



24 October 2019

Elle Clementine
NSW Department of Planning, Industry and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Elle

EPA Assessment of SSD 9505 – Regis Resources McPhillamy Gold Project Environmental Impact Statement

I refer to your request via the major projects portal for the Environmental Protection Authority (EPA) to provide assessment and comment on the Regis Resources McPhillamy Gold Project (the proposal).

As requested, the EPA has considered the proposal in terms of the potential impact to air quality, noise emissions, ground and surface water quality and waste management. The EPA's response is contained in Attachment A. The EPA recommends the Department of Planning, Industry and Environment (the department) seek further information and clarification in respect of the matters raised in Attachment A prior to finalising its assessment of the potential impacts of the Proposal.

The EPA considers that the proponent has not sufficiently modelled and identified the potential impacts associated with the proposal and therefore it has been unable to make a complete assessment of those potential impacts. The EPA is concerned about the potential for environmental and amenity impacts and requires the requested information before it can fully consider the proposal.

Should you have any enquiries in relation to this matter please contact David Joseph at the Central West (Bathurst) Office of the EPA by telephoning (02) 6333 3800 or at central.west@epa.nsw.gov.au.

Yours Sincerely

A handwritten signature in black ink, appearing to read 'SL', located below the 'Yours Sincerely' text.

SHERIDAN LEDGER
Unit Head Central West Region
Environment Protection Authority

encl: Attachment A: Regis Resources McPhillamy Mine EIS EPA Comment

ATTACHMENT A: Regis Resources McPhillamy Mine EIS **EPA Comment**

The EPA understands that the proposed project includes generally:

- Greenfields mining development at Kings Plains outside Blayney NSW
- Currently classified as Primary Production Land RU1
- 2,640ha total project area (2,513ha Mining + 127ha Pipeline corridor)
- 1,812ha mining lease area
- A single mining pit area producing up to 8.5 million tonnes per annum (MTPA) of ore, with associated onsite carbon-in-leach processing infrastructure
- A single 55 gigalitre tailings storage facility in the headwaters of the Belubula River
- Surface water and runoff diversion infrastructure
- Ground water monitoring and extraction infrastructure
- Contaminated/seepage water capture and diversion infrastructure
- An amenity bund wall intended to prevent noise pollution from the mine
- Waste rock emplacement areas in the south and east of the project area
- A 90km water supply pipeline transporting mine water from Centennial Coals' Springvale mine
- 5.6 gigalitres of water inflow to the site/consumption per annum
- 10 years of mining operations
- 5 years of rehabilitation and closure activities
- Production of up to 250,000 ounces of gold per annum
- ~710 FTE construction positions
- ~260 FTE operations positions
- Expected ongoing seepage from the TSF dam wall
- Noise, Visual, and Air Quality impacts to residents in the Kings Plains area

The following summarises the EPA's assessment of the proposed management of the various environmental impacts described within the EIS and provides comments and listed requests for information and actions for incorporation into the DPIE assessment.

1. Air Quality Impacts

Background:

An Air Quality Impact Assessment (AQIA) was prepared for the application and is provided in Appendix M of the EIS. The AQIA presents a meteorological data analysis from the on-site Weather station and data from the BoM monitoring station at Orange Airport. The selected year for the meteorological modelling is 2017. Upper air data used in the modelling was calculated using TAPM and the computer-based dispersion model known as AERMOD was used to predict the potential air quality impacts of the project.

Existing air quality conditions were based on recorded data from four dust deposition gauges and one high-volume air sampler (HVAS) located within the proposed project boundary. In addition, the analysis included hourly average PM₁₀ and PM_{2.5} data from the OEH monitoring station at Bathurst. A revision of emissions reported on the NPi website concluded that contributions to the background levels from other projects in the area levels were low. Background levels of particulate matter used for the assessment included both data from on-site monitoring programs and data from the OEH Bathurst station. In terms of gaseous air pollutants (NO₂) background levels, the AQIA used data recorded at ACT Health Monash station.

Predicted NO_x concentrations from combustion and blasting operations were converted to NO₂ using the USEPA's Ozone limiting Method (OLM). This conversion was done by using data sourced from the ACT Health Monash station.

Based on the expected operations, the report included 4 modelling scenarios to assess the potential impact of:

- Dust deposition
- TSP
- PM₁₀
- PM_{2.5}
- NO₂
- HCN
- Metals and metalloids.

The modelling scenarios were selected to provide an indication of impacts under a range of operational conditions:

- Year 1: Construction and operational phase
- Year 2 and 4: Highest periods of material extraction
- Year 8: Longest haulage distances for ore material from the development.

The following are assumed controls used in the modelling:

Emission Sources	Control	Emission reduction factor (%)
Material haulage using watering only	Route watering	75
	Travel speed reduction	44
	Combined emission reduction	86
Material haulage using chemical suppressant	Suppressant	84
	Travel speed reduction	44
	Combined emission reduction	91
Drilling	Dry bag filter	99
Dozer operations for topsoil and waste rock	High moisture in travel routes/watering	50
ROM pad operations and stockpiles	Water sprays	50
Processing circuit	Dust capture and filters	99
ROM ore stockpile	Water sprays	50
Rehabilitation areas	Secondary Rehabilitation	60

EPA Assessment

In assessing the EIS the EPA reviewed the following documentation:

Document	Author/Publisher	Published Date
McPhillamys EIS: Main Report	EMM Consulting Pty Ltd/NFB Resources NL (Regis)	27 August 2019
McPhillamys EIS: Appendix M: Mine Development Air Quality and Greenhouse Gas Assessment	EMM Consulting Pty Ltd	20 August 2019
Approved Methods for the Modelling and Assessment of Air Pollutants in NSW 2006 (Approved Methods)	EPA	January 2017

EPA Comments:

The AQIA was generally prepared in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods)*. However, the EPA does not consider that sufficient information has been provided to allow a complete assessment of the impacts or that the proponent has correctly identified and modelled the impacts on local air quality, or that the proposed mitigation measures and modelled performance are realistic and achievable. Several inputs into the modelling are either not transparent in their development, completely unrealistic in their assumptions, have not considered the sensitivity of the model outputs and/or do not propose any contingency measures and actions should the actual air quality impacts of the operation vary from the model. The following should be addressed before the Department completes its assessment:

1. Expected additional exceedances at receptor R38:

Cumulative results predicted for year 4 operations for 24-hour average PM₁₀ concentrations at receptor R38 exceed the EPA's impact assessment criterion (50 µg/m³). In addition, a contemporaneous analysis at this receptor shows that the maximum predicted exceeds the impact assessment criteria by 29.5 µg/m³, which represents approximately 60% of the EPA's impact assessment criterion and more than double the background level on the same day.

Although the AQIA mentions the potential for the proponent to acquire this property, there is no evidence of a real commitment to support this claim.

2. No additional controls are proposed to address predicted large increases of air pollution

In addition to the exceedances for 24-hour average PM₁₀ concentrations at receptor R38, modelling results predict large increases of air pollution at other sensitive receptors. The 24-hour average PM₁₀ predicted concentrations for the year with highest periods of material extraction (year 2 and year 4) exceed the assessment criteria ranging from 2.2 to 29.6 µg/m³.

Receptors with the largest predicted 24-hour average PM₁₀ concentration increases include 35 residential homes located to the south of the project (R15 to R50) which is closer to the pit and rock waste emplacement areas. Modelling predictions for this pollutant and averaging period identify exceedances of the assessment criteria at these receptors between 10.01 and 29.6 µg/m³.

As discussed below, there are several unrealistic or opaque inputs and assumptions in the air quality model. Should these be incorrect or inaccurate the actual emissions could double in some parts of the operation. The air quality modelling results indicate the proposal has the potential to provide an pose an unacceptable risk.

3. Model inputs for Emissions inventory are not adequately transparent

Although the emissions inventory in the AQIA outlined activities related to hauling as one of the largest TSP, PM₁₀ and PM_{2.5} emission sources, the report does not provide detailed information regarding the calculation of the anticipated activity rates for any of these activities. There is no consideration of the sensitivity of the proposal to variations from the modelled output and no contingency planning for the impacts of such variation. For example, the impacts of increased activity rates of haulage and processing on the model outputs and the subsequent actions required to address and manage these impacts on local air quality.

Emissions from individual metal and metalloids were calculated using estimated TSP emissions and scaling factors. These scaling factors were derived from the average content by material type from analysed samples. However, it does not present the results from the materials geochemistry profiles, nor does present the adopted methodology.

In addition, estimated TSP, PM₁₀ and PM_{2.5} emissions from dozing operations on waste rock and topsoil assumed a 50% control factor. Although watering travel routes and areas where dozers operations are expected could be considered an appropriate control, this assumption is the equivalent to achieving a moisture content of 6% at the waste rock area and 8% for topsoil activities. Given the current status of the region in terms of drought and water availability, EPA considers this assumption to be completely unrealistic. Failing to achieve and guarantee these moisture contents in the soil means that the estimated emissions for dozing operations could double.

4. Uncertainty for NO₂ predictions

The AQIA predicts no 1-hour NO₂ exceedances, however it is unclear if the concentrations presented in Table 8.1 (i.e. 150.4 µg/m³) include predicted concentrations from both blasting and combustion sources. Section 8.6.1 in the assessment shows that the highest predicted 1-hour NO₂ concentrations from blasting activities taking place every hour between 7am and 5pm is approximately 490 µg/m³.

Whilst the assessment states that 1-hour NO₂ concentrations from blasting are predicted to be below the criterion (246 µg/m³) between 8am and 4pm, there is not commitment to limit blasting activities to this time frame.

5. Dust management measures

The emissions inventories prepared for the AQIA predict large TSP, PM₁₀ and PM_{2.5} emissions. Haulage on unsealed roads is identified as the most significant emissions source. The assumed control for wheel generated dust is 86%, which is based on a calculated watering rate of ~1.7 litres/m²/hour and driving speeds of less than 60 km per hour. In addition, other activities relying on watering as a control factor in the emissions inventory include dozing (50% efficiency) and wind erosion from stockpiles (50% efficiency). Given watering is one of the main dust controls adopted in the assessment and having regard to the current status of the region in terms of drought and water availability, EPA considers these assumptions and inputs into the AQIA to be completely unrealistic.

Requested Information/Actions:

Prior to the department finalising its assessment of the proposal, EPA recommends that:

- 1. The proponent revises the Air Quality modelling to include additional control strategies until compliance with the EPA criterion is predicted and outline additional administrative measures to ensure that residential occupants are not exposed to excessive air quality impacts.**
- 2. The proponent nominates and commits to implement controls that are consistent with best practice control of fugitive emissions to minimise potential impacts.**
- 3. The proponent revises the AQIA to transparently justify assumed and adopted input variables used to calculate expected emissions.**
- 4. The proponent revises the AQIA to ensure waste rock, ore and tailings composition used for modelling is representative of worst-case metal concentrations from materials.**
- 5. The proponent revises the AQIA to include detailed information for the calculation of the metal and metalloids emissions inventory. Adequate detail of all input data, assumptions and methods must be provided to enable the reviewer to replicate the modelled emissions.**
- 6. The proponent revises the AQIA to include strategies that demonstrate that the modelled moisture content levels are achieved and maintained for all dozing operations.**
- 7. The proponent revises the AQIA to transparently justify the quantities and sources of water used to achieve the proposed mitigation performance across the life of the project.**
- 8. The proponent revises the AQIA to transparently justify the results presented for NO₂ emissions in the assessment.**
- 9. The proponent revises the AQIA to nominate and commit to specific measures to minimise the risk of potential NO₂ exceedances.**
- 10. If the project is approved, conditions of approval should ensure that all the proposed dust management strategies are formalised in an air quality management plan. All proposed management practices must be consistent with best management practice and be quantifiable, measurable, auditable and enforceable. Methods for determining compliance must be clearly identified.**

2. Ground Water Impacts

Background:

The EIS includes several documents that analyse groundwater characteristics and potential impacts at the project site.

The primary risk of impacts to groundwater comes from the proposed Tailings Storage Facility (TSF). The EIS proposes to line the TSF facility using a hybrid solution of clay, conditioned soils and geo-membrane however the spatial distribution of these lining systems is not presented in the EIS which makes assessment of the proposal and validation of the claimed efficacy of the liner difficult.

The assessment includes limited information on the location of the network of groundwater monitoring bores and seepage interception bores but is not considered adequate for the purposes of assessing these potential impacts and the efficacy of mitigation measures.

EPA Assessment:

In assessing the EIS, the EPA reviewed the following documents:

Document	Author/Publisher	Published Date
McPhillamys EIS: Main Report	EMM	August 2019
McPhillamys EIS: Appendix K: Groundwater Assessment	EMM	August 2019
McPhillamys EIS: Appendix D: TSF Definitive Feasibility Study	ATC Williams	July 2019
McPhillamys EIS: Appendix F: Tailings storage facility risk assessment	Risk Mentor	July 2019

EPA Comments:

The EPA does not consider that sufficient information has been provided to allow a complete assessment of the impacts of the Proposal on ground waters. Specifically, the spatial distribution of the 3 proposed lining solutions is not provided and so there is no way to ensure that the lining systems have been adequately designed and located in consideration of the geomorphology of the area.

The following should be addressed before the department finalises its assessment:

1. TSF Lining and Seepage Prevention

The proponent has detailed that lining of the TSF will be comprised of three low permeability liners:

- *in drainage features such as the former Belubula River and other areas with weathered geology, a full depth storage blanket liner of clay fill with a minimum depth of 1,000 mm and a permeability of 1×10^{-9} m/s;*
- *in other areas and where suitable clay fill is available, the area will be conditioned by scarifying/ripping, moisture conditioning and compacting to provide a clay fill liner with a minimum depth of 300 mm and a permeability of 3.3×10^{-10} m/s (less than or equivalent to 1,000 mm @ 1×10^{-9} m/s); and*
- *in remaining areas where insufficient suitable clay fill is available, the area will be lined with a geomembrane liner with a permeability less than or equivalent to 1,000mm @ 1×10^{-9} m/s.*

The proposed spatial distribution of these alternate liner methods across the TSF is not presented in the EIS. The EPA requires a minimum permeability of 1×10^{-9} m/s over a 1,000mm depth to be considered suitable to protect receiving environments as a containment barrier system (*Environmental Guidelines: Solid Waste Landfills, 2016*).

The proposal of compacting impermeable clays, where suitable, to thicknesses that are lesser than 1,000mm is not considered suitable for the preferred TSF site. The identified site of the TSF area incorporates the headwaters of the Belubula River and adjacent weathered slopes. This alternative TSF lining method of scarifying/ripping, moisture conditioning and compacting native clays across a heterogeneous weathered profile is not favoured by the EPA at this site due to the full reliance on the modelled performance of this method to mitigate the risk of seepage. The EPA believes a full depth storage blanket liner, of at least 1,000mm is required across this identified TSF site to adequately mitigate the risk of seepage. The host geology and its weathering variability increases the potential for a weakness or high permeability zone to compromise the TSF containment efficacy. For this option to be efficient all variables of risk must be mitigated, as the likelihood of a containment failure increases in relation to variables in the TSF construction. If conditioning is proposed, it should be to a recommended guideline value of a minimum thickness of 1,000mm.

Pollutants with the potential to degrade the quality of groundwater, although identified as low in the tailing assessment, must not migrate through strata over the life of the TSF. The proposed seepage recovery proposal and nominated TSF lining options as described in the EIS do not meet this requirement, nor do they consider contingency management actions in the event that seepage rates exceed those produced by the assessment modelling. Post closure monitoring, management and recovery of seepage is also not considered in sufficient detail to allow an assessment to be made.

More detail regarding the TSF design, dam construction, operation and post closure seepage management activities is required to assess the suitability of the proposed design at the preferred TSF site. The EPA maintains a preference for an engineered impervious seal of at least 1,000mm with a minimum permeability of 1×10^{-9} m/s preventing contained leachate material migrating to underlying strata.

2. Clay material availability assessment

Details regarding the availability and classification criteria for 'suitable clay material' for use in the liner construction are limited. Given that the 300mm thick liner option uses the very low permeability nature of the clay material as the basis for assuming feasibility the quantity of this material and the criteria for decision making about where and when it will be used should be further detailed.

3. Contingency and post closure planning

Details regarding contingency events and post closure management for the TSF are not provided. The lack of information regarding the TSF lining proposal places complete reliance on the modelled performance of the various liner options and the correct siting of the liner options by the proponent. This alone entails a high degree of risk however the proposal also does not address any contingency outcomes such as unexpected rates of seepage or failure of the lining systems.

4. Proposed additional monitoring bores

Details regarding the groundwater monitoring network that is proposed to surround the TSF, waste rock emplacements and water storages are limited to single dot points when describing the monitoring of onsite seepage and risks from project related infrastructure (sections 6.5.1 and 7.3 of Appendix K). No other details are provided and the spatial distribution is unknown.

It is also noted that these monitoring bores will act as in-situ mitigation measures in order to detect seepage from mine relating infrastructure. There are sections in the EIS that suggest the need for these additional monitoring bores are not necessary as the dilution of seepage prior to offsite site discharge will create negligible effects. This possibility of employing a 'do nothing' approach is not considered suitable for the purposes of impact and risk mitigation. Further, EPA notes that the basis of the proposal is a nil discharge site meaning no discharge offsite should occur under any circumstances.

Requested Information/Actions

Prior to the department finalising its assessment of the proposal, EPA recommends that:

- 1. The proponent revises the assessment(s) to provide further information regarding the TSF design, liner options and spatial distribution and the prevention of seepage to the underlying strata.**
- 2. The proponent revises the assessment(s) to provide more detailed information regarding the availability of 'suitable clay material'.**
- 3. The proponent revises the assessment(s) to provide more detailed information regarding the Quality Assurance/Quality Control procedures to be used for determining the suitability of clay material for use in the non-compliant 300mm thick lining option.**

4. The proponent revises the assessment(s) to provide more detailed information regarding the acceptance testing regime that will be implemented to ensure the liner has been installed correctly and without material error and will meet the proposed seepage prevention specifications for all options.
5. The proponent revises the assessment(s) to provide more detailed information regarding the number of proposed monitoring bores at the TSF, waste rock emplacements, and water storages and the proposed sampling program to be undertaken.
6. The proponent revises the assessment(s) to provide more detailed information regarding contingency planning for unexpected rates of seepage from the TSF and the maintenance of zero-discharge operations
7. The proponent revises the assessment(s) to provide more detailed information regarding seepage management and mitigation plans post TSF closure.

3. Surface Water Impacts

Background:

The proposed water management systems include:

- Water supplied to the mine via a 90km pipeline delivering approximately 13 ML/day;
- Clean water diversions;
- Construction phase sediment basin that would convert to tailings storage facility runoff interception dam during the operations phase; and
- During the operations phase, wastewater and runoff generated would be reused onsite and there would be no discharge to waters except as a result of rainfall exceeding the design storms of the storages.

The proposed tailings storage facility (TSF) is designed with freeboard to contain runoff from a 1 in 10,000-year 72-hour duration rainfall event consistent with NSW Dam Safety Committee's *Tailings Dam* guidelines. Other operation phase water storages would be sized to limit spills to less than 1 in 100 years on average.

EPA Assessment:

In assessing the EIS, the EPA reviewed the following documents:

Document	Author/Publisher	Published Date
McPhillamys EIS: Main Report	EMM	August 2019
McPhillamys EIS: Appendix J: Mine Development Surface Water Assessment	EMM	August 2019
McPhillamys EIS: Appendix D: TSF Definitive Feasibility Study	ATC Williams	July 2019
McPhillamys EIS: Appendix F: Tailings storage facility risk assessment	Risk Mentor	July 2019

EPA Comments:

The EPA does not consider that sufficient information has been provided to allow full assessment of the surface water impacts of the Proposal. The following should be addressed before the department completes its assessment:

1. Potential impact of the proposed construction phase discharges on the environmental values of the receiving waterway are not assessed

A discharge impact assessment is required to inform licensing considerations consistent with section 45 of the *Protection of Environment Operations Act 1997*. Given the duration of the construction phase, the proposed sediment and erosion controls and the nature of the receiving environment, a qualitative discharge assessment is likely to be adequate.

2. Potential downstream impacts of the clean water diversions are not addressed

The EIS states that clean water would be diverted around the mine site via a series of diversion channels, dams, pumps and pipelines. Six 'clean water' dams would be constructed, sized to contain runoff from a 1% annual exceedance probability, 72-hour rainfall event with dewatering to occur within 10 days. However, the EIS does not provide a geomorphological assessment for the receiving environment to assess potential impacts associated with a concentrated flow.

The EIS does not include details of how dewatering will be managed to minimise potential downstream impacts including:

- stabilisation criteria established to determine the discharges are "clean" post construction activities; and
- monitoring of potential geomorphological impacts on the receiving environment.

3. Incorrect guideline values adopted for the water quality assessment

The EIS adopts the 80% species protection guideline values to characterise the existing conditions of the receiving waterways. NSW Government policy and the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* recommend that a slightly-moderately disturbed level of protection be applied to most waterways, including for highly disturbed ecosystems. For toxicants, the default guideline values for slightly-moderately disturbed ecosystems are the 95% species protection guideline values (99% for bioaccumulating toxicants).

The EIS does not adopt a guideline value for iron. The *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* recommends that interim working levels are adopted for some toxicants where no moderate or high reliability guideline value is available. The interim working level for iron is 300µg/L.

The EIS also states, "Site specific WQOs would be derived from monitored data as part the Water Management Plan for the project if approved and endorsement for the use of these site specific WQOs would be sought from the NSW government."

However, it is unclear how these 'site specific WQOs' are intended to be used. If the intent is to use these to assess whether water quality is likely to support the environmental values of the waterways (i.e. site-specific guideline values), then they should be derived consistent with the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. If the intent is to detect water quality changes resulting from the project, then comparison of upstream and downstream monitoring results may be more sensitive to water quality changes.

The EPA queries why downstream trigger values are considered in the assessment given the project is proposed to be a NIL-discharge operation. Where site-specific studies are proposed to tailor the trigger values to reflect local conditions, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on environmental values), then prior agreement from the EPA on the approach and study design must be obtained. In these circumstances, the EPA will require demonstration of how the investigation is consistent with the methodology in the national Water Quality Guidelines.

4. Contingency Planning and Post Closure Management of Potentially Acid Forming (PAF) Materials

The assessment of waste rock materials identifies 42% of the waste rock to be PAF material. The proposal is to contain the PAF within non-PAF rock cells which should seal the material off from contact with ground and surface waters and prevent impacts. There is no consideration of contingency outcomes regarding waste materials, for example how impacts to ground and surface water will be avoided if the percentage of PAF turns out to be significantly more than the modelled 42% and how this will impact closure and rehabilitation management actions.

Requested Information/Actions

Prior to the department finalising its assessment of the proposal, EPA recommends that:

- 1. The proponent revises the assessment to include a qualitative assessment of, and mitigation measures to avoid, the potential impacts of construction phase discharges to the downstream environment.**
- 2. The proponent revises the assessment to include details of how dewatering of the 'clean water' dams will be managed to avoid and minimise potential downstream impacts.**
- 3. The proponent revises the modelling to use the relevant Australian and New Zealand Guidelines for Fresh and Marine Water Quality guideline values for slightly to moderately disturbed ecosystems;**
- 4. The proponent revises the modelling to adopt interim working levels for toxicants where no moderate or high reliability guideline value is available; and**
- 5. Any site-specific guideline values are developed consistent with Australian and New Zealand Guidelines for Fresh and Marine Water Quality ensuring that the reference sites are representative of a slightly disturbed condition.**
- 6. The proponent revises the assessment to include scenario modelling that accounts for contingency outcomes such as impacts from PAF to surface waters during the operational, closure and final landform phases of the project.**

4. Noise Emission Impacts

Background

The proposal includes the construction of a new ventilation adit and buttressing of the STSF which will result in some increased noise emissions.

EPA Assessment:

In assessing the modification proposal, the EPA reviewed the following documents:

Document	Author/Publisher	Published Date
McPhillamys EIS: Main Report	EMM	August 2019
McPhillamys EIS: Appendix L: Mine Development Noise and Vibration Impact Assessment	MAC	26 August 2019
McPhillamys EIS: Appendix AA: Pipeline Noise and Vibration Impact Assessment	MAC	2 August 2019

EPA Comments:

The EPA does not consider that sufficient information has been provided to allow full assessment of the noise impacts of the Proposal. The following should be addressed before the department completes its assessment:

EPA review of the mine noise report has identified critical issues which require it to be revised prior to further consideration. The key items of concern are as follows:

- The assessment of low frequency noise has not been done in accordance with the method in the Noise Policy for Industry (NPfI) (EPA, 2017) Fact Sheet C.
- The measurement of background noise levels has not been conducted in accordance with NPfI Fact Sheets A and B.
- The assignment of background noise levels and subsequent derivation of Project Noise Trigger Levels at a number of receivers requires justification and/or revision.

These issues have the potential to significantly impact the outcomes of the assessment. As such, EPA cannot fully assess the application prior to these issues being satisfactorily resolved.

EPA review of the pipeline noise report also identified that the assignment of background noise levels and subsequent derivation of Noise Management Levels at a number of receivers requires justification and/or revision.

Detailed comments on the key items and other areas of concern with the mine noise report are as follows:

1. Receiver Locations

A review of a selection of the nominated receiver locations in Table 1 of the noise report indicates that the receivers have not been assessed in a location consistent with NPfI Section 2.6 which states:

For a residence, the project noise trigger level and maximum noise levels are to be assessed at the reasonably most-affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the reasonably most-affected point within 30 metres of the residence, but not closer than 3 metres to a reflective surface and at a height of between 1.2–1.5 metres above ground level.

2. Background noise monitoring and noise catchments

- a) The noise monitoring graphs in Appendix B appear to show 7 out of the 9 full days of monitoring at all MAC noise monitoring locations recorded wind speeds in excess of 5m/s for the vast majority of the time. Section B1.1 of the

NPfI states that “*Monitoring should not be conducted (or monitoring data are to be excluded) when average wind speeds are greater than 5 metres per second at microphone height, or during rain.*”

- b) NPfI Section A1 requires that a weeks worth of valid data is required to calculate a long term rating background level (RBL). When data with winds speeds above 5m/s are removed, it appears that a weeks’ worth of valid monitoring data were not obtained.
- c) The noise report has defined a number of noise catchments where receivers have been grouped into areas which have similar background noise environments. Table 8 of the noise report shows the background noise monitoring locations in each catchment area. EPA notes the following concerns regarding the grouping of receivers and the assigned background noise levels:
 - i. It is not clear why the average of several RBLs has been used to determine the RBL in a catchment area. It appears to be contradictory that a group of receivers should have a range of different background levels for the same catchment area. If the area represents a similar background environment, there should be no requirement to use multiple monitoring locations. The use of multiple monitoring locations within an area indicates that the definition of the catchment is not appropriate and should be revised.
 - ii. The Kings Plain average RBL in Table 8 appears to show a typographical error.
 - iii. It is not clear why the whole of the Kings Plain area has been assigned an evening RBL of 31 dBA. It would appear that most of the receivers in this group have an offset to the road similar to EMM Location 7 and not the noise monitoring terminal where the 31 dBA was measured.
 - iv. EMM Location 5 was included in the distant rural group when it is located in the Walkom Road catchment.
 - v. In the Sturgeon Hill group, the evening RBL for Location MAC01 should be set equal to the day, as per NPfI Section 2.3.
 - vi. Notes for Table 8 say that 2013 data should be used, however it is not clear which 2013 data is being referred to.
 - vii. The evening RBL at EMM Location 3 should also be set equal to the day. However, it is not clear why the lowest values recorded have not been adopted for this catchment. It appears there were a number of issues with the monitoring including being wind affected and evening RBLs being higher than the day.
 - viii. With regard to the receivers included in the noise catchments, it is not clear why a number of receivers in the Sturgeon Hill group have been assigned the same RBLs as the rest of the group. Receivers R44, R41 and R39 appear to have a similar offset to the road as R20 and R18, however the RBLs assigned to R44, R41 and R39 are higher than at R20 and R18.
- d) The adopted RBLs in Table 9 of the mine noise report should be reviewed and amended as required once the above items have been resolved.

3. Assessment Criteria

- a) The noise management levels (NMLs) in Table 10 and project noise trigger levels (PNTLs) in Table 14 should be reviewed and amended as required when the issues with the RBLs identified above have been resolved.

4. Operational noise assessment

- a) The noise report has assessed some activities as construction activities using the Interim Construction Noise Guideline (ICNG) (DECC, 2009). The clearing and grubbing of the open cut mine areas and ROM pad are not considered construction activities because they take place at the location of the open cut mining area, will use similar equipment and would therefore be generally indistinguishable from other operational activities. Therefore, they should be considered operational noise and be assessed using the NPfI.
- b) Construction of external access roads and permanent site access can be assessed under the ICNG as they represent temporary activities to enable site access.
- c) The proponent should detail the type of mitigation and expected reductions of the proposed mitigation for each plant. This will assist EPA in assessing how achievable mitigated SWLs will be.

- d) The proponent has nominated a maximum noise level of 121 dBA for the assessment. However, the highest sound power level (SWL) Leq,15min is 118 dBA for the primary excavator.
- e) The proponent has used the ISO9613 method for predicting noise levels at receivers.
- f) The noise level predictions in Appendix D appear to show a high number of C-A weighted noise level differences of 15 dB or more. This is not a typical result.
- g) The outcomes of the assessment including those relevant to the Department of Planning Industry and Environment's Voluntary Land Acquisition and Mitigation Policy (VLMAP) are dependent on both the PNTL assigned and the final predicted noise level, including any low frequency noise adjustments.

EPA is unable to review the operational noise assessment further as the issues identified in this review may affect the outcomes.

5. Low frequency noise

- a) The EPA's policy for assessing low frequency noise is set out in the NPfI. The alternative methods of assessment referenced in the mine noise report are not appropriate.
- b) Table C1 in NPfI Fact Sheet C states that where the difference between the C weighted and A weighted noise level is 15 dB or more, then further assessment using the reference spectrum is required. Table 35 and the table showing the difference between C and A weighted noise levels in Appendix D does not appear to have considered a difference of 15 dB as a trigger for further assessment.
- c) EPA notes the comments made by the proponent in Chapter 6.3.4 with regard to the ISO 9613 method. However, as stated in NPfI Section 3.3.2 there are a number of noise prediction methods available and it is the proponent's responsibility to use a method of prediction capable of reliably predicting impacts and demonstrating a project's performance against the requirements of the NPfI.
- d) The catchment area of the receivers in the 'Cwt-Awt' table in Appendix D does not match the rest of the report and should be amended.

6. Construction noise assessment

- a) The proponent must outline the activities, locations and durations of any construction activity they are proposing to undertake outside of standard hours and provide a justification that it cannot be carried out during standard hours in accordance with the ICNG.

7. Road traffic noise

- a) The proponent has stated it has used a method from the US EPA to calculate road traffic noise however, no reference for this method is included in the assessment.
- b) The construction traffic noise assessment has only considered noise levels during daytime. However, construction is proposed to start at 7am, therefore construction workers may be travelling to the site prior to 7am, during the night period.

Detailed comments on the key items and other areas of concern with the Pipeline noise report are as follows:

8. Noise monitoring, rating background levels and noise catchments

- a) The pipeline noise report has nominated a number of receivers located in and around Noon Street in Blackmans Flat which were previously demolished.
- b) The coordinates in the noise report for NM5 appear to show its location as adjacent to the Angus Place Mt Piper Haul Road and around 300m from the closest residential receiver. In addition, it appears that there is a topographical feature between the monitoring location and the Castlereagh Highway, with residential receivers on the opposite side to the monitoring location.
- c) Figure 4 in the pipeline noise report does not show the monitoring locations.
- d) The rating background level (RBL) assigned to receivers based on their catchment are not necessarily representative of the noise environment at the receiver location. For example, the RBL for the Yetholme catchment has been assigned using measurements at NM0. The coordinates in Table 6 of the pipeline noise report for NM0

show the location is directly adjacent to the Great Western Highway. Receiver R156 has been assigned the RBL from NM0. However, it is nearly 2km from the highway and therefore use of NM0 is not appropriate for this receiver.

9. Construction noise assessment

- a) There is no explanation of the abbreviations and acronyms used in the tables in Appendix F.
- b) The pipeline noise report does not appear to have considered compounds and stockpiling activities in its assessment of static scenarios. If construction compounds are proposed to be used, the assessment should be amended to include them.
- c) Figure 6 referred to in Chapter 7.2 of the pipeline noise report has not been included in the report.
- d) The pipeline noise report has referred to the TfNSW Construction Noise and Vibration Strategy (CNVS) when nominating additional mitigation measures. The noise report has nominated more than 30 residential receivers as eligible for alternative accommodation as a mitigation measure for construction noise.

EPA has not reviewed the outcomes of the construction noise assessment further, as the appropriate definition of RBLs at each receiver is critical for assessment outcomes. Therefore, the report cannot be assessed further until this issue is rectified.

10. Operational noise assessment

Operational noise mitigation measures as recommended in the report should be included in the design and operation of the pumping stations.

Requested Information/Actions:

Prior to the department finalising its assessment of the proposal, EPA recommends that the following be sought in terms of a revised noise impact assessment for the proposal:

The Mining Activities

For Receiver Locations:

1. The proponent reviews the assessment locations for receivers and updates the assessment accordingly.

For Background Noise Monitoring and Noise Catchments:

2. The proponent includes the relevant reporting details for noise monitoring as required by Noise Policy for Industry (NPfI) (EPA, 2017) Section B3, including daily graphs of all monitoring data used and relied on in the report.
3. The proponent justifies why monitoring was carried out and included in the assessment when average wind speeds were more than 5m/s
4. The proponent demonstrate that the existing data is valid (ie 1 full week worth) or undertake noise monitoring in accordance with NPfI Fact Sheets A and B
5. The proponent justifies why the minimum measured RBL has not been adopted for each catchment or amend the assessment accordingly
6. The proponent justifies why the whole of the Kings Plains area has been assigned an evening RBL of 31dBA or amend the assessment accordingly
7. The proponent clarifies why EMM Location 5 was included in the distant rural group when it is located in the Walkom Road catchment
8. In the Sturgeon Hill group, the proponent sets the evening RBL for Location MAC01 as equal to the day, as per NPfI Section 2.3.
9. The proponent clarifies which 2013 data is being referred to in the notes for Table 8
10. The proponent justifies that the adopted RBLs and EMM Location 3 are representative and also state the reasons why the minimum measured RBL should not be adopted

11. The proponent reviews the assignment of background noise levels and provides a justification for the RBLs adopted for receivers or amend the assessment accordingly
12. The proponent reviews and amends the RBL's adopted in Table 9 following resolution of the other RBL issues

For Assessment Criteria:

13. The proponent reviews and amends the noise management levels (NMLs) in Table 10 and project noise trigger levels (PNTLs) in Table 14 following resolution of the issues with the RBLs identified above.

For the Operational Noise Assessment:

14. The proponent assesses the clearing and grubbing activities within the minesite as operational noise using the NPFI
15. The proponent assesses construction of external access roads and permanent site access under the ICNG
16. The proponent details the type of mitigation and expected reductions of the proposed mitigation for each plant
17. The proponent justifies the use of an Lmax noise level which is only 3 dB higher than the highest Leq,15min SWL, or amend the report accordingly
18. The proponent demonstrates that ISO9613 is suitable for use in this particular situation and include references such as, but not limited to, published scientific papers, validation studies or comparisons with measured data
19. The proponent includes the octave band sound power levels of noise sources in the assessment

For the Low Frequency Noise Assessment:

20. The proponent revises the assessment to include low frequency noise in accordance with the procedure described in the NPFI.
21. The proponent revises the assessment in accordance with NPFI Fact Sheet C considering C and A weighted noise level differences of 15dB or more.
22. The proponent revises the assessment such that the catchment area of the receivers in the 'Cwt-Awt' table in Appendix D matches the rest of the report.

For the Construction Noise Assessment:

23. The proponent outlines the activities, locations and durations of any construction activity they are proposing to undertake outside of standard hours and provide a justification for why it cannot be carried out during standard hours in accordance with the ICNG
24. The proponent amends the construction noise assessment in light of the comments and amendments made to the operational noise assessment

For the Road Traffic Noise Assessment:

25. The proponent provides a reference for the US EPA method for calculating road traffic noise and defines the assumptions and methods used in the assessment including adjustments for road pavement type, different vehicle types and mix, noise source heights, road gradient, propagation between source and receiver, speed and how vehicle emissions change under different speed settings and ground effects between the road and receivers.
26. The proponent confirms the times when workers will be travelling to the site and amend the assessment accordingly

The Pipeline Development Noise Assessment:

For Monitoring, RBLs and Catchments:

27. The proponent reviews and confirms the accuracy of receivers included in the assessment.
28. The proponent justifies that monitoring location NM5 is representative of the nearest residential receivers or amend the report using representative background noise measurements
29. The proponent amends figure 4 in the report to show the monitoring locations

30. The proponent reviews the definitions of all catchments and RBLs assigned to all receivers and revise them based on appropriate acoustic considerations

For the Construction Noise Assessment:

31. The proponent provides a list of definitions for acronyms and abbreviations used in Appendix F
32. The proponent amends the assessment to include construction compounds and stockpiling activities
33. The proponent includes Figure 6 as referred to in chapter 7.2
34. The proponent clarifies if they are committed to providing the recommended mitigation measures to the 30 residential receivers identified as eligible for mitigation.
35. The proponent produces a construction noise and vibration management plan (CNVMP) prior to works commencing, and that construction activities be limited to the following standard construction hours, unless approved otherwise:
 - Monday to Friday 7am to 6pm
 - Saturday 8am to 1pm
 - No work Sunday and Public Holidays

For the Operational Noise Assessment:

36. The proponent includes operational noise mitigation measures in the design and operation of pumping stations.