DOC17/362277, EF13/5640

NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Colin Phillips

Dear Mr Phillips

STATE SIGNIFICANT DEVELOPMENT 5156
PROPOSED ROCKY HILL COAL PROJECT (AS AMENDED) –
EPA COMMENTS ON RESPONSE TO SUBMISSIONS (RTS) DOCUMENT

Reference is made to your email dated 19 June 2017 seeking the Environment Protection Authority (EPA) provide comments and recommended conditions regarding the above proposal following review of the applicants response to submissions report (RTS) titled *"Gloucester Resources Limited, Amended Rocky Hill Coal Project, Response to Submissions, Extracts for the Environment Protection Authority, Report No. 806/15"*, prepared by R.W. Corkery & Co. Pty. Limited.

A review of the RTS has been completed and the EPA provides comments shown in **Attachment A.**

As is normal practice the EPA has also attached a draft set of recommended conditions (**Attachments B)** for future consideration by DP&E, should the Department consider that approval might be appropriate. However, the EPA highlights in relation to noise and blasting that there are some important considerations for DP&E when weighing up all relevant considerations in relation to this proposal. For water, the EPA notes that the proponent has not satisfactorily addressed the EPA's concerns in relation to appropriate criteria for setting discharge limits, seepage from water storages, and ensuring there are brine disposal options that will be available.

If you require any further information regarding this matter please contact Emma Coombs on (02) 4908 6831.

Yours sincerely

P Jamieson 7-7-17

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ATTACHMENT "A"

NOISE

The proposal, if approved, will likely change the noise environment

The EPA has previously stated that although noise modelling predicts the majority of residents will experience noise levels less than the proposed noise limits, it is important for DP&E to understand that many residents and visitors to Gloucester will experience a changed noise environment if the proposal is approved.

The EPA accepts the arguments put forward by the proponent with regards to audibility of mine noise in Gloucester and its rural-residential estates. However, the EPA maintains that an important planning consideration in this application is that if this project is approved, mining noise will be audible in Gloucester for the first time and this changed noise environment for residents and visitors needs to be understood by the determining authority when considering this application.

The intrusive noise criterion just skirts around the Avon River and Thunderbolt Estates

As previously stated, the EPA notes from the noise modelling conducted that despite the changes made to the project since 2013 the predicted noise contour representing the intrusive noise criterion ($L_{eq(15min)}$ 35dBA) just skirts around the Avon River and Thunderbolt Estates for two of the modelled scenarios.

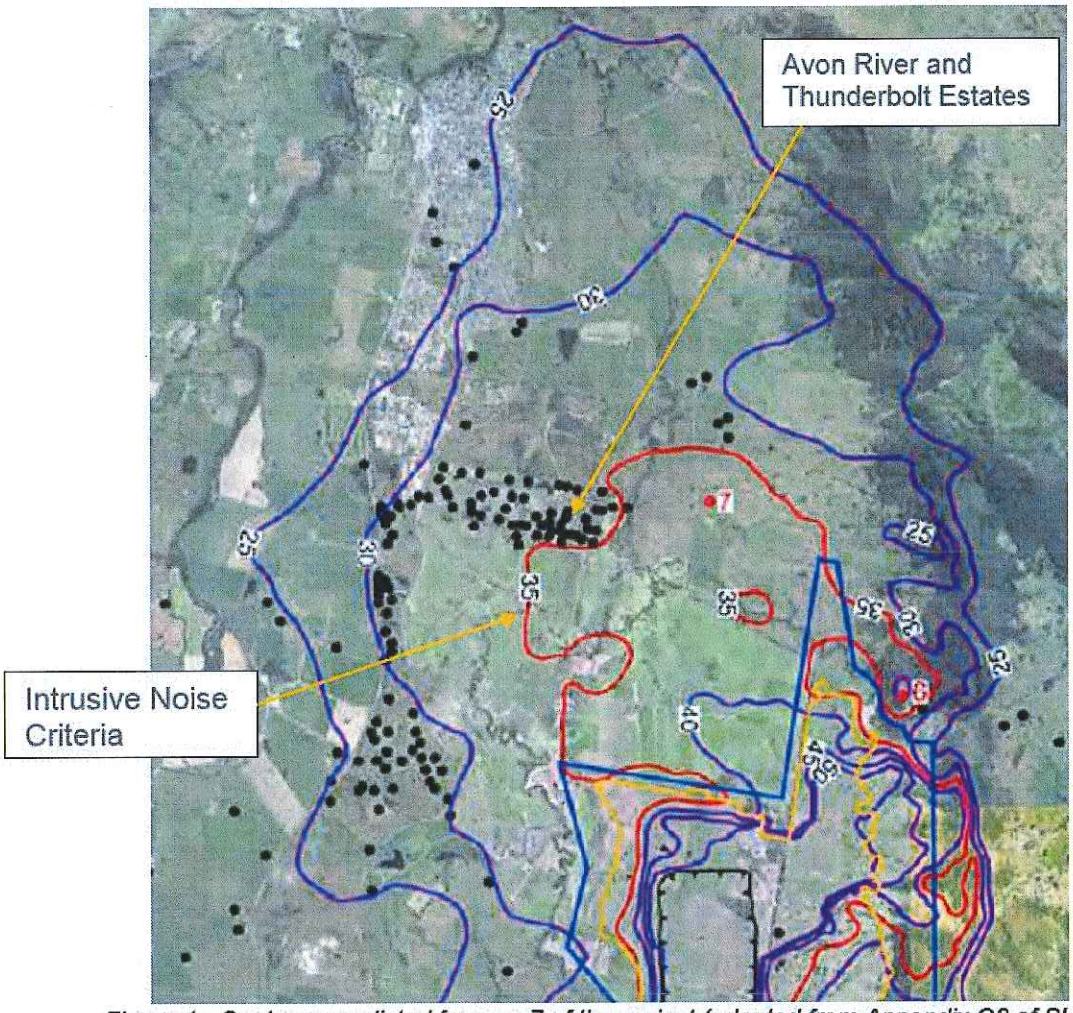

Figure 1 - Contours predicted for year 7 of the project (adapted from Appendix O3 of SLR 2016).

There is always some uncertainty in noise modelling. The EPA highlighted previously to DP&E that the number of residents receiving noise above the intrusive criterion could be significantly greater than predicted if:

- Noise levels were slightly under-predicted, or
- Not all necessary mitigation measures are implemented to meet the noise limits.

The proponent has stated that "in the unlikely event that evening intrusive noise levels have been slightly underpredicted (ie say up to 2 dB(A) higher by comparison with the Noise and Vibration Blasting Assessment), then this would result in 22 residences in the Estates with a predicted evening intrusive noise level of 37 dB(A), and an additional 10 residences in the Estates with a predicted evening intrusive noise level of 36 dB(A)...."

Multiple layers of noise controls necessary to meet noise limits

To ensure the proposal can meet the noise criteria the proponents have said they will implement multiple layers of operational noise mitigation measures. The EPA previously raised concern about the practicality of regularly limiting mining activities in an operational mine, and is concerned the modelling for this project is optimistic about the available noise mitigation measures.

The noise impact assessment in the EIS describes a range of possible measures such as equipment shutdowns, "switching off the coal fleet and associated mobile equipment", restricting some dozers to 1st gear "dependent on the time and location of operation", and not operating "out-of-pit" in certain noise enhancing conditions.

As temperature inversion conditions are likely to be experienced on a large percentage of winter evenings, combined with the need for additional controls during the predominant southerly breezes in the Gloucester Valley, the EPA questions whether the assumed and restrictive operational controls would be regularly put into practice on a large mine with a workforce in excess of 100 employees.

DP&E needs to consider the risk of additional residences being adversely impacted by noise if all proposed measures are not practical to implement at a real life operational mine.

Temperature Inversions

Strong temperature inversions at night are a feature of the Gloucester Valley. Temperature inversions have the effect of increasing noise levels at receivers compared to "normal" conditions. The *Industrial Noise Policy* states that where inversion conditions are predicted to occur for at least 30% of the time on winter nights, the inversion effects on noise are significant.

The proponents RTS includes new data from the site which shows that moderate strength inversions (stability category F) occur about 38% of the time during winter evenings. Strong inversions occur about 8% of the time during winter evenings.

As noted in the EIS, the *Industrial Noise Policy* only requires inversions to be considered when night-time operation is proposed, and because mining operations were assumed to finish at 10:00 pm inversions were not included in any of the EIS modelled noise scenarios.

As noted by the EPA previously, the proponent has conducted its noise assessment in accordance with the relevant guidelines, in not considering inversions.

The proponent in its RTS has provided new data in tables (p28) that suggests that inversion conditions plus a southerly breeze might only result in a noise exceedance of 1 dB(A) at selected houses near the edge of the Avon River Estate. A noise report has not been produced in support of this new tabulated data and so it is difficult for the EPA to make judgments. However, this new data would

suggest that the inversion is having very little influence on noise levels, which is odd. A table comparing the original prediction (southerly breeze only) to the new prediction (inversion + breeze) is shown below.

Residences modelled	**Comparison of Year 7 (Out of Pit) Predictions** with significant plant shutdown in place	
	Original (EIS) prediction – Southerly breeze (3 m/s) only	New (RTS) Prediction – Inversion **PLUS** southerly breeze (2 m/s)
Searle (Res 33)	35 dB(A)	36 dB(A)
Doherty (Res 36)	34 dB(A)	35 dB(A)
Green (Res 25C)	35 dB(A)	35 dB(A)

Limits applying under temperature inversions

The response to submissions showed that F class stability category conditions occur for more than 30% of winter evenings. It also showed that the project could meet the EPA's proposed evening noise limits during F class conditions.

The response was correct in stating that the *Industrial Noise Policy* does not require F class conditions to be assessed in the day time or evening.

The response to submissions asked for noise limits to not apply during F or G class stability category conditions.

However, for evening noise limits to not apply in F class conditions would lead, in this case, to noise limits not applying for a significant proportion of the time: almost half of winter evenings, or 1 in every 4 evenings over a whole year, on average.

Based on the revised assessment of inversions the EPA has amended its recommended condition 27, so that limits apply during F class conditions but not G class.

Maintenance Activities at Night and Night-time Noise Limits

The response to submissions stated that the proponent would make sure that maintenance activities in the night-time are inaudible at sensitive receiver locations.

As outlined in its submission on the environmental impact statement, the EPA has a preference for objective numerical limits, rather than subjective audibility.

It is appropriate for the proponent to require maintenance to be inaudible, but compliance with limits should also able to be objectively assessed. The EPA understands the simplicity and practicality of having an audibility criteria for night-time maintenance activities and has amended condition 25 to reflect both an audibility criteria and objective noise limits.

AIR

Changes to the particulate fraction emission ratios

The proponent provided adequate explanation on the modified particulate emission estimation methodology. The EPA notes the reduction in estimated particulate emissions due to modified particulate fractions and advises that the estimated impacts as a result of the amended project comply with EPA's impact assessment criteria.

Coal Mine Particulate Matter Best Practice Implementation

In the draft conditions of approval, the EPA had recommended that the proponent be required to achieve a wheel generated dust control efficiency of 84% or more.

The proponent's response to this proposed condition states that it would implement dust control measures generally in accordance with the EIS and the air quality management plan. The EPA notes that the proponent has said it will achieve a wheel generated dust control efficiency 90 %. The EPA has therefore varied condition 19 to require a wheel generated dust control efficiency 90 %.

The EPA advises that this a wheel generated dust control efficiency was recently placed on the Environment Protection Licence of all operating open cut coal mines in NSW, including Stratford and Duralie Coal Mines. The management practices implemented by this program are expected to become part of standard operations. These practices will form the basis of the EPA's regulation of Conditions O1 and O2 on coal mine Environment Protection Licenses, which require operations to be undertaken in a competent and proper and efficient manner.

Spontaneous combustion and coal mine fires

The EPA had previously noted the proximity of the proposed mine to Gloucester township, combined with the strong and frequent temperature inversions experienced in the Gloucester valley, combined with a predominance of southerly winds up the Valley (towards Gloucester township) means that potential effects from spontaneous combustion, should it occur, is an important consideration for DP&E when considering this development application.

The RTS contends that the propensity for spontaneous combustion to occur is low. The proponent advises that the risks associated with spontaneous combustion will be managed via the proposed Spontaneous Combustion Management Plan. The EPA advises that requirements for the reporting of spontaneous combustion will be included as a licence condition on the environment protection licence should the Department consider consent appropriate.

BLASTING

Impacts from blast fume

The RTS notes that it was an inadvertent omission that the EIS did not include text relating to the importance of restricting the hours of blasting to protect local air quality.

Clarification has been provided that blasting will be only occur between 10 am and 4 pm. The EPA has proposed a condition of consent to address this issue.

Audibility of blasts

The EPA previously stated blasting limits had been included for the proposal, however even when those limits are met DP&E needs to understand for its assessment of this proposal that blasts are likely to be audible in Gloucester and surrounding areas and the noise environment is likely to be affected by the semi-regular blasts that are required throughout the life of the mine.

In the RTS the proponent stated, and the EPA accepts, "that audibility is not a blasting criterion, and the fact that some blast events may be audible at certain times and at certain locations does not mean that impacts are considered by the receiver to be unacceptable".

The purpose of the EPA statement was to highlight to DP&E and the community that mine blasts will be audible for residents and visitors to Gloucester and this is a factor that needs to be taken into consideration when weighing up all the aspects of this proposal.

WATER

Brine Disposal

The EPA notes the proponent's response regarding waste classification as general waste and disposal at a licenced landfill in the Hunter Region. Given the volume of brine generated, the EPA is still of the view that he proponent should ensure, prior to consent, that appropriate arrangements can be put in place for brine disposal.

Seepage from the Saline Water Zone and permeability requirements

The EPA requested details on how Environmental Dams will be constructed to prevent seepage, or a commitment to construct water storages to minimum permeability requirements to prevent pollution of waters.

The proponent's response does not address the issue of permeability of water storages or potential seepage from the Environmental Dams. The response refers only to irrigation, sediment dam discharges and the size of the sediment dams.

Potential water quality discharge limits and potential pollutants (ANZECC)

The proponent does not address the EPA's comments on the use of 80th percentile values being used as the basis for potential water quality discharge limits.

The EPA reiterates that 80th percentile value of receiving waters can only be used when the data is from an agreed reference site that meets the definition of a reference site for the purposes of developing site specific trigger values as set out in the ANZECC (2000) guidelines. ANZECC (2000) states that: "the reference condition should represent a substantial achievement in environmental protection that is agreeable to the majority of stakeholders" and "It is not acceptable to allow poor environmental performance or water pollution, simply because a waterway is degraded".

In accordance with the ANZECC (2000) guidelines, for a slightly to moderately disturbed system (which is the level of protection that should apply in this case), the reference site(s) should be only slightly modified. In the absence of appropriate reference conditions the ANZECC (2000) default trigger values should be used as a basis for developing discharge criteria.

For toxicants such as metals, the trigger values can be adjusted using the decision tree for toxicants in the ANZECC (2000) guidelines. Where ANZECC (2000) Volume 1 does not provide an aquatic ecosystem trigger value for a particular analyte reference should be made to Volume 2 to determine if an interim trigger value is available as a basis for decision making, or international literature can be reviewed. The use of 99% species protection levels applies as a default value for some analytes for slightly to moderately disturbed ecosystems to account for potential bioaccumulation effects or other issues, e.g. the selenium trigger value in Table 4.55 is incorrect and should be 5 µg/L.

Licence limits could be adjusted to take into account available initial dilution, if discharges occur during times of adequate flows and available dilution is demonstrated, but this issue can only be addressed once appropriate trigger values are determined.

Management of sediment laden water, sediment basins and characterisation

The EPA notes the commitments to monitoring. The RTS states that monitoring of surface water and seepage from overburden collected in sediment dams will occur on "a regular basis" for pH, EC and TSS while a larger suite (in Table 11 of the O&RC report) will be monitored annually.

During the initial stages of the project an increased frequency of sampling and analysis should occur until the collected runoff is characterised, including sampling and analysis to capture the full range of operational scenarios that could materially impact the water quality. Following this the analytes

sampled and the frequency of sampling can be scaled back commensurate with the risk. This requirement can be included in the Surface Water Management Plan or as a licensing requirement.

The EPA notes the proponent's clarification that they used *Managing urban stormwater: soils and construction Volume 2E: Mines and quarries.*

Saline water treatment

The proponent's expansion of the description of the water treatment process adequately responds to the EPA's query. Discharge water quality limits cannot yet be stipulated as the proponent is yet to satisfactorily address trigger values.

Remineralisation of reverse osmosis permeate

The proponent's proposed monitoring and mitigation measures adequately responds to the EPA's query. Discharge water quality limits cannot yet be stipulated as the proponent is yet to satisfactorily address trigger values. Effluent irrigation should comply with advice from qualified soil scientists as well as DEC (2004), *Environmental Guidelines: Use of Effluent by Irrigation* and DECCW (2010), *Strategic environmental compliance and performance review: effluent reuse management.*

Discharge contributing to baseflow in times of drought

The discharge of treated water to the unnamed watercourse and then the Avon River during low flow periods to maintain baseflow should be considered in consultation with OEH and DPI Water.

Assessment of the unnamed watercourse

The proponent has described the watercourse and committed to constructing the discharge to minimise erosion potential.

Irrigation of saline water and treatment

The proponent's description of the water management approach is adequate.

Untreated (saline) water reuse and sodicity

The proponent's proposed monitoring and mitigation measures adequately responds to the EPA's query. Discharge water quality limits will be specified in any Environment Protection Licence issued and the effluent irrigation should comply with advice from qualified soil scientists as well as DEC (2004), *Environmental Guidelines: Use of Effluent by Irrigation* and DECCW (2010), *Strategic environmental compliance and performance review: effluent reuse management.*

Other EPA issues raised

The proposed water management approach outlined in the EIS, including nil discharge of untreated water from the Saline Zone and reverse osmosis treatment for wastewater in the Saline Zone, is adequate. The EIS states that water would only be released in accordance with discharge water quality limits to be specified in the Environment Protection Licence.

ATTACHMENT 'B'

'DRAFT' CONDITIONS OF APPROVAL TO BE CONSIDERED BY DP&E

ROCKY HILL COAL PROJECT (SSD-5156)

ADMINISTRATIVE CONDITIONS

Works to be undertaken in accordance with information supplied

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

   (a) The document *"Amended Rocky Hill Coal Project Environmental Impact Statement Development Application No SSD-5156* (August 2016)" prepared by R.W. Corkery and Co. Pty. Limited; and
   (b) As modified by the document "*Amended Rocky Hill Coal Project, Response to Submissions, Development Application No. SSD 5156 (June 2017)*" prepared by R.W. Corkery & Co. Pty. Limited

   unless otherwise specified in these conditions of approval.

OPERATING CONDITIONS

2. Activities at the premises must only occur during the times detailed in the table below:

Activity	Days *	Permitted Hours of Operation
Construction and site establishment	Monday to Saturday	In accordance with condition 22 and 23 of this consent
Mining (Year 1 to 3)	Monday to Saturday	7:00 am – 6:00 pm
Mining (year 4 to end of mine life)	Monday to Saturday	7:00 am – 10:00 pm
Breaker station operations	Monday to Saturday	7:00 am – 6:00 pm
Coal haulage via private haul road	Monday to Saturday	7:00 am – 6:00 pm
Maintenance	Monday to Saturday	7:00 am – 10:00 pm
	Sunday	8:00 am – 10:00 pm
	Monday to Sunday	All other hours – in accordance with condition 25 of this consent

3. Activities must be carried out in a competent manner. This includes:

a) The processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) The treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

4. Maintenance of plant and equipment

All plant and equipment installed at the premises or used in connection with the activity:
a) Must be maintained in a proper and efficient condition; and
b) Must be operated in a proper and efficient manner.

5. All above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place.

6. Bunds must:

a) have walls and floors constructed of impervious materials;
b) be of sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed);
c) have floors graded to a collection sump; and
d) not have a drain valve incorporated in the bund structure,

or be constructed and operated in a manner that achieves the same environmental outcome.

AIR

Air Quality Management Plan

7. For all emission sources at the site the proponent must prepare an air quality management plan that includes, but is not limited to:

- Key performance indicator(s);
- Monitoring method(s);
- Location, frequency and duration of monitoring;
- Record keeping;
- Response mechanisms; and
- Compliance reporting.

8. The air quality management plan must also include:

- Details of the predictive meteorological system;
- Details of the real-time dust monitoring system; and
- Specific actions that will be taken in response to meteorological or particulate matter triggers being reached, these actions must include stopping certain activities in identified weather conditions or when certain trigger levels are reached.

9. The air quality management plan must be implemented prior to the commencement of any dust generating activities associated with the project.

General Dust Conditions

10. All areas in or on the premises must be maintained in a condition that prevents or minimises the emission of dust to the air.

11. Any activity carried out in or on the premises must be carried out by such practical means as to prevent dust or minimise the emission of dust to the air.

12. Any plant operated in or on the premises must be operated by such practical means to prevent or minimise dust or other air pollutants.

13. All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the emission of dust to the air, or emission from the premises of wind-blown or traffic generated dust.

Air Quality Monitoring and Management

14. Real Time Dust Monitors

a) The proponent must, prior to the commencement of dust generating activities at the site, install continuous real time air quality monitoring for PM_{10} and $PM_{2.5}$ at two locations representative of residences within the Forbesdale Estate and the Avon River Estate.

15. Requirement to monitor ambient particulate matter

a) The licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point 1 to Point x

Parameter	Units of measure	Frequency	Averaging Period	Method
PM_{10}	Micrograms per cubic metre	Continuous	1-hour	AS 3580.9.8 - 2008

Note: The number and location of PM_{10} monitors must be approved by the EPA prior to the installation of the monitoring equipment.

Note: The method must be approved by the EPA prior to the installation of the monitoring equipment.

Note: The calibration, quality assurance, quality control and audit program must be approved by the EPA prior to the installation of the monitoring equipment.

b) Monitoring of all parameters listed in Condition 15(a) Column 1 must commence prior to earth moving activities being undertaken at the site.

16. Contingency monitoring

a) Prior to the commencement of dust generating activities at the site, the licensee must submit a report to Manager EPA Hunter Region that details:

(i) contingency actions, including monitoring, that will be implemented when the weather station is not operating in a proper manner ; and

(ii) contingency actions, including monitoring, that will be implemented when any of Points 1 - x (continuous PM_{10} monitoring) are not operating in a proper manner.

Note: For the purpose of the above condition 'proper manner' means:
(i) operation in accordance with manufacturers specifications and recommendations;
(ii) operation in accordance with relevant Australian Standards:
  i. AS 3580.14—2011 for Condition 1(a);
  ii. AS 3580.9.8 -2008 for Condition 2(a); and

(iii) operation in a manner that provides data required to satisfy condition(s) of the environment protection licence.

b) Prior to the commencement of dust generating activities at the site, EPA must approve the proposed contingency methodology presented in the report required under condition 16(a).

c) To remove any doubt, the licensee must not undertake dust generating activities at the site at any time when there is no way assess to real time site specific or representative ambient PM_{10} and meteorological monitoring data which satisfies the requirements of Conditions 15 or 69.

17. Predictive Meteorological System

Prior to the commencement of dust or noise generating activities at the site, the licensee must install and operate a predictive meteorological system that will predict adverse weather conditions so that operations on the premises can be ceased or modified to adequately control air quality and noise impacts.

18. Dynamic dust management

a) Prior to the commencement of dust generating activities at the site, the licensee must submit a report to the EPA Director Hunter that details:

(i) Action trigger levels based on measured real time PM_{10} concentrations at representative receptor locations and other inputs such as predicted and prevailing meteorology;

(ii) Specify actions to be taken in response to the identified trigger levels which may include, but not be limited to, stopping certain activities, additional control measures or limitations on particular site activities during adverse meteorological conditions

b) A minimum of 1 review of the effectiveness of the air quality management plan must be conducted each twelve months.

c) The plan and the management of all relevant activities on the site must be updated in accordance with the findings of any review of the plan.

d) The plan must be posted on the proponent's website and be made available to the EPA upon request.

19. Coal Mine Particulate Matter Best Practice Implementation

Wheel generated dust

a) The Licensee must achieve and maintain a dust control efficiency of 90 % or more on all haul roads

Control efficiency is calculated as:

$$CE = \frac{E\ (\text{uncontrolled}) - E\ (\text{controlled})}{E\ (\text{uncontrolled})} \times 100$$

Where E = the emission rate of the activity

b) The Proponent must prepare a Monitoring Program to assess its compliance with Condition 19(a) under varying meteorological conditions. The Monitoring Program must detail the following:

- the parameters to be monitored;

- the methods to be used to monitor each parameter;
- the locations where each parameter will be monitored;
- the frequency at which each parameter will be monitored;
- the Key Performance Indicators that will be used to determine compliance with Condition 5(a); and
- a detailed justification for each Key Performance Indicator selected.

As a guide, the EPA anticipates that the following parameters will be monitored:

- moisture and silt contents of haul roads;
- frequency, duration, rate and quantity of water applied to haul roads;
- frequency, duration, rate and quantity of suppressant applied to haul roads in comparison to manufacturer's specifications;
- vehicle kilometres travelled;
- haul truck weight;
- haul truck speed; and
- dust levels on haul roads.

The Monitoring Program must be submitted by the Licensee to the Environment Protection Authority Regional Manager Hunter, at PO Box 488G, NEWCASTLE prior to any dust generating activity occurring on the site.

Note: The EPA intends to require the licensee to implement the Monitoring Program once it is approved by the EPA.

c) The proponent must submit a written report to the EPA providing the results of the Monitoring Program. The report must include an assessment of the dust control effectiveness, dust levels and the proponent's compliance with Condition 19(a). The report must be submitted by the proponent to the Environment Protection Authority Director Hunter, at PO Box 488G, NEWCASTLE.

ODOURS

20. Potentially Offensive Odour

The proponent must not cause or permit the emission of offensive odour beyond the boundary of the premises.

NOISE

21. The proponent must prepare and implement a detailed Construction Noise Management Plan (CNMP), prior to commencement of construction activities, that includes but is not necessarily limited to:

- identification of each work area, site compound and access route (both private and public)
- identification of the specific activities that will be carried out and associated noise sources at each site and access route
- identification of all potentially affected sensitive receivers
- the construction noise objectives identified in accordance with the *Interim Construction Noise Guideline* (ICNG, DECC 2009)
- assessment of potential noise and vibration from the proposed construction methods, including noise from construction traffic, against the objectives identified in (d)
- detailed description of the feasible and reasonable noise mitigation measures that will be implemented to reduce noise from the project in an effort to meet the objectives identified in (d), including at least all feasible and reasonable measures from section 6 of the ICNG
- procedures for notifying residents of construction activities that are likely to affect their noise and vibration amenity

- measures to monitor noise performance and respond to complaints.

22. Construction work associated with the project must be undertaken:

a) between 7:00 am and 6:00 pm, Mondays to Fridays;
b) between 8:00 am and 1:00 pm on Saturdays; and
c) at no time on Sundays or public holidays.

Note 1: for the purpose of this approval, "construction work" includes only: upgrading works for Jacks Road and Waukivory Road, construction of the mine access road and private haul road; construction of offices and amenities; construction of light vehicle carparks; construction of water management structures required prior to the commencement of construction; construction of workshop (including fuel bay, wash-down, store); construction of the ROM pad and breaker station earthworks; and installation of power generation equipment, reticulated power and communications infrastructure. All other activities are deemed operational noise.

Note 2: The EIS for the Project predicted a 10 month site establishment and construction phase.

23. Construction work associated with the project may be undertaken outside the hours specified in the standard hours if it is:

a) construction that causes $L_{Aeq(15min)}$ noise levels that are:
   i. no more than 5 dB above Rating Background Level at any privately-owned residence in accordance with the *Interim Construction Noise Guideline* (DECC, 2009); and
   ii. no more than the Noise Management Levels specified in Table 3 of the *Interim Construction Noise Guideline* (DECC, 2009) at other noise sensitive land uses; and has been approved in writing by the Secretary, or
b) for the delivery of materials required by the police or other authorities for safety reasons; or
c) required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or
d) approved through the process outlined below.

24. The hours of construction specified may be varied with the prior written approval of the Secretary. Any request to alter the hours of construction shall:

a) be considered on a case-by-case or activity-specific basis;
b) be accompanied by details of the nature and justification for activities to be conducted during the varied construction hours;
c) be accompanied by written evidence to the Secretary that appropriate consultation with potentially affected noise sensitive receivers and notification of relevant Council(s) and other relevant agencies has been and will be undertaken;
d) demonstrate that all reasonable and feasible noise mitigation measures have been put in place; and,
e) be accompanied by a noise impact assessment consistent with the requirements of the *Interim Construction Noise Guideline* (DECCW, 2009).

25. Noise generated at the premises must:

a) not exceed the noise limits in the table below. The locations referred to in the table below are indicated by Appendix C1 – Land ownership Plan of the *Noise, Vibration and Blasting Assessment* (SLR Consulting Australia Pty Ltd 2016).

Receiver	Location: MGA94 Zone 56 Easting and Northing	Noise Limits (dBA)	
		Day $L_{eq(15min)}$	Evening $L_{eq(15min)}$
6 Campbell	*405555,6453564*	*40*	*40*
7 Ansell & Murray	*403954,6455192*	*36*	*36*
19A Boorer	*402107,6452036*	*36*	*35*
Any other privately-owned residence	*Any privately-owned residence not identified above or subject to a negotiated agreement*	*35*	*35*

b) Maintenance activities may be conducted during the night-time provided such activities are inaudible at any privately-owned residence and in no circumstance not greater than $L_{eq(15min)}$ 35 dBA and $L_{max(15min)}$ 45 dBA.

Note: In the EIS for the Project the proponent committed that any maintenance activities carried out during 'all other hours' (10pm-8am) will only occur on the condition that the activities are not audible at privately owned residences.

26. For the purpose of condition 25:

- 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.

27. The noise limits set out in condition 25 apply under all meteorological conditions except for the following:

a) Wind speeds greater than 3 metres/second at 10 metres above ground level;
b) Temperature inversion conditions greater than 1.5° C/100 m combined with wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Temperature inversion conditions greater that 4° C/100 m.

28. For the purposes of condition 27:

a) Data recorded by the meteorological station identified as EPA Identification Point <?> must be used to determine meteorological conditions ; and
b) Temperature inversion conditions (vertical temperature gradient in degrees C) are to be determined by direct measurement over a minimum 50m height interval as referred to in Part E2 of Appendix E to the NSW Industrial Noise Policy.

29. To determine compliance:

a) with the $L_{eq(15\ minute)}$ noise limits specified 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_{Amax} noise limits in condition 25, the noise measurement equipment must be located within 1 metre of a dwelling façade.

c) with the noise limits in condition 25, 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 (a) or (b).

30. A non-compliance of the noise limit 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 condition 29; and/or
- at a point other than the most affected point at a location.

31. For the purpose of determining the noise generated at the premises: the modifying factors, except for low-frequency noise, in Section 4 of the NSW Industrial Noise Policy must be applied, where appropriate, to the noise levels measured by the noise monitoring equipment.

32. For the purpose of determining the noise generated at the premises, a correction must be applied to any measured noise level, before comparison to limits, where the LCeq – LAeq exceeds 15 dB and:

- where any of the 1/3 octave noise levels in the table below are exceeded by up to 5dB, a 2 dBA positive adjustment to measured A weighted levels applies in the evening and night periods.
- where any of the 1/3 octave noise levels in Table A are exceeded by more than 5dB, a 5 dBA positive adjustment to measured A weighted levels applies for the evening and night periods, and a 2 dBA positive adjustment applies for the daytime period.

Centre frequency (Hz)	**10**	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
One-third octave $L_{Zeq(15min)}$ threshold level (dB)	92	89	86	77	69	61	54	50	50	48	48	46	44

33. To assess compliance with Condition 25, attended noise monitoring must be undertaken:

a) at each one of residential receivers 6, 7,19A and at a location representative of residences in the Avon River Estate;

b) occur Quarterly, 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.

The extent of monitoring required will be reviewed by the EPA, upon request, after the first two years of data.

34. A noise compliance assessment report must be submitted to the EPA within 30 days of the completion of the quarterly 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 25; and
b) an outline of any management actions taken within the monitoring period to address any exceedances of the limits contained in Condition 25.

35. Annually the noise compliance assessment report must also include an assessment of compliance with the plant and equipment sound power levels identified in Table 4.9 of the EIS. The compliance report must clearly identify the methodology used to determine the sound power levels of the plant and equipment. If plant or equipment individually exceeds the originally predicted sound power level, or if the overall mobile and fixed plant sound power level exceeds the originally predicted sound power level identified in tables 4.9 or 4.10, the proponent must stipulate actions that will be taken to ensure overall sound power levels do not exceed originally predicted levels.

36. Real Time Noise Monitor

The proponent must, prior to the commencement of noise generating activities at the site, install continuous real time noise level monitor at a location representative of residences within the Forbesdale Estate and Avon River Estate.

37. Dynamic noise management

a) Prior to the commencement of noise generating activities at the site, the licensee must submit a report to EPA Director Hunter that details:

i. Action trigger levels based on measured real time noise levels at a representative receptor location and other inputs such as predicted and prevailing meteorology;

ii. Specify actions to be taken in response to the identified trigger levels which may include, but not be limited to, stopping certain activities, additional control measures or limitations on particular site activities during adverse meteorological conditions.

b) A minimum of 1 review of the effectiveness of the dust management plan must be conducted each twelve months.

c) The plan and the management of all relevant activities on the site must be updated in accordance with the findings of any review of the plan.

d) The plan must be posted on the proponent's website and be made available to the EPA upon request.

BLASTING

38. Blasting at the premises may only take place between 10:00am-4:00pm Monday to Saturday. Blasting is not permitted on public holidays.

Note: these time restrictions have been applied as modelling has shown there is a risk of nitrogen dioxide from blast fume exceeding relevant ground level criteria in stable meteorological conditions outside the above time period.

39. Blasting outside of the hours specified in the condition above can only take place with the written approval of the EPA.

40. Offensive blast fume must not be emitted from the premises.

Definition:

Offensive blast fume means post-blast gases from the detonation of explosives at the premises that by reason of their nature, duration, character or quality, or the time at which they are emitted, or any other circumstances:

i. are harmful to (or is likely to be harmful to) a person that is outside the premises from which it is emitted, or
ii. interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premise from which it is emitted.

41. Blasts must be delayed during weather conditions that would transfer excessive dust and/or fume towards Forbesdale, Thunderbolt or Avon River estates.

42. All blasts conducted on the premises must be videoed in such a manner that the scale, direction and extent of any fume and dust produced by the blast is readily apparent. Such video must be provided to the EPA immediately upon request.

Blast Limits

43. The airblast overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

44. The airblast overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

45. Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

46. Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

47. The airblast overpressure and ground vibration levels in conditions 43 to 46 do not apply at noise sensitive locations that are owned by the licensee or subject to a private agreement, relating to airblast overpressure and ground vibration levels, between the licensee and land owner.

Blast Monitoring

48. To determine compliance with condition(s) 43-46:

a) Airblast overpressure and ground vibration levels must be measured and electronically recorded at the nearest residences or noise sensitive locations for all the parameters in the first column of the table below.
b) The licensee must use the units of measure, sampling method, and sampling frequency specified in the other columns.

Parameter	Units of Measure	Frequency	Sampling Method
Airblast overpressure	Decibels (linear peak)	Continuous during all blasts	Australian Standard AS2187.2-2006
Ground vibration peak particle velocity	Millimetres/second	Continuous during all blasts	Australian Standard AS2187.2-2006

49. The proponent must monitor all blasts carried out in or on the premises at or near the nearest residences or noise sensitive locations (such as a school or hospital) that is likely to be most affected by the blast and that is not owned by the licensee or subject of a private agreement between the owner of the residence or noise sensitive location and the licensee relating to alternative blasting limits. At the minimum monitoring must be conducted at residences generally north and west of the premises.

50. The proponent must report any exceedance of the blasting limits to the regional office of the EPA as soon as practicable after the exceedance becomes known to the proponent or to one of the proponent's employees or agents.

51. The proponent must report any impact on a person from offensive blast fume (as defined in the condition 40 above) to the regional office of the EPA as soon as practicable after the impact becomes known to the proponent or to one of the proponent's employees or agents.

WATER AND GROUNDWATER

52. Except as may be expressly provided by a licence issued under the *Protection of the* Environment *Operations Act 1997* in relation of the development, section 120 of the *Protection of the Environment Operations Act 1997* must be complied with in connection with the carrying out of the development.

53. There must be no discharge from the premises of waters contained within open cut pits, unless such waters have first been treated in the water treatment plant.

54. (EPA note: the EPA is likely to require a condition of Environment Protection Licence restricting or prohibiting saline water reuse on the premises, following an adequate and thorough assessment process as to whether saline water reuse is appropriate)

55. The proponent must sustainably reuse as much of the treated minewater as possible, with discharges of treated water to the ephemeral creek to the north of the premises considered a last resort option, unless in times of drought (and with EPA approval) discharges are needed to supplement Avon River baseflows.

Note 1: The EIS for the Project notes the proponent intends to reuse as much of the treated water as possible and the annual volume of water produced by the water treatment plant would be sufficient to irrigate about 200 ha of land, which represents about 15 % of the land owned by the proponent in or adjacent to the mine area.

Note 2: The EPA must be provided with evidence from an appropriate authority that drought discharges are needed to supplement Avon River baseflows prior to any discharge in low river-flow conditions.

56. The proponent must supply a report to the EPA, yearly with the Environment Protection Licence Annual Return documentation, that provides details of:

a) The volume of minewater treated annually in the water treatment plant;

b) The volume of treated minewater sustainably reused throughout the annual return reporting period, including a breakdown on the locations where the minewater was reused;

c) The volume of treated minewater discharged offsite throughout the annual return reporting period;

d) Rainfall recorded over the annual return period, including a comparison to historic 10 percentile, median and 90 percentile rainfall for the area; and

e) Where sustainable reuse of treated minewater represents less than ninety percent of the total minewater treated in the annual return period, commentary as to the reason for this level of reuse and actions proposed to be taken to sustainably reuse as much of the treated minewater as possible.

57. Following the cessation of mining activities there must be no discharge of minewater from the premises.

58. Waste rock must be assessed to determine if it is Potential Acid Forming (PAF). PAF waste rock must be segregated, handled and disposed so as to mitigate against acid formation and pollution of waters.

59. PAF material must not be disposed above groundwater level without EPA specifically approving in writing the location and design of the out-of-pit PAF waste cells.

60. Stormwater management measures must be prepared and implemented to mitigate the impacts of stormwater run-off from and within the premises in a manner that is consistent with the guidance contained in to Managing Urban Stormwater: Soils and Construction Volume 1 and *Managing Urban Stormwater: Soils and Construction: Volume 2C Unsealed Roads and Volume 2E Mines and Quarries* (DECCW 2008).

61. The drainage from all areas at the premises which will liberate suspended solids when stormwater runs over these areas must be diverted into adequately sized sedimentation basins.

62. The sedimentation basins must be maintained (to remove both accumulated sediments and treated water) to ensure that their design capacity is available for the storage of all runoff from cleared areas.

Note: The EIS for the proposal has noted that sediment control basins will be operated such that the water that accumulates after rainfall will be treated as is necessary to achieve the necessary discharge limits and then discharged within five days of the rainfall event.

63. Water and irrigation management plan

(EPA note: it is the intention of the EPA to add a condition similar to that shown below. This draft condition might be varied upon submission of all relevant information as requested in EPA correspondence)

Prior to commencement of the operation the proponent must develop and implement a management plan (or series of plans) that cover the surface water (including the water treatment plant), irrigation and groundwater issues. The plan(s) must include:

- erosion and sediment control measures and bunding;
- maintenance and monitoring of the treatment plant, including reverse osmosis membrane performance, and distribution system for irrigation water and brine, including operational triggers to ensure that the treatment process is functioning in a proper and efficient manner for the entire operational period;

- further development of a detailed water balance that incorporates an annual review to update the balance based on actual rainfall and effluent irrigation data;
- specifications for the unamended and amended quality of irrigation water and the circumstances under which the amendment might be varied, linked to soil monitoring;
- a soil and water monitoring program for irrigation water, soils, groundwaters and crops based on risk factors that aim to detect when specific water quality, soil or crop sustainability trigger values are nearing, or have exceeded, trigger levels;
- clearly defined management actions that are implemented when approaching or exceeding sustainability trigger values. An example of trigger values used for soil sustainability management can be found in: McGahan, Eugine and Robyn Tucker (Principle Authors), 2003, *Resource Manual of Development of Indicators of Sustainability for Effluent Reuse in the Intensive Livestock Industries: Piggeries and Cattle Feedlots.* Project No. 1816. Australian Pork Limited, Canberra, Australia, May, 2003;
- use of 'control' or 'reference' sites which are unlikely to be impacted by irrigation water to allow comparison between impacted and non-impacted sites;
- contingency plans for incidents and emergencies including for water treatment, tank or bunding failure, chemicals spills, poor crop performance, and breakage of brine pipelines;
- a program for reporting on the treatment processes and irrigation operations.

64. Water Treatment Plant Commissioning Stage Monitoring Plan

(EPA note: it is the intention of the EPA to add a condition similar to that shown below. This draft condition might be varied upon submission of all relevant information as requested in EPA correspondence)

The proponent must ensure that data is collected and collated as part of the water treatment plant commissioning stage monitoring program for amended and unamended effluent. The data must be submitted to the EPA for consideration. The data must include, at a minimum:

- organics (total recoverable hydrocarbons, including BTEX);
- radionuclides, including: combined radium-226/-228, gross alpha and gross beta;
- a full suite of metals;
- non-metallic inorganics: ammonia, nitrate, nitrite;
- salinity, major ions, alkalinity and hardness: total dissolved solids, sodium, chloride, potassium, magnesium, fluoride, sulphate, calcium, bromide, bicarbonate, carbonate, hydroxide, hardness;
- dissolved oxygen, electrical conductivity, pH, redox potential, turbidity, total suspended solids.

65. Concentration limits (consent condition)

The proponent must not discharge waters from the site, except in accordance with the conditions of any environment protection licence.

66. Concentration limits (Environment Protection Licence condition)

a. For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant must not exceed the concentration limits specified for that pollutant in the table.

POINT 1-x (each point where sediment laden water is discharged from the premises)

Pollutant	Units of measure	100 percentile limit
Total Suspended Solids	mg/L	50
pH	pH units	6.5-8.5
Oil and Grease	mg/L	5 mg/L and/or None visible

POINT Y (the discharge from the water treatment plant)

Pollutant	Units of measure	100 percentile limit
Total Suspended Solids	mg/L	50
pH	pH units	6.5-8.5
Oil and Grease	mg/L	5 mg/L and/or None visible
Other parameters and limits could not be determined as a result of the proponent not satisfactorily addressing EPA issues raised		

Note: the EPA will consider a turbidity limit in addition to (or as an alternative to) Total Suspended Solids (TSS) where it can be demonstrated there is a clear correlation between TSS and turbidity for the discharge(s) in question.

67. Water Monitoring (Environment Protection Licence condition)

For each monitoring/discharge point or utilisation area specified below (by a point number) the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns

POINT 1-x (each point where sediment laden water is discharged from the premises)

Pollutant	Units of measure	Frequency	Sampling Method
Total Suspended Solids	mg/L	Daily during any discharge	Grab Sample
Turbidity	ntu	Daily during any discharge	Probe
pH	pH units	Daily during any discharge	Probe
Oil and grease	visual	Daily during any discharge	Visual observation
Conductivity	uS/cm	Daily during any discharge	Grab Sample
Aluminium and other parameters – TBD after a more thorough assessment by the proponent			

POINT Y (the discharge from the water treatment plant)

Pollutant	Units of measure	Frequency	Sampling Method
Total Suspended Solids	mg/L	Daily during any discharge	Grab Sample
Turbidity	ntu	Daily during any discharge	Probe
pH	pH units	Daily during any discharge	Probe
Oil and grease	visual	Daily during any discharge	Visual observation
Conductivity	uS/cm	Daily during any discharge	Grab Sample
Other parameters and monitoring requirements/frequency could not be determined and will be stipulated by the EPA after the submission of an appropriate assessment.			

POINT A (Waukivory Creek U/S 2), POINT B (Waukivory Creek D/S), POINT C (Avon River U/S) and POINT D (Avon River D/S) (sampling locations shown on Figure 4.50 of the EIS for the Amended Rocky Hill Coal Project dated 2016)

Pollutant	Units of measure	Frequency	Sampling Method
Total Suspended Solids	mg/L	Monthly	Grab Sample
Turbidity	ntu	Monthly	Probe
pH	pH units	Monthly	Probe
Oil and grease	visual	Monthly	Visual observation
Conductivity	uS/cm	Monthly	Grab Sample

68. Weather Monitoring

A meteorological weather station must be installed and maintained so as to be capable of continuously monitoring the parameters specified in the table below.

For each monitoring point specified in the table below the proponent must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The proponent must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point <z>

Parameter	Units of Measure	Frequency	Averaging Period	Sampling Method
Siting				AM-1
Air temperature at 2 metres	°C	Continuous	1 hour	AM-4
Air temperature at 10 metres	°C	Continuous	1 hour	AM-4
Wind direction at 10 metres	°	Continuous	15 minute	AM-2 & AM-4
Wind speed at 10 metres	m/s	Continuous	15 minute	AM-2 & AM-4
Temperature lapse rate	°C	Continuous	15 minute	Direct measurement over a minimum 50m height

				interval as referred to in Part E2 of Appendix E to the NSW Industrial Noise Policy
Rainfall	mm	Continuous	15 minute	AM-4
Relative humidity	%	Continuous	1 hour	AM-4

Monitoring for all parameters listed in Column 1 must commence prior to earth moving activities being undertaken on the premises.

Note: The location of the weather station must be approved in writing by the EPA prior to the installation of the monitoring equipment.

69. Receiving Environment Investigations

(a) Prior to the commencement of construction the proponent must engage a suitably qualified person to conduct a baseline survey along the entire length of the ephemeral watercourse that is proposed to receive discharges from the water treatment plant to assess for impacts of erosion. The results of the survey must be compiled into a report and include photographs of any erosion issues and recommendations for actions that will be taken (including timelines) to address any erosion (or potential erosion) issues identified. The report must be provided to the EPA within two months of the person conducting the survey.

(b) Annually the proponent must engage a suitably qualified person to conduct a survey along the entire length of the ephemeral watercourse that receives discharges from the water treatment plant to assess for impacts of erosion. The results of the survey must be compiled into a report which compares the results to the baseline survey and the previous survey. The report should include photographs, taken in approximately the same location each year, which compares any erosion issues from year to year. The report must include recommendations for actions that will be taken (including timelines) to address any erosion issues identified. The report must be provided to the EPA annually with the Environment Protection Licence Annual Return.

Note: the EPA will review the frequency of this requirement for the watercourse survey, upon request, after the first two years of surveys have been completed (noting that discharges from the water treatment plant are not predicted to occur until about Year 4).

70. Annual Report on Ambient Environmental Monitoring

Annually the proponent must engage a suitably qualified person review the results of ambient water quality monitoring conducted in the vicinity of the premises. The results of the review must be compiled into a report including graphs for key parameters at each site, showing results since monitoring began. The report must include expert commentary that discusses any trends observed, postulates the reasons for the trends and makes recommendations for any actions necessary to address any adverse trends or results (including timelines). The report must be provided to the EPA annually with the Environment Protection Licence Annual Return.

WASTE

71. The proponent must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by an environment protection licence.

72. This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

EMERGENCY RESPONSE

73. The proponent must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises in accordance with the requirements in Part 5.7A of the *Protection of the Environment Operations (POEO) Act 1997* and POEO regulations. The proponent must keep the incident response plan on the premises at all times. The incident response plan must document systems and procedures to deal with all types of incidents (e.g. spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to cause harm to the environment.