A\$120 per tonne.

Another important aspect of future royalty calculation for a proposed coal project is estimation of future annual production. The Division has estimated that if the Project is approved, around 25 Mtpa of product coal would be able to be economically mined from the Project area from 2016 to 2038.

Using the above parameters the Division has calculated that in a typical full production year the State will receive around \$9 million in royalty and \$240 million over the life of the Project. The net present value of this royalty stream would be A\$130 million using a 7% real discount rate.

Other Factors

The Division also notes from the Economic Assessment prepared by the Proponent that the Project will:

- contribute \$394 million to NSW in Gross State Product
- contribute \$104 Million to regional Gross Regional Product
- generate a net economic benefit of around A\$250 Million (NPV using a 7% discount rate)
- spend a total of around A\$110 million in capital expenditure over its life, and
- will employ around 150 personnel in a typical year of production and up to 225 personnel at full production.

DRAFT RECOMMENDED CONDITIONS OF APPROVAL

DRE recommends the following conditions be incorporated into the Development Consent, if granted:

Rehabilitation Objectives and Commitments

The Proponent shall rehabilitate the site to the satisfaction of the Director, Environmental Sustainability in the DRE.

Rehabilitation must be substantially consistent with the Rehabilitation Objectives described in the EA (and Appendix Q of the EA) and the following objectives in Table 1.

Table 1

Rehabilitation Feature	Objective
Mine site (as a whole of the disturbed land and water)	Safe, stable and non-polluting, fit for the purpose of the intended post-mining land use(s).
Rehabilitation materials	Materials (including topsoils, substrates and seeds of the disturbed areas) are recovered, appropriately managed and used effectively as resources in the rehabilitation.
Landforms	Final landforms sustain the intended land use for the post-mining domain(s). Final landforms are consistent with and complement the topography of the surrounding region to minimise the visual prominence of the final landforms in the post mining landscape. Final landforms incorporate design relief patterns and principles for consistent with natural drainage.
Water Quality	Water retained on site is fit for the intended land use(s) for the post-mining domain(s). The potential ecological, hydrological and geomorphic impacts from post-mining water discharges on receiving creeks are assessed and appropriate mitigation measures are effectively implemented as part of the closure plan. Water management is consistent with the regional catchment management strategy.
Native flora and fauna habitat and corridors	Size, locations and species of native tree lots and corridors are established to sustain biodiversity habitats. Species are selected that re-establishes and complements regional and local biodiversity.
Post-mining agricultural pursuits	The land capability classification for the relevant nominated agricultural pursuit for each domain is established and self-sustaining within 5 years of land use establishment (first planting of vegetation.)

Progressive Rehabilitation

The proponent shall carry out all surface disturbing activities (eg pre-stripping in advance of mining operations) in a manner that, as far is reasonably practicable, minimises potential for dust emissions and shall carry out rehabilitation of disturbed

areas progressively, as soon as reasonably practicable, to the satisfaction of the Secretary of the Department of Industry, Skills and Regional Development.

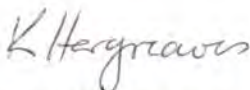
Rehabilitation Plan

1. The proponent must prepare and implement a Rehabilitation Plan to the satisfaction of the Secretary of the Department of Industry, Skills and Regional Development.
2. The Rehabilitation Plan must:
 - a. be submitted and approved by the Secretary of the Department of Industry, Skills and Regional Development prior to carrying out any surface disturbing activities of the development, unless otherwise agreed to by the Secretary
 - b. be prepared in accordance with DRE guidelines and in consultation with the Department, OEH, EPA, DPI - Water, Council and the CCC
 - c. incorporate and be consistent with the rehabilitation objectives in the EIS, the statement of commitments and Table 1
 - d. integrate and build on, to the maximum extent practicable, the other management plans required under this approval
 - e. address all aspects of mine closure and rehabilitation, including post mining land use domains, rehabilitation objectives, completion criteria and rehabilitation monitoring and management.

Note: The approved Mining Operation Plan (which will become the REMP once the Mining Act Amendments have commenced), required as a condition of the Mining Lease(s) issued in relation to this project, will satisfy the requirements of this condition for a Rehabilitation Plan.

Should you have any enquires regarding this matter please contact William Hughes, Director Mineral Operations on (02) 9934 0784.

Yours sincerely



Kylie Hargreaves
Deputy Secretary
Resources & Energy

7.12.15



PCU062984

30th November, 2015

Planner
NSW Dept of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Our ref: 10.121.046

Your ref: SSD6300

Dear Sir/Madam,

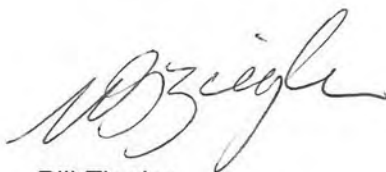
**Rixs Creek Mine (SSD 6300)
Application**

The Dams Safety Committee (DSC) has read the Environmental Assessment Report for Rix's Creek Mine – Continuation of mining project (SSD 6300). The proposed development area does not impact any prescribed dams or dam Notification Areas, also there are no newly proposed dams within the proposal that are likely to be considered for prescription.

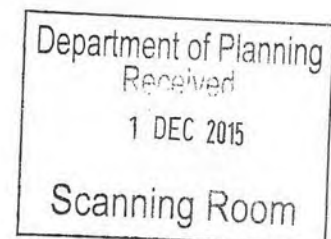
The Dams Safety Committee has no concerns therefore with the development application proposed and has no further comments for submission.

To discuss this situation further would you please contact William Ziegler the Senior Mining Manager at the Dams Safety Committee, on 04 9842 08077 or at bill.ziegler@damsafety.nsw.gov.au.

Yours Sincerely



Bill Ziegler
**Manager Mining Projects
Dams Safety Committee**



G:\DamSafety\Dataserver\Files_Numerical\10\121_Mining_Gen\046_DOP_Part 3A & 75A matters\Hunter Coalfields\Rix's Creek\Rix Creek SSD6300.docx



Your reference: SSD 6300
Our reference: DOC15/503658, EF13/3519
Contact: Michael Howat (02) 4908 6819
Electronic correspondence to: hunter.region@epa.nsw.gov.au

Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Hamish Aiken

hamish.aiken@planning.nsw.gov.au

Dear Mr Aiken

RIX'S CREEK MINE EXTENSION PROJECT, SSD 6300
EPA'S RECOMMENDED CONDITIONS OF APPROVAL

I refer to your email to the Environment Protection Authority (EPA), dated 2 November 2015, seeking the EPA's comments on the Rix's Creek Mine Extension Project, SSD 6300 (the project). The EPA has reviewed the project as detailed in the report titled '*Rix's Creek Mine – Continuation of Mining Project, Environmental Impact Statement: 26 October 2015*' (EIS) Volumes 1 – 5, prepared by Aecom Australia Pty Ltd.

The project involves the following:

- extending open cut mining operations to recover an additional 32 million tonnes (Mt) of coal;
- extend the approved life of mine to 2038;
- increasing the extraction rate of run-of-mine (ROM) coal from 2.8 Mt/year to 4.5 Mt/year;
- extending the western boundary of the existing mining lease to establish new rejects emplacement and overburden stockpile areas;
- increasing the hours of operation of the coal handling and processing plant (CHPP) from 4.5 days a week to 7 days a week;
- transport up to 2.7 Mt/year of coal via rail to the Port of Newcastle;
- continued tailings disposal to existing emplacement areas; and
- construction and operation of a second New England Highway underpass.

The EPA has reviewed the information provided in the EIS and provides the comments below. The EPA's recommended conditions of approval are provided in **Attachment 1**.

Air Quality

The EPA reviewed the EIS for matters relating to air quality and impacts, and specifically Appendix L '*Air Quality and Greenhouse Gas Assessment Rix's Creek Continuation of Mining Project*' (AQIA), dated 26 August 2015 and prepared by Todoroski Air Sciences Pty Ltd.

The EPA has identified a number of issues that must be addressed before the EPA is able to provide recommended conditions of approval in relation to air quality.

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A summary of the EPA's key areas of concern are:

- Diesel engine particulate matter emission estimates. The EIS does not appear to have determined and reported changes to total emissions and resultant impacts, or specific measures to minimise emissions from this source.
- The EIS requires an assessment of potential impacts at all potentially affected properties in Maison Dieu, at Country Acres Caravan Park, and at Maitland Diesel service.
- The EIS does not appear to include estimates of dust emission from all bare areas in the emissions inventory.
- Further detail on the derivation of the emission rate of NO₂ from blasting is required, including the amount of explosive assumed and the emission flux, or equivalent information.

The EPA's detailed AQIA assessment comments are provided in **Attachment 2**.

Hunter River Salinity Trading Scheme

Section 15.3.5 of the EIS states that the mine is licensed for water discharge under current conditions of Environment Protection Licence (EPL) 3391. Section 15.3.5 further notes *"the mine holds salt credits that would facilitate release of water under the conditions of the Hunter River Salinity Trading Scheme, if a discharge point is found to be necessary in the future"*.

Currently EPL 3391 does not permit any discharges from the site. The EPA notes the project does not propose the introduction of any licensed discharge points at the site. As such the EPA does not have any recommended conditions of approval specifically relating to surface water discharges.

Any future proposal to discharge from the site, including under HRSTS conditions, would require amendments to the EPL and consent. This would require an assessment of potential impacts for any proposed discharge to waters.

Environment Protection Licence

If project approval is granted amendments will be required to the current EPL 3391 for the premises. The proponent will have to make a separate application to the EPA to amend the existing EPL 3391 prior to undertaking any on site works associated with the expansion.

If you require any further information regarding this matter please contact Michael Howat on 4908 6819.

Yours sincerely



10 DEC 2015

MARK HARTWELL
A/Head Regional Operations Unit – Hunter
Environment Protection Authority

Encl: Attachment 1 – Recommended Conditions of Approval: Rix's Creek Extension Project (SSD 6300)
Attachment 2 – EPA's Detailed Air Quality Assessment Review

Attachment 1

**RECOMMENDED CONDITIONS OF APPROVAL
RIX'S CREEK EXTENSION PROJECT (SSD 6300)**

As Environment Protection Licence (EPL) 3391 is already issued for the premises, the following recommended conditions of approval are only new or amended condition to those conditions already existing on EPL 3391. The EPA has not included an extensive list of all conditions currently in force in EPL 3391 that will remain if project approval is granted.

General**Works are to be undertaken in accordance with the information supplied to the EPA**

1. Except as provided by these conditions of approval, the works and activities must be undertaken in accordance with the proposal contained in:

- (a) 'Rix's Creek Mine – Continuation of Mining Project, Environmental Impact Statement' (Volumes 1 – 5), dated 26 October 2015, prepared by Aecom Australia Pty Ltd.

Unless otherwise specified in these conditions of approval.

Premises or plant to which this licence applies

2. The licensee must provide the EPA with an updated premises description diagram/map prior to the commencement of any site works associated with the project. The diagram/map must be:
 - (a) Titled and dated;
 - (b) Prepared by a registered surveyor;
 - (c) Clearly identify the boundary of the premises for which Rix's Creek Pty Limited is the occupier;
 - (d) Illustrate location and GPS coordinates of all discharge and/or monitoring points or sites; and
 - (e) Be provided In size A1 hard copy format and in electronic format.

Noise**Noise Limits**

3. Noise generated at the premises must not exceed the noise limits in the Table below. The Receiver locations have been taken from the *Rix's Creek Coal Mine Continuation of Mining Project Environmental Noise Assessment* prepared by Global Acoustics, which is Appendix M of the report titled 'Rix's Creek Mine – Continuation of Mining Project, Environmental Impact Statement: 26 October 2015' Volumes 1 – 5, prepared by Aecom Australia Pty Ltd.

Location	NOISE LIMITS dB(A)			
	Day L _{Aeq} (15 minute)	Evening L _{Aeq} (15 minute)	Night L _{Aeq} (15 minute)	Night L _{A1} (1 minute)
Residents in Noise Assessment Groups A (Bridgman), B (Obanvale) and C (Wattle Ponds); (Residents 1 to 39)	42	42	42	47

Residents in Noise Assessment Groups D through to O; (Singleton Heights North, Huntview, Singleton Heights South, McDougalls Hill, Gowrie, Long Point, Belmadar /MDIE, Maison Dieu East, Mason Dieu West, Camberwell South, Camberwell, Glennies Creek).	40	40	40	47
Any privately owned residential sensitive receiver not included above and not subject to a private negotiated agreement	35	35	35	45

4. For the purpose of the noise limits in the table above;
 - Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and Public Holidays.
 - Evening is defined as the period 6pm to 10pm.
 - Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and Public Holidays.
5. The noise limits set out in the table above apply under all meteorological conditions except for the following:
 - a) Wind speeds greater than 3 metres/second at 10 metres above ground level.
 - b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
 - c) Stability category G temperature inversion conditions.
6. For the purposes of condition 5:
 - a) Data recorded by a meteorological station installed on site must be used to determine meteorological conditions; and
 - b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.
7. To determine compliance:
 - a) with the $L_{eq}(15 \text{ minute})$ noise limits in the table above, the noise measurement equipment must be located:
 - approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
 - within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable
 - within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
 - b) with the $L_{A1}(1 \text{ minute})$ noise limits in the table above, the noise measurement equipment must be located within 1 metre of a dwelling façade.
 - c) with the noise limits in the table above, the noise measurement equipment must be located:
 - at the most affected point at a location where there is no dwelling at the location; or
 - at the most affected point within an area at a location prescribed by conditions 7(a) or 7(b).
8. A non-compliance of the noise limits in the table above will still occur where noise generated from the premises in excess of the appropriate limit is measured:

- at a location other than an area prescribed by conditions 7(a) and 7(b); and/or
- at a point other than the most affected point at a location.

Noise Monitoring Requirements

Note: This condition can be varied and must be negotiated by the Consent Authority and/or the EPA with the proponent before being finalised in any project approval.

9. To assess compliance with the noise limit table above, attended noise monitoring must be undertaken in accordance with condition 7 above and:
 - a) at each one of the locations listed in Condition 3;
 - b) occur annually in a reporting period;
 - c) occur during each day, evening and night period as defined in the NSW Industrial Noise Policy for a minimum of:
 - 1.5 hours during the day;
 - 30 minutes during the evening; and
 - 1 hour during the night.
 - d) occur for three consecutive operating days.

Noise Reporting

Note: This condition can be varied and must be negotiated with the proponent before being finalised in any project approval

10. A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the yearly monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:
 - a) an assessment of compliance with noise limits presented in Condition 3 above; and
 - b) an outline of any management actions taken within the monitoring period to address any exceedences of the limits contained in Condition 3 above.

Definition of Terms

- NSW Industrial Noise Policy - the document entitled "New South Wales Industrial Noise Policy published by the Environment Protection Authority in January 2000."
- Noise – 'sound pressure levels' for the purposes of conditions 3 to 10 above.

Attachment 2

EPA'S DETAILED AIR QUALITY ASSESSMENT REVIEW

The EPA has undertaken a review of the EIS and Appendix L '*Air Quality and Greenhouse Gas Assessment Rix's Creek Continuation of Mining Project*' (AQIA), dated 26 August 2015 and prepared by Todoroski Air Sciences Pty Ltd.

The AQIA has been conducted generally in accordance with EPA's guidance in the '*Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*', however there are still a number of issues that must be addressed before the EPA is able to provide recommended conditions or approval in relation to air quality matters. These matters are discussed below.

Estimation of emissions from diesel engines

The estimation of emissions from diesel engines has been done explicitly to assess contribution to potential impacts on nitrogen dioxide (NO₂) concentrations as shown in Section 10 of the AQIA. Emissions of particulate matter have been included in the estimation of emissions from the movement of materials, as shown in Table 5-1 and in Appendix D.

Section 5.1.1 of the AQIA states the estimated dust emissions "reflect the application of best practice dust mitigation currently being implemented at the site". This includes use of water suppression to reduce dust emissions, listed as providing 85% control for hauling on unsealed roads. Water suppression is not applied to emissions from diesel engines.

This approach leads to underestimation of emissions of particulate matter from diesel engines. As noted in Section 10 of the AQIA, there are substantial quantities of diesel used by the proposed operations, which in the EPA's experience can contribute to a significant proportion of total PM_{2.5} emissions from mine sites.

Based on the above emissions of particulate matter from diesel engines have not been adequately estimated, and the assessment does not appear to nominate controls for particle emissions from diesel engines. The EPA requires the proponent determine and report the change to total emissions and resultant impacts, and specify measures to minimise emissions from this source.

Impacts of proposal

The assessment predicts exceedences of the air quality criteria as summarised in the tables provided in Section 9 of the AQIA.

Impacts above criteria were found for fifteen receptors not owned by the mine. Nine of these are assessed as having impacts from the mine greater than air quality criteria, while the other six are assessed by the cumulative assessment to experience additional exceedences of the 24-hour criterion for PM₁₀.

The Executive Summary comments that of the nine directly impacted receptors, one has an existing negotiated agreement with the project, while the other eight are included in the acquisition zone of other existing approved projects.

The cumulative assessment finding that six non-mine receptors are expected to experience additional days above the 24-hour PM₁₀ criterion should be included in the summary in section 16 and the Executive Summary.

Receptors assessed, including Maison Dieu

The EPA previously queried whether the receptors used in the assessment adequately represented Maison Dieu. In the letter dated 15th October 2015, Todoroski Air Sciences, as consultants for the proponent, respond that there are a number of receptors closer to the active mine and near this estate, providing a conservative estimate at this receptor.

Maison Dieu lies behind an arc from receptor R140 and M18. In this sense R140 is closer to the proposed extension. However, both R140 and M18 are assessed as exceeding air quality criteria. It is therefore possible that other receptors in the area could also exceed, especially given the prevalence of wind from the west-north-west. The EPA requires assessment of additional receptors in this area to identify all potentially affected properties.

Country Acres Caravan Park at 58 Maison Dieu Road lies to the south-west of the proposed pit expansion and within 500 metres. It does not appear to have been assessed as a receptor. Maitland Diesel Service is located on Rix's Creek Lane and also does not appear to have been assessed as a receptor. The EPA requires the potential impacts at these receptors to be assessed.

Emissions from wind erosion – stabilised areas

The EPA has previously queried the estimates of particulate matter arising from wind erosion as the areas set out in the revised AQIA are considerably smaller than previous estimates. Todoroski Air Sciences advised the EPA that work conducted as part of the Pollution Reduction Program (PRP) for Environment Protection Licence (EPL) 3391 shows that much of the area has been "stabilised". This is listed as a reason for excluding it from further consideration.

The EPA notes the measurements taken at the mine and presented in PRP report titled '*Coal Mine Particulate Matter Control Best Practice Final Licence Variation Notice – Exposed Area Assessment*', provided by the licensee for EPL 3391. Stabilised areas are still recognised in this report as a source of dust and should be included.

The EPA further notes that the Exposed Area Assessment acknowledges that the level of stability achieved across the site was due to recent heavy rainfall and inactivity on the stability test areas due to the Christmas shutdown period.

Based on the above, all bare areas across the site are subject to wind erosion and should be included in the emissions inventory for the proposal. Active maintenance is needed to maintain stabilisation.

Estimation of nitrogen dioxide from blasting

In the Todoroski Air Sciences letter to the EPA dated 15th October 2015, the consultant refers to work conducted by CSIRO stating that the maximum NO₂ in the plume is 63.3 kg. This is scaled by a factor of 1.5 to account for conversion of NO to NO₂ and generates an emission rate based on the blast lasting for five minutes. The approach taken is sound, but the derivation of 63.3 kg as an estimate of the maximum NO₂ released from blasting is not clear.

The CSIRO report – '*NO_x Emissions from Blasting Operations in Open Cut Coal Mining in the Hunter Valley*' (ACARP Project C14054) provides estimates of NO₂ by blasting as a ratio to tonne of explosive used. The report uses an average of 0.06 kg NO₂ per tonne of explosive with a range of 0.002 to 0.32. The blasts sampled in that report used from 60 tonnes of explosive to 565 tonnes of explosive. The report does not indicate whether the maximum represents worst case.

It is not clear how the proponent has derived the value of 63.3 kg. The noted high uncertainty suggests that to conservatively estimate emissions, the greatest proposed explosive charge should be multiplied by an estimate of the maximum emission flux.

The EPA requests the proponent provide further details on the derivation of the emission rate of NO₂ from blasting, including the amount of explosive assumed and the emission flux or equivalent information.

3 December 2015

Mr Hamish Aiken
Planning Officer Mining Projects
Department of Planning & Environment
GPO Box 39
Sydney NSW 2001

Dear Mr Aiken

RIX'S CREEK COAL MINE CONTINUATION OF MINING PROJECT SSD 6300

I refer to the Environmental Impact Statement (EIS) exhibited on the NSW Department of Planning & Environment web site in relation to the Rix's Creek Coal Mine Continuation of Mining Project (the project).

The Rix's Creek Coal Mine is an open cut mine located in the Hunter Valley approximately 5 kilometres north-west of Singleton. The project aims to extend the mine in a north-westerly direction and increase production from current production of 2.5 million tonnes per annum (Mtpa) run of mine (ROM) coal per year to 4.5 Mtpa ROM coal. The project seeks to extend the life of the mine until approximately 2037.

Hunter New England Population Health has reviewed the EIS report paying particular attention to the management of air quality, noise, water and issues which may have an impact on public health. The following points are discussed and should be considered in the approval process for this project.

Air Quality

There is no evidence of a threshold below which exposure to particulate matter (PM) is not associated with health effects. Therefore, it is important that all reasonable and feasible measures are taken to minimise human exposure to PM, even where assessment criteria are met.

During a consultation with the team developing Rix's Creek Mine Continuation Project we advised of the importance of considering that air quality goals will not remain static during the proposed life of the mine. It is important that the EIS should address the likely future air quality standard for annual average PM₁₀ of between 20 and 25 µg/m³ and annual average PM_{2.5} of 8 µg/m³ as flagged in the Proposed variation to the Ambient Air Quality NEPM. While the EIS states (on page 102) that the "Air quality impacts were assessed having regard to the World Health Organisation (WHO) Air Quality Guidelines (2005) for particulate matter", the EIS did not use the annual goal of 20 µg/m³ recommended by WHO in the document. Our focus in this review is on average annual particulate levels because this measure is most predictive of health impacts and PM_{2.5} is considered to have more significant health impacts than PM₁₀.

Hunter New England Local Health District
ABN 63 598 010 203

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Wallsend NSW 2287
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www.hnehealth.nsw.gov.au/hneph

The village of Camberwell is inside the contours for modelled worst case annual $\text{PM}_{2.5}$ and PM_{10} goals (using $30 \mu\text{g}/\text{m}^3$ as the goal) (Figures 11.7, 11.8, 11.9, 11.10). Figures 11.9 and 11.10 depicting modelled worst case annual average PM_{10} only provide a $30 \mu\text{g}/\text{m}^3$ contour. Displaying a $20 \mu\text{g}/\text{m}^3$ and $25 \mu\text{g}/\text{m}^3$ contour (as relevant to the goal promoted in the variation to the Australian NEPM) would be of great use in assessing the impact on the nearby settlements such as McDougalls Hill and Singleton Heights. While the Rix's Creek project may only contribute a small (but not insignificant) proportion of particulate emission to the local communities, it is the total impact that is important from a cumulative impact assessment perspective. The intensive mining in this area will likely exceed current and particularly future air quality goals making it difficult to argue that increased particulate emissions are acceptable from a cumulative impact perspective. There are multiple and significant impacts on receptors 170 – 177. The EIS appears to dismiss these impacts because the properties are eligible for acquisition, however, rights to acquisition do not diminish or negate the cumulative impact to these communities (page 111).

Noise and Blasting

Environmental noise can have negative impacts on human health and well-being and trigger ongoing community complaints about annoyance, sleep disturbance and stress. Evidence concerning the adverse health effects of environmental noise is detailed in a number of publications, for example, the *World Health Organization Night Noise Guidelines for Europe* (2009) and the *WHO Guidelines for Community Noise* (1999). To protect public health, it is prudent to take all reasonable and feasible measures to minimise public exposure to mine-related noise, irrespective of compliance with the relevant noise policies.

Data presented in Table 19-6 Impacts on Social Amenity indicate that 37% of all complaints between 2001 and 2015 relate to noise impacts, mostly from operational noise from the Mine, but also noise from coal trains passing residential areas. A further 29% of complaints related to overpressure levels and vibration from blasting (shaking of houses, windows or sheds). These complaints arose even though the airblast and ground vibration from current blasting operations complies with the regulatory limits at all sensitive sites.

Under the *NSW Industrial Noise Policy* (EPA 2000), a development is considered to cause a noise impact if the predicted noise level at the receiver exceeds the project specific noise levels (PSNL) for the project. This Policy also details the response and mitigation measures required when noise trigger levels are met or exceeded

The noise modelling in the EIS shows the potential for some significant exceedences of PSNL in all Noise Assessment Groups (NAG) during worst case scenarios. It has been explained in the EIS that, in accordance with the above policy, as this is an existing development with noise legacy issues, where the modification would have beneficial or negligible noise impacts, that the consent authority cannot grant voluntary mitigation and acquisition rights. The EIS also explained the noise mitigation measures being implemented to address these legacy noise issues. However, it would be preferable for the affected sensitive receivers if these measures were implemented sooner and that very strict controls were placed on operations during conditions that would lead to the noise levels predicted in Table 4.7: 90th Percentile Operational Predictions – $L_{Aeq, 15 \text{ minute}}$ dB.

Effective community consultation is required throughout the project to facilitate public involvement and to allow for the community to participate in the mitigation selection process.

In February the NSW Environment Protection Authority (EPA) announced the introduction of new conditions for open cut coal mines in NSW prohibiting the emission of blast fumes that are likely to cause offence to members of the public. The new licence condition states: "offensive blast fume must not be emitted from the premises". We emphasise the need to ensure strict control of blast conditions to protect the public from blast fume emissions.

Surface Water

There is a health risk from direct human exposure to contaminated surface water or if contaminated surface water enters a drinking water supply. The main drinking water supply for

Singleton, Glennies Creek Dam, is significantly upstream of Rix's Creek Mine and will not be impacted by the Project.

The EIS mentions one other licensed water user on Rix's Creek, and one other on the Un-named Tributary, that could be impacted by the reduction in catchment flows caused by the Project. However, Rix's Creek is an ephemeral stream with a flow rate of zero for 44% of the time. Presumably these two other water users are not using this water as a drinking water supply.

The EIS states that, to date, there have been no observable impacts from Rix's Creek Mine operations on the water quality in Rix's Creek, and provided existing management systems are maintained and measures recommended in Section 15.5 are adopted, there is a low risk of impacts on water quality in the surrounding catchment due to ongoing mining operations.

It is important that any private water users downstream have easy access to and can understand monitoring data. It is also important that, in the event that the water becomes unsuitable for use by private water users that an alternative water source of the same standard, quantity and quality is offered.

Groundwater

The EIS states that the review of licensed bores indicates that all but one are located more than 4.5km from the centre of the Rix's Creek Mine lease area, and they are relatively shallow bores targeting alluvial aquifers which do not extend into the mined area and are considered hydraulically isolated from the Mine target coal seams. The closest bore is 2.38km east of the Mine and is deeper; however, the EIS states that the target of this bore is also hydraulically disconnected from the Mine target coal seams. The EIS therefore concluded that there are no identified groundwater users which could be potentially impacted by the Project.

Rainwater Tanks

The EIS does not mention issues associated with water quality from rainwater tanks at residences without a reticulated water supply. It is recommended that the applicant address the issue of potential impacts on rainwater quality that may be caused by dust from mining construction and operations.

The peak reference document in Australia for information in relation to rainwater tanks is enHealth's *Guidance on use of rainwater tanks* (2010). It would be appropriate to utilise this document and apply its recommendations and standards to rainwater tank systems within the vicinity of the development.

The above document states that "tanks should be inspected every 2-3 years for the presence of accumulated sediment. If the bottom of the tank is covered with sediment the tank should be cleaned". In addition, consideration should be given to the installation of first flush diverters to rainwater tanks to reduce the amount of sediment entering the tanks.

A management system of taking complaints and rectifying issues identified should be considered.

If you require any further information please feel free to contact Carolyn Herlihy, Environmental Health Officer on (02) 4924 6477.

Yours Sincerely



Professor David Durrheim
Director – Health Protection
Hunter New England Population Health



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heritage@heritage.nsw.gov.au
www.heritage.nsw.gov.au

Job ID: DOC15/434767
Your ref: SSD 6300

Mr Hamish Aiken
Team Leader
Resource Assessments | Planning Services
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr Aiken

RE: Notice of Exhibition of Rix's Creek Mine Extension Project (SSD 6300)

I refer to your email received on 2 November seeking input from the Heritage Council of NSW for the above SSD proposal. The EIS submitted with the application indicates that the proposed site is not listed on the State Heritage Register, a Potential State Heritage Item, in the vicinity of any State Heritage Listed item or has any impact on state listed archaeology. Therefore, consultation with the Heritage Council is not required.

If the scope of the project changes and further Heritage Impacts are identified, please refer the Information to us for further comment.

If you have any questions regarding the above matter please contact Gary Hinder, State Heritage Assessment Officer, at the Heritage Division, Office of Environment and Heritage, on (02) 9873 8547 or by email at gary.hinder@environment.nsw.gov.au.

Yours sincerely

Rajeev Maini
Manager, Conservation
Heritage Division, Office of Environment & Heritage
As Delegate of the Heritage Council of NSW
25 November 2015



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heritage@heritage.nsw.gov.au
www.heritage.nsw.gov.au

File No. EF13/08009
Our Ref. DOC15/439191
Previous Ref: DOC15/434767

Hamish Aiken
Team Leader
Resource Assessments, Planning Services
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr Aiken

RIXS Creek Mine – Continuation of Mining Project (SSD 6300) –Comments on the Environmental Impact Statement.

Thank you for referring the Rix Creek Mine Environmental Impact Statement (EIS) (herein referred to as the 'Project Area') to the Heritage Council of NSW for comment and to identify appropriate conditions of approval to the Department of Planning and Environment.

This letter is in addition to previous correspondence from the Heritage Division provided in a letter dated 25 November 2015. The document reference for this letter was DOC15/434767.

A review of the documentation associated with the Environmental Impact Statement (EIS) has been undertaken which included:

- 'Rix's Creek Mine Non-Indigenous Heritage Impact Assessment' prepared by AECOM Australia Pty Ltd dated 15 October 2015 (the Assessment).

As delegate of the Heritage Council of NSW I have reviewed this information and provide the following recommended comments and conditions:

The Project Area does not contain statutorily listed heritage items of local or state significance. It is however noted that one item (the Rixs Creek Coke Ovens and Associated Works) is located adjacent to but outside the Project Area, and is a local heritage item listed on the Singleton Local Environmental Plan 2013. The Archaeological Assessment provided in support of the application has identified four potential heritage items within the Project Area.

The Assessment identified direct and indirect impacts to four items identified during field investigations. Impacts include:

- Direct impact to a Linear Embankment and separate Mound with Historic Material believed associated with the Rixs Creek Coke Ovens; and
- Indirect impacts to the Granbalang Trig Station; and
- Indirect impacts to the Rixs Creek Coke Ovens and Associated Works located outside by adjacent to the study area.

The 'Linear Embankment and Mound with Historic Material' has been assessed as locally significant based for its historical association with the locally listed former 'Rixs Creek Coke Ovens and Associated Works site'. The Assessment has not attempted to undertake additional

historical research to identify the function of these features or to clarify their association if any with the coke ovens. The Assessment did not justify why surface 'relics' present at both sites should be collected when the embankment and mound were assessed as having no technical or archaeological research significance associated with either feature.

To ensure the Applicant does not undertake works that may be unnecessary from a heritage perspective, it is recommended the following conditions be included to resolve the inconsistency identified above and to clarify what, if any mitigation measures are appropriate for the 'Linear Embankment and Mound with Historic Material'. The following condition could be adopted to resolve this by requiring:

1. Additional historical research specific to the 'Linear Embankment and Mound with Historic Material' and its potential association with the "Rixs Creek Coke Ovens and Associated Works" shall be undertaken to better understand and inform the significance of the Linear Embankment and Mound'.

Mitigation measures proposed for the Rixs Creek Coke Ovens and Associated Works in section 9.4, section 9.5.2 and section 9.6.2 are supported. These should be adopted by the Department of Planning and Environment with the following additions to the proposed updated Conservation Management Plan (CMP):

2. A detailed Condition Report of the Coke Ovens and Associated Works site prepared by suitably qualified structural engineer, including detailing existing location and extent of cracks and other defects that may be susceptible from damage caused by vibration;
3. A monitoring timetable should be prepared for regular monitoring of the coke ovens site during and up to one (1) year after blasting activity has been completed;
4. Detailed mitigation options in the event damage caused by vibration activity is identified including remediation options involving the inclusion of new fabric; and
5. A final report shall be prepared within one (1) year of completion of blasting works outlining the results of both visual and vibration monitoring and any repair work completed on the site and shall be submitted for the information of the Department of Planning and Environment and the Heritage Council of NSW.

Should you have any queries, please contact Chris Lewczak, Acting Archaeologist, at the Heritage Division, Office of Environment and Heritage on telephone (02) 9873 8500 or at Chris.Lewczak@environment.nsw.gov.au.

Yours sincerely



Katrina Stankowski,
Acting Manager, Conservation
Heritage Division
Office of Environment and Heritage

AS DELEGATE OF THE NSW HERITAGE COUNCIL OF NSW
02 December 2015



Office of
Environment
& Heritage

Your reference: SSD 6300
Our reference: DOC15/435951-13
Contact: Ziggy Andersons 4927 3151

Dr Hamish Aiken
Team Leader, Resource Assessments
Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Dr Aiken

RE: ENVIRONMENTAL IMPACT STATEMENT FOR THE RIX'S CREEK EXTENSION PROJECT

I refer to your email dated 2 November 2015 seeking comment on the above project. The Office of Environment and Heritage (OEH) understands that this project is a State Significant Development (SSD 6300) under Part 4, Division 4.1 of the *Environmental Planning and Assessment Act 1979*.

OEH has undertaken a review of the relevant sections of the Environmental Impact Statement (EIS) for the Rix's Creek Mine - Continuation of Mining Project, prepared by AECOM Australia Pty Ltd for Bloomfield Collieries Pty Limited (dated 26 October 2015). OEH's detailed comments are provided in **Attachment A**.

OEH has concerns with some sections of the EIS with respect to vegetation mapping, calculation of offset credits and flood assessment. OEH is of the opinion that the areas mapped as the Central Hunter Valley eucalypt forest and woodland is incorrect and will need to be rectified as it has an impact on the project's credit requirements. This issue and advice to clarify the Upper Hunter Strategic Assessment offsetting requirements, mitigation and mine site rehabilitation is discussed further in the attachment. As no flood assessment has been undertaken, it is recommended that a risk assessment is undertaken of the potential impact of a full range of flood event up to the Probable Maximum Flood, on the proposed water and sediment management dams. OEH requests that the concerns are appropriately addressed prior to project approval.

Please note that OEH has not provided recommended conditions of approval for this project but can provide input later in the assessment process if required.

If you require any further information regarding this matter please contact Ziggy Andersons, Regional Biodiversity Conservation Officer, on 4927 3151.

Yours sincerely



4 DEC 2015

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

Enclosure: Attachment A



25 November 2015

SF2012/015953
CR2015/005282
DC

NSW Department of Planning & Environment
Resource Assessments
GPO Box 39
SYDNEY NSW 2001

Dear Hamish Aiken,

NEW ENGLAND HIGHWAY (A15): RIX'S CREEK MINE EXTENSION PROJECT (SSD 6300),
RIX'S CREEK

Reference is made to your email dated 2 November 2015, regarding the abovementioned project which was referred to Roads and Maritime Services (Roads and Maritime) for comment on the Environmental Impact Statement (EIS).

Roads and Maritime understands the proposal is for the continuation of the existing mining activities and seeks approval to increase extraction from 1.5M tonnes per annum (Mtpa) to 4.5 (Mtpa). The project will include a new cut and cover tunnel crossing under the New England Highway north of the existing tunnel. Vehicular access to the mine will be from Rixs Creek Road.

Roads and Maritime Response

Roads and Maritime has reviewed the information provided, including the Traffic Impact Assessment (TIA) prepared by AECOM dated 15 October 2015 and has no objections to the proposal provided the following matters are addressed and included in the Department's Project Approval conditions:

Traffic Impacts

- A comprehensive Construction Traffic Management Plan (CTMP) shall be provided to identify measures to minimise the impacts of construction traffic on the road network. The CTMP shall be submitted to Roads and Maritime for review and acceptance prior to the commencement of any construction activity on the New England Highway and must include:

Roads and Maritime Services

- A risk assessment to identify hazards to traffic control associated with the site, the level of risk posed and control measures to be implemented.
- A Vehicle Movement Plan for the management of construction traffic.
- A Traffic Control Plan in accordance with the RTA's Traffic Control at Work Sites manual

Comment: Roads and Maritime reserves the right to review the CTMP at any stage and make changes in the interest of maintaining road safety and network efficiency.

Cut and Cover tunnel

- All structures on the Roads and Maritime network, especially on highways, shall be designed in accordance with the AS5100 Bridge Design code, as well as RMS specifications, Bridge Technical Directions, and standard drawings.
- The Cut and Cover Tunnel Concept Design included in Appendix E of the EIS shall be amended to incorporate comments provided by Roads and Maritime, as per the marked-up plans attached.

Side Track Road Concept Design

- The design of the Side Track Road shall comply with current Austroads Guidelines and RMS supplements for the posted design speed.
- The design review will be an ongoing process as the plans are developed to Construction stage.
- All the works associated with the subject development shall be undertaken at full cost to the developer and no cost to Roads and Maritime or Council.

Works Authorisation Deed

- As road works are required on the New England Highway, Roads and Maritime will require the developer to enter into a Works Authorisation Deed (WAD) with Roads and Maritime. Roads and Maritime would exercise its powers and functions of the road authority, to undertake roads works in accordance with Sections 64 and 71 of the Roads Act, as applicable, for all works under the WAD.

Comment: It is requested that the Department advise the developer that the conditions of consent set by the Department do not guarantee Roads and Maritime's final consent to the specific road work, traffic control facilities and other structures or works, for which it is responsible, on the road network. Roads and Maritime must provide a final consent for each specific change to the classified (State) road network prior to the commencement of any work.

The WAD process, including acceptance of design documentation and construction, can take a considerable amount of time. The developer should be aware of this and allow sufficient lead time within the project development program to accommodate this process.

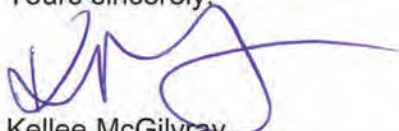
It is therefore suggested that the developer work through this process as soon as possible with Roads and Maritime.

- All the works associated with the subject development shall be undertaken at full cost to the developer and no cost to Roads and Maritime or Council and to Council requirements.

Further advice regarding the WAD process is provided in Attachment B.

On the Minister's determination of this Project, please forward a copy of the Project Approval to Roads and Maritime for record and / or action purposes. Should you require further information please contact David Collaguazo on 4924 0334 or by email at development.hunter@rms.nsw.gov.au

Yours sincerely,



Kellee McGilvray
Manager Land Use Assessment
Hunter Region

Enc. Attachment A: Mark-up of Bridge design drawings by SKM

Enc. Attachment B: WAD Advice to Consent Authority and Developer

Attachment B: WAD Advice to Consent Authority and Developer

Attachment B: WAD Advice to Consent Authority and Developer

Advice to the Consent Authority

- On the Minister's determination a copy of the Project Approval should be forwarded to Roads and Maritime within the appellant period for advice / consideration and action where required.
- Conditions of development consent do not guarantee Roads and Maritime consent to the specific road works, traffic control signals and /or other structures or works for which it is responsible. The developer must obtain Roads and Maritime authorisation in writing prior to the commencement of any road works on New England Highway, including traffic management, temporary or permanent road works associated with the proposed development.

Advice to the Developer

- Following development consent, early discussion with the Roads and Maritime Project Manager is recommended. Roads and Maritime will initiate the WAD process by sending out a letter and information pack on receipt of the Project Approval, including the name and contact details of the Project Manager.
- As the WAD process, including acceptance of design documentation and construction can take considerable time, you should allow sufficient lead time within the project development program to ensure that all documentation and works are completed in advance of occupation. Roads and Maritime will not consider granting concurrence to occupation until it is satisfied all documentation and works under the WAD have been completed.
- Authorisation to commence construction will only be granted when Roads and Maritime is satisfied that all requirements under the WAD have been met by the developer, including Roads and Maritime fees and charges, an unconditional bank guarantee for the full value of the works, detailed design documentation, environmental assessment, road occupancy license, among other matters. Roads and Maritime will issue a letter to the developer advising of this authorisation.
- Any property acquisition / dedication required to accommodate the State road works / traffic control signals associated with the proposed development shall be at full cost to the developer, including all legal and survey costs. This land shall be dedicated by the developer as public road reserve in favour of the Council, as the owner.
- Part of the developers' timeline should make provision for Roads and Maritime to satisfy its obligations under the *Environmental Planning and Assessment Act 1979* (EP&A Act) to assess the environmental impacts of the works within the road reserve. Further investigation and assessment to that undertaken for the development consent may be required to the satisfaction of Roads and Maritime, under Part 5 of the EP&A Act.
- It is recommended that the developer use design consultants with the experience and knowledge of Roads and Maritime design requirements, in particular the Austroads *Guide to Road Design 2010* (with Roads and Maritime supplements) and relevant Australian Standards.
- A fact sheet providing further information on the WAD process can be obtained from the Roads and Maritime Private Developments Website at:
http://www.rms.nsw.gov.au/roadprojects/community_environment/private_developments.html
- Construction on a State road and / or traffic control signals requires the engagement of a Roads and Maritime pre-qualified contractor. A list of pre-qualified contractors can be found on the Roads and Maritime website below.
<http://www.rms.nsw.gov.au/doingbusinesswithus/tenderscontracts/prequalifiedcontractors.html>

(From Appendix E)

ONE END
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TO RESIST BREAKING FORCES.

- How will access to bearings be provided?

- * BRIDGE DESIGN SHOULD CONFORM TO RMS BRIDGE TECHNICAL DIRECTIONS AND STANDARD DRAWINGS.

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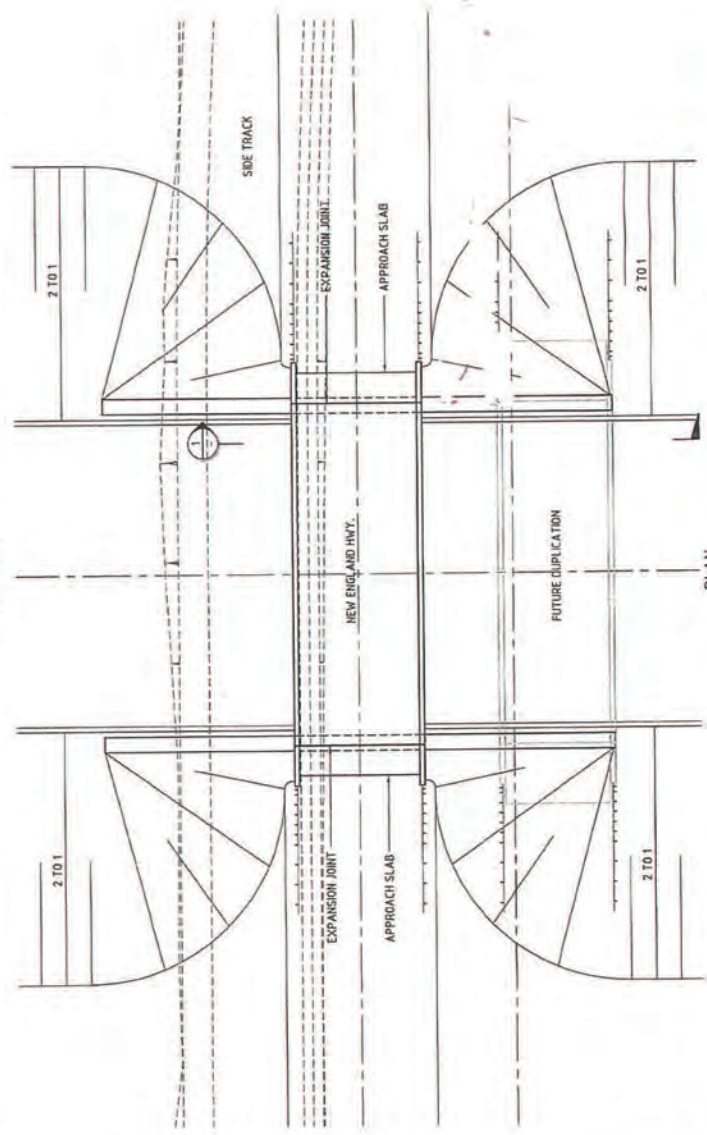
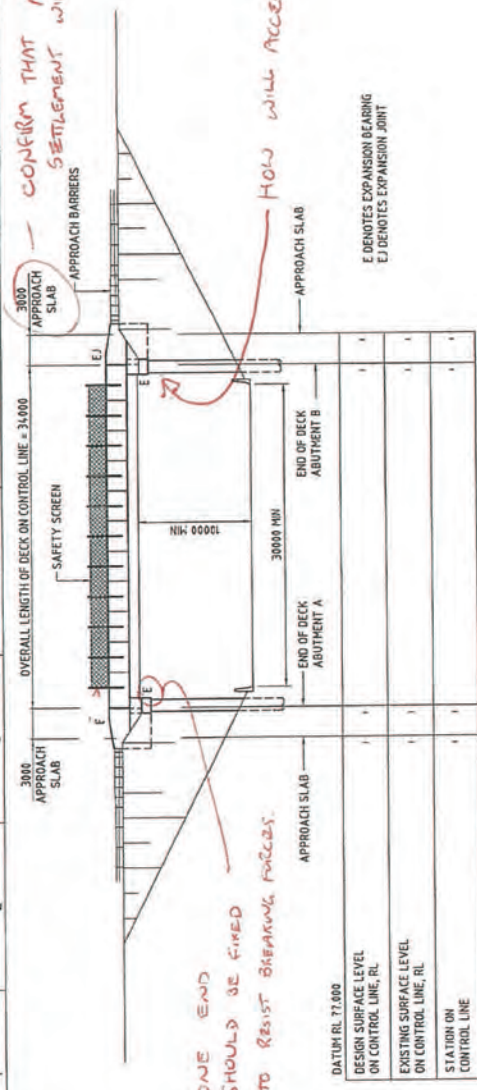
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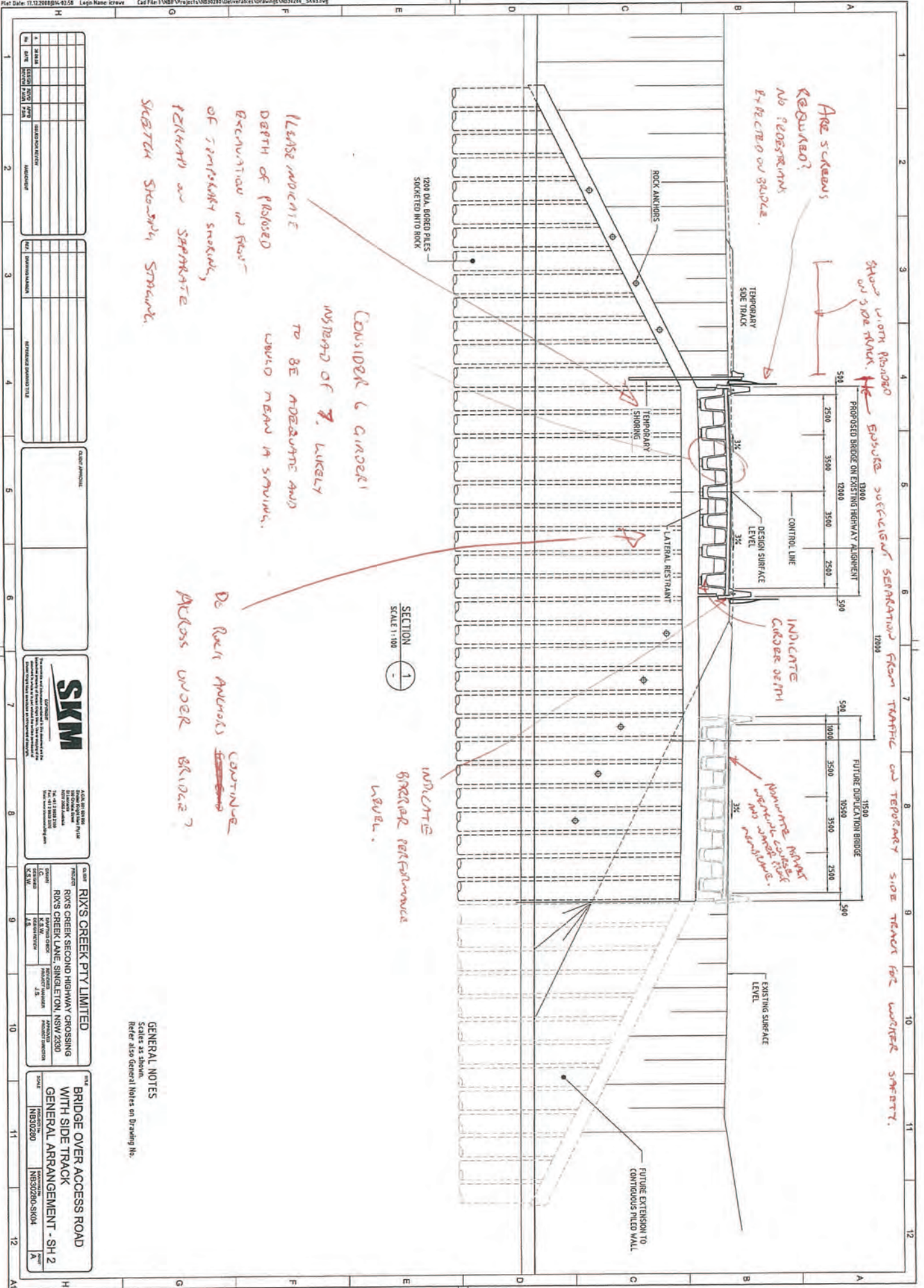
Plan

* WHAT IS INTENDED FOR THIS STRUCTURE BEYOND THE LIFE OF THE MINE? 100 YEAR LIFE?

LB
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GENERAL NOTES
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ATTACHMENT A: OEH REVIEW OF ENVIRONMENTAL IMPACT STATEMENT FOR THE RIX'S CREEK EXTENSION PROJECT (SSD 6300)

THREATENED SPECIES

OEH has reviewed the ecological report titled 'Ecology Report for the Continuation of Rix's Creek Mine, Singleton LGA' (dated October 2015) and provides the following comments.

This application area occurs within an identified Project Area of the Upper Hunter Strategic Assessment (UHSA). Although the UHSA has not been finalised or publically exhibited, the project still has the option of being assessed as a 'Path 1' project under the UHSA Interim Policy (October 2012) as indicated in the EIS. This review has assumed that the UHSA will be applied and has therefore focused on the assessment of any revised calculations, any new listings under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or *Threatened Species Conservation Act 1995* and the suitability of avoidance, mitigation and offsetting considerations.

OEH acknowledges that re-referral under the EPBC Act is not required and the current 'not a controlled action' decision is consistent with the Path 1 requirements of the UHSA Interim Policy. The Interim Policy also requires that projects are consistent with the method (i.e. the Biodiversity Certification Assessment Methodology) and approach in the Draft Biodiversity Plan. In order to achieve consistency, the EIS must identify areas that conform to the recently listed Commonwealth Central Hunter Valley eucalypt forest and woodland critically endangered ecological community (CEEC).

This has been included in the EIS, however, after receiving advice from the Australian Government Department of the Environment, OEH is of the opinion that the areas mapped as the Central Hunter Valley eucalypt forest and woodland is incorrect. The Department of the Environment advice is provided below:

"A patch should be the largest area (as a whole), across which a projected canopy cover of trees of at least 10% (on average) applies (or across which a native tree density of at least 10 native tree stems per 0.5 ha [on average] (at least 20 native tree stems/ha on average) that are at least one metre in height applies), or a combination of the two. A patch should also have native understory. A patch is a discrete and mostly continuous area of the ecological community. Where there is a break in native vegetation cover from the edge of the tree canopy of 30 m or more, then the gap indicates that separate patches are present".

"Where native grassland/shrubland (whether derived from the ecological community or not) connects discrete patches of the ecological community in close proximity (up to 30 m apart) then it should be treated as part of a single patch. Also where native grassland/shrubland is within a gap in, or at the edge of a patch, (up to 30 m from the edge of the tree canopy/saplings) it should be considered to be part of the patch of the ecological community".

"Native means vegetation 'dominated by native species', i.e. that 50% or more of the perennial vegetation cover is native".

The patches of Central Hunter Valley eucalypt forest and woodland CEEC currently mapped in the EIS are within 30 metres of other smaller patches and therefore should be included with the currently mapped patch, in addition to areas of derived native grasslands within the gaps. OEH requires that updated mapping of the Central Hunter Valley eucalypt forest and woodland and subsequent areas are provided.

Requirements for mitigation and mine site rehabilitation under the UHSA

The EIS states that *"mitigation of impacts on biodiversity will be met through implementation of the UHSA and the associated purchase of ecosystem credits. Rehabilitation commitments will include the planting of tree species characteristic of the disturbed communities"*. Please note that purchase of credits or any other form of offsetting is not regarded as mitigation. The mitigation of impacts on biodiversity will be undertaken in accordance with the draft UHSA 'Guidelines for the mitigation of coal mining impacts on biodiversity'. Ecological rehabilitation will be undertaken in accordance with the draft UHSA 'Guidelines for the ecological rehabilitation of recognisable and self-sustaining plant community types' where possible. These documents are currently in preparation.

Requirements for offsetting under the UHSA

The EIS states that *"the Project Area has been assessed under the Upper Hunter Strategic Assessments bio-certification process being coordinated by OEH. Rix's Creek is a signatory to the UHSA and with approval of the Rix's Creek continuation project, offsets for the project will be provided in accordance with the Upper Hunter Biodiversity Plan, including contributing money to the Upper Hunter Offset Fund using the appropriate OEH calculators"*. OEH stresses that the UHSA uses the Biodiversity Certification Assessment Methodology (BCAM) to calculate credits. The project does not result in biodiversity certification of the assessment area. It is also noted that certain entities may first require that 'reasonable steps' are undertaken to source land-based offsets before a proponent can offset by paying into the Offset Fund (which is currently under development).

Credit Calculations.

The EIS appears to include incorrect ecosystem credit calculations. OEH has subsequently been provided with the calculator for the project application area. A review of the calculations and of the EIS has established that there are a number of incorrect entries in the calculator, which will need to be rectified as they have an impact on the project's credit requirements.

The calculation errors appear to have occurred in the Landscape Value Assessment component. Specifically the '% Native Vegetation Cover' entries do not correspond to the values provided in Table 14 of the EIS. Within the Connectivity Value tab 'Nil Biodiversity links' has been selected, this is incorrect due to the presence of 'Local Biodiversity Links' and based on the information provided within Table 14 the EIS. Under the 'Adjacent Remnant Area' tab, as per the methodology, the maximum value that can be entered is 501 hectares and as such the entry needs to be adjusted accordingly.

ABORIGINAL CULTURAL HERITAGE

OEH has reviewed the 'Rix's Creek Continuation of Mining Project, Aboriginal Archaeological and Cultural Heritage Impact Assessment, prepared for Rix's Creek Pty Ltd, prepared by AECOM, 23 September 2014' in relation to Aboriginal cultural heritage and potential impacts from the proposed mine extension and makes the following comments and recommendations.

The Aboriginal Archaeological Cultural Heritage Impact Assessment undertaken by AECOM Australia Pty Ltd was for two parcels of land located in close proximity to the existing Rix's Creek Mine. The Project Area for this assessment comprises two spatially discrete parcels of land within Bloomfield's existing CL352 Mine Lease boundary and proposed lease extension area. The first is located to the north/northwest of existing open cut Pits 2 and 3 on the western side of the New England Highway and covers an area of approximately 133 hectares (ha). The second is located to the southwest of the mine's existing Coal Handling and Preparation Plant complex on the eastern side of the New England Highway and covers an area of approximately 32 ha. Collectively, these parcels of land constitute the project's disturbance footprint and cover an area of 165 ha.

As a part of this assessment, an archaeological survey of the Project Area was undertaken over three days between 27 May and 29 May 2014. A total of 22 new sites were identified during survey, consisting of 15 artefact scatters and seven isolated artefacts. In addition, the six previously recorded sites were subject to updated recordings. The assessment concluded that the scientific significance of newly and previously recorded Aboriginal sites within the Project Area was moderate for six of the sites and low for the remaining 22 sites. Based on the assessment provided by AECOM, OEH concurs with the assessment of scientific significance.

An assessment of the potential impacts of the project on the known Aboriginal archaeological resource of the project area finds that 21 sites will, or have the potential to, be directly impacted by the proposed project activity. In total, 21 sites can be identified as having the potential to be directly impacted by the project through the proposed activity, including road development, spoil deposition and mining continuation activity. These comprise 16 artefact scatters and five isolated artefacts. Five sites have been assessed as being of moderate scientific significance and the remaining 16 as being of low scientific significance. In addition to identified surface sites, it is considered likely that a body of subsurface Aboriginal archaeological material will be impacted by the project.

OEH notes that to manage potential impacts to the known and potential Aboriginal archaeological resource of the Project Area, it is recommended that a detailed Aboriginal Cultural Heritage Management Plan (ACHMP) be prepared for the project. The ACHMP should be prepared in consultation with the registered Aboriginal parties and OEH, and to the satisfaction of the Department of Planning and Environment. The commitment for the development of this ACHMP should be addressed in the EIS. OEH strongly supports the development of an ACHMP for the project.

OEH further supports the proposed key components of the ACHMP for the project which will include:

- Archaeological Salvage Program
- Archaeological Excavation Program
- Protection of Non-Impacted Sites
- Annual Monitoring of Conserved Sites
- AHIMS Site Cards
- Previously Unrecorded Aboriginal Archaeological Evidence
- Human Skeletal Remains finds procedure
- Aboriginal Site Database
- Aboriginal Heritage Introduction & Cultural Awareness Training
- Reporting under the ACHMP
- Continuing Access to Non-Salvaged Sites for Archaeological Research
- Periodic Review of ACHMP.

FLOODING

The following comments are offered on the floodplain management components of the Rix's Creek Mine Extension Project

The site is an extension of existing mining operations that operate under current approvals and have previously disturbed the catchment of Rix's Creek and Station Creek. The proposed works would further exacerbate these disturbances, including re-routing of additional catchment areas of Stonequarry Gully which flows adjacent to the eastern boundary of the proposed works footprint.

There are numerous considerations for impacts on groundwater and surface water flows in non-flood times, and for discharge water quality from overflow of sediment and storage dams. It is assumed that these will be assessed by the Environment Protection Authority and /or NSW Office of Water, where appropriate, particularly with regard to the changes in flows indicated in the EIS. Sediment dams have been sized for the 85% rainfall, therefore some discharge from sediment basins can be expected on an annual basis.

There is no flood assessment included in the EIS. Statements are made to indicate that the proposed works footprint is not on an active floodplain, nor is it exposed to flooding, however, no flood study or flood mapping is provided in support of this statement. Rix's Creek passes through the site and crosses the New England Highway in the centre of the property footprint. Catchment analysis indicates that the total catchment to Rix's Creek is reduced by the mine works, however, catchment calculations indicate that flows to Rix's Creek are increased to approximately 140 per cent of predevelopment flows at a point upstream of the highway crossing. No data is provided at the highway crossing and the effect of the water diversion on the flood behaviour at the highway has not been included in the assessment. Similarly it is noted in the EIS that overflow of the North Pit sump has the potential to affect the neighbouring Integra Mine. Analysis of dam and sediment basin behaviour appears to be limited to water balance analysis not flood analysis.

With regard to flood impacts, any proposed works must ensure that any adverse impacts are maintained within the boundaries of the land owned by the proponent, up to and including the Probable Maximum Flood (PMF). Flood modelling of Rix's Creek and Station Creek will be required to demonstrate no adverse impacts. This includes peak water levels and velocities and impacts on roads and other evacuation routes. There must be no adverse flood impacts on properties owned by others as a result of the proposed works.

It is recommended that a risk assessment is undertaken in accordance with AS/NZS ISO 31000:2009 Risk Management - Principles and Guidelines, of the potential impact of full range of flood event up to the PMF, on the proposed water and sediment management dams. The risk assessment should consider the peak flood extents / heights and inundation durations of the PMF to assist in the management of any residual flood risk.

Hec-Ras model cross-sections have been provided for Rix's Creek. The model cross-sections provided relate to a design flow of 200 ML/day which is based on the water balance estimates and equates to a flow which has a probability of exceedance of four days per year. Rational method calculations have also been provided, however, these appear to have been used to calculate the potential for erosion of the creek line only, not for flood analysis. No flood model outputs have been provided.

Stream power calculations indicate that the thresholds for velocity, shear and stream power are exceeded in the upstream portions of Rix's Creek and that this is likely to result in erosion. It is also noted that existing erosion has occurred in Rix's Creek and that an existing erosion and sediment control plan is in place for the current approvals. The presence of existing unmitigated erosion indicates that the existing erosion and sediment control plan is not adequate to mitigate the effects of existing operations or is not being fully implemented. Review of this plan including mitigation of the increased flows in the upstream portions of Rix's Creek will be required.

It is not possible to determine the flood impact of the development from the provided report therefore it is recommended that flooding analysis be provided for review prior to consent. Flooding analysis should provide sufficient detail for impact assessment on the New England Highway which bisects the site and demonstrate no significant adverse impacts on properties/infrastructure owned by others. The Director General's environmental assessment requirements requested a flood assessment including identification of any necessary flood impact mitigation measures. The EIS has only considered the extent of Hunter River flooding and stated that the mine is outside of the floodplain of the Hunter River. No flooding impact assessment has been provided in support of previous or proposed diversion of water courses around the mine workings or impact of the proposed mine dams.

From: Ihlein, Mark [mailto:mihlein@singleton.nsw.gov.au]
Sent: Friday, 4 December 2015 12:04 PM
To: Hamish Aiken
Subject: Exhibition Notice - Rix's Creek Mine Extension Project (SSD 6300) - Singleton council
Interim submission

Hi Hamish,

Please find following a submission on behalf of Singleton Council in respect of the Rix's Creek Mine Extension Project.

- The Rix's Creek Mine Operation is the closest mine to the Singleton town ship, located to the north west of the town. The Operations have not attracted any significant level of community concern and are regarded as being well managed.
- The proponent has regularly briefed Council on the Project.
- The Project is proposing to move away from Singleton and to extend the life of operations for a further 21 years with an average extraction rate of 2.8Mtpa ROM.
- The Project also anticipates the prospect of increasing production to 4.5Mtpa ROM in the event it's sister mine in the Maitland area closes to enable meeting contracted tonnages and potentially employing some additional personnel.
- The mine design would allow for the future access to an underground resource past open cut operations. It is understood the possible underground mine would require separate approval at a time in the future.
- Consent is also being sought to place overburden in an area currently outside the mining lease which is likely to reduce visual impacts, with lower dump elevations, and improved noise level and air quality impacts.
- Whilst the Council has no significant issues of concern it is important that the noise and air quality impacts described in the EA are comprehensively assessed by the technical experts in these areas to validate the modelling.
- Council is currently considering a Planning Proposal seeking to rezone land to residential in North Singleton, west of Bridgman Road and north of Gardner Circuit . While it is acknowledged mining operations are moving away from Singleton it is not clear from the EA the extent of, if any, noise impact on this area having regard to future residential land uses.
- It is acknowledged that the existing visual environment along the New England traversed is impacted the current operations. The proposal will continue to impact within this corridor, however it is considered that the proposed progressive screen planting seeks to minimise impact in this regard. The EA notes that that two residences to the south of the project area, located in Maison Dieu Road, will be visually impacted, however this will be mitigated by progressive screen planting along with rehabilitation.
- There is a significant discussion being held with the mining community regarding end use of mine sites and particularly final land forms and voids. As this is an ongoing discussion with industry being an active participant, it is requested that any conditions are flexible in order to enable adaptive end of mine planning which is responsive to community and industry positions over time.
- It is noted that the project will deliver a significant net social and economic benefit to the Singleton Local Government area.

Regards

Mark Ihlein
Director Planning and Sustainable Environment Group
Singleton Council

