NSW EPA

Your reference:
Our reference: DOC 13/47238, EF 13/5640
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Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Paul Freeman

Dear Mr Freeman

Environmental Impact Statement- Rocky Hill Coal Project (SSD-5156)

Reference is made to correspondence received on 23 August 2013 from the Department of Planning and Infrastructure (DoP) requesting comments and recommended conditions of approval from the Environment Protection Authority (EPA) for SSD-5156, the Rocky Hill Coal Project. Reference is also made to correspondence and documentation received on 28 August 2013 including the document titled: *"Environmental Impact Statement for the Rocky Hill Coal Project Development Application No SSD-5156* (August 2013)" (the EIS) prepared by R.W Corkery and Co Pty. Ltd.

The EPA has reviewed the EIS, and understands that the proponent is seeking approval for a new open cut coal mine close to the township of Gloucester. Key details of the proposal are as follows:

- Extraction of Coal from four open cut pits varying in depth from approximately 70m to 190 m including the development of two smaller shallower sub pits.
- Construction and use of three visibility and noise barriers
- Construction and use of three overburden structures including a permanent out of pit emplacement, an interim and in-pit emplacement.
- Construction and operation of a coal handling and preparation plant including coal stockpile, switchyard, workshop and ancillary buildings.
- Construction and operation of an overland conveyor.
- Construction and use of a permanent rail load out facility.
- Relocation of an existing 132 KV Powerline.
- Construction and use of ancillary infrastructure.
- Development and progressive rehabilitation works.

A review of the EIS has been completed and EPA provides comments as shown in **Attachment 1.** Due to the significance of a number of issues the EPA declines to provide any recommended conditions of approval until such time as outstanding issues are satisfactorily resolved.

The main issues for the EPA relate to noise and air impacts. As noted above, due to outstanding issues the EPA is not yet in a position to recommend conditions of approval,

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however to assist DoP in its assessment of this application the EPA has provided a technical appraisal of the documentation submitted. Key points from this assessment are:

- the acoustic environment of much of Gloucester township is likely to change if the proposal is approved, with many residents / visitors being able to hear mine noise for the first time;
- the noise predictions are based on regularly altering operations in response to prevailing weather conditions. If these changes are not regularly implemented as is stated will occur, residents will be exposed to higher levels of noise than predicted;
- where noise levels are predicted to be above the Project Specific Noise Level the proponent needs to consider the acceptability of the impacts in accordance with the EPA's Industrial Noise Policy;
- the air modelling is likely to under-predict impacts on air quality; and
- the air modelling does not represent what has been applied for, that is, modelling is based on 2.0 Mtpa production whereas the application is for 2.5 Mtpa. Also the modelling does not consider any mine generated dust between 10 pm and 4 am when the application is seeking to operate in these hours.

A full assessment is found at Attachment 1.

Please contact Cameron Perry on (02) 4908 6808 if you require any further information regarding this matter.

Yours sincerely

3-11-13

PETER JAMIESON
A/Manager Hunter Region
Environment Protection Authority

ATTACHMENT 1

EPA COMMENTS SSD-5156 - Rocky Hill Coal Project

Noise

One of the main issues for this proposal from an EPA perspective is the potential impacts of noise. The Department of Planning and Infrastructure (DoP) will see from this attachment there are a number of issues that need to be resolved prior to the EPA being in a position to suggest recommended conditions of approval. Notwithstanding this, to assist DoP in its assessment of this important issue, the EPA provides key information in relation to noise, based on the information that has been presented to date.

1. Mine Audibility in Gloucester and Surrounding Areas

The EPA's experience for new proposals like this is that residents/visitors perception of noise impact is often not so much driven by the "acceptability" of the noise level but is often driven the very fact the resident can hear an industrial noise that was not previously part of the local noise environment. Therefore, given the nature of the Gloucester township and surrounding areas the EPA requested that the EIS detail the number and location of residents who will experience a changed noise environment as a result of the proposal, that is, be able to hear mine noise for the first time. The EIS states on page 4-57 that mine noise will be heard by residents down to about 5 dBA below the "background noise level". The EPA notes that noise contour maps have not been provided in the EIS, however these have been provided in the Noise, Vibration and Blasting Assessment (NVBA). The noise contour lines shown in the model predictions are the "predicted 10% exceedance $L_{Aeq,15\ min}$ level" (meaning that 10 % of the $L_{Aeq,15\ min}$ noise emitted from coal mining operations will be higher than this level). The EPA notes that the night-time "rating background noise level" was in the range 26 to 27 dBA at sites within Gloucester township. From an assessment of the night-time predicted noise levels shown in Figures 6.12, 6.18, 6.24 and 6.32 of the NVBA the EPA assesses that much of Gloucester township would experience a changed noise environment as a result of the first 8 or so years of the mine, that is, be able to hear mine noise for the first time. This does not mean that residents of Gloucester township will be exposed to noise levels above the criteria noise limits, nor does it mean that mine noise will be audible all the time, but it does mean that residents and visitors to Gloucester will experience a changed noise environment (mining noise as part of the background) if the proposal is approved. Given the nature of the Gloucester township, this is an important consideration for DoP in its assessment of this application.

2. "Worst Case" Noise Predictions may not be "worst case"

The EIS details a suite of noise ameliorative measures to bring noise levels down. The predicted noise levels as shown in the NVBA are contingent upon these measures being consistently put in place. Many of these measures relate to not operating certain equipment in specific meteorological conditions or not operating equipment in certain areas during "adverse" weather conditions. The EPA notes from Table 4.11 of the EIS that throughout the life of the project these "adverse" weather conditions occur regularly. For example, between 20% and 31% of "days" are predicted to experience "adverse" weather conditions during the seasons of summer, autumn and winter. Across all seasons in the "evenings" operations would need to be curtailed between about 34% to 53% of the time. Accordingly, when the EPA reviewed the draft EIS we noted "*the EIS needs to be clear if such curtailment of operations will be realistic and practical*". The EPA commends proponents for putting in

measures to reduce noise, however if these measures are not practical or not enforced by the mine, the actual noise levels received by residents will be higher than has been predicted.

The EPA also notes that the noise contour plots shown in the NVBA relate to: "Mine only"; "Mine plus Conveyor"; and "Mine plus Rail Loadout Facility". The EIS argues it is not necessary to model all three operations occurring simultaneously on the basis that the "*periods when they would all be operating simultaneously would be very rare.*" The EPA does however note that the conveyor is expected to be operating for approximately 30 hours per week and the rail load-out facility is expected to operate approximately 17 hours per week, and is it acknowledged in the EIS that all three operations will occur simultaneously from time to time.

The EPA notes from the noise modelling contours that the "line" of noise greater than the Project Specific Noise Level (above the criteria) just skirts areas with concentrations of residences. For example, Figure 6.16 of the NVBA shows the "noise criteria line" skirting the edge of the Avon River Estate, the Thunderbolt Estate and the Forbesdale Estate. If the noise modelling slightly under predicts the noise impacts (as discussed above) it is likely that many more residents (from the rural-residential estates noted above) would potentially be adversely affected by noise. This will be an important consideration when DoP determines how to deal with residences that are predicted to be (or are in reality) above the Project Specific Noise Level (PSNL).

3. The Need for More Thorough Assessment of Impacts from Simultaneous Operations

As noted above the EIS and Section 6.4.5 of the NVBA discusses combined mining, conveying and rail load-out operations. The report states that due to the very low likelihood of these activities occurring concurrently during adverse weather conditions, contour plots have not been shown for concurrent operations and predictions have only been carried out at the potentially most exposed receptor (56A).

The report should also present predictions to other potentially most impacted receptors, to show any other potentially increased impacts.

4. Residual Impacts

The proponent has predicted that noise levels from the project will exceed the PSNLs at a number of locations, summarised in Table 6.14 of the NVBA. Neither the EIS nor the NVBA however, have considered the acceptability of the impacts in accordance with Chapters 8 and 9 of the EPA's Industrial Noise Policy (INP). In the *Bulga Milbrodale Progress Association Inc v Minister for Planning and Infrastructure and Warkworth Mining Limited* [2013] NSWLEC 48, one of the issues which led to the appeal being upheld was that impacts above the PSNL were predicted, but that in giving approval to the project DoP did not consider the acceptability of the impacts in accordance with Chapters 8 and 9 of the INP. **An assessment of the acceptability of impacts in accordance with Chapters 8 and 9 of the INP needs to be provided.** Once this has been provided, the EPA will be in a position to recommend noise limits for all residences predicted to receive noise levels up to and including the PSNL. For any other receivers predicted to receive noise levels above the PSNL, DoP is best positioned to weigh the social and economic benefits of the proposal against potential adverse noise impacts and to determine if a higher noise limit is justified. If a higher noise limit is stipulated by DoP following this assessment, and consent is granted, the EPA will include these limits in the environment protection licence that would be needed for such a mine.

5. Cumulative Noise Impacts

Contour plots for cumulative noise impacts have been provided in Appendix 3 for the Year 4.25 evening and night scenarios.

EPA requests that contour plots for cumulative impacts be provided for more than just this one period of time, so that a better appreciation of long-term cumulative impacts can be determined.

6. Construction Impacts

Table 2.4 of the NVBA details site establishment and construction hours that extend outside the standard construction hours in the EPA's Interim Construction Noise Guideline. While EPA understands that these are nominated as 'contingency hours', any works undertaken outside the standard construction hours should require prior application and approval. Section 8.2 states that some of these activities (rail load-out and overland conveyor works) are predicted to exceed the noise-affected level, with the potential to impact surrounding receivers.

7. Meteorological Data

The proponent should provide further details of the 'diagnostic meteorological model' mentioned in Section 6.1.2.3 of the NVBA to support its use in deriving final meteorological noise modelling conditions.

Section 6.1.2.3 also states that operations are likely to be allowed or not allowed based on meteorological conditions in the early evening period. EPA notes that there is a 20% chance that the inversion conditions will exist later in the evening period even if no inversion is present in the first evening hour. EPA considers that operational scenarios should be adjusted based on inversion conditions throughout the evening period, not only the first hour of the evening period.

8. Road Traffic Noise Impacts

Table 7.6 of the NVBA provides predicted road traffic noise levels during the night-time period with an $L_{Aeq(15hour)}$ descriptor, this should be amended to a $L_{Aeq(9hour)}$ descriptor.

9. Rail Traffic Noise Impacts

Section 7.3.3 of the NVBA discusses rail traffic noise predictions. It assumes a train movement distribution of two trains during the daytime/evening (4 train movements) and one train (2 movements) during the night-time period, as the distribution is at the discretion of rail operators and unknown. It is however usual practice that freight movements are often required to be conducted towards the night period as a result of other train movements in the daytime period.

The assessment should also present results assuming a mix of one train during the daytime/evening and two trains during the night-time, to identify any potential impacts and mitigation actions, or even the worst case scenario of three trains during the night-time period.

The assessment should identify the number and location of additional houses that, as a result of the proposal, will exceed the Environment Protection Licence 3142 night-time $L_{Aeq(9\ hour)}$ goal of 60 dBA:

- **On the section of rail line between the proposal and the Stratford Mining Complex;**
- **On the section of rail line between the Stratford Mining Complex and Duralie Mine assuming the Stratford Extension project is approved; and**
- **On the section of rail line between the Stratford Mining Complex and Duralie Mine assuming the Stratford Extension project is not approved.**

Air Quality

As a part of its review of the *"Environmental Impact Statement for the Rocky Hill Coal Project Development Application No SSD-5156* (August 2013)*"* the EPA has reviewed the Project air quality assessment *Rocky Hill Coal Project - Air Quality and Health Risk Assessment* (Pacific Environment Limited, February 2013) (the AQA).

The EPA advises that further information and clarification is required to demonstrate the Project will not result in adverse air quality impacts at nearby receptors.

A summary of the EPA's review is provided below.

1. Although approval is sought to mine up to 2.5 Mtpa of ROM coal, the Project dispersion modelling only considers mining conducted at 2.0 Mtpa

The proponent is seeking approval to mine up to 2.5 Mtpa of ROM coal per year with the current production schedule expected to peak at 2.0 Mtpa.

EPA notes the chosen modelled scenarios in the AQA are derived on the current production schedule rather than the maximum amount the proponent is seeking approval to mine.

The EPA cannot support approval up to 2.5 Mtpa of ROM coal, when the assessment has only been conducted to 2.0 Mtpa.

2. Proposed operations for all potential operational hours do not appear to be included in the dispersion model

The AQA lists the proposed hours of operation for each of the key activities on site, including mining between 10pm and 4am from Monday to Saturday subject to confirmation by modelling and confirmation that noise criteria are satisfied.

However the Project dispersion modelling has been undertaken to only include dust generating activities between 7am and 10pm, with the exception of blasting (9am to 5pm) and rail load-out operations (24-hours per day). This is despite mining potentially also occurring between 10pm and 4am Monday to Saturday.

The AQA acknowledges activities may occur in the pit between 10pm and 4am however these emissions are not explicitly modelled (AQA Appendix B). The AQA states the 24-hour average PM_{10} model predictions would not change as no additional emissions are generated, the only change is the way emission are distributed across the day. The EPA disagrees with this assessment.

The EPA notes that:

- the AQA estimates of emissions for each source were developed on an hourly time step taking into consideration the activities that would take place at that location;

- if the hours of mining activities are increased to 7am to 4am it is likely additional emissions will result due to increased operations, rather than operations being scaled back or rescheduled to utilise the extra operational hours; and
- emission transport and dispersion depends on the meteorological data which varies significantly during the hours of each day. Meteorology between 10pm and 4am is typically likely to result in reduced emission dispersion and transport due to the prevalence of factors such as lighter winds and cooler land surfaces. These factors in turn may result in increased particulate matter concentrations at nearby impacted receptors.

Based on the above information the EPA has identified the potential for the impacts from the proposal to be underestimated, especially as a result of activities that occur between 10pm and 4am are not included in the modelled emission scenarios.

The EPA cannot support approval of mining activities between 10 pm and 4 am when the air quality assessment has not considered activities in this night-time period (a period when there is likely to be reduced dispersion of pollutants and associated increased particulate matter concentrations at nearby impacted receptors).

3. <u>The AQA does not justify that a control level of 90% can be achieved for haul road dust emissions</u>

A 90% control efficiency has been applied to fugitive haul road dust emissions. This level of control efficiency is assumed based on the use of watering and potential use of chemical suppressants/surface treatments.

The EPA notes that fugitive haul road dust emissions are estimated to contribute up to approximately 30% of total suspended particulate emissions for the Project. Consequently assuming a high level of control efficiency for fugitive haul road dust emissions will result in a significant reduction in predicted particulate matter impacts. Where the control efficiency cannot be met this will result in an underestimation of air impacts.

The AQA states the control efficiency for haul road watering is unknown at the Project site and recommends:

- the control efficiency for haul road watering is determined using the moisture ratio methodology as defined in US EPA AP 42 Chapter 13.2.2. Unpaved Roads; and
- where the control efficiency is found to be less than 90%, the watering/dust suppressant application rate required to achieve 90% control should be determined.

The EPA notes however that the proposed 90% control efficiency for haul road dust emissions:

- has not been demonstrated at the Project site and is based on theoretical control efficiencies. Control efficiencies are dependent of a range of factors and a 90% control efficiency may not be achievable or practicable at the Project site;
- is greater than the 84% control efficiency stated to be best practice, in the *NSW Coal Mining Benchmarking Study: International Best Practice Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Katestone Environmental, June 2011); and
- is higher than that currently achieved, or has not been demonstrated, at other coal mining operations in NSW.

The EPA also notes the proponent should be advised:

- that all proposed management practices must be consistent with best management practice and be quantifiable, measurable, auditable and enforceable; and
- methods for determining compliance with the stated control efficiency in the AQA will be required if the Project is approved, and each method to determine compliance will need to be clearly identified in the air quality management plan for the Project.

The EPA recommends to DoP that the proponent:

1. **review and revise the AQA so that a conservative control efficiency is applied for haul road dust emissions. The AQA must demonstrate the control efficiency used can be achieved in practice for ongoing operations; and**
2. **be advised that all proposed management practices must be quantifiable, measurable, auditable and enforceable. In addition, a Project air quality management plan will be required if approved, and methods for determining compliance with the control efficiency for each management practice will be required.**

4. The AQA predicts exceedences of the 24-hour average PM_{10} EPA assessment criterion due to Project emissions only

The abovementioned points highlight that the air quality modelling may be an underestimation of air quality impacts associated with the mine. Notwithstanding this, the dispersion model predicts exceedances of the 24-hour average PM_{10} EPA assessment criterion (50µg/m^3) at two receptors (R18 and R6) due to Project emissions only. The EPA notes other privately owned residences close to these residences and if the model is under predicting impacts then other residences may also exceed the criteria.

The dispersion model predicts exceedance of the 24-hour average PM_{10} EPA assessment criterion (50µg/m^3) for the four modelled scenarios (years 2.5, 4.25, 7.75 and 13) at receptor R18, and for the Year 2.5 scenario at receptor R6. A summary of the predicted maximum 24-hour average PM_{10} concentrations at R18 and R6 is provided in the table below.

Receptor ID	Maximum proposal-only predicted 24-hour average PM_{10} impacts (criterion 50 µg/m^3)			
	Year 2.5	Year 4.25	Year 7.75	Year 13
6	**51**	50	22	19
18	**59**	**73**	**55**	**78**

DoP will need to consider how the consent will address the potential of residents living in dwellings that are predicted to be exposed to levels of particulate matter from the mine greater than the 24-hour average PM_{10} EPA assessment criterion.

5. The Cumulative Impact PM_{10} Assessment (mine plus other sources) may underestimate the cumulative impact

A "Monte Carlo" analysis was used to predict the maximum cumulative 24-hour average PM_{10} impacts. When Project, background and other nearby emission sources are considered the Monte Carlo analysis shows:

- at Residence R18 potentially 23 days per year may exceed the criterion, increasing from 5 predicted exceedances for the project alone (predicted for Year 13 scenario); and,
- at R6 potentially less than one day per year may exceed the criterion (predicted for Year 2.5 scenario).

The AQA notes that the predicted frequency is "due to the statistical determination of cumulative frequency of exceedance of 50 µg/m^3 calculated as less than 1". The EPA notes the method used appears to underestimate cumulative impacts, in particular predicted cumulative impacts should not be less than impacts due to Project emissions only.

The EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (the Approved Methods) lists the statutory methods for modelling and assessment of air pollutants from stationary sources in NSW. The Approved Methods requires, where predicted ground level concentrations exceed impact assessment criteria, the inclusion of additional mitigation methods and management practices until compliance is achieved.

The EPA recommends the proponent clarify the methodology used in the cumulative assessment of 24-hour average PM_{10} impacts, review the proposed control measures and amend the AQA to ensure the Project does not result in any additional exceedences at all potentially impacted receptors.

6. The AQA does not quantitatively assess diesel emissions

Coal mining operations utilise a large amount of plant that combust diesel fuel. Recent coal mine assessments have indicated the potential for impacts to arise from diesel emissions, in particular those due to NO_2.

The EPA's NSW air inventory data suggests exhaust emissions from off-road diesels at coal mines make a significant contribution to man-made particulate matter (i.e. 6% of $PM_{2.5}$) and ozone precursors (i.e. 8% NO_x and 2% VOC) in the Greater Metropolitan Region and are expected to increase significantly in the future.

The Project Director General Requirements (DGRs) required:

- a quantitative assessment of potential construction and operational impacts, including diesel emissions; and
- reasonable and feasible mitigation measures to minimise diesel emissions, including evidence that there are no such measures available other than those proposed.

EPA notes that the assessment of diesel emissions includes particulate matter only (ie. not NO_2).

The EPA notes the AQA should have quantitatively assessed NO_2 emissions from diesel combustion and identified reasonable and feasible mitigation measures to minimise diesel emissions.

7. The AQA predicts exceedences of the 1-hour average NO_2 EPA assessment criterion due to blast fume emissions

Five receptors were chosen for assessment. The dispersion model predicts exceedance of the 1-hour average NO_2 EPA assessment criterion (246µg/m^3) at each of the five receptors (R6, R18, R36, R154 and R167A). Other residences that are close to these receptors, which were not assessed, would similarly show exceedances of the EPA assessment criterion.

The dispersion model predicts exceedance of the 1-hour average NO_2 EPA assessment criterion (246µg/m^3) for the Year 2.5 and Year 4.25 modelled scenarios at receptors R6,

R18, R36, R154 and R167A. A summary of the number of hours predicted to exceed the 1-hour average NO_2 criterion due to blasting operations is provided in the table below.

Receptor ID	No. of hours predicted to exceed 1-hour NO_2 criterion (246 µg/m^3)	
	Year 2.5	Year 4.25
6	8	3
18	3	8
36	2	9
154	2	3
167A	1	1

R36 is a residential receptor located approximately 2 km to the north west of the mine boundary area at the south of Gloucester, while R154 is located approximately 1 km to the west of the mine boundary area at the east of Forbesdale. These receptors are included to provide an estimation of impacts at the boundary of these townships.

An analysis of the predicted exceedance showed that all but one occurred at 4pm. The remaining exceedance occurred at 9am. This timing corresponds to low wind speeds, low mixing height and slightly unstable to neutral atmospheric conditions.

This assessment shows that care will be needed during blasting operations to prevent adverse impacts on residents. The proponent will need to consider not only NO_x emissions, but also consider potential impacts from fume products like carbon monoxide and carbon dioxide. In particular: time of day, atmospheric conditions, moisture content in blast holes, and size of the blast will need to be carefully considered to prevent adverse impacts to residents in the vicinity of the proposed mine.

To prevent any exceedance of the impact assessment NO_2 criterion, the AQA proposes the implementation of management measures:

- to minimise the formation of NO_x emissions; and
- to ensure blasting does not occur under the conditions predicted to exceed the assessment criteria, including limiting blasting to hours prior to 4pm.

The AQA states these management measures would be identified in a Project Blast Fume Management Strategy and implemented as a part of the Project Blast Management Plan.

The EPA recommends if the Project is approved, the conditions of consent include those consistent with the measures outlined in the AQA.

Upon issues detailed above being resolved the EPA will propose blasting conditions that deal with controlling blast fume impacts.

Water and Groundwater

The EPA has assessed the EIS with regard to potential water impacts. The EPA can draft potential conditions of approval for DoP's consideration, however given the issues identified above these will be provided upon resolution of these issues. In addition, some other issues shown below need further consideration prior to a decision being made on the Project.

The EPA has briefly considered the groundwater section of the EIS (section 4.6), keeping in mind that NSW Office of Water (NOW) has substantially more expertise in groundwater assessment than the EPA. The EPA requests DoP, in consultation with NOW give consideration to the following points when assessing the development application.

The EPA has noted that the proposal is reliant on the establishment of trigger values to trigger management actions. This program does not appear to have been finalised including what the monitoring requirements would be monthly or quarterly. Prior to the commencement of construction these trigger values would need to be established, including what actions would be taken if the triggers were exceeded. **The EPA recommends if the Project is approved, the conditions of consent include conditions detailing limits relating to groundwater discharges, including reference to the trigger values, which need to be established prior to commencement of construction.**

The EPA notes that the EIS has identified a relationship between the Alluvium beds and flows in the Avon River and the Waukivory Creek with flows going both from the waterways to the mine and, from the proposed mine area to the Creeks depending on season. EPA requests NOW and DoP give consideration to whether the proximity of the Avon River and Waukivory Creek might pose a risk of:

- Unacceptable draw-down of the Avon River and the Waukivory Creek during extraction activities and
- Unacceptable risk of water pollution of the Avon River and Waukivory Creek during backfill of the void with waste rock and then the inflow of saline water and polluted discharges through the groundwater into the Avon River and Waukivory Creek.