



16 June 2023

Ref: 2021.09001

Department of Environment and Science

Minerals Business Centre

PO Box 7230

CAIRNS QLD 4870

ATTENTION: Mikaela Dry

Via email: ESCairns@des.qld.gov.au

Dear Mikaela,

**RE: ENVIRONMENTAL AUTHORITY AMENDMENT RESPONSE TO INFORMATION REQUEST –
AGATE CREEK GOLD MINE**

Savannah Goldfields Limited (SVG) (formerly Laneway Resources Limited) submitted the Agate Creek Gold Mine site-specific environmental authority application and proposed Progressive Rehabilitation and Closure Plan (PRCP) to the Department of Environment and Science (DES) on 8 November 2022 (REF: A-EA-NEW-100326876).

On 20 February 2023, the DES issued Wulguru Technical Services (WTS) with an Information Request notice, and additional information as prescribed under Section 550 of the *Environmental Protection Act 1990* is required.

WTS acknowledges the Department of Environment and Science's Information Request notice and have attached to this letter, SVG's response. We look forward to working with the DES through the PRCP process.

Should you have any questions, please do not hesitate to contact me at scott@wulgurutechservices.com.au or 0437 799 193.

Yours sincerely,

Scott Hayes-Stanley, CEnvP, MSSSI

Wulguru Technical Services

Appendix A – Responses to Information Request Notice

Appendix A – Response to Information Request

Item #	Relevant section (EA Application)	Matter	Information Request	Response
General				
1	Section 4.3.1 Overview of Land Impacts	Section 4.3.1 and Table 32 of the environmental authority (EA) supporting information describes the proposed disturbance footprint for the mining activity. It is noted that the mining camp, roads not described as haul roads (site access road, access tracks), sewage treatment plant (STP), workshop facilities, exploration related disturbance (pads and roads), water structures (i.e., 2 water structures identified in Appendix L and unidentified sediment pond seen in Appendix F), topsoil stockpile areas and magazine (stated in the Appendix L), pipelines, hardstand areas and processing plant (as described in Appendix C) were not included in the proposed disturbance footprint.	Clarify and provide a detailed description of the total disturbance footprints for the Agate Creek Mine. Describe the potential impacts on environmental values, risks and mitigation measures to be implemented associated with each of the disturbance footprints.	Figures and text (Section 2) have been amended to provide clarification.
2	Section 1.6.2 Environmentally Relevant Activities	A pre-wet season inspection of the Agate Creek Mine identified a newly installed STP with effluent being discharged through an irrigation system (also seen in Appendix A). It was noted that the capacity of the worker's accommodation is 46 (23 rooms x 2 persons/room). No information has been included in the EA Application surrounding a STP besides that the sewage will be treated in site via an existing septic system (section 4.5.3).	Provide further information surrounding the STP, including: (a) disturbance footprint and location; (b) system type and design specification and construction details; (c) potential impacts to environmental values and risks (i.e., contaminants discharge points, treatments, etc.); and (d) avoidance and management strategies to be implemented (e) expected treatment quality. Provide clarification whether the proposed sewage treatment	Section 4.5.3.1, Section 4.5.4.2.1, and Section 5.1.4 have been revised to include the required information. A comprehensive design of the STP is provided in Appendix O. The system equates to 13.8 Equivalent Persons (EP), which is

			activities constitute environmentally relevant activity 63 as defined in schedule 2 of the Environmental Protection Regulation 2019.	below the ERA trigger level as stipulated in the EP Regulation, as discussed in Section 4.5.3.1.
3	Section 5. Environmental Risk Assessment	Section 5 of the EA supporting information includes a risk assessment carried out for the risks identified at the Agate Creek Mine. The supporting information has not considered all risks associated with the project and environmental values to be impacted.	Provide a more detailed and comprehensive assessment of all risks associated with all proposed activities at the Agate Creek Mine. Provide information to demonstrate that all risks, direct and indirect, have been considered and are addressed appropriately. All risks including but not limited to: (a) the STP; (b) groundwater contamination; (c) surface water contamination; (d) contaminated waste rock migration; (e) waste rock handling and storage; and (f) conservation species detection.	Section 5 has been revised taking into consideration all proposed activities. Additional information has been provided in Appendix G, Appendix H, Appendix Q, and Appendix S.

4	All sections	Throughout the application, several plans were mentioned, however these were not submitted with the application. For example: (a) Section 4.1.5 of the EA supporting information describes a 'Air Quality Management Plan.' (b) Section 1.3 of Appendix L states a Groundwater Monitoring Program is in development and an Erosion and sediment control plan will be developed. (c) Section 4.3.9.7 and Section 4.3.9.7 of the EA supporting information states an erosion management plan will be developed. (d) Section 4.3.9.8 of the EA supporting information states a topsoil management plan will be developed. (e) Section 4.3.9.3 of the EA supporting information states a weed management plan will be developed. This section also states that control measures will be implemented, however these control measures were not listed. (f) Section 3.4 of Appendix G states a waste rock block model should be developed to provide a basis for the initial mine planning for the proposed Agate Creek project and states this model will show the distribution of non-acid forming (NAF) and potentially-acid forming (PAF) waste and ore units and assist the waste rock placement programme.	Provide all plans mentioned in the EA supporting information. In addition, provide information to demonstrate that each plan addresses potential impacts to environmental values, risks and mitigation measures to be implemented.	Management plans have been provided in the following Appendices: • Appendix G: Waste Rock Management Plan • Appendix H – Water Management Plan • Appendix L – Receiving Environmental Monitoring Program • Appendix M – Progressive Rehabilitation and Closure Plan • Appendix P: Air, Noise and Vibration Management Plan • Appendix Q: Topsoil Management Plan • Appendix R: Weed Management Plan • Appendix S: Fauna Impact Management Plan • Appendix T: Groundwater Monitoring Program
Noise				

5	Section 4.2.1 Sensitive Places	Section 4.2.1 of the EA supporting information identified the camping ground as a sensitive receptor, however, did not include it within the noise modelling as <i>“the proponent has reached an agreement with the campground land owner to relocate the campground”</i> (Appendix B - Air Impact Assessment). As no information has been provided to support this statement, it is appropriate to consider all existing sensitive receptors unless it is explicitly demonstrated it is no longer a place of concern. Sensitive receptors including the Rungulla National Park and Rungulla Resource Reserve were not included as sensitive receptors in the Noise and Vibration Assessment. Where the location of the relocated camping ground is known then this should also be considered as a sensitive receptor.	Provide additional information to demonstrate that the camp ground will be moved or re-assess the noise report with the premise it won't. Provide an assessment of potential impacts on Rungulla National Park and Rungulla Resource Reserve. If impacts are predicted, include these as sensitive receptors within the supporting information and describe the potential impacts and subsequent mitigation measures to be imposed to avoid impacts. Where the location of the relocated camping ground is known then this should also be included as a sensitive receptor in the assessment.	The noise and vibration study was reassessed to investigate and model the potential impacts to the Rungulla National Park and Rungulla Resource Reserve; this information has been provided in Section 4.2. and in the revised assessment in Appendix C. A compensation agreement is in place between Savannah Goldfields Limited and the owners of the Agate Creek Campground; the agreement allows for the campground to relocate, however the owners have not determined if or where they would like to move to at the present time. Savannah Goldfields Limited has paid the compensation agreement, providing the campground the ability to relocate at the landholders discretion.
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6	Section 4.2.2 Description of Ambient Noise Levels	A proposal for a new EA requires a significant assessment of the existing environmental values. For the noise component of an EA assessment, this means there is at least at a minimum one week of unattended noise measurement (in a cooler period of the year to avoid insect impact) and several attended short-term measurements within the same period to provide a good baseline for the projected impact. A preferred approach includes two separate one-week measurements, one in a cooler time of the year and one in the warmer months of the year. Without a proper measurement of the existing environment, it is not possible to assess the impact of the proposed noise goals to the existing environment and as stated in section 4.2.2.1 of the EA supporting information, background noise level measurement has not been undertaken. Upon assessment of the PEN3D modelling used, an 'assumed background' noise level is included, however, it has not been adequately justified why the assumed background levels are suitable as opposed to assessing actual background noise level. The Noise and Vibration Assessment provides a heatmap of the expected noise level from the activity without identifying the sensitive receptors on the map.	Undertake an assessment of the existing noise environment and assess how the cumulative impacts of the operation and background noise have been considered. Ensure that the unattended measurement identifies the general existing noise levels such as L90, LAeq, L10, L1 and LAm_{ax}, and the attended measurement includes observations regarding the general noise environment and what predominant sounds are in the general environment, and what sounds are causing the peaks naturally and at what levels. The background noise level should be adopted into the noise and vibration assessment. Provide further justification as to why the assumed background levels were used as opposed to measuring the actual background noise level. Amend the calculated noise contours depicted to indicate identified sensitive receptors.	A baseline noise survey was undertaken at the campground and incorporated into a revised noise assessment. The assessment is discussed in Section 4.2. and provided in Appendix C.
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7	Section 4.2.10 Noise Mitigation	Section 4.2.10 of the EA supporting information describes how the project will implement normal practices to maintain all equipment in good serviceable condition and that it's not necessary to provide any further mitigation measures based on the noise modelling outcomes. In a development of this scale, it is appropriate to require a development of a noise and vibration management plan which identifies the existing risks, specific triggers and management methodologies. There are minimum mitigations that need to be considered in designing and implementing the operation other than maintenance of equipment. It is in line with general environmental duty (GED) to require a noise and vibration management plan with certain specific triggers and management strategies. Models may predict compliance with certain levels, but it is best practice to have a contingency management plan to ensure any environmental harm is mitigated.	Prepare a noise and vibration management plan which identifies the existing risks, specific triggers and management methodologies. Development of the management plan must consider information outlined in the administering authority's guideline <i>Application requirements for activities with noise impacts</i> located here .	An Air, Noise and Vibration Management Plan is provided in Appendix P.
8	Appendix C - Noise and Vibration	It is noted as part of the noise assessment, road trains transporting ore from the run of mine (ROM) area to the processing facility, were not included. Although the use of road trains on the road is not regulated by the EA, the operation of the road vehicles on site and on the road forms part of the cumulative noise impacts from the activity. Therefore, it is appropriate to consider the impact from the activity, any possible management strategies, or mitigation measures to be implemented. Section 1.1 of the Noise and Vibration Assessment state the mine has a 10-year mine life (2022 – 2032), however the PRCP states the mine has a 3-year mine life. Additionally, it states that the mining fleet	As road trains will be operated on site, consider and describe the potential impacts to noise environmental values from the activity, consider whether the impacts are appropriate, and describe any possible management measures to be implemented. Confirm the total mine life of the Agate Creek Mine and include appropriate information regarding the associated plant in the EA application.	A revised Noise and Vibration Assessment is provided in Appendix C. Further discussions of road train impacts and mitigative measures is provided in the assessment and in the Supporting Information Report, Section 4.2.

		includes an associated plant, however the associated plant is not described in the EA application.		
Air				
9	Section 4.1.1 Surrounding Land and Sensitive Receptors	It is noted in section 4.1.1 of the EA supporting information that a protected area or critical area is considered a sensitive receptor under the <i>Environmental Protection (Air) Policy 2019</i> . In that respect, the Rungulla National Park and Resources Reserve are considered sensitive receptors, however, were not included as sensitive receptors within Table 15 and the Air Impact Assessment.	Provide an assessment of potential impacts on Rungulla National Park and Rungulla Resource Reserve. If impacts are predicted, include these as sensitive receptors within the supporting information and air modelling and describe the potential impacts and subsequent mitigation measures to be imposed to avoid impacts.	Appendix B has been revised, identifying the Rungulla National Park and Rungulla Resource Reserve as sensitive receptors. Section 4.1 of the Supporting Information Report has been revised.
10	Section 4.1.2.1 Air Quality Objectives and Appendix B – Air Impact Assessment	A chemical characterisation of the ore body and overburden was not included in the Air Impact Assessment to determine the presence of other contaminants such as heavy metals or arsenic. This information is required to confirm there are no additional contaminants such as heavy metals or hazardous chemicals associated with handling of the ore and overburden that should be included in the air quality objectives.	Provide the chemical characteristics of the ore and overburden in regard to potential impacts to air quality. Confirm there are no contaminants such as heavy metals or hazardous chemicals associated with handling of the ore and overburden. If other contaminants are identified, revise the application material accordingly to include impacts, risks, monitoring and mitigation measures to be taken.	Appendix B has been revised to compare the waste rock geochemical characterisation to the EPP Air Limits. Section 4.1 of the Supporting Information Report has been revised.
11	Section 4.1.4 Predicted Air Impacts	Section 4.1.4 of the EA supporting information includes a reference to SEG (2021). The Air Impact Assessment referred to as SEG (2022).	Clarify all information contained within the EA supporting information is based on SEG (2022).	References within the EA Supporting Information Report have been clarified.

12	Appendix B – Air Impact Assessment	Multiple disconnects have been identified between section 4.1 of the EA supporting information and the Air Impact Assessment. This includes: (a) The maximum monthly ROM ore and mining waste presented in Table 19 of the EA supporting information, which are based on SEG (2022), are much smaller than those identified in Table 6 of the Air Impact Assessment. (b) Values presented in Table 20 of the EA supporting information differ from those described in Table 7 of the Air Impact Assessment. (c) The particulate matter, total suspended particles and dust deposition values presented in Table 21 of the EA supporting information for the camping ground and old camping ground differ from those presented in Table 8 of the Air Impact Assessment.	Clarify the total emission values described in Table 19 and explain where these values are derived from. If values from Table 19 are to be used, re-run the air model with these values. Otherwise update Table 19 to reflect the values described in the Air Impact Assessment and revise the supporting information accordingly. Clarify why values presented in Table 20 differ from those presented in Table 7. As stated above, clarify where values in Table 20 are derived from, and if required, re-run the air model with these values. Otherwise update Table 20 to reflect the values described in the Air Impact Assessment and revise the supporting information accordingly. Clarify why values presented in Table 21 differ from those presented in Table 8. As stated above, clarify where values in Table 21 are derived from, and if required, re-run the air model. Otherwise update Table 21 to reflect the values described in the Air Impact Assessment and revise the supporting information accordingly. Update section 4.1 of the EA supporting information with appropriate information once values are clarified. Ensure impacts, risks, avoidance, and mitigation measures are revised accordingly.	The data in the Supporting Information Report has been amended to be consistent with the revised assessment. A revised assessment is provided in Appendix B.
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13	Section 4.1.4.4 Summary of Impacts	Figures presented in section 4.1.4.4 of the EA supporting information appear to depict project only emissions. The Air Impact Assessment assumed the background air quality (existing ambient levels) and were included in the figures provided. Furthermore, the figures did not indicate identified sensitive receptors.	There are differences identified in the modelled ground level concentrations and associated contour figures. Clarify whether the ambient existing levels were included in the figures described in the EA supporting information, or alternatively revise this section accordingly to be consistent with the Air Impact Assessment. Amend the figures to include the identified sensitive receptors.	The figures have been amended to include sensitive receptors.
Water				
14	Section 4.4.8 Consequence category assessment and section 4.4.5 Site Water Balance	Section 4.4.8 of the EA supporting information (Table 70 and 71), and Appendix H details the regulated structure assessment carried out for the water storage dam (WSD) and sediment ponds. The WSD and sediment ponds have a low consequence category for a number of elements, but specifically, the application states the water quality sampling indicates that the site water quality is not likely to meet the threshold for a significant consequence category. To date, limited appropriate water quality data has been undertaken.	Provide evidence to confirm that the water quality of the site is unlikely to meet the threshold for a significant consequence category has been reached, considering the limited water quality data that has been undertaken.	Appendix H has been revised to provide clarity. Waste rock runoff to the sediment ponds is not expected to trigger the criteria for a Significant consequence if discharged to the downstream environment. This is due to the low storage volumes within the sediment ponds, and that geochemical testing suggests the waste rock runoff would generally be below ANZECC livestock limits.

15	Section 4.4.4.3, Discharges and Releases	Section 4.4.4.3 of the EA supporting information states that there is a chance that sediment ponds would release mine-affected waters to the neighbouring environment. However, it is unclear whether direct releases from the mine-affected dam to the receiving environment are planned. Any wastewater, generated during the mining operations, should be classified as mine-affected water, and be managed accordingly. There is a possibility of mixing of mine-affected water generated from the operations with the surface water collected in the sediment dams. The risk of mixing of surface water from the sediment dams and mine-affected water from the storage facilities has not been sufficiently addressed in the application.	Provide a revised risk assessment that considers the risk of mine-affected water from the sediment dams being released into the receiving environment. Provide additional details of the water and stormwater management taking into consideration the adjacent comments.	Water from the sediment ponds will be transferred to the Water Storage Dam. Discharges from the sediment ponds would only occur under emergency situations. The sediment ponds have been appropriately sized to have a spill risk of <20%. The risk assessment in the Supporting Information Report has been revised for clarity.
16	Section 3.3.1.1 Appendix L	Environmental values, including the aquatic ecosystems, are mentioned in section 3.3.1.1 of the EA supporting information. However, the water quality objectives proposed align with livestock drinking water quality (Appendix L). The proposed water quality objectives are not in line with the baseline water quality monitoring data presented in table 8 of the EA supporting information. Whenever possible, site-specific limits should be derived	Update the water quality objectives to align with the most conservative environmental value identified for Agate Creek.	Section 4.4.4.5 and Appendix L have been revised considering 95% species protection level for aquatic ecosystems.

17	Appendix L – Receiving Environment Monitoring Program (REMP)	Sampling of the receiving environment indicated that only 1 out of 5 reference sites and 5 out of 8 impact sites had surface water when sampled. As limited water was available when sampling, it was recommended that 2 reference and impacts sites will be removed, however no additional sites were proposed. Sediment and macroinvertebrates samples were taken from all sites, even when water wasn't present, and it was recommended in section 4.3 that consideration of timing will be need revised to ensure water is present. Furthermore, information from the REMP indicated that the sampled sites surface water quality had exceedances in pH and dissolved oxygen saturation. Interpretations from a single sampling point have their limitations, especially when the samples were collected under nil-flow conditions. A comparison against stock watering limits, particularly for the metal/metalloid concentrations is not supported. Diagram 4 (pg. 10) of Appendix H illustrates the proposed receiving environment monitoring locations, however, these locations are different than those identified in Figure 14 (pg. 39) of the REMP. Furthermore, the naming convention used for the receiving environment monitoring locations are different. Section 2 of the REMP states "All monitoring of the REMP was conducted in accordance with the Agate Creek REM Design 2021 (WTS 2021)", however, this document was not provided as part of the EA supporting information.	Revise the REMP locations and propose alternative sites where water will be present when sampling to demonstrate that the project will not have an adverse effect on the receiving environment. In addition, it is recommended that additional reference points be established at the Agate Creek upstream to where discharges are planned. Undertake further targeted sampling under base- flow conditions, given the ephemeral nature of the creek systems related to the site. This is also applicable to any sediment or macroinvertebrate sampling. The flow conditions at the time of sample collection should be reported. Clarify the naming convention to be used for the receiving environment monitoring locations. Provide WTS 2021 to understand the detailed description of the methodology used to support the REMP.	As the REMP has evolved, monitoring locations have been revised to target the most suitable aquatic habitats and/or to improve safe access during monitoring. An additional two sites were added in the most recent REM event for a better understanding of potential ecological impacts of mining activities. The REM design has been revised and is provided in Appendix L.
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18	Appendix H – Water Management Plan (WMP)	It is noted within the WMP that further tests/reports are required or need to be revised. This includes: (a) Section 3.4.1 states findings of the waste rock characterisation report are not finalised as additional test from Pit 6 weren't included. (b) Static and kinetic leach testing were not available at the time. (c) Potential contaminant sources and contaminants of interest identified within the site need to be revised when more data is available. (d) The WMP states low quality elevation data (gridded satellite data) was used and a detailed site survey to accurately pick up the existing terrain elevation is required. Furthermore, groundwater inflow rates, and water quality data is to be revised. (e) The water balance model is uncalibrated as no measured data or observations related to the proposed water management system were available.	Confirm if these samples from pit 6 have since been included in the waste rock characterisation report and verify if these samples are consistent with those presented in the WMP. Confirm if static and kinetic leach testing has since been achieved. Discuss the results and provide an assessment of the potential changes and revision to the WMP. Revise the potential contaminant sources and contaminants of interest within the site and address the potential issues, risks and measures to be taken and revise the WMP accordingly. Update the WMP with these issues resolved to ensure the validity and accuracy of the WMP.	The Water Management Plan has been revised and is provided in Appendix H. Kinetic testing has been completed and a revised Waste Rock Characterisation Report is provided in Appendix G with results discussed and evaluated in the Water Management Plan.
UWIR				

19	Appendix K – Hydrogeological Assessment	Section 4.1 of appendix K discusses the database searches for groundwater bores to identify the presence of current water bores within and surrounding the mine. It was identified that the 10 bores used in the search did not identify any registered bores within 5km of the project mining area, however the database search excluded the additional 24 bores installed in 2020-2021. This totals 34 bores at the Agate Creek project. In contrast, section 4.5 confirms there are only 24 bores (10 that were assessed and 14 that were installed in 2021). It is unclear how many monitoring bores are installed at the Agate Creek Mine. The hydrogeology assessment assessed 10 monitoring bores which were installed in 2020. Section 4.5 states an additional 14 bores were installed in 2021, with 2 of these bores classed as production bores to provide water for operational activities and camp facilities. It is noted that these 14 bores were not included within the assessment. Section 7.2 concludes the 10 monitoring bores used in the assessment do not meet the minimum requirements for water bores in Australia, therefore it is recommended these bores are decommissioned and redrilled in accordance with the Australian guideline and implemented into the Agate Creek groundwater monitoring program. Section 5.3 states <i>“groundwater elevations have the potential to be significantly impacted by the bore design and construction. Each bore in the Agate Creek network is screened at the bottom of the whole, with the bentonite seal placed at the bottom of the surface casing. Consequently, water may enter the screened interval from any point below the bentonite</i>	Clarify how many monitoring bores are currently present at the Agate Creek Mine. Revise the hydrogeology assessment with the additional 14 bores constructed and determine if the results of the assessment are consistent with those previously discussed. Provide a discussion of how data from these bores might impact the conceptualisation of the groundwater system and the prediction of impacts. Address the possible issues of concern regarding the construction and installation of the 10 monitoring bores. (Refer to point 10 of Attachment 2). Provide details on the production bores and how these impact groundwater resources. Revise the hydrogeology assessment with the recommendations for the production bores considered to accurately determine the groundwater take volumes, impacts to water levels and/or quality, and impacts of drawdown. Provide further clarification on this statement and demonstrate how it was determined that the zone of influence would be restricted to within the mining lease boundary for several decades. Elaborate on this statement and/or provide the numerical groundwater model used to support this claim. Provide details on the specifics required for the pits and incorporate	As discussed in Section 3.3.3.2 as well as Appendix K, 22 monitoring bores exist, installed in 2020-2021. Additionally, there are two production bores also established within this time; the production bores are not part of the groundwater monitoring bore network. The Hydrogeology report has been revised and is provided in Appendix K.
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		<i>seal, therefore skewing the calculated groundwater elevations. Furthermore, due to the network construction design, a level of uncertainty remains in terms of groundwater elevations and the direct relationship to the screened lithology." It is noted in section 4.4.11.3.3 of the EA supporting information that Savanna Gold Ltd is aware of this issue, however, are committed to conduct an investigation into the bore integrity upon approval of the EA Application and if necessary, these bores will be re-established. Investigations are required before approval to assess the accuracy of the groundwater assessment.</i> <i>Limited information was provided for the production bores with recommendations from the hydrogeology assessment concluding each production bore must be fitted with a flow meter to accurately measure take volumes as this will provide additional scope for assessment when the annual groundwater reviews are completed to determine whether any impact has occurred to water levels and/or quality. Specifics relating to the extraction points must be identified to ensure monitoring bores are screened within the same aquifers to accurately assess impacts of drawdown.</i> <i>The executive summary states "The groundwater assessment for the Agate Creek mine expansion found that the risk to groundwater systems was low, with poor hydraulic conductivities restricting the zone of influence to within the mining lease boundary for several decades." It is unclear how this determination was reached as limited supporting information was provided within the hydrogeology assessment. To note, there is a reference in section 5.2 to utilising the</i>	these into the revised hydrogeology assessment. Provide details on the monitoring methodology and confirm if changes have been made to ensure an accurate assessment of recharge can be carried out. With the information required above, revise the underground water rights impact report in accordance with section 376 of the Water Act 2000 and section 126A of the EP Act.	
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		<i>methodology of Marinelli and Niccoli (2000) for the estimation of groundwater inflow to the pits of the mine site, however, beyond that, little information is provided as to how it was determined that the zone of influence would be restricted to within the mining lease boundary for several decades.</i> <i>In section 1.1 it states, "Refinement of the existing numerical groundwater model to allow the mining effects on groundwater levels to be presented for the first three years of mining." It is not clear how this wording fits the situation when there is no numerical model mentioned within the report.</i> <i>It is noted there is no discussion regarding the dimensions of the pits, when they will be constructed and how this will impact groundwater. These details are required to be linked into any discussion of where the zone of influence would extend to.</i> <i>Section 5.3 states that the monitoring methodology requires changing to allow for an accurate assessment of recharge values for individual bores.</i>		
Land				
20	Section 4.3.1 Overview of Land Impacts	The EA supporting information does not include a quantity and quality of vegetation to be excavated or removed as a result of the mining activity. This information is important as it informs the management practices to be implemented to ensure the land will be managed appropriately and potential impacts from removal are addressed and avoided.	Describe the quantity and quality of vegetation to be disturbed as a result of the proposed mining activity. Describe the measures to be taken to ensure correct removal, segregation and management of the removed vegetation to demonstrate potential impacts are identified and avoided where possible.	Sections 2.3.3 and 4.3.1 have been revised with additional detail regarding the quantity and quality of vegetation proposed to be disturbed.

21	Appendix E – Terrestrial Flora and Fauna Baseline Study	Section 6.2 of appendix E states at the time of the flora and fauna baseline study, no proposed disturbance footprint for future development was available. Section 4.3.9.9.2 of the EA supporting information states that sites won't be re-survey. Section 6.6 of appendix E describes the conservation significant flora species. The report states that these species have a moderate to high likelihood of occurring within the project area, however, based on the conclusion that none of the conservation significant flora species were identified in the survey, it is recommended the activity will not cause an impact on these species. Section 7.1 states that regional ecosystem (RE) 2.10.5a likely provides for the highest ecological value of the project area due to its water availability during dry season, and the sandstone features it retains. Within the report it states that sandstone formations provide connectivity corridors for endemic species, including the gilbert ground gecko and silver-eyed velvet gecko, and therefore it is recommended that development within these areas is avoided, where possible to reduce impacts the biodiversity values. At the time of the study, the landscape fragmentation and connectivity tool which assists in identifying and quantifying a significant impact on connectivity for individual impact areas, was not used as no proposed disturbance was given at the time.	As the flora and fauna survey did not consider the proposed disturbance footprints, provide either a field validated survey within the proposed disturbance footprint or demonstrate that the current field survey is reflective of the flora and fauna community within the areas to be disturbed. Provide an assessment of the likelihood of these species occurring within the proposed disturbance footprint and describe the management practices to be implemented to avoid significant impacts to these conservation species. Describe if the proposed mining disturbance will impact RE 2.5.10a and the sandstone formations. If so, describe the potential impact to the local biodiversity values and management strategies to be employed to avoid/ reduce impacts to these values.	The Agate Creek ML was sufficiently and extensively surveyed prior to knowing the proposed expansion layout. The survey also meets the techniques described in the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Section 4.3.9 describes how the flora and fauna surveys is reflective of the communities within the proposed disturbed areas. Section 4.3.9.5.1 describes findings of RE 2.5.10a and the anticipated impact to the sandstone formations.
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22	Appendix F - Significant Residual Impact Assessment	Appendix E involved a ground-truthed survey over the project area, however, at the time of the survey, the proposed disturbance footprint was not known. The areas described as matters of state environmental significance (MSES), specifically, vegetation intersecting a watercourse, was not surveyed. This information is critical in confirming the extent, location and nature of the MSES and the potential impact of the activity on the MSES. The ground-truthed information will appropriately inform the significant residual impact assessment. Limited information is provided on disturbance area 2 (10m haul road intersecting MSES) within the application. Further information is required regarding the road and its construction across the creek (i.e., construction of road (dam break, bridge, gated, etc.) and potential impacts on flow and aquatic ecosystems, etc.). It is noted the aquatic field survey (appendix J) provides information on the aquatic ecology of the site, however noting that water was not present at the time of the survey and did not talk about its relationship with the impact from the haul road to cross Agate Creek. Section 4.3.8.6.1 of the EA supporting information and appendix F identifies the disturbance areas undergoing a significant residual impact assessment. It is noted that disturbance area 3 includes sediment dam 3A, pit 1 and the southern section of pit 2. It is unclear what sediment dam 3A is. Furthermore, there is an unidentified sediment pond in the top north-east of the mining lease which intersects the MSES.	Provide either a field-validated survey or demonstrate that the current field survey is reflective of the vegetation and MSES values within the proposed disturbance footprint. Confirm that vegetation descriptions within these areas match the descriptions contained within appendix F and E and undertake a significant residual impact assessment. Additionally, include a map or update Figure 1 (appendix F pg. 7) to demonstrate where the significant residual impact assessment is carried out in relation to the disturbance footprint. Provide further details on disturbance area 2 such as the construction, potential impacts and risks to environmental values, and mitigation measures to be implemented. Provide an assessment whether the construction will affect the aquatic ecology of the site. Clarify what sediment dam 3A and unidentified sediment pond in the top north-east of the mining lease, and if required, appropriately assess the sediment pond in the significant residual impact assessment.	The surveys conducted were sufficient and extensive across the ML including within the proposed disturbance areas as discussed in Section 4.3.9. The revised Significant Residual Impact Assessment Technical Memorandum is provided in Appendix F which discusses the assessments and findings in relation to the proposed disturbance areas. The section of haul road that intersected RE 9.3.13 was an artifact of the original design work carried forward in the spatial information. The northern section of the haul road has been amended to meet with an existing track prior to RE 9.3.13. This detail has been added to Section 4.3.9.5 of the Supporting Information Report.
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Waste				
23	Section 4.5.3 Waste Treatment Process	Section 4.5.3 of the EA supporting information discusses that waste rock is stored as per section 4.3.5 and no treatment is required. Upon assessment, section 4.3.5, does not include information surrounding waste rock storage.	Provide further information on how waste rock will be stored appropriately. Discuss the potential impacts to environmental values, risks and mitigation measures to be implemented to ensure waste rock is stored suitably.	Section 4.5.4 of the Supporting Information Report has been revised to provide additional information on waste rock storage. Section 3.2.2 of the Waste Rock Dump Management Plan (Appendix G) has been revised to provide additional information on waste rock storage, taking the kinetic testing results into consideration.
24	4.5.3.1 Waste Transport	Section 4.5.3.1 of the EA supporting information discusses how waste will be transported on site. Limited information is provided in terms of how vehicles, tanks, containers and locations for storing and/or transporting waste are appropriate. For example, section 4.5.4.2 states <i>“General wastes, oils & greases, sewage, scrap metal and vehicle batteries will all be produced by everyday mining and ancillary activities. These wastes are to be temporarily stored within the mine infrastructure area.”</i> The ROM pad used to store waste rock (ore) and roads trains to transport have not been included in the information.	Describe how vehicles, tanks, containers and locations are appropriate to transport and/or store waste. Include a description of the construction material to be used, size of containers, if necessary, and securing/sealing/covering measures to be used to prevent escape/spillage of waste. Describe the mitigation measures, maintenance provisions and handlings measure to be employed to ensure contamination of contaminants to receiving environment is avoided.	Section 4.5.4.1 and 4.5.4.2 of the Supporting Information Report has been revised.

25	Section 4.5.4 Management of Waste Impacts	Section 4.5.4.2.1 of the EA supporting information states “<i>The waste rock disposal areas (Figure 3) have been designed to ensure that the receiving environment is not impacted by the material...., The small percentage of PAF material will be appropriately blended with waste rock containing an excess of acid-neutralising capacity (ANC) to minimise the risk of any PAF waste rock (C&R Consulting, 2022).</i>” Figure 3 depicts the proposed expansion layout and does not provide information on how the WRD disposal areas have been designed to ensure the receiving environment is not impacted by any contaminants within the NAF material. Furthermore, no information has been provided regarding the percentage of NAF-PAF material to be used to ensure PAF material is encapsulated correctly. In the design of the WRD (section 4.5.4.3 and Appendix G), it is noted that NAF material will be utilised as a liner at the base to prevent contaminant migration into the receiving environment, followed by PAF material placement and then NAF again to encapsulate the PAF. Section 4.3.9.6.4 describes how sample selection will be undertaken to provide sufficient samples for each lithological unit and mass of material to be extracted from the open pit. There is no information regarding the volume of PAF material expected on site and how this will be managed appropriately to ensure contamination is not breached. Section 4.5.4.3.1 discusses how the waste rock dumps will be visually inspected weekly to evaluate the performance and condition of the facilities. SGL state “<i>The toe sections of the waste rock dumps shall be assessed for seepage, and if seepage is observed, the</i>	Revise the Waste Rock Management Plan and provide further information to support the adjacent statements. Describe how much PAF material is expected to be on site and describe the volume of PAF material to be encapsulated in each WRD. Describe how many samples will be taken to ensure accurate validation of sampling takes places and describe the mitigation and management measures to be implemented to ensure contaminant migration is avoided. Provide details on the risks to the receiving environment if seepage occurs and include a description of the management measures to be taken if seepage is recorded.	The Waste Rock Dump Management Plan has been revised and is provided in Appendix G.
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		<i>specific location and flow rate will be recorded.</i> ” No information is provided regarding the risks of seepage to the receiving environment or management practices to be implemented if seepage occurs.		
Item #	Relevant section (proposed PRC plan)	Matter	Information Request	
Project Planning				
1	All sections	It is noted throughout the EA application and the PRC plan, Mineral Development License (MDL) 402 is discussed and illustrated, however MDL402 is held under EA EPSX00165413.	Remove MDL402 from all aspects within the PRC plan as it does not relate to the new EA Application or PRC plan. Specifically, the final site design maps and spatial data.	MDL402 has been removed from the plan and spatial data.
2	3.1 Project Description	As discussed in attachment 1, mining disturbance footprints require clarification.	Clarify all mine disturbance footprints proposed for the Agate Creek Mine project and demonstrate all mine related disturbance have been accounted for in the PRC plan. Ensure disturbance areas discussed in the EA application remain consistent to those in the PRC plan. Revise the spatial imagery to identify any changes to or additional mine disturbance footprints.	Figures and text (Section 3) have been amended to provide clarification.

3	Section 5. Design for Closure	As stated in the Not Properly Made Notice, <i>"The proposed PRC plan must include a detailed description of the design for closure which demonstrates how progressive rehabilitation and closure has been considered in the design of the mine site. All relevant design for closure information is required in accordance with section 126C(1)(j) of the EP Act and meet the requirements of section 3.1 of the PRCP guideline."</i> Section 5 of the current PRC plan document does not adequately provide the requested information. However, some of the requested information is provided in separate reports/Appendices. Pit 5 and Pit 6 are proposed to remain unfilled and a PMLU water storage (PRC plan page 64 Section 6.2.2). Pit 5 and Pit 6 depths are estimated to be 20 and 60 m deep respectively (Figure 5 page 585 of PRC plan). Surface topography shows land slopes in an easterly direction towards Agate Creek. Current hydrogeological assessment may not accurately depict water flow out of the pit and if direction of flow is towards Agate Creek. Therefore, it is unknown if water from Pits 5 and 6 will impact water quality and quantity in Agate Creek. Further hydrogeological investigations are required to quantify the water balance of these two long term water sources. The PRC plan is lacking information relating to the predicted duration of each of the relevant activities proposed for the mine site. This information is important when determining how and when to carry out rehabilitation and closure activities.	Revise the section of the PRC plan titled <i>"Design for Closure."</i> Please demonstrate the design for closure section is revised in accordance with section 126C(1)(j) of the EP Act and meet the requirements of section 3.1 of the PRCP guideline. Revise hydrogeological assessment of the site with a focus on the impact of Pit 5 and Pit 6 on groundwater and seepage towards Agate Creek. The assessment must evaluate if water quality in Agate Creek will be adversely affected by water from Pit 5 and Pit 6. Include information relating to the duration of each of the relevant activities proposed for the mine site.	The PMLUs for Pits 5 and 6 have been revised. All pits will be backfilled and returned to native ecosystem. This has been reflected throughout the PRC Plan and Schedule.
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4	Section 5.3.1 Historical Exploration Disturbance Appendix I: Agate Creek Rehabilitated Disturbance Areas	Appendix I and section 5.3.1 of the PRC plan state a number of historic exploration tracks and other disturbance areas (rehabilitated WRD) have undergone rehabilitation activities and can be removed from the total disturbance area of the EA. A total of 2.783ha has been rehabilitated for exploration tracks and 0.93ha for the WRD. At this point, SGL have not applied for progressive certification to demonstrate these areas have been rehabilitated successfully.	As progressive certification has not taken place for the disturbed areas of the exploration tracks and WRD, please include these disturbance areas within the PRC plan and update the total disturbance areas described in the PRCP schedule.	Exploration disturbance is rehabilitated in accordance with the Code of Environmental Compliance for Exploration and Mineral Development. Exploration disturbance has been removed from the PRC Plan and schedule.
5	Spatial information	The spatial information submitted requires further consideration and refinement. Relevant activities discussed in Table 34 have not been included in the spatial data (i.e., topsoil dump, ROM stockpiles, laydown yard, exploration drill pads, etc.). Please include all relevant activities within the spatial information. SGL states in the Not Properly Made Response, "There are no sensitive receptors identified within the tenement." However, multiple sensitive receptors are identified within the EA Application, including the camp ground, homestead, Rungulla National Park and Rungulla Resources Reserve, MSES values, etc.	Revise the current spatial information to ensure the following are included as identified in the EA application: · all mining domains and disturbance footprints (see Point 2 above) · mining activities (topsoil stockpiles, ROM, exploration drill pads etc) and all sensitive receptors	The spatial information has been revised.
Post Mining Land Use				

6	Appendix D - Compensation Agreement	Section 6.1.1 states “A <i>Landholder agreement is in place with Howlong Station to retain Pit 5, Pit 6, and water management structures for water storage, as well as some access tracks. A copy of the agreement is provided in Appendix D.</i>” Section 9.1.8 of the PRC Plan states, “<i>an allowance has been made to retain four additional sediment control post mine closure.</i>” A review of the ‘compensation agreement’ between the landowner and SGL under the <i>Mineral Resources Act, 1989</i> is not explicit in detailing the exact infrastructure to be retained by the landowner. Furthermore, section 5.2 of the agreement gives effect to clause 5.1 which implies the infrastructure to be retained. At this point, no further agreements have been supplied.	Provide an up-to-date land holder agreement, which explicitly details which infrastructure is to be retained by the landowner. For infrastructure to be retained by the landholder please include information relating to the ongoing maintenance requirements needed and management of residual contamination required. Please refer to section 3.2 and 3.6.5 of the PRCP guideline and section 126C(1)(d) of the EP Act.	The PRCP has been revised. The only infrastructure to be retained is the preexisting land holder tracks. These tracks are clearly defined on Attachment 2 of the agreement. This figure is also reproduced as Figure 1 within the PRCP.
7	Section 6. Post Mining Land Use	Table 18 describes the PMLUs attributed to the RAs. It is noted this table states RA5 (water storages) will have a PMLU of water storages, however the PRCP schedule states RA5 will have a PMLU of low intensity grazing. Furthermore, throughout the PRCP RA5 contains the water storage dam and sediment ponds and will have PMLU of water storages, however figure 30 depicts RA5 having a PMLU of low intensity grazing. The plan states that the pits 5 and 6 will provide a consistent water source for use by graziers, however, will have fences and a 2 metre (m) high abandonment bund installed to restrict human and cattle. The restriction of humans/cattle does support the proposed post mine land use. Section 6.2.3 RA3 – Waste Rock Dumps (page 66 of PRCP) states the WRD will allow	Please revise the PRCP schedule and PRC plan to correct RA5. Please revise the PRC plan to address why the installation of a fence and bund is appropriate to support the PMLU of RA2. Revise the PRCP to include: · Details of the fence design · Area of RA3 to be fenced · Long term management of the fence · Impact of fence on wildlife corridor and management strategy to allow ecosystem connectivity if the fence remains a permanent structure	The PRC Plan and schedule have been revised.

		vegetation to naturally establish. This area will be fenced to exclude cattle (Section 6.2.3.5) however no information is provided on whether the fence will remain in- place or be removed at some point in time, or if the final end-use of RM3 is to act as a wildlife corridor within the site (see Section 9.1.15 Landform Design).		
8	Appendix I: Water Management Plan (WMP) (EA Application)	Section 4.4.2 of the EA application supporting information states that pan evaporation far exceeds rainfall with a rainfall total of 6293.4 millimetres (mm) and an evaporation total of 25,388.7mm over 10-years from 2012 to 2022. The difference between rainfall and evaporation favours extended periods when RA2 (Pits 5 and 6) and RA5 may be dry and no longer act as a water storage PMLU. Salt accumulation due to evaporation may result in increased salinity of the water eventually leading to surface salting following 100% water loss. Progressive evaporation may result in water quality exceeding ANZECC/ARMCANZ (2000) Guidelines for Livestock Drinking Water Quality. Table 33 in Section 9.1.11.2 Contaminant Transport and Fate (page 89) states that any uncontrolled release of water during a significant wet weather event may be assimilated within Agate Creek. What is the likelihood of the assimilation capacity being exceeded and contaminants moving offsite? Section 9.1.11.5.2 Post-Closure and Long-Term Management Requirements (page 91 of PRCP) state that the final landforms of the domains are to be free-draining and non-polluting achieved through sufficient capping, reshaping to low gradient structures, and revegetation. For the waste rock dump	The surface water management plan should be revised to address water quality in response to changing water volume changes and if ANZECC/ARMCANZ (2000) Guidelines for Livestock Drinking Water Quality will be exceeded. The water balance model should be revised and re-run to address these concerns.	The water balance has been recalculated and is presented in the Water Management Plan. The Water Management Plan has been revised and is provided in Appendix E of the PRC Plan. With the revised PMLUs, no water storage structures will be retained on closure.

		landform (RM3) this landform should be constructed so the cover is water shedding and restricts rainfall infiltration. Eliminating water entry will minimise the potential for oxidation/mineralisation of PAF within this landform.		
		Section 10 Risk Assessment identifies water quality exceedance as a risk (RM15) but does not address how this will be managed. The post-closure water balance assessment (Section 6 of Appendix F Water Management Plan) recommends revision of the Plan in conjunction with water quality information. Section 6 Post-Closure Water Balance Assessment (page 1788 of Supplementary PRCP Report) modelling assumed that pits are empty at the commencement of the modelling scenario. However, section 9.1.11.6 of the PRC plan states that dewatering of Pits 5 and 6 is unlikely to be necessary. It is unclear if the model assumption and actual field conditions are contradictory and if assuming an “empty” pit will influence model outcomes.	This revision should address non-compliance if RM2 and/or RM5 do not satisfy final end use criteria as a water storage facility. The water management plan and associated modelling must reflect whether the pit being empty or not influences model outcomes and therefore the spill risk.	The water balance has been recalculated and is presented in the Water Management Plan. The Water Management Plan has been revised and is provided in Appendix E of the PRC Plan. With the revised PMLUs, no water storage structures will be retained on closure.
Community Consultation Plan				

9	Section 5.5 Community	As stated in Not Properly Made Notice state, <i>“Section 5.3.2 of the PRC plan identifies that a community consultation plan will be prepared, and a register will be developed and updated throughout the life of mine, however, no plan or register was provided. A community consultation plan is required as part of the proposed PRC plan pursuant to section 126C(1)(c)(iii) and (iv) of the EP Act and must meet the requirements of section 3.5 of the PRCP guideline.”</i> SGL submitted a community consultation plan (appendix H), however, the plan to date has not been completed, nor have relevant communities or stakeholders been engaged with.	Please revise the community consultation plan in accordance with section 126C(1)(c)(iii) and (iv) and section 3.5 of the PRCP guideline. Please demonstrate a community consultation plan is in effect and the project has been consulted with the community, public and stakeholders.	A Community Consultation Plan is provided in Appendix G and the Community Consultation Register is provided in Appendix I.
Rehabilitation and Management Methodology				
Item #	Relevant section (proposed PRC plan)	Matter	Information Request	
10	Section 4.5 Hydrogeology	Section 4.5 is lacking in detailed information on the site hydrogeology. The data forming the basis of the hydrogeological assessment may have been compromised by past bore installation and construction issues. The report by C&R Consulting (Appendix G of PRCP) concludes <i>“The groundwater assessment for the Agate Creek mine expansion found that the risk to groundwater systems was low, with poor hydraulic conductivities restricting the zone of influence to within the mining lease boundary for several decades”</i> . However, the hydrogeology assessment provided in the PRCP is based on the information from 10 bores previously	Revise hydrogeological assessment to: a) Include new information from the additional 14 bores installed and incorporate this information with existing data. b) Address possible issues of concern with the existing data for the 10 bores in terms of: i. Installation and sampling protocol ii. Aquifer hydraulic properties such as hydraulic conductivity and transmissivity iii. Aquifer water chemical	A revised hydrogeological assessment is provided in Appendix F.

		installed by Lait (2020). An additional 14 bores have since been installed but the data was not included in the current assessment (page 663 of PRCP). The report by C&R Consulting state that of the 10 previously installed bores <i>"However, it should be noted that groundwater elevations have the potential to be significantly impacted by the bore design and construction. Each bore in the Agate Creek network is screened at the bottom of the whole, with the bentonite seal placed at the bottom of the surface casing. Consequently, water may enter the screened interval from any point below the bentonite seal, therefore skewing the calculated groundwater elevations. Furthermore, due to the network construction design, a level of uncertainty remains in terms of groundwater elevations and the direct relationship to the screened lithology."</i> The C&R Consulting report (page 668 of PRCP) also states the location of the bore screened intervals may not reflect the hydraulic properties of the water-making beds, and the low hydraulic conductivity values presented in Table 6 (page 668) would only be representative of the solid rock formation. This implies the low hydraulic conductivity values do not reflect that of the transmissive properties of the water-bearing geology of the site. C&R Hydrogeology report (Appendix G of PRCP) states (page 670 of PRCP) that "Further monitoring and a change of monitoring methodology is required to allow for an accurate assessment of recharge values for individual bores." Figure 10 (page 670) shows albeit small response to rainfall in bore CCWB521	composition and potential impact on the receiving environment iv. Potential for hydraulic connection between Agate Creek and underlying groundwater c) Confirm groundwater flow paths and velocity onsite based on past and new data. Decommission existing 10 bores if new data confirm issues of concern that render the data invalid	
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		(ground level at 421 m AHD) with a screened interval of 67-73 m BGL assumed to be through recharge. CCWB519 (ground level at 517 m AHD) is located highest in topographic elevation with a screened interval at 79-85 m BGL and is highly responsive to rainfall. This raises a question as to why does the deeper bore respond more quickly to rainfall? This may reflect poor bore construction with preferential flow (i.e., rapid recharge) to depth within the bore annulus. Table 7 (page 675 of PRCP) provides ionic composition and water type for each groundwater bore. Data is presented as a Piper trilinear diagram in Figure 14 (page 676). Waters from similar geological formations exhibit different ionic composition and classed as different water types. Furthermore, variations in soluble aluminium concentrations may reflect elevated colloidal content of sampled waters due to sampling technique (page 677). These anomalies in groundwater composition may be due to poor installation and/or sampling techniques. Table 7 (page 30 of PRCP) reports chemical composition of groundwater for metals but not standard cations (Ca, Mg, K, Na) and anions (Cl and SO₄). This information should be included to allow water type to be identified. This data can be accessed from C&R Consulting report but its validity is questionable. New data should be included for comparison.		
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11	Section 8. Voids in Floodplains	The PRC plan flood modelling predicts that floodwaters from Agate creek during events will not intrude on the voids and majority of the floodwaters are confined to the Agate creek floodplain. Figures 17 and 19 of the PRC Plan predict the south of ML100030 will be inundated with water during times of flood. This area is where the ROM and mine infrastructure area is proposed to be positioned. Surface topography (Section 4.2) also confirms higher elevations to the west of the ROM suggesting surface water flows may occur through the mine lease from west to east and through the ROM infrastructure during extreme rainfall events. Table 24 (page 89 of PRCP) lists likely contaminants associated with the ROM Pad as metals although hydrocarbons cannot be discounted. These contaminants can be mobilised in the environment either dissolved in runoff water or attached to suspended sediments. This potential environmental risk is not addressed in Section 9.1.11.2 Contaminant Transport and Fate or in Section 10 Risk Assessment.	Revise the PRCP to confirm that the location of the ROM Pad and associated infrastructure will not be impacted by flood waters. Revise the PRCP to confirm that the location of the ROM Pad and associated infrastructure will not be impacted by surface water runoff from the western side of the mine lease. Revise the PRCP to demonstrate contaminants associated with the ROM Pad and infrastructure will not be mobilised by flood waters and/or surface runoff.	No voids will be retained after closure. Additional detail regarding the ROM has been provided in Section 3.5.10
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12	9.1.4 Soil and capping material assessment	Table 20 displays a material balance estimate for each proposed RA, specifying how much topsoil and NAF material is required. It is noted that waste rock will be utilised to fill RA1 (Pits 1-4), and topsoil will be required to backfill RA3 (waste rock dumps), RA4 (mine infrastructure area) and RA6 (exploration). The amount of topsoil available is unclear. Table 21 states there is a total estimate of 16,539m of topsoil available, noting that additional topsoil is available outside of current mining domains and may be accessed in future via borrow pits. Table 20 states the topsoil required for rehabilitation is 70,470m³, however 1,076,210m³ is available, noting available topsoil across whole of ML100030 which may be utilised via borrow pits for use in rehabilitation. Additionally, section 9.1.15.5 states the estimated topsoil reserve is 124,000m³.	Please revise section 9.1.4 PRC plan in accordance with section 126C(1)(e) and (i) of the EP Act and section 3.6 of the PRCP Guideline. Please confirm the: (a) The quality and quantity of available resources on site to be used in each RA, ensuring to advise how NAF material will be utilised and how much PAF is expected to be encapsulated. (b) Location and accessibility of cover material and where stockpiles and borrow pits will be located. (c) Assessment to determine the need for ameliorants and fertilisers for use in rehabilitation activities. (d) Relationship between soils and vegetation ecosystems for the proposed PMLUs to support the PMLU.	The topsoil balance has been revised for clarity, in Section 3.5.3. Additional detail regarding ameliorants and fertiliser is provided in Section 3.5.6 A Topsoil Management Plan is provided in Appendix J.
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13	Section 9.1.13 Waste Characterisation	Page 94 Section 9.1.13.3 Kinetic Leach Column Tests – - only four samples were selected for KLC analysis. This represents only a small sample size and there is no indication of how representative these samples are of the total range of waste rock materials. Section 4.5.1 (Table 19 of Appendix B: Waste Rock Characterisation) presents the trend in pH for KLC tests (page 192 of PRCP) but do not indicate if any of these samples are examples of PAF materials? If not, what was the basis for their selection? - Page 95 Section 9.1.13.4.1 states pH ranged from pH 4.5 to pH 8.8 with a median pH of 6.7. This represents a range from very strongly acid to strongly alkaline, with a median of neutral pH. What is the basis for the stated classification of pH 4.5 as slightly acid and pH 8.8 as slightly basic? - Page 95 Section 9.1.13.4.1 states the pH values at high solid to solution ratio to be a worst-case scenario. This ratio is expected to occur under field conditions as pore water moves within the soil profile. Therefore, sub-surface water flow will result under conditions of high solids to solution ratios and the “worst-case scenario” would be expected. - Page 98 states “Of the 260 waste rock samples, 45 have positive NAPP values. However, most of these positive samples are in the uncertain range, with only three samples having values greater than 10. These are associated with either Pit 2 or Pit 6.” Pit 6 proposed final end use is a water storage (Table 18, page 61 of PRCP). Spatial information indicates groundwater flow is towards Agate Creek but the likelihood for	Revise the PRCP to state what was the basis for selecting the four samples used in Kinetic Leach Column tests and identify if any of these are PAF. Revise the PRCP to classify pH condition more accurately or provide a reference that supports the classifications presented in the PRCP. Revise PRCP assessment of environmental harm to include situations where the pore water exhibits chemical characteristics expected at high solid to solution ratios and potential impact on environmental receptors. The PRCP must be revised to confirm whether PAF in Pit 6 has any potential to impact Agate Creek. Consideration of the worst-case scenario under high solid to solution ratio must be given in this revision. Revise the PRCP to estimate the volume of PAF material likely to be present on site. These estimated volumes of PAF per Pit should be included in Table 28 (page 100 of PRCP). Revise the Waste Rock Management Plan based on PAF estimated volumes if necessary.	Section 3.5.12 has been revised to provide further justification. Section 3.5.12.4 has been revised for clarity. Section 3.5.10.4 has been revised. The PMLU for Pit 6 has been revised since the original submission. Section 3.5.10 has been revised. The Waste Rock Characterisation Report has been revised and is provided in Appendix B. The Waste Rock Management Plan has been revised and is provided in Appendix L.
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		acid water moving to Agate Creek is uncertain until the revised hydrogeological assessment is complete. · Page 98-99 Net Acid Generation (NAG) Test states “Five samples are certainly PAF, having a NAG (pH) less than 4.5 and a positive NAPP value.” Also, 11 samples were categorised as PAF, and although these make up <14% of the 260 samples analysed, the volume of material categorised as PAF was not quantified. Section 9.1.14 Management of waste Rock (page 102) outlines the strategy for classifying and segregating PAF waste rock during site operations. Again, there is no indication of the volumes of PAF that may be expected and managed. An estimation of this volume should be provided to allow assessment of the proposed management plan.		
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14	Section 9.1.15 Landform Design	The Waste Rock Dump (RA3) represents a likely source of potential contamination due to the housing of PAF within its structure. There are concerns with the construction of this landform: - Section 6.2.3.3.1 method of construction (page 66) states PAF will be placed on a compacted layer of NAF but details on landform engineered design, construction, and mitigation strategies to ensure no PAF seepage to the surrounding environment are not provided. Given this landform is housing PAF, specific criteria on method of compaction and compaction lifts (e.g., 0.5 m), method of compaction and permeability testing during landform construction, surface cover hydraulic characteristics, and strategies for managing potential drainage/seepage is required for this landform. - Section 6.2.3.1 Overview (page 66) states the Waste Rock Dump will be topsoiled but not seeded. The landform will be allowed to develop a vegetation cover naturally from the topsoil seedbank. To maintain physical integrity of the surface cover, deep-rooted species must not be part of the species of the emerging vegetation. - Depending on the time for seed germination, establishment and developing an effective rooting structure, the topsoil will remain exposed and susceptible to erosion particularly during high-risk times of the year (December – March; see Table 13 page 43 of PRCP). The dominant soil types (Page 42 Table 12) are also classed as having moderate susceptibility to erosion, with moderate to high hazard rating for Dec – Mar (Table 13 page 43).	PRCP to be revised to include details on - compaction testing per lift (e.g., 0.5 m) - permeability testing (saturated hydraulic conductivity = 10^{-9} m/s) per lift - testing to ensure the surface cover is water shedding to restrict rainwater contacting encapsulated PAF - strategies for managing potential drainage from the base and/or lateral seepage through the external embankment. The PRCP revegetation strategy for the waste rock dump landform to be revised to state that deep- rooted species will not be part of the established soil cover vegetation mix and strategy to remove these species outlined. PRCP to be revised to include a detailed description on erosion risk during the early stage of the rehabilitation process and provide strategies to minimise this risk until the vegetation cover is established. Revise PRCP (Section 9.1.15) to correct information for proposed PMLU for the RAs. Revise PRCP (Table 29) to correct information for proposed PMLU for the RAs. Revise PRCP (Section 9.1.15.6) to include values for RUSLE input parameters and justification for selecting these values. Provide a justification for	The PMLUs for RA1 and RA2 have been revised. The Waste Rock Management Plan has been revised and is provided in Appendix L. Section 3.5.8 has been revised. Section 3.5.6 has been revised. PMLUs have been clarified throughout. Additional detail is provided in Section 3.5.5
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		· Section 9.1.15.1 Determining Final Landform Design (page 103) states the PMLU for RA1, RA3 and RA6 as native ecosystem and RA4 and RA6 as low intensity grazing. Table 18 (page 61) identified RA1 and RA3 only as native ecosystem PMLU, and RA4 and RA6 as low intensity grazing. The information in Section 9.1.15.1 needs to be corrected. · Table 29 (page 103) information for RA3 reflects criteria relevant to grazing (i.e., seeding with pasture species). The criteria are expected to the same as for RA1. Needs to be corrected. · Section 9.1.15.6 Landform Stability (page 110) estimated soil loss using RUSLE. The input data used to estimate soil loss is not provided or evidence of the calculations. This input information for each of the parameters of the RUSLE must be provided to evaluate their suitability for the site conditions. Calculations presented in Table 31 state soil loss values of 148 – 353 t/ha/yr and are rated as low to medium risk based on the publication IECA (2008). Although there are no specific guideline or criteria for acceptable soil loss the published literature indicates soil loss rates much lower than 100 t/ha/yr are acceptable.	considering the calculated soil losses to be low – moderate. This justification should be based on annual soil loss and stability of the WRD landform (RA3).	
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15	Section 9.1.11 Water Management	Section 9.1.11.2 Contaminant Transport and Fate (page 89) states that any uncontrolled release of water during a significant wet weather event may be assimilated within Agate Creek. What is the likelihood of the assimilation capacity being exceeded and contaminants moving offsite? Section 9.1.11.5.2 Post-Closure and Long-Term Management Requirements (page 91 of PRCP) state that the final landforms of the domains are to be free-draining and non-polluting achieved through sufficient capping, reshaping to low gradient structures, and revegetation. For the waste rock dump landform (RM3) this landform should be constructed so the cover is water shedding and restricts rainfall infiltration. Eliminating water entry will minimise the potential for oxidation/mineralisation of PAF within this landform.	Revise PRCP to estimate · the assimilation capacity of Agate Creek and · what is the likelihood of the assimilation capacity being exceeded and contaminants moving offsite? Revise PRCP to ensure the design of the WRD landform is water shedding and eliminates/restricts infiltration into and movement within the landform.	PLMUs for the waste rock dumps and pits have been revised since the original submission. Section 3.5.14 has been revised.
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16	Section 9.19 Revegetation	Table 22 of the PRC plan defines the vegetation seed mix to be used for the RAs if natural revegetation does not occur. This table does not include species for RA2 and RA6. The PRCP schedule will use monitoring and sampling information from analogue/reference sites as milestone criteria (Table 23), however these sites have not been identified (Section 11.2.1 of PRCP). Section 6.6.2 states a potential environmental benefit of RA2 is a fauna habitat and Section 11.2 Monitoring Program states that the native fauna will be part of the monitoring program. No management and/or monitoring plan is provided in the Monitoring Schedule (Section 11.2.2) of the current PRCP. Section 11.2.2 Monitoring Schedule states monitoring will commence 12 months after revegetation and be on-going. No information is provided on the scheduling of the monitoring, i.e., is it quarterly, event-based, annually. Section 9.1.9 Revegetation states that if natural revegetation is not successful, re-seeding will occur. Information on how re-seeding will be undertaken is not provided. Table 31 states RA3, RA4 and RA6 will receive ameliorants or fertiliser if required. No information is provided on which ameliorants and/or fertiliser is required or on the rates of application.	Revise the PRCP to include the species proposed for RA2 and RA6. If species are not to be sown to these RAs provide justification to support this decision. Revise the PRCP to provide evidence and justification for any analogue sites nominated. This information must include monitoring of soil, vegetation and surface water for parameters listed in Tables 37, 38 and 39 of the PRCP. Soil sampling must include profile sampling to a depth which encompasses the A and B horizons. Please include a management and monitoring plan and schedule for the high wall of the Pits to ensure they can support the proposed fauna habitat. Revise PRCP to include information on when monitoring is scheduled to be undertaken. Please revise the PRC plan to include a description of how re-seeding and subsequent monitoring will be undertaken. Include a detailed description of all management and maintenance actions that are required to ensure seed establishment and seedling survival, and any corrective maintenance measures to achieve the proposed vegetation. Revise PRCP to identify the ameliorants or fertiliser required, rates of application and method of application/incorporation.	The species mix has been revised, in Section 3.5.8 Section 3.7 has been revised. Section 3.5.8 has been revised.
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17	Section 9.2 Void Closure Plan	Section 9.2 of the PRC plan discusses the void closure plan, however limited information is provided to ensure the voids will achieve a safe and stable condition. Section 9.2.3 states <i>“Geotechnical studies will be completed, on closure, based on the final landform after mining ceases. These studies will determine if additional earthworks are required to ensure the long-term stability and safety of the final voids. The studies will consider long term erosion, weathering, and the effects of significant hydrological events.”</i> An assessment on the geotechnical stability is required in order to ensure the PMLU can be achieved. As stated previously, the hydrogeological assessment requires refinement and further consideration due to the groundwater bores. Please ensure once assessment has been completed, results are incorporated into the void closure plan. Section 9.2.9 of the PRC plan state a stock exclusion fence and 2m high bunds will be installed to prevent cattle entry. Is this a viable rehabilitation method, considering the water storages are to be used for agriculture purposes post closure?	Please revise section 9.2 of the PRC plan in accordance with section 126C(1)(e) and (i) of the EP Act and section 3.6.3 of the PRCP guideline. Please ensure information related to, but not limited to, is included in the revision: a) Options available for minimising the final void area b) Pit wall geotechnical stability, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events. c) Demonstration of suitable landform design via approval from an appropriately qualified person. d) proposed final slope angles of high wall, low wall and end walls of each final void e) void hydrology, addressing the long-term water balance and water level in the voids, stratification f) connections to groundwater resources and potential for overflow – need re-assessment g) groundwater modelling to determine whether the void is acting as a sink or a source for groundwater – need to be re-done because groundwater assessment needs to be revised h) a water balance study including an assessment of void surface and groundwater interactions. i) a 3D void design plan Please revise the rehabilitation strategies of the voids to ensure the PMLU is appropriate.	The PMLU for the pits has been revised since the original submission. This section is no longer relevant.
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Risk Assessment				
18	Section 10. Risk Assessment	The Risk Evaluation (Table 36 page 125 of PRCP) outlines the hazards and potential impacts for each RM primarily in terms of landform stability. Little information is similarly presented in terms of the final landform being “non-polluting” (stated on page 66 of PRCP). Potential sources and pathways for pollution include PAF encapsulated within the waste rock dump (RA3). Additional criteria to address potential pollution/contamination arising from PAF and its migration pathways are required. Section 9.1.11.5.2 (page 91) states “landforms will be free- draining and non-polluting”. Rainwater infiltration into the final waste rock dump landform (RA3) must be minimised to avoid contact with encapsulated PAF. This requires RA3 not to be free-draining, rather the surface cover must be water shedding with corresponding low internal hydraulic conductivity. By being water shedding, additional management strategies will need to be included in landform design to ensure surface runoff does not exacerbate erosion. RM8 in Table 36 states (page 130) “Heavy rainfall occurring prior to establishment of vegetative cover” represents a potential impact due to erosion from the poor vegetation cover. Section 6.2.3 (page 66 of PRCP) states RA3 “will be topsoiled, and the landform left for vegetation to naturally re-establish”. If seed emergence and establishment at RA3 is poor and heavy rainfall causes erosion, concerns for the integrity of the encapsulated PAF exist.	Revise PRCP risk evaluation and milestone criteria to address potential causes and migration pathways of contaminants (e.g., PAF) both onsite and offsite and related management strategies (Section 9.1.11.2 Contaminant Transport Fate, page 89). The potential for contaminant (metals and hydrocarbons) mobilisation from the ROM Pad and infrastructure with flood and/or runoff water should be included as per Item 11. Revise PRCP risk evaluation and Section 9.1.11.5.2 and associated text in PRCP to stipulate RA3 landform to be water shedding and include appropriate surface water management strategies to manage the runoff (water and sediment) and mitigate erosion. Revise PRCP to identify methods to ensure surface cover stability for RA3. For example, risk may be reduced if the topsoil at RA3 is seeded with native ecosystem species following topsoil placement. This will increase the potential ground cover percentage during the early stage of landform establishment. This species mix must not include deep rooted species to maintain surface cover physical integrity and limit rainwater infiltration and drainage.	Section 3.6 has been revised.

Monitoring and Maintenance				
19	Section 11 Monitoring and Maintenance	Section 11.2.7 Surface waters (Table 39 page 141) provide the range of parameters and trigger levels for surface water quality. These parameters must include pH as currently this measure is not included. The inclusion of biological parameters such as Cyanobacteria (blue-green algae) should also be considered. Section 11.2.7 Surface water quality at REMP locations will be evaluated with regards to ANZECC/ARMCANZ Table for livestock drinking water. It is unclear if the same guidelines will be used for Pit water quality. Consideration to water quality potentially resulting from contact with PAF and subsequent release from the landform has not been given in the current PRCP. The chemical character of this water may be markedly different to other onsite surface waters and require lower (high risk) trigger values.	Revise Table 39 to include pH and Cyanobacteria (blue-green algae). Revise Section 11.2.7 to state guidelines relevant to Pit water quality. Revise PRCP to include water quality parameters and corresponding trigger values for PAF- contaminated waters (surface and groundwater).	The PMLU for pits has been revised and this section is no longer relevant.
Item #	Relevant section (proposed PRC plan)	Matter	Information Request	
PRCP Schedule				
20	Final site design Map	Figure 12 of the PRC plan depicts the final site design of the site in terms of the rehabilitation areas proposed. The legend for the post mine land use is difficult to read, specifically the difference between the PMLUs depicted as water storages, native ecosystems, and recreation.	Please provide an updated final site design and reference maps.	Reference maps have been revised for clarity.

21	Section 6.3 PMLU Completion Criteria	Table 23 (page 72 of PRCP) presents PMLU completion criteria for the RMs. The criteria for some RMs are not SMART and need to be more specifically defined: · RM2 –The completion criteria require a licenced disposal location for the contaminated material. · RM3 – Pits backfilled with waste rock and suitably compacted. To what value of compaction does this refer to? · RM4 – more details on safety bunding, fencing and signage is required as specific criteria (e.g., height, materials, etc) · RM5 refers to landform design. A detailed description of the proposed design must be provided as it is currently not provided in current PRCP. · RM6 refers to “gently sloping” but no slope angle/degrees are provided. RM8 states “Topsoil placement of a minimum of 15 cm where required”. What is the criteria for selecting “where required”?	The milestone criteria for RM2 need to be better defined and can be re-written as: · Contaminated land investigation for all areas that are identified as containing a source of contamination undertaken by an AQP. · All contaminated material removed from the site unless onsite remediation is being undertaken. · A contaminated land investigation document has been prepared by an AQP, containing a site suitability statement confirming that land is not contaminated and is suitable for the proposed PMLU.	The completion criteria for the RMs have been revised for clarity.
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		· RM9 and RM10 state criteria based on achieving >30% of analogue sites. - o Currently, monitoring data for the analogue sites is not presented in the PRCP so the criteria of >30% has no meaning. - o The value of 30% of the analogue is not an acceptable criterion for ground cover. For example, if the analogue site has 30% ground cover, then 30% of 30% is <10%. The criterion must be realistic such as “final ground cover will be 50% of the ground surface area or >75% of the analogue sites” · RM11 stipulates an average erosion rate of <5 t/ha/y with a maximum erosion rate of <10 t/ha/y. This erosion criteria must also include other aspects with respect to gully erosion such as (see for example <i>Australian Soil and Land Survey Field Handbook (3rd Edition)</i>, <i>The National Committee on Soil and Terrain published by CSIRO Publishing 2009</i>) - o Active soil erosion and development of rills and gullies is repaired prior to seeding - o No active gullies >1.0 m depth - o Any gullies <1.0 m >0.3m have shown progressive stabilisation (i.e., have become partly stabilised or stabilised⁴) over successive annual monitoring events · RM13 and RM14 refer to vegetation criteria “comparable to reference sites”. This criterion must be quantitative and therefore requires monitoring of analogue/reference sites to be completed as soon as possible and site-specific vegetation completion criteria determined. · RM15 refers to the achievement of pot mining land use to a stable condition (water storage), however, criteria related to RA5 has not been included.	Revise PRCP to include level of compaction or a measurable parameter (e.g., hydraulic conductivity) Revise PRCP to details on safety bunding, fencing and signage Revise PRCP to provide detailed description on landform design Revise PRCP to quantify landform slope angles. Revise PRCP to include criteria for selecting topsoil placement. Revise PRCP to provide more acceptable measurable ground cover and vegetation performance criteria based on analogue site monitoring. Revise PRCP to provide criteria for managing gully erosion. Revise PRCP to provide criteria for RM15 relating to RA5.	
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22	Section 9.4 Summary of Key Rehabilitation and Management Practices	Table 34 discusses the proposed rehabilitation activities and timing afforded. As discussed throughout the PRC plan, the mine is proposed to have a 3-year mine life, ending in 2025, however RA1, RA2 and RA3 begin rehabilitation activities 10 years post closure. This does not demonstrate rehabilitation activities are occurring as soon as practical. Subsequent rehabilitation activities from the initial RM have been included, however no justification for the timing afforded has been discussed.	Please revise timing of rehabilitation activities for RA1, RA2 and RA3, and demonstrate activities take place as soon as practical as per Section 126 of the Environmental Protection Act. Please discuss and justify the proposed commencement timeframes for each and every RM in relation to each and every RA.	The PRCP Schedule has been revised considering the current life of mine.
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