

18 September 2026

Kajal Chand
Senior Environmental Officer (Minerals Assessment)
Department of Environment, Tourism, Science and Innovation
Minerals Business Centre
PO Box 7230
Cairns QLD 4870

By Email: Kajal.Chand@detsi.qld.gov.au, Giles.Bezzina@detsi.qld.gov.au

Dear Kajal,

Information Request Response for application A-EA-NEW-100363198

Strategic Minerals Corporation Pty Ltd lodged a site-specific Environmental Authority application for the Big Vein South gold project with the Department on 23 December 2022, with the application received on 6 January 2023.

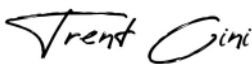
On 20 June 2025, the Department advised that an Environmental Impact Statement would not be required and issued a formal Information Request (IR). The IR comprised 47 items relating to the Environmental Assessment Report and 36 items relating to the Progressive Rehabilitation and Closure Plan.

These items have been addressed in the attached report, a copy of the IR is also provided in Annexure A. An updated Environmental Assessment Report and Progressive Rehabilitation and Closure Plan supporting the application, is provided with this letter.

Spatial data has been provided separately as part of this response.

Please contact Craig Streatfeild on 0491 274 818 or email cstreatfeild@qcoal.com.au with any queries.

Yours faithfully,



Trent Cini
General Manager – Environment

Strategic Minerals Corporation Pty Ltd ACN 008 901 380



STRATEGIC MINERALS
CORPORATION

INFORMATION REQUEST RESPONSE - ENVIRONMENTAL AUTHORITY APPLICATION

BIG VEIN SOUTH GOLD PROJECT

18/09/2026

Strategic Minerals Corporation Pty Ltd
ACN 008 901 380

Level 15, 40 Creek Street, Brisbane Qld
4000

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Annexure A INFORMATION REQUEST NOTICE

Information Request Response - Environmental Authority Application

INTRODUCTION

Strategic Minerals Corporation Pty Ltd (SMC) submitted an application to the Department of the Environment, Tourism, Science and Innovation (DETSI) for an Environmental Authority (EA) on 6 January 2023. The EA application (reference No. A-EA-NEW-100363198) relates to the approval of the Big Vein South Gold Project.

DETSI issued an Information Request Notice for the EA application on 20 June 2025. A copy of the DETSI Notice is provided in Annexure A.

This document provides SMC's response to the Environmental Assessment Report (EAR) and Progressive Rehabilitation and Closure Plan (PRCP) issues in the DETSI Information Request Notice. It has been prepared by SMC, with input from:

- the SMC project team
- Hansen Environmental Consulting
- the EAR technical specialist consultant team.

The specific responses to each of the DETSI information requests are provided in the following sections with the ERA responses presented first, followed by the PRCP responses. The numbered DETSI comments and requested actions in Appendix A of the DETSI Notice are presented in blue and grey text boxes, respectively. SMC's response to each information request is provided in plain text.

DETSI and SMC have had ongoing consultation, including meetings and workshops, since the DETSI Information Request Notice was issued. The SMC issue responses have been developed based on the outcomes of this consultation.

EAR INFORMATION REQUEST AND RESPONSES

1 Project Disturbance Footprint

DETSI's Comments

The footprint of each mine infrastructure within the Environmental Authority Report (EAR) and supporting information documents requires clarification to ensure the disturbance area and infrastructure location is clear. For example, the footprint of structures within the project description is not consistent with the accompanying PRCP schedule and planning part.

DETSI's Requested Actions

- 1.1** Provide a schedule of disturbance that includes the disturbance footprint of each mine feature that is consistent with the PRCP application and spatial information. Include each mine domain, mine feature name on relevant mining lease, location (northing and easting) and maximum disturbance area in hectares (ha).
Further, ensure the disturbance footprint of mine structures such as pits, waste rock dumps and tailings facility include sufficient area for rehabilitation of the land and mine closure.

The disturbance footprint areas for individual mine features in each rehabilitation area are included in Table 9 of Section 4.2 of the PRCP. The location of the disturbance footprint for each mine feature is shown in PRCP Figure 18.

The disturbance footprint areas for the mine structures listed include sufficient area for rehabilitation and mine closure.

Note that the figures in EAR Section 3 – Project Description depict the layout of the mine infrastructure, mine waste storage facilities and pits. These figures do not show the disturbance footprint for each mine feature. The disturbance footprints for each mine feature are included in PRCP Figure 18.

2 Cyanide Destruction

DETSI's Comments

The EAR indicates that the Carbon In Leach (CIL) Plant will include a cyanide destruction circuit that will reduce weak acid dissociable (WAD) cyanide levels in tailings to below 50 mg/L. However, the Mine Materials Management Plan (MMMP) states that *tailings will undergo cyanide detoxification before being deposited in the TSC, with WAD cyanide concentrations reduced to below 0.5 mg/L*. In addition, it is noted that the MMMP makes reference to tailings deposited in tailing storage cell (TSC) for cyanide destruction. Clarification on the WAD cyanide concentration of tailings at all disposal locations, is required to ensure the impacts and associated risk of environmental harm is understood.

DETSI's Requested Actions

2.1 Confirm the concentration of cyanide expected in all tailings stream (slurry and dewatered tailings).

The cyanide concentration specified in EAR Section 3.6.1 is correct and all tailings (both slurry and dewatered) will pass through a cyanide destruction circuit that will reduce WAD cyanide levels to below 50 mg/L.

A new Mine Waste Material Management Plan (MWMMP) will be developed prior to the commencement of mining activities.

3 Heap Leach Facilities

DETSI's Comments

The application proposes on-site ore processing using heap leach facilities (HLF) in initial project years prior to commissioning of CIL plant in year 3 and tailings dewatering system in year 4. Spent heap leach residue is proposed to be reprocessed through the CIL plant over the life of mine. Despite the HLF being proposed to be used in initial years, progressive rehabilitation of HLF have not been contemplated. Based on the proposed PRCP schedule (Appendix J), it appears that rehabilitation of heap leach pads and ponds are not proposed to commence until project year 12 (Rehabilitation Area 4).

In addition, the application provides limited environmental impact assessment associated with the risks from operation of the HLF. For example, section 3.6.1 of the EAR states: *Both the heap leach pads and heap leach ponds will be lined with a synthetic liner to ensure there is no loss of the leaching solution and therefore no contamination of the respective foundations underlying natural material or groundwater... These ponds have been sized (modelled) to contain the maximum volumes of pregnant and barren leaching solutions generated from the heap leach process and also have additional freeboard capacity to ensure total containment. The Storm Water Pond has been sized with sufficient capacity to contain the runoff from the modelled worst rainfall sequence (Section 6 – Surface Water).*

A comprehensive risk assessment associated with seepage, release of contaminants, overtopping, drainage failure, liner failure, residual cyanide contamination, long-term monitoring and management measures to be in place to minimise environmental impacts has not been provided. It is unclear whether reliance on the functionality of the liner is an appropriate measure to conclude that there will be no contamination to the underlying material and groundwater. The presented assessment in the current application generally does not appear to align with best practice environmental management therefore, justification on how the HLF is designed to operate in accordance with leading practice environmental management is required.

Based on the presented waste characterisation in Appendix A (Geochemistry Report), it is plausible that significant acid generation may not be expected however, the results from kinetic tests indicate potential for neutral and saline drainage. As such, an assessment of potential or actual environmental harm to the relevant environmental values from the operation of heap leach facilities is required. Appropriate mitigation measures including a broader groundwater network than the current proposal is required to determine potential contamination pathway and source during operation and monitoring post closure to ensure stable conditions are achieved.

In addition, the referenced model or information presented in section 6 - surface water does not include information on the modelled worst rainfall sequence, sizing or how the capacity of heap leach or storm water ponds were determined.

DETSI's Requested Actions

3.1 Given other lower risk (closed system) gold processing / extraction methods are readily available, provide justification why such measures have been discounted in the context of the risk of environmental harm.

Closed-system processing has not been discounted. The project involves mining of two ore types with distinctly different metallurgical properties, and the processing method for each is dictated by that metallurgy:

- Low-grade ore from the shallow weathered profile in the BV1 and BV2 pits
- Higher-grade ore from the fresh Proterozoic basement rock in the BVS Pit.

Both a closed system and heap leaching are proposed, sequenced to match the different processing requirements of the two ore types.

The BVS Pit ore will be processed in a Carbon-in-Leach (CIL) Plant (a closed, tank-based system). The CIL Plant elution circuit and gold room will be commissioned in Project Year 1, with the plant treating BVS Pit ore from Project Year 3 to the end of the mine life. The CIL Plant is necessary for processing the BVS Pit ore where the gold is locked inside sulphide minerals within the fresh rock ore. The BVS Pit ore cannot be processed by heap leaching and the higher grade of the ore supports the capital cost of the necessary CIL Plant.

Heap leaching will be used predominantly in the initial project years, for processing the low-grade ore from the BV1 and BV2 pits, prior to commissioning of the CIL Plant in Project Year 3. Weathering has already broken down the sulphide minerals in this oxidised ore and hence the gold can be readily recovered by heap leaching without the milling and tank leaching a CIL Plant requires. The Heap Leach Facility (HLF) is also an interim, fully retrievable facility. All spent residues will be progressively re-mined and reprocessed through the CIL Plant, and no spent heap leach residues will remain at mine closure.

The proposed management of the potential risk of environmental harm from the HLF is discussed in the responses to requested actions 3.2 to 3.9, below. The potential risks have been identified and addressed in the conceptual design and proposed operation of the HLF. This includes the incorporation of relevant best practice environmental management measures for the containment, detection and management of any leakage from the facility and the prevention of overflow of leach fluids and stormwater from the facility. The HLF pads and ponds will also be regulated structures and hence the design and construction of the facility will be required to be assessed and certified by a Registered Professional Engineer of Queensland (RPEQ) in accordance with the EA conditions. A closed system would not reduce residual risk below the level these controls achieve during operations.

3.2 Clarify the timeframe over which spent residue will be processed through the CIL Plant and provide justification for the appropriateness of this timeframe considering the risks of unrehabilitated HLF in the environment e.g. presenting an ongoing contaminant source, and an expectation that disturbed land should be progressively rehabilitated.

The actual timing of the proposed reprocessing of the spent heap leach residue through the CIL Plant will be dependent on ore production rates and the available capacity in the CIL Plant. Based on the current production schedule, the spent heap leach residue is planned to be reprocessed in Project Years 6 to 11.

The management of the environmental risks associated with the unrehabilitated HLF is discussed in the responses to 3.3, 3.4 and 3.5.

- 3.3** Provide a detailed risk assessment of potential environmental harm associated with the operation of the HLF on the environmental values, mitigation measures and management practices proposed to be implemented to minimise adverse environmental harm. Ensure risks such as overflow during heavy rainfall accounts for extreme weather events and climate change impacts, direct or indirect release of contaminants to groundwater from the operation of the activity are included.

EAR Attachment 15-2 provides an HLF risk assessment including HLF overflow and groundwater contamination risks. The assessment describes the HLF management and mitigation measures and concludes that there is a low residual risk of overflow and contamination from the HLF operation.

- 3.4** Provide details of long-term monitoring (monitoring of liners, pads and leachate collection systems) and measures in place to monitor residual cyanide in leach and that will prevent or minimise adverse effects to groundwater or any associated surface ecological systems.

EAR Section 3.6.1 has been updated to include details of the HLF monitoring program designed to detect any leakage of leach fluids or stormwater, trigger rectification and avoid any adverse environmental impacts. As discussed in EAR Section 3.6.1, during decommissioning and rehabilitation, the HLF will be subject to a decontamination assessment that would identify and address any residual contamination.

- 3.5** Provide conceptual designs of heap leach facilities including adequate measures to capture seepage (such as seepage interception and drainage).

EAR Figure 3-17 shows the conceptual HLF configuration and process.

EAR Section 3.6.1 has been updated to include further explanation of the HLF liner and monitoring program that are designed to intercept and detect any seepage/leakage from the HLF. The liner will include underdrainage and perimeter seepage collection sumps to collect and contain any leakage.

EAR Section 3.6.1 also includes an explanation of the detailed design process that will be undertaken to determine the detailed configuration and specification of the HLF liner system, as well as the relevant design standards and quality assurance measures that will be considered as part of the detailed design.

DETSI has subsequently confirmed that, given the heap leach ponds will be regulated structures and will be subject to detailed design by an RPEQ, further conceptual design of the HLF is not required at this stage.

- 3.6** Provide details of heap leach material characterisation in accordance with information requirements in item 18 below.

Refer to the response to requested action 18 below in relation to the information requirements in item 18.

The geochemical characterisation of the heap leach residue is described in Section 7 of the Geochemistry Report (EAR Appendix A).

- 3.7** Provide justification on how the HLF is designed to operate in a manner that aligns with best practice environmental management and prevents adverse effects on adjacent areas.

Section 21 of the Environmental Protection Act 1994 (Qld) defines best practice environmental management as the management of an activity to achieve the ongoing minimisation of environmental harm through cost-effective measures assessed against those currently used nationally and internationally for the activity.

EAR Section 3.6.1 explains that the HLF has been conceptually designed around the principle that leaching solutions and potentially contaminated stormwater are contained within a dedicated, engineered water management system and are prevented from migrating to adjacent land, surface water or groundwater. This

approach aligns with best practice environmental management by applying multiple levels of prevention, containment, monitoring and response consistent with contemporary HLF design and management practices.

3.8 Provide the referenced model or additional information on how the capacity of heap leach or storm water ponds were determined.

Section 3.6.1 of the EAR states that the HLF Barren and Pregnant Ponds have been sized to contain the maximum volumes of leaching fluids generated from the heap leach process with additional freeboard capacity to ensure total containment. The project water balance modelling is described in Section 5 of the Surface Water Report (EAR Appendix D) and utilised the GoldSim probabilistic modelling software. The HLF Stormwater Pond has been sized with sufficient capacity to contain the runoff from the worst-case rainfall sequence based on 133 years of modelled daily rainfall data.

3.9 Consider progressive rehabilitation of HLF following commissioning of CIL Plant and earlier processing of spent heap leach residue.

As discussed in the response to 3.2 above, the timing of processing of the heap leach residue will be dependent on the production schedule and the available capacity in the CIL Plant. Based on the current production schedule, the reprocessing of the spent heap leach residue will be completed in Project Year 11 and decommissioning and rehabilitation of the HLF will commence in Project Year 12.

4 Flood Protection Levee – Permanent Diversion

DETSI's Comments

Section 3.6.2 states there are no flood protection levees required for the project due to the proposed pits being situated above the Woolgar River 0.1% (1 in 1,000) Annual Exceedance Probability (AEP) flood level. However, it is noted that the application proposes a permanent drainage diversion around the BVS Pit that appears to be for the purpose of preventing the ingress of clean water. It is further noted that the permanent drainage diversion will be designed with capacity to convey the 0.1% AEP flow event and will remain in place after mine closure.

Given the proposed purpose and size of the permanent diversion drain it appears to meet the requirements of a regulated structure (levee) and therefore, assessment against the *Manual for assessing consequence categories and hydraulic performance of structures* (the Manual) is required to ensure the structure is appropriately designed and operated.

For information, it should be noted that the EP Act (and therefore the Manual) has a broader definition for a watercourse and as such, the 0.1% AEP under the Manual is expected to have different flood levels to the flood modelling provided in the application material.

DETSI's Requested Actions

4.1 Provide a detailed assessment of the proposed diversion by a suitably qualified and experienced person in accordance with the Manual for assessing consequence categories and hydraulic performance of structures.

As discussed in EAR Section 6.6.2 – BVS Pit Water, drainage features 1 and 2, which will be diverted by the BVS Pit drainage diversion, are not watercourses under the *Water Act 2000* and hence the drainage diversion is not a licensed watercourse diversion. However, as explained in PRCP Section 4.4.1 and updated EAR Section 6.6.2, the diversion drain will be designed and certified by an RPEQ to ensure the long-term stability and functionality of the diversion following mine closure.

Section 4.4.15 of the *Surface Water Report* (Appendix D) and Section 6.6.2 of the EAR have been updated to confirm that the levee associated with the BVS Pit drainage diversion inlet works will be a regulated structure in accordance with the Manual. As agreed with DETSI, a detailed consequence category assessment will be conducted as part of the detailed design of the levee, in accordance with the Manual and any relevant EA conditions.

- 4.2** Provide a cost benefit analysis where it is identified that the operational area is encroached by a flood event with probability less likely than 0.1% AEP to determine if a levee is to be constructed.

A cost benefit analysis for a levee design of greater than a 0.1% AEP flood event will be conducted by a suitably qualified and experienced person in accordance with the Manual as part of the detailed design of the diversion.

5 GHG Emission Reduction: Diesel Consumption

DETSI's Comments

A power station including diesel generators with an average generation load of 8.75 MW, supplemented with a 2.5 MW solar farm is proposed to be constructed to power the mine.

It is noted from Appendix G (Air Quality Report) that diesel consumption accounts for most of Scope 1 emissions. The proposed mitigation measures in section 7.6 of Appendix G appear to have limited impacts on reducing Greenhouse Gas (GHG) emissions therefore, additional mitigation measures such as reconsideration of diesel consumption, increasing capacity of solar farms (with battery storage) may be required.

DETSI's Requested Actions

- 5.1** Provide details of additional mitigation measures to reduce GHG emissions associated with diesel consumption.

Refer to the response to requested action 36.1. The GHG Abatement Plan is included in Section 5 of the *GHG Assessment Report* (EAR Appendix L).

6 Solar Farm

DETSI's Comments

Limited information is included in the application on the proposed 2.5 MW solar farm. Information is required to demonstrate how the solar farm will be managed in a way to prevent environmental harm. For example, it is not clear how erosion and runoff will be managed, implications of runoff on the mines water management infrastructure, and flood model considerations.

DETSI's Requested Actions

- 6.1** Provide a risk assessment for the construction and operation of the proposed solar farm on the environmental values, mitigation measures and management practices proposed to be

implemented to minimise adverse environmental harm. Ensure risks such as erosion and water runoff are included.

EAR Section 3.6.3 has been amended to explain the management of runoff, and erosion and sediment control for the solar farm area. DETSI has subsequently confirmed that a risk assessment for the solar farm is not required.

6.2 Clarify if additional infrastructure, e.g. battery storage is required to support the solar farm. Include location and information as required by (1) on any additional infrastructure.

EAR Section 3.6.3 has been amended to confirm that battery storage will not be included in the solar farm.

7 Proposed Airstrip

DETSI's Comments

It is noted from section 3.6.5 and 13.3 of the EAR that an onsite airstrip designed to cater for the largest aircraft - ATR 72 will be constructed to transport workers (to and from) and gold bars from the site. Community engagement with the landholder of the Peterfield airstrip dated 26 November 2023 provided in Appendix J (PRC Plan) indicates the landholders offer to use his airstrip as an option. It appears that the Peterfield airstrip that is located approximately 6 km east of the southern end of the project is of similar size as the proposed onsite airstrip and may be suitable for the intended use. However, further commentary on the landholders offer to use the existing airstrip, whether Peterfield airstrip is a suitable option and justification for a new airstrip requiring proposed 48.12ha of land clearing have not been provided.

In addition, the proposed airstrip is located immediately south of the TSC that will contain tailings (slurry). It appears that the application does not consider the impact of the proposed airstrip on the structural stability and integrity of the TSC and its embankment. A risk assessment and a detailed geotechnical assessment on the TSC's susceptibility of vibration and potential risks associated with compromised TSC is required.

DETSI's Requested Actions

7.1 Provide justification on the proposed airstrip and its location having considered the landholders proposal.

SMC is proposing to develop and manage an on-site airstrip for the project. This proposal is justified based on SMC's feasibility assessment which took into account the safety, security, capacity, operational requirements and costs of the air transport requirements of the project.

7.2 Provide a risk assessment and a detailed geotechnical assessment to demonstrate the structural integrity of the TSC and its susceptibility of vibration from the proposed aircraft activities.

The detailed design of the TSC and airstrip will include detailed geotechnical assessment and any relevant consideration of the effects of the operation of the airstrip on the adjacent TSC. DETSI has subsequently confirmed that on this basis, a risk assessment and a detailed geotechnical assessment of the TSC are not required at this stage.

7.3 Provide appropriate mitigation and management measures for risks identified in (2) above that would be implemented to minimise environmental harm.

Relevant mitigation and management measures will be identified and addressed at the detailed design stage.

8 Water Management Strategies

DETSI's Comments

Information on water management strategies provided within the EAR and section 4.3 of the surface water report require further justification. Water management strategies included as *italics* text are inappropriate measures to manage water on site. This includes but is not limited to:

- Section 3.7.1 of EAR states A seepage collection system will be installed along the toe of the external WRD embankment slopes ... Seepage water captured in the seepage collection system will be directed to sediment dams for the removal of suspended sediments. It is unclear how seepage from WRDs that are proposed to contain PAF and co-disposed dewatered tailings will be treated in a sediment dam given the seepage is likely to contain elevated electrical conductivity, trace metals and potentially low pH.
- Section 3.7.1 of EAR states mine dewatering during operations and the subsequent establishment of a post mining final void lake will create a hydraulic groundwater gradient and induce groundwater flow towards the BVS Pit and its final void. Any water seepage from the WRDs into the underlying geology will therefore migrate towards the BVS Pit and its final void. However, this statement does not appear to be correct based on the predicted drawdown from the BVS pit, in particular, within the weathered profile.
- Section 5 of EAR states seepage from the WRDs is therefore comparable to existing groundwater quality and is not expected to present any significant environmental risks to surrounding groundwater quality. This is not supported by the waste characterisation data and the metal concentrations observed which indicate enrichment of several contaminants including elevated trace metals and metalloids (such as aluminium, arsenic, copper, cadmium, zinc etc) that are greater than 95% species protection value ANZG (2018). Appropriate water quality objectives for measurement against seepage quality must be provided to demonstrate seepage is of similar quality to the existing groundwater quality.
- Section 4.3.4 of Appendix D states sediment-affected runoff (including runoff from the waste rock dumps and low grade ore stockpiles) is expected to be suitable for discharge following primary treatment for suspended solids through an erosion and sediment control system. It is unclear how runoff from WRDs and ore stockpiles are classified as sediment-affected water, given the nature of the materials contained in the WRDs and low grade ore stockpiles, and how quality is determined suitable for discharge. It is noted that Appendix D describes the site as nil discharge system.
- Section 4.3.4 of Appendix D states runoff will be directed via gravity flow to sediment dams ... Overflow and pumped dewatering of the sediment dams will be directed to the receiving environment, typically via a natural drainage line or gully. The direct and indirect release does not align with nil discharge system. Further, a risk assessment on indirect releases such as indicated overflow into the receiving environment have not been provided.
- Section 6 of the EAR states the results of the geochemical testing indicate that runoff from the WRDs and low grade ore will be benign and will not contain any concentrations of contaminants that could pose a risk to the downstream receiving environment. Based on these results, runoff from the WRDs and low grade ore is not 'mine-affected' water and does not require particular contaminant management measures or total containment on site. Runoff from the WRDs and low grade ore may contain suspended sediment and may be managed in accordance with the EA requirements for 'sediment-affected' water. It is contended that runoff from mine waste structures is considered mine-affected water.

In addition, figure 6-4 of the EAR illustrates site drainage which is consistent with the information presented in Appendix D, outlined above. It appears that all drainage ultimately flows to the Woolgar River however, water quality indicators and contaminants of concerns (CoC) to mitigate environmental impacts on the Woolgar river system have not been provided. It is also noted that ATC Williams report identifies the seepage quality from the seepage collection system at the WRDs as unsuitable to be directly released into the receiving environment.

The classification of stormwater runoff from disturbed mining-related areas such as WRDs, temporary low grade ore stockpiles, mine pre-stripping, soil stockpile areas and disturbed areas undergoing rehabilitation as 'sediment-affected water' is not supported as water encountering mining processes are considered mine-affected water that should be managed separately from sediment dams that deal with sediment and erosion control. Sediment dams are not designed to treat or manage dissolved contaminants such as metals and nutrients found in mine-affected water. Therefore, any wastewater, generated during the mining operations (including runoff), must be classified as contaminated water, and be managed accordingly.

The risk of mixing of surface water from the sediment dams and contaminated water from the storage facilities has not been sufficiently addressed in the application. Appropriate mitigation strategies to prevent contaminant release to receiving waters have not been clearly addressed in the submitted documentation, especially in the context of ephemeral Woolgar River which flows only following significant events (3 months in a year). In addition, the application does not identify release points for the indicated release of treated sediment affected water, release limits and predicted frequency of release.

DETSI's Requested Actions

8.1 Please refer to the publication Technical Guideline for wastewater release to Queensland waters for guidance on providing the information requested in this section.

Provide a revised risk assessment that considers the risk of mine-affected water from the sediment dams being released into the receiving environment. Additionally, consider:

- a. Identification of all potential CoC from the activity.
- b. Indirect releases (surface and groundwater) to the receiving environment;
- c. Uncontrolled release of contaminant-affected and sediment-affected water from sediment and erosion control structures (for example; overflow);
- d. Additional contingency measures to prevent or minimise adverse effects on the environment due to unplanned releases or discharges of contaminants to water;
- e. Clearing of vegetation associated with mining areas leading to erosion and sediment release; and
- f. Operation of haul roads and other infrastructure.

SMC has revised the mine water management system so that it no longer includes the uncontrolled release of mine-affected water from sediment dams. As explained in updated EAR Section 6.6.6, all drainage from the WRDs, temporary ore stockpiles and the Northern MIA will now be collected, contained and re-used for mine water supply. Any excess water would be released in accordance with EA controlled release conditions, approved by DETSI, and designed to ensure no environmental harm to the downstream receiving environment. Hence, any risks associated with the uncontrolled release of mine-affected water from sediment dams are no longer relevant.

As agreed with DETSI, SMC will update the mine water balance to include the controlled release system during the development of the Mine Water Management Plan, prior to the commencement of mining

activities. The controlled release conditions will be developed based on a suitable baseline monitoring dataset for the receiving environment. As discussed in EAR Section 6.6.6, the controlled release water quality limits will align with the relevant ANZG 2018 limits for aquatic ecosystem protection and/or baseline receiving water quality and will take into consideration the relevant contaminants of concern from the mining activities, in order to ensure the protection of the receiving environment.

In relation to the DETSI comment regarding seepage from WRDs migrating to the BVS final void, the statement in EAR Section 5.6.6 that *... establishment of a post mining final void lake will create a hydraulic gradient and induce groundwater flow towards the BVS Pit and its final void* is technically correct. Figure 31 of the *Groundwater Report* (Appendix C) shows the drawdown on the groundwater table (including the areas where the groundwater table is present within the weathered profile). This level of drawdown would create a hydraulic gradient in the groundwater table towards the BVS final void.

In relation to the DETSI comment regarding the provision of appropriate groundwater quality objectives, interim site-specific groundwater quality objectives, based on the groundwater monitoring data to date, are provided in Table 2 of the *Groundwater Report* (Appendix C).

Erosion and sediment control for sediment-affected runoff, including runoff from cleared areas and haul roads, is discussed in EAR Sections 6.6.7, 6.6.8 and 6.9.2.

8.2 Provide an updated supporting document that provides appropriate risk assessment and mitigation strategies that addresses concerns identified in adjacent comments. Include additional assessment on the release of potential contaminants of concerns during rainfall events and discharges or overflow of sediment dams into the Woolgar River and measures to prevent or minimise adverse effect beyond the boundaries of the site.

As discussed in the response to 8.1, SMC has revised the mine water management system so that drainage from the WRDs will be contained, re-used for mine water supply or released in accordance with controlled release conditions. Hence, any risks associated with the uncontrolled release of WRD drainage from sediment dams are no longer relevant. The release of potential contaminants of concern will now be managed through controlled release conditions in the EA.

8.3 If required, develop water quality objectives such as pH, EC, and any other CoC such as metals or nutrients to protect the environmental values of the receiving waters.

Interim surface water quality objectives for the Woolgar River catchment are provided in EAR Table 6-2. As discussed in updated EAR Section 6.6.6, SMC will develop water quality limits for the controlled release of mine-affected water for inclusion in the EA conditions. These will be aligned with the relevant ANZG 2018 limits for aquatic ecosystem protection and/or baseline receiving water quality and will take into consideration the relevant contaminants of concern from the mining activities, in order to ensure the protection of the receiving environment.

8.4 If required, develop conditions upon which a release occurs e.g. background stream flow conditions, release water quality, dilution, etc to ensure the site is designed in a manner that contains and treats hazardous contaminants in accordance with best practice environmental management.

As discussed in the response to 8.1, EA controlled release conditions, which include release points, release water quality limits and receiving flow limits, will be designed to ensure no environmental harm to the downstream environment.

8.5 Pending response to (4) above, provide the locations for controlled releases and associated release limits.

Refer to the response to 8.4.

8.6 Provide a sediment and erosion control plan (ESCP) that demonstrates how erosion and sediment control measures detailed in the plan adequately minimises the release of sediment to the receiving waters and includes the following information:

- An assessment of the size and characteristics of all catchment areas;
- An assessment of relevant properties of soils and waste materials;
- An identification of receiving waters environmental values, water quality objectives and management intent;
- Specification of minimum design criteria for erosion and sediment control structures to achieve the management intent of receiving waters;
- Locations and descriptions of all erosion and sediment control measures;
- An audit schedule to ensure erosion and sediment control measures are maintained; and
- A process of regular review and updates to the Erosion and Sediment Control Plan.

Following further consultation, DETSI has confirmed that operational management plans, including the ESCP, can be conditioned in the EA to be developed prior to the commencement of the project and are not required at this stage. SMC commits to providing the ESCP on this basis.

8.7 Provide a water management that:

- a. Provides for effective water management of actual and potential environmental impacts resulting from the activity; and
- b. Include:
 - A study of the source of contaminants;
 - A water balance model for the site;
 - A water management system for the site, which includes stormwater management;
 - Measures to manage and prevent saline mine drainage;
 - Measures to manage and prevent neutral mine drainage;
 - Measures to manage and prevent acid rock drainage;
 - Contingency procedures for incidents and emergencies; and
 - A program for monitoring and review of the effectiveness of the Water Management Plan.

Following further consultation, DETSI has confirmed that operational management plans, including the Water Management Plan, can be conditioned in the EA to be developed prior to the commencement of the project and are not required at this stage. SMC commits to providing the Water Management Plan on this basis.

9 Consequence Category Assessment (CCA)

DETSI's Comments

It is noted that some mine structures are proposed to be constructed within close proximity of the tenure boundaries. This includes but is not limited to the raw water dam (approximately 280m from western boundary), TSC (approximately 270m from southern boundary) and TSC storm water pond (approximately 285m from southern boundary). The application does not appear to consider risks associated with overtopping or compromised structures resulting in greater environmental harm.

A detailed and certified CCA a suitably qualified and experienced person in accordance with the Manual has not been provided. The preliminary CCA provided within Appendix D is limited to adequately assess risks associated with each structure. For example; Section 4.3.6 and 4.4.5 of Appendix D (Surface water report) indicates that the Process Water Dam (PWD) will receive pumped inflow from the TSC Stormwater Pond and Mine Water Dam (MWD). The preliminary CCA for TSC stormwater pond is assessed as high and MWD as significant. Given PWD will receive water from both regulated structures, it is expected that the PWD will contain the same or similar concentrations of contaminants as TSC stormwater and MWD. Therefore, it is unclear how the PWD has been assessed as low consequence and subsequently not a regulated dam.

DETSI's Requested Actions

- 9.1** Provide a revised risk assessment and mitigation measures to be implemented to minimise environmental harm from structures proposed to be constructed within close proximity of to the tenure boundary.

DETSI has subsequently advised that due to the significant risks associated with material stored in the proposed regulated structures, it will condition the EA to specifically prescribe relevant hydraulic criteria that must be complied with.

- 9.2** Provide a certified CCA for all proposed regulated structures undertaken in accordance with the Manual.

Preliminary Consequence Category Assessments (CCAs) for water management structures, undertaken in accordance with the Manual, are provided in Table 9 of the *Surface Water Report* (Appendix D). DETSI has subsequently confirmed that the preliminary CCAs can be updated during detailed design, in accordance with the standard EA conditions for regulated structures.

- 9.3** Provide justification for the assessment for the PWD considering information on how process water will be managed during operation.

The preliminary consequence category assessment for the Process Water Dam (PWD) has been revised and now concludes that the PWD will be a high consequence category and will therefore be a regulated dam (Table 9 of the updated *Surface Water Report* [Appendix D]).

- 9.4** Pending response to item (8) of this information request above, provide a revised CCA for all sediment dams that are currently assessed as low CCA.

SMC has revised the mine water management system and the WRD sediment dams will now be replaced by catch dams. The preliminary consequence category assessment for the catch dams concludes that they will have a significant consequence category and will therefore be regulated dams (Table 9 of the updated *Surface Water Report* [Appendix D]).

10 Aquatic and Terrestrial Groundwater Dependent Ecosystems

DETSI's Comments

There is a high level of uncertainty regarding potential impacts to GDEs as a consequence of the proposed activities. Matters requiring further detailed information include, but are not limited to:

It is unclear whether the GDE mapping presented in figures 7-8 to 7-10 represent all potential GDEs presently mapped on BoM GDE Atlas for aquatic and terrestrial GDEs.

Despite the mapped moderate potential aquatic and terrestrial GDEs across most of the site, the application only identifies potential adverse impact to terrestrial GDEs across 43 ha north-west of the BVS pit. It is unclear whether potential GDEs on the east (including off lease predicted drawdown) have potential to be impacted by the proposed mining activities.

It is unclear whether GDEs that are concluded to have potential adverse impact identified above have been considered for environmental offsets.

As highlighted elsewhere in this information request, further mitigation measures such as implementation of additional control measures to minimise seepage from high risk structures is required. This includes consideration for interception bores or trenches. Impact to potential GDE's may require further consideration from impacts associated with the operation of seepage interception measures (if proposed).

DETSI's Requested Actions

10.1 Provide assessment of potential impacts and risks to GDEs from the proposed mining activity. Include:

A new *GDE Report* is provided as Appendix K to the EAR. This report provides a detailed description of the GDE assessment undertaken for the project. A summary of the report is also included in EAR Section 7.7.

For terrestrial and aquatic GDEs, the methodology used for the GDE assessment is explained in Section 2.1 of the *GDE Report* (Appendix K) and included:

- Identifying the GDE study area based on the maximum predicted extent of direct and indirect impacts from the project on GDEs
- Identifying areas of potential GDEs based on a desktop search of relevant databases and information sources including the Qld GDE map and the BoM GDE Atlas
- Identification of potential GDEs based on the relevant site-specific geology, groundwater, surface water and ecology data including rationalising the desktop GDE database/mapping information with the site-specific data
- Assessing potential impacts from the project on potential GDEs identified based on the site-specific assessment and proposing monitoring and management measures for any significant impacts.

The new *GDE Report* (Appendix K) addresses DETSI's comments and requested actions as described below.

10.2 Confirmation on whether presented figures capture the Queensland GDE map and BoM GDE Atlas for all potential GDEs.

Section 2.3 of the new *GDE Report* (Appendix K) provides the results of the desktop database searches. All potential terrestrial and aquatic GDEs mapped on the BoM GDE Atlas and Qld GDE mapping are shown in Figure 8 of the *GDE Report*.

EAR Figures 7-8 and 7-10 do not show all potential GDEs mapped on the BoM GDE Atlas and Qld GDE mapping. Rather, these figures present the findings of the site-specific GDE assessment undertaken based on the site-specific and field-validated information obtained from the project geology, groundwater and terrestrial ecology assessments. These figures are discussed further in Section 2.2.4 of the new *GDE Report* (Appendix K).

Note that the GDE assessment does not include impact assessment for potential GDEs identified in the desktop database searches in instances where the more accurate site-specific data indicates that the desktop database GDEs are not likely to be present. The reconciliation of the database search results with the site-specific data is provided in Section 2.3 of the new *GDE Report* (Appendix K).

10.3 Consideration of potential groundwater impacts and predicted drawdown including on the east (and off lease).

The presence and distribution of potential aquatic and terrestrial GDEs within the GDE study area was determined through a site-specific assessment that is described in Section 2.2 of the new *GDE Report* (Appendix K). The assessment concluded the following:

- There are no potential aquatic GDEs present within the GDE study area. Therefore, the project's effects on groundwater are not expected to give rise to any impacts on aquatic GDEs.
- Woodland vegetation in areas where the groundwater table is located in the alluvium or weathered profile at depths of up to 20 m below ground level is a potential terrestrial GDE.

As explained in Section 2.2.4 of the new *GDE Report* (Appendix K), Figure 6 shows the parts of the GDE study area where terrestrial GDEs are unlikely to occur. As illustrated in Figure 6, GDEs are unlikely to occur on the eastern side of the GDE study area, including the areas where the maximum predicted groundwater drawdown extends off lease.

10.4 A risk assessment that identifies all potential GDEs (surface expression and terrestrial).

To assist in the identification of all potential GDEs, a conceptual ecohydrogeological model was developed based on relevant site-specific data. The model shows the relationships between potential GDEs within the GDE study area and the relevant aspects of the surface geology, groundwater regime and surface water setting. The ecohydrogeological model is described in Section 2.2.4, and presented in Figure 5, of the new *GDE Report* (Appendix K).

The site-specific groundwater assessment confirmed that there is no surface expression of groundwater within the GDE study area and hence there are no aquatic GDEs present within the GDE study area.

10.5 Deficiencies in desktop analysis.

Section 2.3 and Figure 8 of the new *GDE Report* (Appendix K) provide the results of the desktop database GDE searches conducted. Section 2.3 explains the basis and accuracy of the GDE database information. SMC considers there are no deficiencies in the desktop analysis.

Section 2.3 of the new *GDE Report* (Appendix K) also includes reconciliation of the database search results with the accurate site-specific data. In instances where the more accurate site-specific data indicates that the desktop database GDEs are not likely to be present, the database GDEs are not considered further in the assessment.

10.6 Undertake field studies to examine in detail what GDEs are present in locations and areas that could potentially be impacted by the project.

Details of requested field surveys (including methods, results and assessment for potential GDEs, assumptions, constraints or limitations).

The site-specific GDE assessment undertaken for the project is described in Section 2.2 of the new *GDE Report* (Appendix K). The assessment was based on site-specific data and field-validated information obtained from the project groundwater and terrestrial ecology assessments.

The scope of work and methodology for the project groundwater assessment is described in Section 4 of the *Groundwater Report* (Appendix C) and summarised in EAR Section 5.3. In particular, the assessment involved a field investigation that included:

- Detailed review of the site geology based on SMC's exploration drilling program
- Targeted drilling and installation of a dedicated groundwater monitoring network
- Measuring groundwater levels and testing groundwater quality in monitoring bores
- Undertaking a targeted creek and alluvium investigation, to ground-truth the extent and depth of bed sediments and alluvium associated with watercourses and drainage features, and to identify landform features relevant to the local groundwater regime
- Conducting a census of groundwater supply bores, to collect information on groundwater usage and quality
- Conducting a spring survey and inspection.

The data and information gained from the field investigation were used to develop a 3D numerical groundwater flow model that simulates the existing groundwater regime. This model was used to identify the presence of groundwater that could support terrestrial and aquatic GDEs.

The methodology for the project terrestrial ecology assessment is described in Section 3 of the *Terrestrial Ecology Report* (Appendix E) and included a desktop study and field surveys to ground-truth the vegetation present on the project site. The results of the field surveys are presented in Section 4 of the *Terrestrial Ecology Report* (Appendix E).

The extent of ground-truthed vegetation determined through field surveys was considered in conjunction with the ground-truthed surface geology and groundwater depth information, to identify locations and areas of vegetation within the GDE study area that could potentially be groundwater dependent.

The site-specific data obtained from the project site investigations in relation to geology, groundwater and vegetation was suitable for the purpose of confirming the accuracy of the GDE database information, which is based on desktop and/or regional geology, groundwater and vegetation mapping information.

The field studies and surveys that have been undertaken as part of the groundwater and terrestrial ecology assessments provide sufficient detail to identify potential GDEs present in areas that could potentially be impacted by the project.

10.7 Details of management and mitigation strategies for GDEs that are found to be present. Demonstrate that the mitigation measures would avoid impacts to the greatest extent practicable.

The site-specific GDE assessment concluded that there are potential terrestrial GDEs within the project disturbance area that will be directly impacted by the effects of mining disturbance. These potential GDE areas are discussed in Section 2.5, and shown in Figure 9, of the new *GDE Report* (Appendix K).

Measures to avoid, manage and mitigate direct impacts to vegetation within the project disturbance area are described in EAR Section 7.6.2.

The site-specific GDE assessment also concluded that there are potential terrestrial GDEs present outside the project disturbance area but within the maximum predicted extent of groundwater drawdown from the project. These potential GDEs may also be indirectly impacted by changes in groundwater levels from the project. These potential GDE impact areas are discussed in Section 2.5, and shown in Figure 9, of the new *GDE Report* (Appendix K). The total area of terrestrial GDEs that may be indirectly impacted is approximately 43 ha of least concern woodland vegetation.

Section 2.6 of the new *GDE Report* (Appendix K) describes the monitoring and management program relevant to the potential terrestrial GDEs that may be indirectly impacted by groundwater drawdown. It explains that groundwater monitoring will enable confirmation of the groundwater levels and extent of groundwater drawdown in this area and validation of the conservative groundwater modelling predictions presented in the *Groundwater Report* (Appendix C). If the groundwater level monitoring results confirm the groundwater levels and/or groundwater drawdown from the project could potentially impact GDEs, vegetation surveys will be designed and undertaken to monitor the condition of the potential terrestrial GDEs in the affected areas. The results of any vegetation surveys would detect any significant impacts on the vegetation condition. Offsets would be provided for any associated significant residual impacts on any prescribed environmental matters.

10.8 Propose a management and/or mitigation plan to manage and monitor impacts to GDEs for the life of mine and post mine closure.

The proposed plan for the management and monitoring of potential impacts to GDEs over the life of the mine is discussed in the response above.

As discussed in Section 6.2.1 of the *Groundwater Report* (Appendix C), groundwater levels around the BVS Pit final void will recover post mining in line with the establishment of a groundwater pit lake. Hence, the maximum drawdown in the area of potential indirect impacts on GDEs due to groundwater drawdown will occur at the end of the mine life and there will be no additional drawdown or associated risk of GDE impacts post mine closure. Section 6.4 of the *Groundwater Report* (Appendix C) addresses impacts on groundwater quality and concludes that the project will not result in any groundwater contamination over the life of the mine or post closure. The operational and post-closure groundwater monitoring programs will confirm the groundwater levels and quality and are designed to detect any unanticipated groundwater effects that could result in impacts on GDEs. Regular review of the groundwater monitoring results and comparison with predicted groundwater effects would trigger a review of the GDE impact assessment, where monitored unanticipated effects could result in additional GDE impacts.

10.9 For significant impacts on prescribed environmental matters, assess the offsets requirements in accordance with the *Environmental Offsets Act 2014* and the latest version of the Queensland Environmental Offsets Policy (EPP/2015/1658) (DES 2023). Describe in detail how the offsets were determined or justify why no offsets are proposed.

Offsets are proposed for all prescribed environmental matters assessed to have significant residual impacts due to the project. This includes any GDEs within the project disturbance area.

The identification of potential GDEs within the GDE study area has been based on conservative assumptions to account for any uncertainty in relation to the groundwater dependence of vegetation. The groundwater modelling conducted to predict project groundwater drawdown is also based on conservative assumptions. Hence, confirmation of significant impacts on GDEs and the need for any offsets for significant residual impacts on related MSES need to be based on groundwater monitoring and, if necessary, vegetation monitoring. The proposed monitoring for GDEs potentially indirectly impacted by groundwater drawdown from the project is described in Section 2.6 of the *GDE Report* (Appendix K). SMC is proposing to conduct GDE monitoring and management in accordance with the project EPBC Act approval conditions.

11 Tailings Storage Cell Seepage

DETSI's Comments

Section 5.6.7 of the EAR states - *Geochemical testing results show that water from the stored tailings will be pH neutral to slightly alkaline, with low salinity and low concentrations of metals and metalloids. The TSC liner will prevent seepage of water from the TSC to the underlying groundwater regime.*

It is unclear how the quality of TSC seepage is comparable to underlying groundwater regime as the water quality data set to support the above statement have not been provided. In addition, the application does not identify the potential for seepage or contaminant to be released from the TSC and where seepage may be intercepted or expressed to surface water. Further information on the water quality limits and strategies to minimise seepage to the receiving environment is required.

DETSI's Requested Actions

- 11.1** Provide an impact assessment for the potential failure of indicated liner system (potential and actual), and mitigation measures to be implemented to detect, minimise and manage seepage, manage direct or indirect release of contaminants to groundwater and minimise adverse effects on groundwater or any associated surface ecological systems; and

As explained in EAR Section 3.7.2, the configuration and specification of the TSC liner system will be determined through detailed engineering design, based on the characteristics of the tailings and tailings water, site-specific geotechnical and hydrogeological conditions, and the assessed consequences of seepage. Further assessment of any potential impacts associated with specific liner failure scenarios will be undertaken by the certifying engineer as part of the detailed design process.

Conceptually, the TSC liner system will be designed to minimise seepage to groundwater and will incorporate appropriate seepage management measures, which may include underdrainage, leak detection, secondary containment and/or seepage collection and interception. Any collected TSC seepage water will be returned to the TSC Stormwater Pond.

EAR Section 3.7.2 has been updated to provide additional information on the conceptual liner system for the TSC and the measures that will be incorporated to detect, minimise and manage seepage. EAR Section 5.7 has been updated to include TSC seepage/groundwater monitoring.

- 11.2** Provide advice on the considerations of secondary containment and / or other seepage interception to prevent or minimise releases to the environment to demonstrate that the activity, and components of the activity, are carried out on the site in a way that prevents or minimises adverse effects on the use of surrounding land and waters and allows for effective management of the environmental impacts of the activity.

Refer to the response to 11.1, above.

12 Road Crossings

DETSI's Comments

Section 6.4.3 of the EAR proposes construction of seven new road crossings of drainage features:

- One (1) haul road crossing of the BVS Pit Drainage Diversion and six (6) local access road crossings on Drainage Features 1, 2 and 3.

However, information including but not limited to crossing designs, potential risks associated with the use of road crossings (for example spillage and potential contamination of waterways), vegetation clearance, potential biodiversity offsets, mitigation measures and treatment plans to minimise impacts have not been provided.

DETSI's Requested Actions

Information in relation to the design of the project road creek crossings, relevant impacts, mitigation measures and the need for biodiversity offsets is provided in the relevant sections of the EAR, as indicated in the responses to each requested action, below.

12.1 Provide details of the crossing design including size (widths) and location (GPS coordinates and maps).

EAR Section 6.4.3 describes the conceptual design of the road crossings (i.e. the haul road crossing will be an embankment with culverts across the BVS Pit diversion drain and the access road crossings will be rock-fill causeways with low flow culverts). The locations of the crossings and drainage features are shown in EAR Figure 6-4, which is referenced in EAR Section 6.4.3. The access road crossings will be approximately 8 m wide and the haul road crossing will be approximately 30 m wide. EAR Section 6.4.3 has been amended to include the approximate crossing widths.

12.2 Provide information on hydrological changes associated with road crossings.

The proposed road crossings will be designed so that they do not significantly impact the flows in the natural drainage features. The haul road crossing will be constructed over an engineered diversion drain. Both the diversion drain and haul road crossing will be designed to minimise any adverse hydrological changes in the natural drainage features upstream and downstream of the diversion drain.

The access road crossings will be low-level causeway crossings designed to ensure they will not significantly impede channel flow in the relatively small ephemeral drainage features (stream orders 1 to 3). The main impact on stream flows due to the causeway crossings will be localised flow velocity increases over the causeway and hence the detailed design of the causeways will include provision of adequate scour protection for the crossing.

EAR Section 6.4.3 has been amended to include the description of potential impacts of the road crossings on stream hydrology.

12.3 Provide an updated risk assessment that considers risks associated with the operation and design of the road crossings including appropriate mitigation measures and treatment plans to be implemented to minimise environmental harm to waterways including impacts to fauna, e.g. waterway barriers, and riparian flora.

As explained in EAR Section 4.2, the EAR scoping was risk-based and considered all components of the project, rather than involving independent risk assessments of each individual component of the project.

The impacts of the project road waterway crossings on aquatic ecology, including mitigation measures and consideration of waterway barriers, are addressed in EAR Section 8.6.2 – Road Crossings of Drainage Features and Sections 8.2.3 and 8.5.1.2 of the *Aquatic Ecology Report* (Appendix E).

The areas required to be cleared of vegetation for the construction of the road waterway crossings are included in the total project disturbance footprint (EAR Figure 7-4). The total impacts of the project on terrestrial ecology, including riparian flora and fauna, due to clearing of vegetation, including the road waterway crossings, are addressed in EAR Section 7.6.2 and Section 5.1 of the *Terrestrial Ecology Report* (Appendix E).

12.4 If applicable, provide a significant residual impact assessment for regulated vegetation where regional ecosystems are located within defining banks of relevant drainage features at the proposed road crossings.

Biodiversity offsets are addressed in EAR Section 7.6.2 and Section 5.1.3 of the *Terrestrial Ecology Report* (Appendix E) and are related to Regional Ecosystems (REs) within the defining banks of watercourses (REs 2.3.21j, 2.3.26b, 2.3.40, 2.5.9 and 2.11.1c). The location of regulated vegetation (watercourse REs) in relation to the total project disturbance footprint, including the waterway crossings, is shown in EAR Figure 7-5. Section 5.1.3 of the *Terrestrial Ecology Report* (Appendix E) includes a reference to the assessments of significance for the project impacts in Appendix G of the *Terrestrial Ecology Report* and a summary table that lists all regulated vegetation (including watercourse REs) within the project site, the impacted area, conclusion of the significance assessment, and the requirement for offsets.

13 Aboriginal Cultural Heritage Matters

DETSI's Comments

Section 14 of the EAR includes limited information on aboriginal cultural heritage and consultation with relevant parties regarding the potential impacts of the project on aboriginal culture heritage. A search of the Aboriginal and Torres Strait Islander cultural heritage register and database available at the Queensland Governments [website](#) identified mapped cultural heritage site points within the boundaries of ML2739 and ML90238. These attributes are identified as artefact scatters (in two areas) and a quarry. The relevant party identified via the database is Ngawun Mbara People Core Country Claim.

Section 14 of the EAR indicates that the proponent holds an existing agreement with the Woolgar valley Aboriginal Corporation to access the mining leases for mining activities and that Aboriginal cultural heritage clearances will be conducted in accordance with the *Aboriginal Cultural Heritage Act*.

For Aboriginal and Torres Strait Islander peoples, water bodies such as rivers, creeks and groundwater systems often hold profound cultural and spiritual significance.

Section 6.3.1 of the EAR states *There are no known significant cultural or spiritual values associated with the Woolgar River and its tributaries*. However, it is not clear if the relevant parties have been engaged with in relation to all cultural and spiritual values of air, land, and water of the project site.

Further information including records of consultation with all relevant parties (including Ngawun Mbara People Core Country Claim) on the potential project impact to known and unknown aboriginal cultural values is required. Cultural and spiritual values are an environmental value therefore, an assessment of impact on these matters (and other unidentified matters that may be present on site), and mitigation and management measures implemented to protect aboriginal cultural values must be provided.

DETSI's Requested Actions

- 13.1** Provide evidence to demonstrate consultation with all relevant parties associated with the:
- Project and potential impacts to the cultural matters;
 - Potential impacts to cultural and spiritual values of waters, including (but not limited to) impact to water quality and stream hydrology components of these values. Identify concerns raised by relevant parties and how these have been addressed in the application.
- 13.2** Provide information on proposed management and protection measures of the aboriginal cultural matters

Section 14.2.2 of the EAR has been updated to confirm the previously registered native title claimants for the Ngawun Mbara People Core Country Claim are identified as the Relevant Aboriginal Party (RAP) in relation to Aboriginal cultural heritage management for the project, in accordance with the *Aboriginal Cultural Heritage Act 2003* (ACH Act).

As indicated in EAR Section 14.2.2, SMC is required to manage the impacts of the project on Aboriginal cultural heritage in accordance with the requirements of the ACH Act. This will include addressing potential impacts on Aboriginal cultural heritage, including any cultural or spiritual values associated with waterways. The details of the Aboriginal cultural heritage and values located on the project site, proposed management and protection measures agreed with the RAP, and associated consultation conducted with the RAP in accordance with the ACH Act, will be confidential and are not appropriate to be published in a public EAR document.

14 Waste and Resource Management Hierarchy

DETSI's Comments

Section 15.2.5 of the EAR states that mine haul truck tyres will either be removed offsite or potentially disposed of (encapsulated) within the WRD, which includes tracking and quantities and surveying of locations.

Disposing of tyres in a WRD is not considered leading practice due to potential environmental risks and long term closure implications (e.g. leachate generation, decomposition, stability).

It is unclear whether any risk assessment associated with disposal of tyres in WRD (with PAF and dewatered tailings co-disposal in southern and central WRDs) have been conducted. Further clarity on the disposal strategy and a risk assessment is required.

DETSI's Requested Actions

- 14.1** Clarify if tyres are proposed to be disposed in WRDs and if proposed, provide details of how the waste and resource management hierarchy has been considered in determining the appropriateness of disposal and how the disposal prevents adverse impacts to environmental values.

As indicated in EAR Section 15.2.5, SMC will potentially dispose of waste tyres within the three WRDs. EAR Section 15.2.5 and Attachment 15-1 have been amended to clarify that waste tyres would only be encapsulated within NAF waste rock areas of the three WRDs. Hence, any waste tyres encapsulated within the WRDs would not come into contact with any PAF mine waste materials or drainage/seepage from any PAF mine waste materials.

The management strategies for waste tyres were developed with consideration of the DETSI Operational Policy *Disposal of scrap tyres at mine sites* (ESR/2016/2380), which is based on the waste and resource management hierarchy. The proposed potential management strategies (EAR Attachment 15-1) include:

- Take-back agreement with the tyre supplier
- Recycling of tyres off-site by a licensed waste contractor
- On-site disposal within the WRDs.

Due to the very remote location of the project site, the feasibility of a take-back agreement with a tyre supplier or recycling of tyres off-site will only be able to be determined at the commencement of operations. In the event that these options are not feasible, waste tyres will be disposed of on-site within the WRDs.

The DETSI Operational Policy states that *Disposing of scrap tyres in spoil emplacements is acceptable, provided the tyres are placed as deep in the spoil as possible but not directly on the pit floor. Placement should ensure scrap tyres do not impede saturated aquifers and do not compromise the stability of the consolidated landform.*

These requirements are specifically designed to ensure that on-site disposal of scrap tyres within spoil emplacements does not result in any adverse impacts to environmental values. Any disposal of scrap tyres within the WRDs will be conducted in accordance with these requirements.

14.2 Where disposal is required, of the three proposed WRDs, clearly identify the WRD that will contain tyres.

Waste tyres will potentially be disposed of in all three WRDs. Any tyres disposed of in the Central WRD would only be encapsulated within the NAF waste rock areas. The Northern and Southern WRDs will only contain NAF waste rock and will not contain any PAF mine waste.

14.3 If applicable, provide justification for the proposed disposal of tyres in WRDs (such as an options analysis) and a comprehensive risk assessment including geotechnical and structural stability of WRDs with particular consideration to co-disposed PAF and dewatered tailings.

As discussed above, each of the options in the DETSI Operational Policy waste management hierarchy was considered in the development of the waste tyre management strategies. The potential requirement for on-site disposal within the WRDs is related to the very remote location of the project site, which limits the potential feasibility of off-site waste management options.

Waste tyres will not be disposed of within, or in proximity to, any PAF mine wastes within the WRDs (including PAF waste rock and dewatered tailings). The WRDs will also not contain any aquifers. The disposal and encapsulation methods will ensure the waste tyres do not adversely affect the geotechnical stability of the WRDs. This will include ensuring the tyres are buried deep in the WRDs, are not disposed of in concentrated areas within the WRDs and are fully backfilled. Given the disposal strategy is consistent with an accepted method and requirements of the DETSI Operational Policy, further risk assessment is not warranted.

15 ERA 60: Waste Disposal

DETSI's Comments

The application seeks approval for waste disposal under *ERA 60(1)(a)(a) – Waste Disposal for operating a facility for disposing of, in a year, less than 50,000 t of waste.*

According to section 13.2.2 and submitted mine layouts, all waste including general, sludge/solids from STPs will be removed from the project site and transported to existing waste facilities in Richmond via the Yan Yean-Burleigh-Mt Norman Rd and the Richmond-Woolgar Road. Scrap metal and oil waste will be transported to Townsville via the Flinders Highway.

The application does not make reference to an onsite landfill therefore, clarity for requesting ERA 60 is required. It is further noted that the application references implementation of a waste management system however, it is unclear whether the waste management system or plan is proposed to be developed and implemented in accordance with Part 5 of the *Environmental Management (Waste Management) Policy 2000*.

DETSI's Requested Actions

15.1 Clarify the request for ERA 60.

SMC has confirmed that waste will be disposed of at the Richmond Shire Council landfill. On this basis, ERA 60 has been removed from the EA application (reference to ERA 60 has been removed from EAR Section 2.3.1).

- 15.2** Confirm whether an onsite landfill is being proposed. If so:
- Provide an assessment against the waste and resource management hierarchy to justify the proposed landfill; and
 - An updated application material that includes the design and location, risks associated with operation of landfill, impacts to environmental values, management and mitigation strategies, and rehabilitation of the facility in accordance with the departments landfill siting, design, operations, and rehabilitation guideline.

An on-site landfill is not proposed and reference to ERA 60 has been removed from the EAR.

- 15.3** Confirm whether the proposed waste management system will be developed and implemented in accordance with the waste management policy.

An on-site landfill is not proposed and reference to ERA 60 has been removed from the EAR.

16 Sewage Treatment Plants (STP)

DETSI's Comments

Sections 15.3 of the EAR does not include sufficient information on the sewage treatment activities and infrastructure associated with the facilities. In addition, the application does not provide justification for the proposed treated sewage water quality criteria referred to in Table 15-2 with respect to proposed nutrient concentrations (total nitrogen, total phosphorous). No information is provided as to the exact locations of the three sewage treatment plants (STPs), locations and volumes of the three suitable wet weather storages and the location and sizes of the sewage irrigation areas further discussed in item 17 below. Specific information including but not limited to the plant design, capacity, suitability of STP locations, operation and maintenance have not been provided.

An assessment of compliance with conditions contained within the Model operating conditions (ERA 63—Sewage Treatment) and Model mining conditions (Schedule G - Sewage treatment) should be provided.

In addition, a detailed waste management program that includes (but not limited to) the following information is required:

- Details of waste generated (such as treated sewage/effluent, recycled water, grit, screenings, biosolids, etc), storage method/s;
- Odour generation and controls (a list of all potential odour sources associated with the sewage pumping station and related infrastructure and measures that will be taken to control odour impacts);
- Recycle/reuse or disposal method/s;
- Details of how waste is managed with reference to the waste management hierarchy and 'cleaner production';
- Procedures for improving waste management practices;
- Provides details on the grit and solids screening process (if any) including the frequency for screen maintenance and the process of removal of the grit and solids; and
- If applicable, a Site-Based Management Plan (SBMP), a Contingency Plan and an Emergency Response Plan.

DETSI's Requested Actions

Following further consultation, DETSI has confirmed that it would accept the adoption of the Model Mining Conditions (ESR/2016/1936) for sewage treatment within the project EA. The inclusion of these conditions provides a suitable framework to address the requested actions associated with the sewage treatment infrastructure, while recognising that the final configuration and design parameters of the modular STPs will be refined through the detailed design and procurement process.

16.1 Provide a scale site plan which includes location of all sewage treatment infrastructure, sensitive features within 200m of the proposed sewage pumping station, floodplain extent (1% and 0.1% events).

As discussed in EAR Section 15.3, the STPs will be modular wastewater treatment plants. The final configuration and detailed site plans for the STPs will be confirmed during detailed design/procurement. As discussed in Section 15.3.1, the STPs will be located at the main (Southern) MIA, Northern MIA and the accommodation camps (Figure 15-1) at locations well above the Woolgar River floodplain (as defined by the 0.1% AEP flood extents [refer EAR Figure 6-4]). There are no sensitive features in proximity (or within 200 m)

of the Southern MIA and accommodation camp STPs. The Northern MIA STP irrigation area will be located and designed so that it does not pose a risk to Drainage Feature 3 (EAR Figure 6-4). There are no other sensitive features within proximity of the Northern MIA STP.

16.2 Provide information on the expected effluent quality for parameters including BOD, TSS, turbidity, dissolved oxygen, total nitrogen and phosphorus, E.Coli, sodium adsorption ratio, electrical conductivity and other analytes (including viruses, protozoans or suitable indicators of viruses and protozoans) and a description of how influent volumes were determined.

Effluent quality will be in accordance with the Model Mining Conditions for sewage treatment. The estimated influent volumes are described in EAR Section 15.3.2.

16.3 A description of the 'class' of treated sewage/recycled water that will be generated and its uses. Class of recycled water as defined in the Technical Guideline for disposal of effluent using irrigation.

As explained in EAR Section 15.3.2 and above, the STPs will generate sewage effluent that meets the Class C treated effluent standard and the Model Mining Conditions for sewage treatment, and treated effluent will be used for irrigation or dust suppression.

16.4 Provide information on how treated sewage/wastewater will be delivered to the proposed irrigation areas.

The details of the effluent irrigation systems will be confirmed during detailed design of the STPs.

16.5 A description of the method of disposal of grits, screenings, scums and sludges.

As explained in EAR Attachment 15-1, STP sludge and residues will be collected and disposed of off-site by a dangerous goods transport agent to a suitable waste handling facility.

16.6 Provide a quantitative description of expected average and peak wastewater flows associated with the STPs.

The daily wastewater flows for each STP, estimated using the methods outlined in the EP Regulation, are provided in EAR Table 15-1.

16.7 Further description of the effluent disinfection method/s that will be used to ensure that 'effective' disinfection will be achieved.

The effluent disinfection methods are described in EAR Section 15.3.2. Further details of the disinfection methods will be confirmed during detailed design/procurement of the STPs.

16.8 A description of alarm systems and details of power backup facilities.

The alarm systems and details of power backup facilities will be confirmed during detailed design/procurement of the STPs.

16.9 Information on peak design capacities and details of emergency storage capacities (volumes and time) in the pump station for peak dry and wet weather flows.

The pump station peak design and emergency storage capacities will be confirmed during detailed design/procurement of the STPs.

16.10 Information on the chemicals and polymers to be used in the treatment processes, chemical storage, containment and disposal.

The specific chemicals and polymers used in the treatment processes, and appropriate storage and disposal in accordance with the relevant Australian Standards, will be confirmed during detailed design/procurement of the STPs.

16.11 Monitoring of inflow and outflow of sewage from pumping station and wastewater generation, measures to minimise risks to public health.

Monitoring of inflow and outflow of sewage from pumping stations and wastewater generation will be undertaken using flow monitoring and routine operational inspections to confirm wastewater volumes remain within the design capacity of the STPs. Treated effluent quality and system performance will be monitored in accordance with the EA conditions and manufacturer specifications. Measures to minimise risks to public health will include effective wastewater treatment and disinfection, routine maintenance, alarm systems, emergency storage capacity, restricted access to infrastructure, and implementation of contingency procedures for system failures or overflows.

16.12 A detailed waste management plan.

A project-wide Waste Management Plan will be developed and implemented for the project. The plan will address the identification, storage, handling, recycling and disposal of all waste streams generated by the project, including general waste, regulated waste, scrap tyres, hydrocarbons, and sewage treatment by-products. Waste management practices will be implemented in accordance with the waste and resource management hierarchy, with a focus on waste avoidance, reuse and recycling where practicable, and disposal undertaken at appropriately authorised facilities where required.

17 Proposed Irrigation of Treated Effluent

DETSI's Comments

Section 15.3.2 of the EAR proposes effluent irrigation in areas such as the gardens and landscaping areas in the accommodation camp area and the MIA, or a dedicated irrigation area via ERA 63(1)(b)(i). However, the application lacks information to support the irrigation proposal including but not limited to environmental risk assessment, the exact discharge locations, size of irrigation areas, effluent data, climate data used for designing the scheme, flooding history, soil characteristics of proposed irrigation locations, proposed vegetation for irrigation areas, groundwater interactions, irrigation management, wet weather storage and duration of the proposed activity.

Further information including a risk assessment associated with the proposed effluent irrigation in accordance with the available Technical Guideline for disposal of effluent using irrigation is required to adequately perform an environmental risk assessment and determine whether the irrigation proposal is sustainable.

Where preliminary risk assessment identifies the proposed irrigation is not low risk, a complex mathematical modelling such as Model for Effluent Discharge through Land Irrigation (MEDLI) must be provided to assess the environmental impacts and sustainability of treated sewage irrigation schemes.

DETSI's Requested Actions

- 17.1** Provide detailed information requirements specified in Appendix 1 of the Technical Guideline for Disposal of effluent using irrigation.

The detailed location and design of the effluent irrigation systems for the project STPs, including development of the information requirements specified in Appendix 1 of the DETSI Technical Guideline, will be completed prior to the construction of the STPs.

- 17.2** Conduct a preliminary risk assessment considering information outlined in section 3.2 of the technical guideline.

Risk assessment of the project STP effluent irrigation systems will be completed as part of the STP detailed design process.

- 17.3** If applicable, provide a detailed risk assessment including MEDLI modelling (scenario and output files).
- MEDLI output file (*.medr)
 - MEDLI scenario file (*.med)

Detailed risk assessment and MEDLI modelling will be conducted, if required, as part of the detailed design of the project STP effluent irrigation systems.

- 17.4** Demonstrate the suitability of the locations and designs of sewage treatment, wet weather storage and irrigation site/s.

Detailed STP and effluent irrigation area site selection, sewage treatment design and wet weather storage will be completed as part of the project STP detailed design process. Preliminary details of the suitability of the STP sites for effluent irrigation are provided in the response to 16.1. Appropriate siting of the STPs and effluent irrigation areas will be an outcome of the detailed design process.

- 17.5** Provide evidence to demonstrate how/why the maximum 40 mg/L of total nitrogen and 12 mg/L of total phosphorus value were chosen/derived.

The nitrogen and phosphorus limits in EAR Table 15-2 have been amended to match the Model Mining Conditions for sewage treatment.

- 17.6** Provide the electrical conductivity (EC) or TDS and sodium adsorption ratio (SAR) of the treated sewage irrigation water.

The treated effluent quality will be confirmed as part of the STP detailed design process.

- 17.7** Provided a revised EAR that includes the most locally relevant climate data. This can be obtained and assessed from the Silo Data Drill (web link) data.

The detailed design of the STPs and effluent irrigation systems will take account of the most up-to-date, locally relevant climate data, at the time of design and construction.

- 17.8** Provide information on proposed grown crop species in the treated sewage irrigation areas.

This will be determined as part of the detailed design of the effluent irrigation areas.

- 17.9** Provide details of groundwater depth, quality and uses at the irrigation sites.

The detailed location and design of the project effluent irrigation areas will take into account the groundwater setting and ensure there are no potential adverse impacts on groundwater.

18 Waste Characterisation

DETSI's Comments

Geochemical analysis found most waste rock materials are classed as non-acid forming (NAF) but the tailings (dewatered) exhibit near-neutral pH and can be saline (EC 1680 $\mu\text{S}/\text{cm}$). Two of the three samples tested were classed as potentially acid forming (PAF) with low metal/metalloid concentrations. Elevated chromium (Cr(VI)) was detected in one tailings sample and the sulfate generation and oxidation rates were low. Given tailings are proposed to be co-disposed with NAF, the potential acidity associated with PAF oxidation is understood to be limited however, the extent of this is unknown. The geochemical analysis considers the release of acidic seepage as comparable to underlying groundwater regime which appears to be based on the neutralising effect of NAF waste rock. Kinetic column leach (KCL) tests involving NAF/PAF mixtures to confirm the potential seepage quality have not been provided. Treatment KLC16 represented a composite of NAF and PAF however, no information on the ratio of these materials was provided so the neutralising effect is not able to be evaluated.

Section 7.2.3 of Appendix J (MMMP within PRCP Plan) states *the dewatered tailings will be co-disposed with NAF waste rock in a ratio of 1:5* however, validation of this ratio (such as KLC) have not been provided.

It is further stated in section 3.7.1 of EAR that the geochemical test results from Appendix A indicate all of the waste rock from the BV1 and BV2 Pits will be non-acid forming with significant excess acid neutralising capacity.

The application indicates that a total of seven (7) ore and mine waste samples were prepared for use in the geochemical assessment as follows:

- 3 tailings samples (Tailings Sample 1 to 3);
- 2 spent heap leach residue samples (Spent Heap Leach Residue Sample 1 and 2);
- 1 low-grade ore sample; and
- 1 high-grade ore sample.

Further geochemical assessment of waste rock characterisation that is undertaken at a minimum rate of eight (8) regularly spaced samples per 100,000 tonnes of waste rock is required to validate the analysis presented in Appendix A. Further, a progressive sampling program that validates pre-mine waste rock characterisation should be included in the MMMP.

In addition, geochemistry of waste rock indicates that NAF has potential to generate alkaline/saline drainage. The geochemistry of NAF waste rock KLC tests releases leachate with a pH ≈ 9 and EC up to 4,600 $\mu\text{S}/\text{cm}$. Further information is required on the potential for and quality of drainage from the NAF external batter into the receiving environment and whether this seepage poses an environmental risk that also needs to be managed.

It is noted that section 5.3 of the ATC Williams report (April 2025) states that *RGS also reported limited testing of the high-grade ore ($n = 1$) which returned a PAF classification and low-grade ore ($n = 1$) stream which returned a classification of NAF. These results were in accord with the tailings testing ($n = 3$) that classified the tailings as PAF... While significant acid generation is not expected, the results from kinetic testing did indicate that neutral/saline drainage may be encountered during operations and placement of the cover system ... It is however highly unlikely that seepage generated by the CPC would be suitable for direct release to the receiving environment. Formation of acidic drainage is less likely but formation of neutral or saline drainage should be expected.* Therefore, having considered the limited testing and identified variability in sulfur content that are liable to react with water and oxygen forming sulfuric acid which could in turn, mobilise salts and heavy metals, further analysis of regularly spaced samples and assessment of neutral and saline drainage and mitigation measure to be implemented to minimise environmental harm is required.

DETSI's Requested Actions

- 18.1** Provide additional sample analysis for all mine waste. The minimum number of regularly spaced samples collected from each rock/overburden type during initial sampling should generally be as follows:

Mass of each separate rock type (tonnes)	Minimum number of samples
<10,000	3
<100,000	8
<1,000,000	26
<10,000,000	80

The project geochemical assessment was conducted by RGS, which is a leading geochemistry firm in the Australian mining sector. Dr Alan Robertson (Principal Geochemist at RGS) was a member of the development panel for the Australian Government's handbook *Preventing Acid and Metalliferous Drainage* (the PAMD Handbook) and was engaged by the Australian Government to peer review the PAMD Handbook (refer to page vii of the PAMD Handbook). Dr Robertson was also the expert peer reviewer for the 2024 South Australian guidelines *Assessment and Management of Acid and Metalliferous Drainage* and is chairperson of the NT Government's *McArthur River Independent Expert Panel on the Prevention and Management of Potential AMD from Large Waste Rock and Tailings Storage Facilities*.

Contemporary best practice geochemical sampling and characterisation for Australian mining projects is undertaken in accordance with the PAMD Handbook. The PAMD Handbook was published in 2016 and established the current overarching national framework for the assessment and management of acid and metalliferous drainage (AMD) across the mining industry.

The specified rock/overburden sampling frequencies provided in the information request have been extracted from a table presented in Section 6(3) of the Department of Mines and Energy's 1995 *Draft Technical Guidelines for Environmental Management of Exploration and Mining* (Draft DME Guidelines). The Draft DME Guidelines were never finalised or formally adopted by the Queensland Government and are no longer publicly available from the Queensland Government websites. The specified sampling frequencies have not been reproduced in any of the Australian or state/territory AMD guidance documents that have been released in the 30 years since the Draft DME Guidelines were prepared. Hence, these minimum sampling frequencies are not considered to be consistent with the current best practice approach for geochemical sampling.

Regardless, the project geochemistry assessment was based on more than 10,000 representative rock samples, which satisfies the 1995 DME Guideline sampling requirements as reproduced in the information request.

The approach to sampling and geochemical characterisation within the EAR has been undertaken generally in accordance with the PAMD Handbook. Section 4.2 of the PAMD Handbook requires that proponents undertake a risk-based, site-specific material characterisation program prior to mining, based primarily on the geological and geochemical variability of the in-situ rock and the consequences of misclassifying materials. Section 4.2 of the PAMD Handbook specifically recommends that the program should be designed to be representative rather than achieve a specific minimum sampling frequency or density.

Sections 1.2 and 4.1 of the PAMD Handbook require that the material characterisation program be undertaken by an expert in geochemical characterisation due to the unique site-specific nature of each program and the high degree of interpretation and analysis required to determine whether a program is suitably representative. RGS designed and managed the EAR geochemistry characterisation program.

For projects at this stage of development, the PAMD Handbook methodology involves:

- An initial desktop assessment to establish the geological variability and any known AMD risks
- An initial screen of the in-situ rock for potential AMD risks
- A targeted sampling of the in-situ rock and/or mine materials to confirm the screening results and confirm the potential AMD risks.

Section 3 of the *EAR Geochemistry Report* (Appendix A) has been updated to include additional details of the geochemical characterisation program, including the desktop assessment, screening assessment and targeted sampling undertaken in accordance with the PAMD Handbook.

As part of this response, RGS reviewed 1,200 additional geochemistry assay samples from the BV1 and BV2 Pit waste rock profiles. RGS analysed a suite of geochemistry data from these samples and concluded that the results of this additional analysis reinforced the validity of its previous assessment of potential AMD risks associated with the BV1 and BV2 Pit waste rock. Section 10 of the *EAR Geochemistry Report* (Appendix A) has been updated to include additional explanation of the geochemical risk assessment and AMD risk classifications.

Based on the consistent and predictable geology and the significant number of representative geochemical datapoints (>11,000), RGS concluded that there is a high level of confidence in the conclusions of the geochemical characterisation program and a low risk of materials being misclassified.

In summary, the geochemical characterisation program is considered to be consistent with the relevant leading practice guidelines for geochemical characterisation and is appropriate for the pre-mining phase of a project. On this basis, there is no technical justification for additional geochemical sampling or testing.

The findings of the geochemical characterisation and mine waste AMD classifications presented in Section 10 of the *EAR Geochemistry Report* (Appendix A) have been used to inform the design of the storage facilities and the handling requirements for all mine materials.

An MWMMP will be developed for the project prior to the commencement of mining activities in accordance with the EA conditions. The MWMMP will include an operational geochemical sampling and testing program for waste rock and tailings materials to confirm the geochemistry and AMD risk classifications are as expected and to ensure the appropriate storage and handling of the mine wastes. Relevant management actions will be included in the MWMMP.

18.2 Provide additional tests (including KLC) analysis of NAF/PAF mixtures to demonstrate expected WRD seepage quality.

Static and kinetic leachate tests are highly idealised laboratory tests and the results of these tests do not represent field seepage water quality. Section 4.3.1 of the *EAR Geochemistry Report* (Appendix A) has been amended to provide further information.

Static tests measure the maximum solubility of each component of the mine materials under idealised laboratory conditions designed to maximise oxidation and dissolution from pulverised sample materials (<75 µm) with a very high surface area. Kinetic tests measure the timing, rate and duration of oxidation and acidity/alkalinity generation processes generally under highly concentrated, freely oxidising conditions.

The *EAR Geochemistry Report* (Appendix A) specifically includes kinetic leachate test KLC16, which assessed NAF waste rock mixed with a high proportion (25%¹) of PAF material (i.e. mineralised rock

¹ For reference, as discussed above, the waste rock in BVS Pit is overwhelmingly (98%) non-acid forming (NAF) rock with significant buffering capacity and is likely to be acid consuming. Approximately 2% of the waste rock is classified as PAF material.

associated with the orebody). The KLC16 test was prepared from a total of 31 representative waste rock samples including 24 NAF samples and 7 PAF samples and is therefore sufficiently representative of a wide range of waste rock materials.

Attachment D of the EAR *Geochemistry Report* (Appendix A) shows that the leachate from KLC16 is typically pH 6 to 8 with an electrical conductivity (EC) of less than 350 $\mu\text{S}/\text{cm}$ and contains low concentrations of metals and metalloids that are comparable to the referenced default toxicant guideline values. The only exception is dissolved aluminium, which is marginally elevated in the KLC16 leachate but can, at least partially, be present as part of fine colloidal material and pass through the standard laboratory filtration stage of analysis and would be expected to be sparingly soluble at neutral pH.

Based on the test results to date, once the diluting effects of incident rainfall/infiltration in the field are considered for a range of larger particle size materials in a typical waste rock dump, the seepage quality from the storage of PAF materials within the NAF waste rock is expected to be pH neutral, non-saline and contain low concentrations of dissolved metals and metalloids (including aluminium). Hence, additional tests are not contemplated at this stage and an operational geochemical sampling and testing program will be included in the new MWMMP.

Assessment of Potential for Hexavalent Chromium in Tailings Seepage

The comments relating to this IR Issue noted that “elevated” hexavalent chromium (Cr(VI)) was detected in Tailings Sample 1 and queried the potential for hexavalent chromium to be present in tailings seepage (including seepage from the Central and Southern WRDs that will store dewatered tailings).

Section 6.2 of the EAR *Geochemistry Report* (Appendix A) explains that Tailings Sample 1 contains slightly elevated total chromium, rather than hexavalent chromium as suggested. RGS has confirmed that the total chromium result is likely to be due to naturally occurring trivalent chromium present in ultramafic and mafic rocks (mainly as chromite or other very stable trivalent chromium-bearing minerals), rather than hexavalent chromium.

Leachate from Tailings Sample 1 was tested for total chromium and the concentrations are below the limits of reporting. These results are consistent with trivalent chromium, which is sparingly soluble, tends to adsorb strongly to clays and iron oxides, and is relatively immobile.

Hexavalent chromium is only stable under strongly oxidising and alkaline conditions. Stored mine waste rock environments are rarely alkaline and sufficiently oxidising to drive significant conversion of trivalent chromium to hexavalent chromium and these alkaline and oxidising conditions are unlikely to occur in the project waste storage facilities.

Hexavalent chromium is also mobile and soluble and, if present, would leach easily and would give rise to elevated total chromium concentrations in leachate tests.

On this basis, the total chromium detected in the Tailings Sample 1 is likely to be trivalent chromium in mineral lattices, not hexavalent chromium, and its conversion to the hexavalent form within the project waste storage facilities is not likely. Hence, the tailings stored in the mine waste storage facilities are considered unlikely to generate seepage containing hexavalent chromium.

18.3 Provide information on the ratio of materials analysed in sample KLC16.

The KLC16 sample was a blend of 1 part PAF waste rock to 3 parts NAF waste rock (i.e. 25% PAF to 75% NAF).

This sample was specifically prepared with an unrepresentatively high proportion of PAF waste rock to ensure that the water used in the elution process interacted with and contacted the PAF waste rock and, hence, the water collected from this kinetic leach column contained drainage from the PAF waste rock.

This sample does not represent any specific waste rock disposal ratio or storage scenario. However, testing results collected from this sample demonstrate clearly that the NAF waste rock has the ability to neutralise PAF material at significantly higher proportions than will be present in the WRDs. This validates the acid base accounting results and conclusions presented in the *EAR Geochemistry Report* (Appendix A).

On this basis, the NAF waste rock is expected to be suitable for beneficial use as a neutralising medium for co-disposed PAF materials.

Section 4.3.1 of the *EAR Geochemistry Report* (Appendix A) has been amended to provide clarification on this issue.

18.4 Clarify the co-disposal strategy for dewatered tailings and subsequently revised application documentation for the selected co-disposal method.

The disposal strategy for dewatered tailings is addressed in the response to IR Issue 47.

18.5 Pending response to (4) provide information on validation of the proposed co-disposal ratio 1:5.

The disposal strategy for dewatered tailings is addressed in the response to IR Issue 47.

18.6 Provide information on the expected quality of drainage from the NAF batter into the receiving environment. If applicable, provide mitigation and management measures to be implemented to minimised harm to the receiving environment.

Section 10 of the *Geochemistry Report* (Appendix A) concludes that the drainage water quality from the WRDs is likely to be pH neutral to slightly alkaline, with low salinity and low concentrations of metals and metalloids. This conclusion is based on the leachate testing results presented in Attachment D of the *Geochemistry Report*, with consideration of the testing methods and associated biases observed in the results (for example, the variability observed in KLC13 and KLC14 test results due to the bespoke testing methods and higher solid to water ratios used for these samples) and the diluting effects of incident rainfall/runoff in the field.

SMC has revised the water management strategy for drainage from the NAF WRD slopes. The WRD drainage water will now be collected and stored in dams for re-use as mine water supply or released in accordance with EA controlled release conditions. The EA controlled release conditions will be approved by DETSI and will be designed to ensure the controlled releases do not result in any significant environmental harm in the receiving environment.

EAR Section 6.6.6 provides a description of the controlled release system for the NAF WRD slopes. Further detail on the operation of the controlled release system will also be provided in the Water Management Plan prepared prior to the commencement of mining activities.

19 Groundwater Bore Network and Interim Limits

DETSI's Comments

Groundwater Bore Network

There are around 14 bores used for baseline monitoring (paired bores shallow and deep). Most of the bores are located within the project footprint and are likely to be directly impacted by mining activities during operation. It is unclear how the continuity of the groundwater quality monitoring program for various water bearing units will be achieved into the future. The proposed monitoring network is insufficient to determine contaminant pathway, potential impacts and monitoring during operation and post closure. It is noted that a network for groundwater monitoring post mine closure have not been proposed.

Groundwater Interim Limits

The interim limits presented in Table 1 of Appendix C for copper, molybdenum, and selenium have been adopted from the guidelines for livestock drinking water, which is not appropriate. All of these indicators frequently fall below the detection limits in the monitored waters and are not adequate to protect aquatic ecosystems and groundwater values.

DETSI's Requested Actions

Provide the following information:

- 19.1** A revised groundwater network including additional upstream and downstream bores surrounding regulated structures.

A revised groundwater monitoring network has been included in EAR Section 5.7.

- 19.2** Groundwater monitoring bore locations for existing and new bores including coordinates (easting and northing), installation phase for each bore, surface RL (mAHD), screened interval RL (mAHD), target formation and monitoring frequency, quality characteristics, limit type and proposed site-specific limits (95th percentile of background).

EAR Section 5.7.1 and EAR Table 5-2 describe the groundwater level monitoring program. EAR Section 5.7.2 and EAR Table 5-3 describe the groundwater quality monitoring program.

EAR Tables 5-2 and 5-3 include the groundwater monitoring bore coordinates, ground surface elevation, screened interval, target strata/groundwater system and monitoring frequency for each monitoring bore. EAR Table 5-3 also includes the groundwater quality characteristics to be monitored.

EAR Section 5.7.2 explains that groundwater quality trigger values will be finalised prior to commencement of mining activities. Final groundwater quality trigger values will be site-specific values calculated from the complete pre-mining baseline dataset, including at least 18 datapoints spanning at least 24 months. Prior to finalisation of the groundwater quality trigger values, interim groundwater quality trigger values based on relevant published default guideline values will be adopted. The interim groundwater quality trigger values are summarised in Table 1 of the EAR Groundwater Report (Appendix C).

- 19.3** Update Table 1 to include metals with limit values for the 95% species protection in the national guidelines (ANZG, 2018), similar to the other indicators mentioned in Table 1.

DETSI has subsequently confirmed that interim groundwater quality trigger values for these metals can be conditioned in the EA based on the default guideline values (95% aquatic ecosystem protection), and further updates to the EAR are not required at this stage.

- 19.4** Provide a groundwater management plan that includes the following information (but is not limited to):
- Potential sources of contamination to groundwater from the activity;
 - Potential groundwater impacts due to the activity are identified, monitored and mitigated;
 - Sampling and monitoring methodology;
 - Adequate groundwater monitoring and data analysis is undertaken to detect any impacts to groundwater levels and quality due to the activity and determine trends in groundwater quality;
 - Appropriate quality assurance and quality control program;
 - Conceptual groundwater model (3D); and
 - Review process to identify and implement improvements to the program.

DETSI has subsequently confirmed that operational management plans, including the Groundwater Management Plan, can be conditioned in the EA to be developed prior to the commencement of mining activities and are not required at this stage.

20 Groundwater Model

DETSI's Comments

The scaled root mean squared error (SRMS) is calculated as 9.83% (section D2.6 of the groundwater modelling results) however, justification for the selected target SRMS has not been provided. It is also noted that the groundwater model does not identify the convergence criterion for the numerical model nor discusses the correlation referenced in section D2.6. The convergence criterion for the numerical model should generally be less than 1% and reported at all times and cumulatively over the whole simulation for the error to be acceptable.

In addition, Table D8 of the model identifies that validation of long term trends replication and temporal discretization have not been undertaken. Justification for the absence of this validation have not been provided.

Furthermore, section 5.6.7 of the EAR states that any limited water seepage from the satellite pit final voids into the underlying geology will migrate towards the BVS Pit over time. This is justified on the location of the satellite pits being hydraulically upgradient of the BVS Pit final void and the associated groundwater sink. However, section 5.5.3 states that - *the water level within the BVS Pit final void is predicted to recover to a quasi-equilibrium elevation of approximately 230 mAHD. Hence, the predicted final void lake elevation is approximately 120 m lower than the pre-mining groundwater level within the BVS Pit footprint. This difference in groundwater elevation will generate a post mining hydraulic gradient that induces groundwater flow towards the BVS Pit final void.* Further information on whether the potential for seepage generation during the operational phase of mine have been assessed is required. An assessment of the hydraulic connectivity between the pits and groundwater including surface and groundwater interaction at the satellite pits to address potential risks associated with the proposed activities is required.

DETSI's Requested Actions

- 20.1** Provide justification for the selected target SRMS of 9.83% and details of the correlation between measured and modelled hydrographs.

Scaled Root Mean Square (SRMS) Error

The *Australian Groundwater Modelling Guidelines* (AGMG) describes how groundwater model calibration should be evaluated in Australia. AGMG Guiding Principle 5.4 requires that calibration performance is

measured using both quantitative measures (e.g. the SRMS error for groundwater levels) and qualitative performance measures (e.g. replicating the conceptual model, recharge and discharge observations, etc).

Section 5 of the AGMG explains that the SRMS error is a useful quantitative measure when the only modelling objective is to match observed groundwater levels but is less useful when automated calibration methods are used (as was the case for the project). It also explains that SRMS error targets are context-dependent and specifically cautions against the use of predefined SRMS error targets that would prevent the best overall model calibration based on relevant information.

Section D2.11 of the *EAR Groundwater Report* (Appendix C) explains that the calibration performance was evaluated using quantitative and qualitative measures, including the SRMS error.

The hydrogeologist confirmed that the model achieved the optimal overall calibration of quantitative and qualitative measures including groundwater levels and trends, vertical hydraulic gradients (shown in *EAR Groundwater Report* Figures 12 to 15) and the observed groundwater flow patterns described in Section 5 of the *EAR Groundwater Report* (Appendix C). As stated in Section 4.4 of the *EAR Groundwater Report* (Appendix C), the model calibration is therefore considered to be robust.

With respect to groundwater levels specifically, Table D3 of the *EAR Groundwater Report* (Appendix C) shows that the calibration achieved a weighted SRMS error of 1.67% which demonstrates a very good fit to the weighted groundwater level observations used in the calibration. Table D3 also shows that the calibration achieved an unweighted SRMS error of 9.83% which, although less relevant than the weighted SRMS error, shows that the model still provides a good match to the raw groundwater level observations (i.e. less than 10% error). Note that the SRMS error of 9.83% was an outcome of the calibration rather than a target.

The hydrogeologist has also confirmed that whilst the calibration could have been adjusted to reduce both SRMS errors, this would have resulted in a sub-optimal calibration for other aspects of the model (i.e. less consistency with the conceptual model, observed groundwater level trends, hydraulic gradients, hydraulic parameters, etc) and a less robust overall model calibration.

Hydrograph Correlation

Figure D12 of the *EAR Groundwater Report* (Appendix C) is a correlation plot that shows the unweighted correlation between all measured and modelled groundwater levels. Figure D12 has been updated to also show the correlation based on the optimally weighted groundwater level dataset used in the calibration and the supporting text in Sections D2.6.3 and D2.6.4 has been updated to describe the figure update and provide further explanation of the calibration results. The updated Figure D12, together with the statistical performance measures in Table D3, demonstrates that the measured and modelled groundwater levels are suitably correlated (i.e. that the model achieved what the AGMG describes as a “good fit” to the measurements).

The corresponding hydrographs for the calibration data presented in Figure D12 have also been included in Appendix D1 of the *EAR Groundwater Report* (Appendix C). These hydrographs show the temporal distribution of modelled and observed groundwater levels over the calibration period and demonstrate visually that the model has replicated the observed groundwater level trends and patterns.

20.2 Provide the level of convergence for the numerical model.

The numerical model was constructed using MODFLOW software. In MODFLOW, model convergence occurs when the maximum absolute change in groundwater level (hydraulic head) between model calculation steps is less than the specified convergence criteria (also called the “head change” criteria).

AGMG Table 5-1 recommends that the convergence criteria are set one or two orders of magnitude smaller than the level of accuracy required by the groundwater level predictions.

The convergence criteria adopted for the groundwater model are as follows:

- 0.0005 m (0.5 mm) for the steady-state model calibration
- 0.005 m (5 mm) for the transient model calibration.

Section 6.2.1 of the *EAR Groundwater Report* (Appendix C) explains that a 1 m change in groundwater level represents the reasonable limit of accuracy that can be inferred from groundwater modelling. Hence, the convergence criteria adopted are more than two orders of magnitude smaller than the level of accuracy required from the model and therefore exceed the convergence criteria specified in the AGMG.

The model achieved the adopted convergence criteria at all modelled time steps/stress periods. The above convergence criteria also affect the volumetric budget (water balance) error (i.e. how well the computed flows in and out of the modelled groundwater system balance). An excessively large convergence criterion typically results in unbalanced flows and larger water budget errors (>1%) while a smaller convergence criterion typically results in a more precise water budget (e.g. <0.1%).

AGMG Table 5-1 recommends that a water budget error of less than 1% should be achieved at all times, and cumulatively.

Section D2.10 of the *EAR Groundwater Report* (Appendix C) explains that the volumetric water budget error for each timestep ranges from -0.001 to 0.001 m³/day (i.e. +/- 0.0003%). This equates to a total error of less than 0.0063% for all time steps. Section D2.10 of the *EAR Groundwater Report* also explains that the model achieved nil error at the end of the final calibration timestep. These statistics demonstrate that the calibrated model is numerically stable, achieves an accurate numerical solution for each timestep and cumulatively over the calibration period and reaches a perfect numerical solution at the end of the model calibration.

This outcome confirms that the selected convergence criteria (head change criteria) are appropriate.

Section D2.6 of the *EAR Groundwater Report* has been updated to include Section D2.6.2 that explains the convergence criteria and level of convergence achieved by the model calibration, as described above.

Section D2.10 has been updated to provide additional explanation of the volumetric water budget statistics as they relate to the level of model convergence, as described above.

20.3 Provide justification for the validation of model for long term trend projection.

Table D8 of the *EAR Groundwater Report* (Appendix C) provides a summary of the model calibration confidence classification based on the AGMG Table 2-1 classification scheme.

Table D8 shows that the model calibration achieves a Class 2 to Class 3 calibration, both overall and specifically with respect to long-term trend replication and temporal discretisation (i.e. a high confidence model calibration).

Table D8 notes that the model calibration was not “validated”. For clarity, the model was progressively validated via an informal process that involved comparing the model results to simple mathematical (analytical) solutions.

However, in the context of the AGMG classification scheme, “validation” refers specifically to model verification as described in Chapter 5 of the AGMG.

As explained in Chapter 5 of the AGMG, model verification is the process of reserving a subset of the calibration data set (observed historic data) and testing the calibrated model against this data to confirm that the model is suitable for use as a predictive tool. However, the AGMG cautions that excluding data from the model calibration so that it can be used for verification is often not the best use of the available data (i.e. the data may be better used to calibrate the model). Hence, the benefits of undertaking a model calibration verification must be considered on a case-by-case basis.

In this instance, the hydrogeologist identified that using the available data in the model calibration achieved the optimum calibration result as evidenced by the calibration metrics discussed in the response to IR Issue 20(1) and that reserving a subset of the observed data for verification would result in sub-optimal model calibration. Hence, this calibration decision is technically justified based on the available information and the AGMG and does not indicate an omission or deficiency in the scope of the modelling. Furthermore, this approach is consistent with the calibration approach typically used for greenfield mining projects in Queensland.

Table D8 of the *EAR Groundwater Report* (Appendix C) has been updated to reflect the above clarification.

20.4 Confirm whether satellite pits BV1 and BV2 are a groundwater sink or source.

As explained in Section 6.1.2 of the *EAR Groundwater Report* (Appendix C), BV1 Pit and BV2 Pit (the satellite pits) are relatively shallow pits that will terminate 20 m and 15 m above the groundwater table, respectively. Hence, the satellite pits are located well above the groundwater table and will not receive groundwater inflows during the operations phase.

Section 6.1.2 of the *EAR Groundwater Report* (Appendix C) also explains that the base of the satellite pits will be located in the Proterozoic basement. The Proterozoic basement is an aquiclude that is essentially a dry crystalline and metamorphosed rock mass with occasional disconnected cracks that can contain groundwater. It has very low permeability that will effectively prevent seepage of any pit water to the underlying groundwater table. Hence, the satellite pits are expected to have negligible effect on the underlying groundwater regime during the operations phase.

During the operations phase, the BVS Pit will function as a groundwater sink from the time the mining excavation descends below the groundwater table (in Year 1 of operations). The BVS Pit is located in the down-gradient groundwater flow direction from the satellite pits (Figures 21 and 22 of the *EAR Groundwater Report* [Appendix C]). Hence, any unexpected pit water seepage from either BV1 Pit or BV2 Pit during the operations phase would migrate very slowly towards the underlying groundwater table and follow the hydraulic gradient towards the BVS Pit to the south-west.

Section 5.5.2 explains that the Proterozoic basement through which any seepage from the satellite pits would flow has an extremely low permeability that was measured at between 3 mm and 15 mm per year. Given that the BVS Pit will be located more than 1 km to the south-west of the satellite pits, and will function as a groundwater sink from Year 1 of operations, any unexpected water seepage from BV1 Pit and BV2 Pit would be captured in the BVS Pit. Hence, any potential effects on groundwater quality due to satellite pit seepage during the operations phase would be limited to the groundwater flow path between the satellite pits and the BVS Pit.

A groundwater monitoring program will be implemented that will detect any unexpected groundwater quality effects due to any seepage from the satellite pits/voids during the operations phase and post closure. The groundwater monitoring program is provided in EAR Section 5.7.

Additional explanation of the potential for groundwater seepage from the satellite pits during the operations phase has been included in Section 6.4.2 of the *EAR Groundwater Report* (Appendix C).

20.5 Provide information on surface water and groundwater interaction at the satellite pits and an assessment of the hydraulic connectivity between the satellite pits and groundwater to address potential risks associated with the proposed activities.

This issue is addressed in the response to 20.4.

21 Drawdown

DETSI's Comments

The predicted drawdown in the groundwater report includes sensitivity scenarios for the extent of the drawdown based on the worst-case scenario for the Proterozoic basement. However, limited interpretation of the results presented in Figure D 16-19 is provided.

Further interpretation such as the worst case scenario for hydraulic conductivity (k_x and k_z) that projects drawdown beyond tenure boundaries and into the Woolgar River is required. In addition, it is recommended that periodic validation of the drawdown model and management measure including a contingency plan for the worst-case drawdown scenario be provided to ensure adverse effects from drawdown is minimised.

DETSI's Requested Actions

21.1 Provide additional interpretation of the predicted worst-case drawdown scenarios.

Section 6.2.1 of the *EAR Groundwater Report* (Appendix C) describes the worst-case project drawdown predictions. As explained in this section of the report, the worst-case groundwater drawdown typically occurs at the end of mining operations, when the open cut pit excavation is dewatered at its maximum depth. Once mine dewatering ceases at the end of mining operations, groundwater levels in the vicinity of the pit final void will recover in line with the establishment of a final void lake. This approach is appropriate and conservative for assessing the effects of mining on the groundwater regime and ensures that the potential worst-case impacts on groundwater users and sensitive groundwater-dependent environmental features are assessed.

Section D3.2 of the *EAR Groundwater Report* (Appendix C) explains that a sensitivity analysis was undertaken to test the sensitivity of the groundwater model drawdown predictions to the hydraulic parameters used in the model.

The sensitivity analysis focussed on the variability of hydraulic parameters used in the model because this is the key quantitative uncertainty in any groundwater model. It is not possible for a groundwater model to precisely capture the full range of real-world spatial variation in hydraulic properties. This is largely due to the model scale, resolution (both horizontal and vertical) and computational limitations. Hence, the groundwater model necessarily provides a simplification of real-world variations in hydraulic properties.

EAR Groundwater Report (Appendix C) Figures D16 to D19 show the project drawdown extent produced by each of the sensitivity tests (in the Proterozoic basement, which is the hydrogeological unit most impacted by the project). It is important to note that the parameter values used for each sensitivity test are extreme (i.e. hydraulic conductivity values were increased and decreased by a factor of five from their calibrated values) and, when applied across the model domain and/or in combination, will produce unrealistic drawdown zones with negligible probability of occurring.

Figures D16 to D19 also show the baseline predictions, i.e. the predictions produced by the calibrated model against which the sensitivity results are compared. The baseline predictions are derived from the most appropriate parameter set, which best represents real-world conditions and the conceptual groundwater model, while achieving the optimal model calibration for all key calibration metrics.

Accordingly, it is important to note that drawdown results generated by extreme parameter variations for the purposes of sensitivity analysis do not represent worst-case drawdown predictions. Hence, they are not suitable or appropriate for use in impact assessment.

As explained in Section D3.2 of the *EAR Groundwater Report* (Appendix C), the sensitivity analysis results show that the predicted drawdown extent is more sensitive to changes in hydraulic conductivity and specific

storage and less sensitive to recharge rates and streambed conductance. It was also found that the sensitivity tests destabilised the model and produced sub-optimal performance metrics, reinforcing that the sensitivity values tested are less appropriate than the baseline values.

When considered in a risk management context, it is highly unlikely that the extreme parameters used to undertake the sensitivity test will ever occur. However, the project groundwater level monitoring program is specifically designed to confirm the actual levels of groundwater drawdown from the project in order to verify the groundwater level predictions presented in the *EAR Groundwater Report* (Appendix C). The EA will also contain groundwater level triggers to identify any significant departures in monitoring results from the model predictions. Any groundwater level trigger exceedances will be investigated and corrective actions implemented, as necessary. This would include assessment of any potential additional impacts, and appropriate mitigation measures, due to higher-than-expected levels of drawdown, including any drawdown extending beyond the project site boundary.

21.2 Propose period validation of drawdown model.

Section 7.2 of the *EAR Groundwater Report* (Appendix C) explains that SMC will undertake an annual review of the groundwater monitoring data to confirm the accuracy of the groundwater model drawdown predictions.

Where the review finds that the drawdown predictions are likely to have been under-estimated and potential additional impacts are likely, additional groundwater modelling will be undertaken to validate the model and update the drawdown predictions and associated impact assessment.

As explained in Section 7.2 of the *EAR Groundwater Report* (Appendix C), the results of the annual review will be reported to DETSI and will include a supported statement confirming whether the monitoring results are consistent with the model predictions.

The annual review process will be detailed in a Groundwater Management Plan that will be prepared prior to commencement.

Separately, SMC will also review the groundwater model and update the groundwater model, where necessary, every 3 years in accordance with the underground water management provisions of Chapter 3 of the *Water Act 2000*.

21.3 Provide management measures and contingency plan for the management of drawdown based on the worst-case drawdown extent.

The project EA conditions will require the development and implementation of a Groundwater Management Plan, prior to commencement of the project. The plan will be required to specifically address any risk that groundwater effects and impacts are greater than predicted. The groundwater monitoring program included in Section 5.7 of the *EAR* has been designed to confirm the actual groundwater effects from the project including actual groundwater level drawdown. Groundwater management will require the comparison of monitored groundwater levels with EA groundwater level triggers and any trigger level exceedances will trigger an investigation to determine the reason for the exceedance. Where monitored exceedances are confirmed to be due to underprediction, impact assessments will be required to confirm the extent of any additional environmental impacts and suitable mitigation measures.

This well-established operational framework for the management of groundwater impacts will adequately account for any risk associated with unexpected groundwater effects and impacts, including greater than predicted levels of groundwater drawdown.

22 Table 3 – Summary of Bores and VWP

DETSI's Comments

In Table 3 of the Appendix C, around 14 bores and 3 vibrating wire piezometer (VWP) arrays for various aquifers have been designated for groundwater monitoring. However, it is unclear how many of these bores would serve as interpretation bores, which are often up-gradient to the activities. At any given point, up-gradient bores provide information about the natural, unaffected groundwater quality of a water bearing unit and are important for the interpretation of changes in water quality at the compliance bores.

DETSI's Requested Actions

22.1 Clearly identify interpretation bores and compliance bores.

EAR Section 5.7 describes the updated groundwater monitoring program, including interpretation and compliance bores.

23 Compliance Strategy – Limit Monitoring

DETSI's Comments

The application does not propose a compliance strategy against all proposed groundwater quality indicators. For example, three (3) consecutive exceedances of an indicator would trigger a non-compliance to the limit, in line with DES (2021) groundwater guideline. A comprehensive groundwater monitoring and compliance strategy should be developed in future to ensure long-term management.

DETSI's Requested Actions

- 23.1** Provide a compliance strategy for each groundwater quality indicator. The following is recommended:
- Groundwater samples obtained from monitoring bores must not exceed Limit A specified in Table 1 of Appendix C on any five (5) consecutive sampling occasions.
 - Samples obtained from monitoring bores must not exceed Limit B specified in Table 1 of Appendix C on any three (3) consecutive sampling occasions.
 - If groundwater samples from any monitoring bore exceeds Limit B specified in Table 1 of Appendix C on any one (1) sampling occasion then resample the groundwater within the monitoring bore for all exceeding parameters

DETSI has subsequently confirmed that the required compliance strategy for groundwater quality triggers will be conditioned in the EA.

24 Surface Water Monitoring

DETSI's Comments

Surface water monitoring

Appendix D indicates that the proposed monitoring program during the operation will include monthly monitoring for water storage levels and volumes, but quarterly for water quality. Considering that the periods of water flow in the Woolgar River (8 weeks throughout the year) and tributaries, the surface water monitoring regime appears insufficient.

Further, section 3.1.1 acknowledges the limited existing baseline surface water quality and therefore proposes interim water quality guideline values until sufficient data is available from the Receiving Environment Monitoring Program (REMP). Although the justification for inadequate samples at the time of application lodgement is understood, it is unclear why the sampling program is delayed until REMP is implemented. The application does not provide justification for this delay.

For establishing limits for the physicochemical indicators, water quality guidelines recommend *“that estimates of 80th percentiles should be based on a minimum of 18 samples collected at 1 to 2 reference sites over at least 12 months but preferably over 24 months (to capture 2 complete annual cycles).”* The 95th percentiles from dissolved concentrations of metals and metalloids is recommended to determine site-specific water quality objectives.

Proposed interim limits

The proposed interim trigger value for selenium does not consider the bioaccumulation potential of the selenium in accordance with the ANZG, 2018 guidelines. For selenium, ANZG recommends applying the 99% species protection level (instead of 95%) for a slightly to moderately disturbed ecosystem to allow for adjustment for bioaccumulation at the site.

DETSI's Requested Actions

24.1 Provide an updated supporting document and surface water report that provides justification for the proposed monitoring frequencies.

EAR Section 6.9.3 includes a revised surface water monitoring program, including monitoring frequencies. The proposed water quality monitoring frequencies for the Woolgar River and the drainage features traversing the project site are weekly during flow events (EAR Table 6-7). SMC considers this monitoring frequency is appropriate for ephemeral waterways.

24.2 Provide justification for the delayed baseline data collection.

Baseline surface water quality monitoring to date has been significantly constrained due to the following factors:

- Remoteness of the project site, which is approximately 7.5 hours' drive from the closest NATA water quality testing laboratory in Townsville
- Limited surface water flow events in the project area due to the highly ephemeral nature of the Woolgar River and the drainage features that traverse the project site
- Inaccessibility of the project site and the waterways during wet periods, when the limited surface water flow events occur, due to the undeveloped nature of the project area.

SMC is proposing to undertake routine monitoring to obtain the minimum baseline dataset required to determine EA water quality trigger levels once site access arrangements are improved during the early site establishment phase.

24.3 Pending response to (2) above, provide baseline dataset as detailed in adjacent comments and site-specific limits for physicochemical indicators. Note that data should be obtained under base-flow conditions and the flow during sampling should be recorded.

DETSI has subsequently confirmed that in the absence of sufficient site-specific baseline water quality data, interim water quality objectives and triggers, based on the default guideline values (ANZG 2018), can be included in the EA. In this event, the EA would include the requirement for site-specific water quality objectives and triggers to be developed, at a later stage, based on a sufficient baseline monitoring dataset, and included in the EA.

24.4 Provide a revised limit for dissolved selenium concentrations that considers the bioaccumulation potential in accordance with the ANZG 2018 guideline. It is recommended that limit of 5 µg/L is appropriate to protect the 99% of the species population (section 8.3.5.7 of ANZECC & ARMCANZ 2000 guidelines).

The interim surface water quality guideline value for selenium in EAR Table 6-2 and Table 3 of the *Surface Water Report* (Appendix D) has been amended to 5 µg/L.

25 Surface Water Monitoring Locations

DETSI's Comments

The proposed monitoring program includes insufficient monitoring locations. Some observations are listed below:

- Monitoring location(s) in the northern catchment on site have not been proposed.
- Monitoring location further downstream of SW1 is required to measure effectiveness of water management implemented on site. SW1 is likely to capture potential impact from the site at the confluence of western tributary to Woolgar River.
- Monitoring location(s) to detect potential pathway in the southern catchment have not been provided.

DETSI's Requested Actions

25.1 Provide an updated supporting document and surface water report that provides further justification on monitoring locations and regime.

EAR Section 6.9.3 includes a revised surface water monitoring program, including explanation of the monitoring locations and regime.

25.2 Identify additional monitoring locations upstream and downstream of the proposed mining area.

The revised monitoring program includes monitoring locations upstream and downstream of the proposed mining areas in the Woolgar River and the drainage features traversing the project site (EAR Table 6-7 and Figure 6-6).

- 25.3** Provide location for reference and compliance sites including monitoring location, monitoring description and coordinates (easting and northing).

These details are included in the surface water monitoring program in EAR Section 6.9.3. The specific reference sites and compliance sites for controlled releases will be confirmed in the Water Management Plan, prepared prior to the commencement of mining activities.

26 Processing Chemicals

DETSI's Comments

There is insufficient information provided on the process chemicals to fully understand the potential contaminants pathways and environmental impacts associated with the extraction processing on site, heap leach facilities and CIL Plant.

DETSI's Requested Actions

- 26.1** Provide an updated supporting document and surface water report that provides further information on the process chemicals, identification of potential CoC to determine the potential contaminants, pathways, and environmental impacts.

EAR Section 3.6.1 includes a list of the process chemicals used in the CIL Plant and HLF. As discussed in EAR Section 3.6.1, these reagents will be appropriately stored in a dedicated chemical storage area at the CIL Plant and will not be at risk of release to the environment.

The TSC, HLF and Central WRD, which will store processing waste materials that may contain processing chemicals, each have stormwater and seepage management systems designed to prevent the release of any seepage or stormwater from these wastes to the downstream receiving environment.

The water quality monitoring programs for these facilities will include parameters that will detect any processing chemicals.

- 26.2** In addition, provide further information to demonstrate hazardous materials are stored in safe area taking into consideration the likelihood of flooding.

As discussed in EAR Section 3.6.1, chemicals will be stored in a dedicated chemical storage area at the CIL Plant and will not be at risk of release to the environment. As shown in EAR Figure 6-4, the CIL Plant and the Southern MIA are located well above the Woolgar River 0.1% Annual Exceedance Probability (AEP) flood extents (i.e. the 1 in 1,000 year flood level). There are also no creeks or drainage lines in the vicinity of these facilities and any associated chemical storage areas. Hence, there is a very minor flood risk for the chemical storage areas.

27 Field-validated Vegetation Survey

DETSI's Comments

Appendix E and EAR indicates that the assessment for regulated vegetation, habitat mapping for threatened fauna species were based on field-validated vegetation mapping. The field-validated also referred to as ground-truthing regional ecosystem (RE) map is shown in figure 7-4 of EAR and figure 6 of Appendix E. The REs recognised as mapped under the *Vegetation Management Act 1999* (the VM Act) comprises of larger areas that have not been identified during field survey. In addition, it is noted from Table 1 of Appendix E that ground truthing surveys identified areas of REs with greater extents and different REs than government mapped RE's.

The impact assessments to flora and fauna habitat appear to be based on the field survey that has not been validated by the relevant agency for the survey (Queensland Herbarium as the lead agency for survey, mapping and monitoring of vegetation). In the absence of a validated map from the Herbarium, impact assessment must be based on RE currently mapped under the VM Act. Therefore, the impact assessment including significant residual impacts (SRI) and proposed environmental offsets provided in Appendix E and EAR is invalid until the field survey is verified with the Herbarium.

DETSI's Requested Actions

- 27.1** Provide confirmation on the validation of the field survey from the Queensland Herbarium. If this process has not commenced for the validation of ground truthed data, please engage directly with the department to facilitate this process. Please note, it is strongly recommended to engage in this process at the earliest convenience to avoid potential project delays. Alternatively, provide a revised flora and fauna impact assessment including revised SRI assessment for Matters of State Environmental Significance (MSES) in accordance with the SRI Guideline and environmental offsets that align with the current mapped RE and fauna habitat for the proposed impact area. In addition, provide a map identifying proposed biodiversity offsets for the respective REs.

The Queensland Herbarium provided validation of the remnant vegetation mapping within the project site on 2 November 2025. The EAR *Terrestrial Ecology Report* and EAR Section 7 – Terrestrial Ecology have been updated to include the Herbarium's RE mapping.

As indicated in EAR Section 7.6.2 – *Biodiversity Offsets*, SMC is proposing to provide offsets for residual MSES using financial settlements in accordance with the QEOP. Hence, land-based offsets are not proposed and the provision of a map of proposed offsets is not relevant.

28 Field Survey Results: *Drummondita calida*

DETSI's Comments

The EAR and Appendix E indicates that although potential habitat for a threatened flora species (*Drummondita calida*) was identified on the sandstone plateaus within the project site, field surveys did not record this species as present on site. Section 4.2.2 of Appendix E identifies a small section of sandstone scarps that were not surveyed due to accessibility issues (shown in figure 8 of Appendix E). The report further assumes that this species is unlikely to be recorded in large numbers at the unsurveyed areas given it was not identified in other parts of the surveyed site. This species has been recorded at a number of locations with the nearest being recorded 25km east of the project (CSIRO 2022). The application does not provide clear determination on the potential impact on *Drummondita calida*. As such, further information including a map illustrating full extent of the identified species (123.6ha) and a targeted survey for *Drummondita calida* is required for a detailed assessment of impact and the likely SRI on these species.

DETSI's Requested Actions

28.1 Provide a map of identified *Drummondita calida* (total).

Figure 8 of the EAR *Terrestrial Ecology Report* (Appendix E) identifies areas within the project site considered to provide potentially suitable habitat for this species. The mapped area of potential habitat in Figure 8 is 140.9 ha. Figure 8 of the revised *Terrestrial Ecology Report* (Appendix E) has been updated to show the portion of the potential habitat area that was not surveyed in detail due to access constraints (steep topography).

Detailed searches of all areas of potential habitat within the project site, other than the area shown in amended Figure 8 with limited access, were completed during the field surveys. This included all areas within the project disturbance footprint. As stated in Section 4.2.2 of the EAR *Terrestrial Ecology Report* (Appendix E), no individuals of *Drummondita calida* were recorded within the project site or during other surveys of areas to the east of the project site.

As stated in Section 4.2.2 of the EAR *Terrestrial Ecology Report* (Appendix E), the nearest known record of *Drummondita calida* to the project site is approximately 25 km to the east, north-east, from 2004 (referenced as CSIRO 2022 in the EAR *Terrestrial Ecology Report*).

This species is a relatively conspicuous shrub that is up to approximately 2.5 m in height with small, tightly held foliage. Therefore, it is considered likely that it would have been identifiable from some distance and is considered very unlikely to be present within the project disturbance footprint.

Any large populations of this species are considered likely to have been very conspicuous during the field survey if present, even in the area that was not comprehensively surveyed due to access constraints. However, the presence of a small number of scattered individuals within the area that was not comprehensively surveyed due to steep terrain/access limitations cannot be ruled out. However, the areas that could not be accessed are outside the project disturbance footprint.

Section 3 (*Methodology*) and Section 4.2.2 (*Threatened and near threatened fauna*) of the EAR *Terrestrial Ecology Report* (Appendix E) have been updated to clarify where comprehensive searches for the species were difficult due to steep terrain limiting access. Figure 8 of the EAR *Terrestrial Ecology Report* (Appendix E) has been updated to show the area of steep terrain where access was limited.

28.2 Provide details of a targeted field survey including survey methodology in alignment with minimum survey standards and guideline requirements in accordance with the flora survey guideline for protected plants and a revised SRI assessment based on the results of the survey.

Flora surveys are only required to be conducted in accordance with the Queensland Flora Survey Guidelines for Protected Plants within mapped High Risk Areas under the Flora Survey Trigger Mapping (refer Section 2 of the Queensland Flora Survey Guidelines). As stated in Section 4.2.2 of the *EAR Terrestrial Ecology Report*, there are no High Risk Areas for *Drummondita calida*, or any other species, mapped within or adjacent to the project site. The Flora Survey Guidelines for Protected Plants provide general guidance on how flora surveys for threatened flora species should be conducted and do not contain any specific survey methods for *Drummondita calida*.

As explained in Section 3 of the *EAR Terrestrial Ecology Report* (Appendix E), detailed flora surveys were conducted for the project over four separate surveys comprising 11 days in the early wet season 2015 (12 to 22 November, inclusive), 8 days in the early dry season 2016 (11 to 18 April, inclusive), 3 days in the early wet season 2017 (19, 21 and 24 November) and another 9 days in the early dry season 2021 (27 April to 5 May, inclusive). During these surveys, a total of 350 flora species were recorded across the project site.

Random meanders within areas of potentially suitable habitat were the primary survey technique employed to detect threatened species. GPS tracks of meanders were not recorded during the field surveys. Meanders were completed in the vicinity of each flora survey site as well as while traversing on foot between survey sites. Figure 3 of the *EAR Terrestrial Ecology Report* (Appendix E) shows the flora survey sites completed across the study, which provides an indication of survey site coverage within the project site.

The survey methodology and survey effort were suitable to identify any *Drummondita calida* present and a revised SRI assessment is not warranted.

29 Ghost Bat *Macroderma gigas* (Endangered: Nature Conservation Act 1992): Survey Effort

DETSI's Comments

The survey for identifying ghost bats at the site has been identified as inadequate effort to support the conclusion that Ghost bats are absent from the proposed project area.

Appendix E indicates the use of incorrect and outdated information in forming the conclusion that ghost bats unlikely to occur in the project site. This includes but is not limited to known roosts in Queensland and roosts observed at abandoned mines. Information available through Queensland Government WildNet platform indicates that at least 11 colony sites are known in Queensland. Similarly, the statement that there are no known records at abandoned mine roosts also appear incorrect.

Furthermore, the literature reviews included as reference to four surveys listed in Table D2 (Mammals: Ghost Bat) of Appendix E are greater than 100km from the proposed project area that are not located in the Gulf Plains Bioregion (applicable to proposed mine site). The initial likelihood of occurrence analysis based on these references do not support the survey effort. Where available, surveys for bats for the eastern half of the Gulf Plains Bioregion must be used as reference surveys. Therefore, a comprehensive survey of bats to clearly determine the occurrence likelihood and an appropriate SRI assessment to adequately assess the impact to this species is required.

In addition, the provided survey reports state that no evidence of bats of any species was found in caves, overhangs or cave-like structures. However, Table F3 and F6 of Appendix E identifies cave roosting bats such as Eastern Horse-shoe Bat during seasonal surveys in 2017, 2019 and 2021. This species has a limited foraging range from roost. Further species including the Eastern Bent-winged Bat and Troughton's Sheath-tailed Bat have roosting preferences for caves and cave-like structures. All these species have been observed sharing roosts with ghost bats. Further commentary is required on the noted presence of cave roosting bats at the study site in light of no suitable structure being found and no microbat use of caves or cave-like structure being observed.

DETSI's Requested Actions

DETSI originally requested a further targeted field survey of the Ghost Bat but subsequently agreed that a further survey was not required and issued the five clarification questions (29.1 to 29.5) highlighted below in relation to the Ghost Bat survey and assessment conducted.

Background

As indicated in Appendix D of the EAR *Terrestrial Ecology Report* (Appendix E), the Ghost Bat was assessed as having a low likelihood of occurring within the project site. This conclusion was based on the following factors:

- The BVS project site is at least 500 km from the nearest known permanent breeding roost.
- The Ghost Bat is known to disperse approximately 150 km from permanent breeding roosts. Therefore, the BVS project site is well outside the dispersal area from the known permanent breeding roosts.
- The BVS project site is outside of three government maps depicting the geographical range of the Ghost Bat. Specifically:
 - approximately 54 km west of the western limit of the Ghost Bat range depicted in the DETSI Ghost Bat Survey Guideline

- approximately 70 km west of the Department of Climate Change, Energy, the Environment and Water (DCCEEW) Ghost Bat map which depicts habitat where the species is considered likely to occur
- approximately 10 km to the south-west of the limit of the possible range of the species mapped by the Australian Bat Society's BatMap Viewer.
- There are no records of the Ghost Bat in, or in the area surrounding, the BVS project site based on:
 - no database records from the 50 km search radius
 - no records during project field surveys including comprehensive spotlighting effort in potential temporary roost habitat.
- The field surveys confirmed that there are no known permanent breeding roost sites within the BVS project site.
- The field surveys confirmed that one smaller historic gold working (50 to 60 cm wide opening, and a shaft that extended for approximately 4 to 5 m at an angle of approximately 30 degrees) and the sandstone outcrop with some small escarpment areas (in the east of the project site) with rock shelters, deep overhangs and vertical cracks could provide suitable temporary Ghost Bat roost habitat. However, there was no evidence during two separate searches of the historic gold working and multiple traverses of the sandstone outcrop areas that bats used this habitat (i.e. lack of bat scats), which is consistent with the findings that the BVS project site is outside the Ghost Bat range. Therefore, it is unlikely that the Ghost Bat would use any temporary roost habitat in the BVS project site.

Greg Ford (a terrestrial ecologist with more than 25 years' experience and a recognised bat expert who has analysed hundreds of hours of acoustic bat records from north Queensland) agreed with the conclusion that the Ghost Bat was unlikely to occur within the BVS project site.

The Wildnet database is not able to be interrogated by members of the public. Therefore, the assessment of the location of known Ghost Bat permanent breeding roost sites has used publicly available published reports and records available through the Atlas of Living Australia.

From this publicly available information, Ghost Bats have not been recorded using abandoned underground mines as permanent breeding roost sites in Queensland and no permanent breeding roosts in abandoned underground mines have been recorded near the project site. However, the species is known to use abandoned mines as permanent breeding roost sites in Western Australia and the Northern Territory (Bat Call WA, 2021).

A review of publicly available literature did not identify any published surveys targeting Ghost Bats from the eastern half of the Gulf Plains Bioregion. Consultation with Greg Ford indicated that he is not aware of any unpublished targeted Ghost Bat surveys that have been undertaken in the eastern Gulf Plains Bioregion.

On 16 December 2025, DETSI provided the following references for publicly available publications and grey literature regarding the potential location of significant Ghost Bat permanent breeding roost sites in Queensland.

Site	Reference
Blackbraes National Park	Molnar et al 1984
Mount Etna	Hoyle, Pople, Toop 2001
Cape Hillsborough	Worthington-Wilmer et al 1999
Camooweal Caves	Worthington-Wilmer et al 1999
Starcke National Park	Molnar et al 1984
Cape Melville National Park	Augusteyn et al 2023
Kings Plain (Boulder Fields; Western Karst & Melody Rocks)	Worthington-Wilmer et al 1999

Site	Reference
Kalkajaka (Black Mountain)	Augusteyn et al 2023
Mitchell Palmer Karsts	Worthington-Wilmer et al 1999
Greenvale Limestone	Price et al 2020
Dixie Station	Augusteyn et al 2023
Girringun National Park	Augusteyn et al 2018
Hervey Range	Augusteyn et al 2018
Native Cat Range	Toop 1999

The Draft National Recovery Plan for the Ghost Bat (DCCEEW 2025) cites research from the Pilbara that identified high levels of population connectivity within 250 km of a permanent breeding roost site, which is likely to be driven by male dispersal. The longest recorded Ghost Bat dispersal was 268 km. The Draft National Recovery Plan for the Ghost Bat also states that in the Central Queensland Coast region, there does not appear to be any connectivity between the Mt Etna and Cape Hillsborough populations that are approximately 300 km apart. Therefore, we have conservatively reviewed the references provided by DETSI that are related to locations within 300 km of the project site, of which there are three:

- Blackbraes National Park (approximately 88 km from the project site)
- Greenvale Limestone (approximately 190 km from the project site)
- Girringun National Park (approximately 295 km from the project site).

Relevant information contained in each of these referenced papers in relation to Ghost Bat permanent breeding roost sites is discussed below.

The DETSI reference for a Blackbraes National Park Ghost Bat roost site record is Molnar et al 1984. However, this paper relates primarily to fossil records of the Ghost Bat from southern Australia and does not include any mention of Blackbraes National Park or the Lyndhurst region. Figure 4 of the paper, which illustrates all modern and fossil records known at the time of publication, does not include any records from the Woolgar / Lyndhurst region of Queensland where the project is located. Therefore, this paper does not indicate that there are any Ghost Bat records or significant roost sites located within Blackbraes National Park.

The DETSI reference cited for the Greenvale Limestone Ghost Bat roost site record (Price et al. 2020) relates to fossil records but does not include any mention of the Ghost Bat. However, Vakili et al. (2025) provides an assessment of fossil records from nearby caves to those investigated by Price et al. (2020) and does include one record of a single specimen of Ghost Bat from Millennium Cave dating from around the time of European settlement (early 1800s). However, there is no suggestion in this paper that the Greenvale area currently supports a permanent breeding roost site or a significant roost site from which Ghost Bats could disperse to the project site. Historically, if a permanent breeding roost site was present at Millennium Cave, it would be reasonable to expect that remains of the species would be more prevalent in the cave deposit than a single specimen. This record may represent historical use of the area for temporary roosting when animals disperse from permanent breeding roost sites. Due to the age and scarcity of the Ghost Bat in the fossil records of the caves, it has been concluded that there are no recent (i.e. within the last 100 years) Ghost Bat permanent breeding roost sites or significant roost sites in the Greenvale area.

The only other significant roost site record within 300 km of the project site listed in the DETSI reference table is the confirmed Ghost Bat permanent breeding roost site record at Girringun, approximately 295 km from the project site. This roost site is more than 268 km (the longest recorded dispersal distance of the Ghost Bat) from the project site. Hence, it is unlikely that any Ghost Bats from this permanent breeding roost site would make use of any habitat in the project site. This is consistent with the conclusion of the Terrestrial Ecology Report that the Ghost Bat is unlikely to occur within the project site.

Hence, overall, the references provided by DETSI do not provide any information that indicates there are any Ghost Bat permanent breeding roost site records within the dispersal range of the species from the project site (268 km). The information provided in the references also does not provide any information that is inconsistent with the conclusion that the species is unlikely to occur within the project site.

Appendix D (Likelihood for significant flora and fauna to occur in the project site) of the EAR Terrestrial Ecology Report has been updated to include the updated justification for the Ghost Bat having a low likelihood of occurrence in the project site, the amended dispersal range and closest permanent breeding roost site records.

29.1 Provide commentary on the noted presence of cave roosting bats at the study site in the light of no suitable structure being found and no microbat use of caves or cave-like structure being observed.

Searches were conducted of all accessible areas in the sandstone outcrops/escarpments area and the historic mine workings within the project site. No evidence of roosting bats was found within the project site. However, the area to the east of the project site contains some steep sandstone gorges and escarpments. The cave-roosting bat species recorded within the project site are likely to be roosting in these areas outside of the project site and were detected while foraging within the project site. Many cave-roosting bat species such as the Eastern Bent-wing Bat (*Miniopterus orianae*) are known to forage at considerable distances of more than 20 km from their roost cave. The Eastern Horseshoe Bat (*Rhinolophus megaphyllus*) is thought to forage closer to roosts although there is limited information available. Although primarily cave-roosting, both of these species have also been recorded roosting in tree hollows (Slade and Power 2023). Hence, the detection of cave-roosting bats within the project site is not inconsistent with the observation that there are no bats utilising potential cave-like roost habitat within the project site.

29.2 Clarify whether broadband recordings were made during the active surveys, and if so what equipment and analysis settings were used.

Fauna surveys conducted in 2017 utilised Anabat Express detectors and were not full spectrum recorders. Surveys conducted in 2019, 2021 and 2024 utilised Anabat Swift full spectrum detectors with data analysed by Greg Ford. The 2019 survey used the detectors in both full spectrum mode and zero cross analysing mode with five of the nine sites in full spectrum mode. Therefore, a total of 13 Anabat sites (AB16, AB17 and AB20 to AB30 inclusive) were completed in full spectrum mode and 17 in zero cross analysis mode.

The settings of the Anabat Swift units in full spectrum mode were:

- Sample rate 500ksps
- Max file length 10s
- Trigger frequency 10kHz to 250kHz
- Min event 2ms
- Trigger window 2s
- Sensitivity Generally set between 10 and 15 depending on wind and other background noise levels at each site

Analysis methodology provided by Greg Ford, the bat expert who conducted the project bat call analysis, is presented below:

Call analyses were performed in Anabat Insight, with all files passed through a Decision Tree analysis to exclude files containing only background noise and group detected bat-calls based on a combination of pulse characteristics, such as characteristic frequency (Fc), time between calls (TBC) and pulse curvature.

The preliminary call identities applied by the Decision Tree process were then confirmed or adjusted manually by comparing the call spectrograms and derived metrics with those of reference calls from central and northern Queensland and/or with published call descriptions (e.g. Reinhold et al. 2001). Consideration was also given to the probability of species' occurrence based on published distribution information (e.g. Churchill 2008; van Dyck et al. 2013) and on-line database records (e.g. <http://www.ala.org.au>).

The 13 acoustic survey sites completed with Anabat Swift units in full spectrum mode would have been capable of detecting the Ghost Bat if the species had been calling within range of the detector.

Section 3 (Methodology) of the EAR Terrestrial Ecology Report has been updated to provide the above additional information on the Anabat detectors and analysis method.

29.3 Provide mapping displaying the actual walked sampling area.

It is assumed that this comment is in relation to spotlighting surveys undertaken on foot. GPS track data of spotlighting surveys were not recorded for the surveys. However, spotlighting was conducted by two ecologists generally in an area within 300 m of each of the 7 trap sites and 21 of the supplementary survey sites at which spotlighting was conducted. The supplementary sites at which spotlighting was conducted were S20 – S28 in 2017; S29, S30, S31, S33, S34, S35, S36, S40, S41 and S44 in 2018; and S10 and S12 in 2021. The locations of these sites are shown in Figure 4 of the EAR Terrestrial Ecology Report (Appendix E) and are described in Appendix A (Section A3.7.4 – Spotlighting) of the EAR Terrestrial Ecology Report.

Appendix A (Section A3.7.4 – Spotlighting) of the EAR Terrestrial Ecology Report has been updated to note that two ecologists generally conducted spotlighting within 300 m of each trap or supplementary site listed above.

29.4 Provide explanation for why searches for foraging roosts (tree scratches) across the site were not undertaken.

Potential temporary roost sites in the project site were searched during the field survey, as explained in the background section of the response to IR Issue 29, above. In relation to searches for tree scratches, we note that neither the Northern Territory guidelines for surveying for the ghost bat at the landscape scale published in 2024 (that is now considered to be Australian best practice) nor the Queensland Ghost Bat Targeted species survey guidelines published in 2011 identify searches for foraging roosts (tree scratches) as a recommended survey technique for detecting Ghost Bats.

29.5 Clarify why a lured trap was not utilised as a part of the survey.

The survey methodology making use of acoustic lures for detecting the presence of the Ghost Bat was detailed in the *Northern Territory guidelines for surveying for the ghost bat at the landscape scale* published in 2024. As noted within the guidelines, prior to their publication there was “...no common, agreed approach that standardises the method, effort or timing for surveying ghost bats...”. These guidelines were published after the completion of fauna surveys for the project. Therefore, acoustic lured traps were not used as part of the fauna surveys for this project.

As discussed above, the species was assessed as being unlikely to occur within the project site at the time of the field surveys. In addition, the field surveys conducted are considered likely to have detected the species if it was present, regardless of the lack of use of acoustic lures.

30 Significant Residual Impact Assessment

DETSI's Comments

The submitted documents state there would be significant direct impacts to a range of MSES such as regulated vegetation (watercourse). There is limited analysis of potential indirect impacts to adjacent environmental values / MSES including *Drummondita calida* and Ghost bat *Macroderma gigas* provided in the reports. Further potential indirect impacts to these values include:

- Habitat fragmentation and loss of connectivity, including along the Woolgar River which is a mapped ecological corridor;
- Potential for reduced condition of surrounding habitat due to the introduction of weeds and pests;
- Noise and vibration impacts on local fauna;
- Increased risk of bushfire, linked to equipment operation and other accidental ignition sources; and
- Potential impacts on fauna from artificial lighting.

DETSI's Requested Actions

30.1 Provide an updated supporting document and Terrestrial Ecology Report that provides further information on indirect impacts to *Drummondita calida* and Ghost bat *Macroderma gigas* in relation to the project.

The potential indirect impacts of the project on vegetation communities and fauna habitat are discussed in Section 5.2 of the EAR Terrestrial Ecology Report and included habitat fragmentation and edge effects, noise and vibration, vehicle strike, lighting, dust, erosion and sedimentation, and pest animals and plants. Additional information on the potential indirect impacts on the Ghost Bat and *Drummondita calida* is provided below.

The Ghost Bat is considered unlikely to occur within the project site as previously explained. Therefore, potential indirect impacts to this species are not discussed.

Drummondita calida is very unlikely to occur within the project disturbance footprint as explained above. However, an assessment of potential indirect impacts to the species has been undertaken in the unlikely event that a small number of scattered individuals are present in the area, outside the project disturbance footprint, not comprehensively surveyed (Figure 8 of the EAR Terrestrial Ecology Report).

The generation of dust and altered fire regime are the primary indirect impacts with the potential to affect *Drummondita calida*. The species is not considered likely to occur within the disturbance footprint or the project site. Habitat fragmentation and edge effects, and erosion and sedimentation are therefore not likely to impact this species. Noise and vibration, vehicle strike, and lighting will have no impact on this flora species. Pest animals and plants are unlikely to impact this species as the species is unlikely to be an attractive browsing species for introduced herbivores and pest plants are unlikely to become widely established in the rocky, skeletal soils of the potential habitat of this species within the project site.

As stated in Section 5.2.5 of the EAR Terrestrial Ecology Report, in the project site, the movement of machinery including vehicles on unsealed roads, explosions/blasts, strong wind on exposed areas, and mining activities within the pits may generate dust. Dust control methods that will be implemented include watering haul roads, active mining areas and waste rock dumping areas, and undertaking progressive rehabilitation. Both methods will minimise the area of exposed dry material which may generate dust. Wind-blown dust may travel and settle onto vegetation. Studies on the impacts of dust from unsealed roads on vegetation have found no evidence that dust has any detrimental impacts on vegetation (Cumberland Ecology 2015; Jones et al. 2016). Furthermore, with the proposed dust control methods, generation of dust is

expected to be limited. Dust-related impacts will be relatively minor and are, therefore, not likely to cause a significant impact on any individuals of this species within the project site.

The project has the potential to alter the existing fire regime of the project site that could in turn potentially affect any scattered individuals of *Drummondita calida* should any be present. SMC will have firefighting capability such as water trucks and an emergency response plan to deal with fires should they occur on the project site. If site operations were to result in the ignition of a fire, it is expected that it would be controlled relatively quickly before it spread to areas of potential habitat of this species.

A new section has been inserted in the EAR Terrestrial Ecology Report (Section 5.2.8) to discuss the potential indirect impacts, and associated mitigation measures, from an altered fire regime.

References

DCCEEW 2025, Draft National Recovery Plan for the Ghost Bat (*Macroderma gigas*), Department of Climate Change, Energy, the Environment and Water, Canberra.

Price, Gilbert J., Jonathan Cramb, Julien Louys, Kenny J. Travouillon, Eleanor M. A. Pease, Yue-xing Feng, Jian-xin Zhao, and Douglas Irvin. 2020. Late Quaternary fossil vertebrates of the Broken River karst area, northern Queensland, Australia. In *Papers in Honour of Ken Aplin*, ed. Julien Louys, Sue O'Connor, and Kristofer M. Helgen. *Records of the Australian Museum* 72(5): 193–206.

Slade, C.P. and Power, D.M., 2023. Diurnal tree-roosting by eastern horseshoe bats *Rhinolophus megaphyllus*. *Australian Zoologist*, 43(1), pp.109-115.

Vakil V et al. (2025) Subfossils suggest worse-than-realised losses of small-bodied mammals in northern Australia. *Wildlife Research* 52, WR24149.

31 Air Quality Standards and Criteria

DETSI's Comments

Air quality standards and criteria discussed in section 2.3 and Table 1 Air quality objectives used in the assessment are based on a previous version of Queensland Environmental Protection (Air) Policy 2019 and National Environment Protection (Ambient Air Quality) Measure (Air NEPM) 2021. Recently (1 January 2025), the EEP Air including the quality objectives of PM_{2.5}, SO₂ and NO₂ have been revised. For example, the EPP (Air) PM_{2.5} objectives are reduced from 25 to 20 µg/m³ (24-hour average) and from 8 to 7 µg/m³ (annual average). The EPP (Air) SO₂ objectives are reduced from 570 to 214 µg/m³ (1-hour average) and 229 to 57 µg/m³ (24-hour average). Similarly, the NO₂ objectives are reduced to from 250 to 164 µg/m³ (1-hour average) and from 62 to 31 µg/m³ (annual average).

Therefore, a revised air quality impact assessment that aligns with the revised criteria specified in the current EPP Air objectives is required. In the event EPP Air objectives cannot be complied with, additional information including site-specific limits, release locations, description of contaminant source and appropriate monitoring must be provided.

DETSI's Requested Actions

- 31.1** Provide an updated air quality assessment including revised air quality objective in alignment with the latest EPP Air objectives. Following revision, confirm whether the air pollutants can be complied with the EPP Air objectives.

The EAR Air Quality Report (Appendix G) has been updated to note the amendment of the EPP Air in 2024 to align its air quality objectives (AQOs) with the NEPM (refer Section 2.3 and Table 1). The updated AQOs include PM2.5, SO2 and NO2.

Tables 17 to 22 of the updated EAR Air Quality Report (Appendix G) have been updated to show the revised AQOs in comparison to the predicted levels. The results show that the predicted ground level concentrations of all air pollutants, including ambient background levels, comply with all of the AQOs at all sensitive receptors.

It should be noted that the ambient background annual average PM2.5 concentration of 7.1 µg/m3 adopted for the original EAR Air Quality Report was above the current EPP Air AQO of 7.0 µg/m3, without any contribution from the project. This was because the background level adopted was from 2019, which was an atypical year with elevated PM2.5 and PM10 levels due to the effect of bushfires in the area where the referenced monitoring station is located. The updated air quality assessment has adopted more typical ambient background concentrations of PM2.5 and PM10 based on worst-case monitored levels from 2017 to 2024, excluding the atypical data from 2019 (refer updated Sections 4.4.2 and 4.4.3, Tables 17, 18, 19, 20, 21 and 22 and Plates 1 to 5, 7 to 16, 18 to 22).

EAR Section 9 – Air Quality has also been updated, where necessary.

- 31.2** Pending response to (1) above, provide:
- Release source description and locations;
 - Source description;
 - Mitigation measures to reduce emission and protection of the receiving environment;
 - Receiving environment monitoring location, limits and frequency; and
 - Dust deposition monitoring location, limits and frequency.

As discussed in the response to requested action 31.1 above, the predicted ground level concentrations of all air pollutants from the project, including ambient background levels, comply with the updated EPP Air AQOs at all sensitive receptors.

Hence, additional air quality management and/or mitigation measures are not warranted.

32 Dust Emissions Inventory

DETSI's Comments

Section 5.3 provides an estimated 99% reduction in dust emission generated from drilling by using a fabric filter when drilling. The estimated 99% reduction is significant emission reduction value from drilling source however; it is unclear how on what basis the emission reduction efficiency was selected. The report does not make any further reference to the application of this fabric filter nor the extraction system. Further information on the extraction system and fabric filter efficiency is required to understand the significant estimate of the reduction.

DETSI's Requested Actions

- 32.1** Provide details of the extraction system and fabric filter efficiency to support the 99% reduction of emission.

Section 5.3 of the EAR Air Quality Report (Appendix G) confirms the 99% reduction in emissions from drilling due to the application of fabric filters. This section also refers to Appendix C for further details of the methodology and emissions factors used for estimating dust emissions. Section C4 – Drilling confirms that the 99% emissions factor for fabric filters is defined in the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Mining, Version 3.1 (2012, Department of the Environment).

Whilst the level of control adopted for emissions from drilling is soundly based, it should be noted that the PM10 emissions from drilling represent a small proportion of the total PM10 emissions from the project, i.e. if there were no control on dust emissions from drilling, drilling would contribute, at most, 4% of total emissions from the project. Hence, the level of control on dust emissions from drilling is not a material factor for the level of dust impacts from the project.

33 Diesel Generator Emissions Inventory

DETSI's Comments

It is unclear how the estimates for mass emissions of NO_x, SO₂ and CO from the diesel fired generator (8.75MW capacity) provided in Table 14 Emission rates for combustion gases and stack parameters in Table 15 Stack characteristics for diesel generators were estimated.

DETSI's Requested Actions

- 33.1** Provide information on how the mass emissions and stack parameters in Tables 14 and 15 were estimated.

Section 3.3 of the EAR Air Quality Report (Appendix G) explains that the emission rates of key exhaust pollutants for the diesel generators, listed in Table 14, have been estimated using emission factors from the NPI Emission Estimation Technique Manual for Combustion Engines, Version 3 (2008, Department of Environment). Additional text has been inserted in Section 3.3 of the updated EAR Air Quality Report to clarify the specific diesel generator categories used.

The stack parameters listed in Table 15 of the EAR Air Quality Report (Appendix G) were assumed based on Katestone's experience with similar generators (refer additional explanatory text inserted in Section 5.3 of the updated EAR Air Quality Report).

34 Emissions Inventory: Power Generation

DETSI's Comments

Air emission limits for the power generators must be based on best practice emission standards such as those specified in the NSW Protection of the Environment Operations (Clean Air) Regulation 2021 (NSW POEO Regulation) Group 6 Standard of Concentration.

It is unclear whether the proposed power generator meets the best practice source emission standards. Further information including the pollutants concentration values and its comparison against the NSW POEO Regulation is required.

DETSI's Requested Actions

- 34.1** Provide information on the pollutants concentration values in alignment with the best practice emission standards.

SMC notes that there are no current Queensland or national best practice standards for diesel generator emissions.

SMC is proposing to address appropriate emissions standards for the diesel generators as part of the project procurement process. This will involve consideration of feedback from suppliers in relation to feasible emissions limits, relevant guidance from other jurisdictions including the Protection of the Environment Operations (Clean Air) Regulation 2022 (NSW), and consideration of the potential impacts of emissions on sensitive receptors.

35 Heavy Metal Composition

DETSI's Comments

The report does not include information on heavy metal composition of the mined ore. The presence of metals and metalloids in the mined ore has the potential to become airborne during the mining and material processing operation which can pollute the receiving environment. The heavy metals released from the site activities may include Arsenic (As) Cadmium (Cd), Cobalt (Co), Chromium (Cr), Copper (Cu), Manganese (Mn), Nickel (Ni), Lead (Pb), Selenium (Se), Zinc (Zn) and Boron (B).

Further information on the potential heavy emissions from the site and their impact on the receiving environment is required.

DETSI's Requested Actions

- 35.1** Provide an assessment on potential heavy metal emissions for the mined ore and assessment of impact on the receiving environment.

An assessment of heavy metal emissions from the project has been included in the updated EAR Air Quality Report (refer Sections 2.2, 2.3, 3.2, 3.3, 5.3, 6.2, Tables 1, 16, 22, 23, B3 and Plate 24).

As explained in Section 6.2 of the updated EAR Air Quality Report (Appendix G), the modelling results show that the ground level concentrations of all heavy metals due to the project are predicted to comply with the relevant AQOs at all sensitive receptors.

As expected, overall, the metal concentrations at the closest receptors are very low. The predicted heavy metal concentrations are, at most, 1.3% of the relevant AQOs at the sensitive receptors (for the maximum 1-hour average concentration for cobalt at Receptor 2).

36 Greenhouse Gas Guideline

DETSI's Comments

Based on the GHG emissions estimate from the Air Quality Report, the project falls within a **medium to high emitter** (>25,000 t CO₂-e/year) category and as such, specific application requirements apply to this project. These requirements are outlined in *Table 3: Application requirements for low and medium to high emitters* of the GHG guideline, which includes the need for a GHG abatement plan. The content requirements for this plan are detailed in Appendix A, including emissions reduction targets for Scope 1 and Scope 2 (not relevant for this project as the site is not connected to the grid) emissions, as well as an emissions reduction program. A Scope 3 emissions inventory is also needed.

Given the report was drafted in 2022, some references and data sources appear out of date and require update.

DETSI's Requested Actions

36.1 Revise the report to cover all required information for a medium to high emitter setting in the GHG emissions guideline, including:

A new *GHG Assessment Report* addressing the DETSI GHG Guideline has been prepared for the project by Katestone Environmental Pty Ltd. The new *GHG Assessment Report* is included as Appendix L of the amended EAR. EAR Section 9.3 has also been updated with a high-level overview of the scope and key conclusions of the *GHG Assessment Report*. Section 7 – Greenhouse Gas Assessment and all other references to GHG have been deleted from the EAR *Air Quality Report* (Appendix G).

A comprehensive Scope 1 emissions inventory over the lifespan of the project (construction and decommissioning); e.g. please justify the emissions from wastewater treatment plants and carbonates within the ore (if any).

The Scope 1 emissions inventory is included in Table 6 of the *GHG Assessment Report* (Appendix L).

Emissions from wastewater treatment plants are presented in Section 4.5 (Table 8) of the *GHG Assessment Report*. The calculation methodology for wastewater treatment plant emissions is described in Section 3.4.3 of the *GHG Assessment Report*.

There are no significant quantities of carbonates within the ore other than a small fraction of calcite. As explained in Section 3.3 of the *GHG Assessment Report* (Appendix L), ore processing is unlikely to convert calcite to CO₂. Hence, there are no significant GHG emissions from carbonates in the ore.

Scope 3 emissions inventory (e.g. capital goods, purchased goods and services, fuel and energy, upstream and downstream transport etc).

The Scope 3 emissions inventory is presented in Table 9 of the *GHG Assessment Report* (Appendix L). In summary, the total unabated Scope 3 emissions from the project are estimated to be approximately 670 kt CO₂-e, with construction contributing 56% and operations 44%.

GHG emission mitigation and management practices (including Scope 3 where possible).

GHG emissions mitigation and management are addressed in Section 5 – Greenhouse Gas Abatement Plan of the *GHG Assessment Report* (Appendix L).

GHG abatement plan including emissions reduction program.

The GHG abatement plan including emissions reduction program is addressed in Section 5 of the *GHG Assessment Report* (Appendix L).

A risk assessment that outlines the scale of expected GHG emissions from the project and how they are expected to contribute to climate change impacts on Queensland's environmental values.

The DETSI GHG Guideline requires a description of the risk and likely magnitude of impacts on environmental values. This is addressed in Section 6 of the *GHG Assessment Report* (Appendix L).

36.2 Update relevant references and data sources.

Relevant references and data sources are included in the *GHG Assessment Report* (Appendix L).

36.3 Provide detailed input information for the FullCAM model.

The input information for the FullCAM model is described in Sections 3.4.2 and 4.4 of the *GHG Assessment Report* (Appendix L). This includes the annual vegetation clearing areas for the project (Table 7) and the formula for conversion of Eucalyptus open woodland areas to GHG emissions (Section 3.4.2).

37 Safeguard Facility

DETSI's Comments

Scope 1 GHG emissions associated with the project (excluding land clearing) are not expected to exceed the Safeguard Mechanism facility threshold of 100 ktCO₂-e/yr. The project would not be subject to the requirements of the Safeguard Mechanism in its current format.

The estimated maximum annual scope 1 emissions are 89,797 t CO₂-e excluding land clearing, which is close to the threshold of safeguard facility (over 100,000 t CO₂-e). Safeguard facility faces stricter emissions requirements and increased compliance obligations, including a declining baseline and best-practice emission intensity for new facilities. Following assessment of Scope 1 and revision of report per GHG Guideline, it may be necessary to reassess the likelihood of the project being a safeguard facility.

DETSI's Requested Actions

37.1 Provide a revised Scope 1 emissions with a comprehensive inventory.

The Scope 1 GHG emissions inventory over the project life is presented in Table 6 of the *GHG Assessment Report* (Appendix L). The unabated Scope 1 emissions over the life of the project are approximately 931 kt CO₂-e. The majority of the emissions are as a result of on-site diesel power generation and diesel-powered mining equipment.

37.2 Provide justification for the projects likelihood as a safeguard facility. Revise the report to accurately reflect the implications of safeguard facility status, if applicable.

As explained in Section 4.3.1 of the *GHG Assessment Report* (Appendix L), the project maximum annual Scope 1 emissions of 88,256 t CO₂-e are less than the Safeguard Facility threshold of 100,000 t CO₂-e/yr. Therefore, the project is not subject to the requirements of the Safeguard Mechanism.

38 Assessment of Existing Noise Environment

DETSI's Comments

An assessment of the existing noise environment was not included in the noise assessment report. The report uses the criteria from the Acoustic Quality Objectives (AQO) which is set for all of Queensland and is not specific for the protection of the existing environmental values at the site. As per section 3 of the Application requirements for activities with noise impacts guideline, an assessment of the existing environment should be provided. The purpose of an application assessment process is not just to set an EA noise limit, but to assess if an impact of the development is sustainable to the surrounding environment.

Further, it is noted that actual levels were not measured as part of this report and assessment was based on the assumptions from previous measurements conducted in central Queensland. Values from the previous measurements were not provided either. Measured levels of the existing environment to form baseline assessment is required.

When considering site remoteness (and likely low background noise) and absence of site-specific measurements and assessment of EVs of the site, the predicted levels at Receptor 2 (Middle Park) in adverse weather conditions (37dBA) and night (35dBA) may impact the environmental values of the receptor adversely and cause environmental nuisance on the receptor. As such, a noise monitoring station at this receptor may be required.

DETSI's Requested Actions

38.1 Undertake and provide an assessment of whether the proposal would comply with the acoustic quality objectives prescribed in the Environmental Protection (Noise) Policy 2019 (limits as per calculated using the information provided and the methods within ESR/2016/1936).

The relevant Acoustic Quality Objectives (AQOs) prescribed in the Environmental Protection (Noise) Policy 2019 (EPP Noise) are discussed in Section 3.1.1 of the *EAR Noise and Vibration Report* (Appendix H) and were previously adopted as the noise criteria for the project (refer Section 3.1.3 of the *EAR Noise and Vibration Report*). A comparison of the predicted noise levels from the project with the relevant AQOs is provided in Table 8 of the *EAR Noise and Vibration Report* (Appendix H). Table 8 shows that the predicted project noise levels comply with the EPP Noise AQOs.

The Model Mining Conditions (ESR/2016/1936) (MMC) contain recommended EA conditions that may be used as a basis for developing appropriate conditions for an EA for a mining project in consultation with the administering authority. The MMC EA conditions can be modified to suit specific circumstances of a mining project subject to the assessment criteria specified in the Environmental Protection Regulation 2019 and the standard criteria contained in the *Environmental Protection Act 1994*. It should be noted that the noise limits specified in the MMC are not consistent with the EPP Noise AQOs.

The *EAR Noise and Vibration Report* (Appendix H) has been amended to include noise criteria based on the MMC noise limits (refer Sections 3.1.3, 3.1.4 and Table 8 of the amended *EAR Noise and Vibration Report*). Sections 10.5 and 10.7 of the EAR have also been updated accordingly.

Note that the MMC noise limit note 5 states that where the measured background noise level is less than 30 dBA, then 30 dBA can be substituted for the measured background level. Hence, at homesteads in remote rural areas, like the closest receptors to the project site, where the background noise level is expected to be at or below 30 dBA, the background noise level can be set at 30 dBA for the purposes of determining noise limits in accordance with the MMC. Hence, any MMC noise limits calculated based on a background level of 30 dBA are as low as possible and background noise monitoring would not change the outcome.

38.2 Provide a noise and vibration management plan.

Further consultation with DETSI following the information request has confirmed that a Noise and Vibration Management Plan would not be required if predicted noise levels are compliant with the relevant noise criteria.

38.3 Pertaining response to predicted noise levels described in adjacent comments:
Provide further information on the likeliness of the predicted level and whether this represents a realistic worst case scenario. Consider conducting an assessment at the sensitive receptor(s).

The noise prediction methodology is described in detail in Section 4 of the *EAR Noise and Vibration Report* (Appendix H). The methodology includes assessment of the representative worst-case:

- Equipment sound power levels
- Operating scenarios for each receptor
- Noise enhancing atmospheric conditions, including wind and temperature inversions.

The predicted noise levels at each receptor for the modelled combinations of operating scenarios and atmospheric conditions are provided in Table 8 of the *Noise and Vibration Report* (Appendix H). The predictions include the worst-case scenarios for each receptor and are considered to be conservative.

As discussed in the response to 38.1, given the proposed MMC noise limits for the project at all receptors have been calculated based on the minimum background noise level of 30 dBA, background noise monitoring at the sensitive receptors would not change the proposed noise criteria or the assessment of project compliance with the criteria. Hence, background noise monitoring at receptors is not proposed.

38.4 If revised levels exceed AQO, conduct further investigation into the noise source and provide mitigation measures to reduce noise impacts.

The predicted noise levels comply with the relevant AQOs, as indicated in Table 8 of the *EAR Noise and Vibration Report*.

As indicated in the amended *EAR Noise and Vibration Report* (Appendix H), the proposed evening and night-time criteria are 35 dBA. In relation to predicted noise levels at Receptor 2 (Middle Park), additional noise management (i.e. moving evening waste rock dumping to shielded locations in the Northern WRD) is now proposed to reduce the worst-case predicted evening noise level to below the criteria (refer Section 4.3, Table 8, Appendix A Figure A2 and Appendix B Figure B3 of the amended *EAR Noise and Vibration Report*). All other predicted project noise levels comply with the criteria in all time periods.

38.5 Provide information on the receiving environment monitoring locations, limits for day, evening and night times.

The proposed noise criteria are provided in Section 3.1.4 of the amended *EAR Noise and Vibration Report* (Appendix H).

As explained in Section 10.8 of the EAR, a complaint handling procedure will be implemented for the project. This will include the investigation of any complaints in relation to project noise levels. Investigations would include noise monitoring at the receptors, where necessary.

39 Appendix I: Non-indigenous Cultural Heritage Report

DETSI's Comments

Appendix I identifies forty-seven (47) abandoned mine working associated with the Woolgar Goldfields that are located within the project site. The statement of significance which was assessed to determine the potential for each site to be classified as local heritage significance appears to be based on assumptions that features identified in previous records (Denaro 2001 and Taylor 2013 report) are still present on site. Contemporary ground survey to confirm these recordings, its conditions and features or identify additional workings have not occurred.

The report recommends a site-inspection to be conducted to complete the significance assessment as the abandoned mine working may reach the threshold to be classified as local heritage significance. However, it is unclear whether further investigation to confirm this preliminary assessment have occurred.

Given that thirteen (13) of the known abandoned sites are located within the proposed disturbance footprint, it is vital that contemporary ground survey to determine their condition, archaeological significance, identification of unknown sites or artefacts (if any) and a detailed impact assessment including management measures be provided.

DETSI's Requested Actions

39.1 Provide a contemporary ground survey identifying:

- Known abandoned mine sites, conditions and features (i.e., artifacts etc) present within the proposed disturbance footprint;
- Unknown abandoned mine sites, conditions and features (if identified in survey);
- Detailed heritage significance assessment including assessment of local heritage significance;
- Archaeological significance assessment in accordance with DETSI Guideline: Archaeological Investigations (if applicable); and
- Management measures to be implemented during mine operation.

A comprehensive field survey of the non-indigenous cultural heritage of the Woolgar Gold Fields, including the project site, was conducted in 2013 by a PhD student from the School of Archaeology and Anthropology at the Australian National University (ANU) (Tayler, 2013). The report acknowledges the assistance provided with field survey access within the project area by SMC field staff at the time.

The project non-indigenous heritage assessment presented in the *Non-indigenous Cultural Heritage Report* (Appendix I) included detailed review and assessment of the findings of the ANU field survey, including identified heritage sites, within the project site and project disturbance area. Consequently, a further field survey is not considered warranted. The *Non-indigenous Cultural Heritage Report* (Appendix I) concludes that there are 13 heritage sites (related to the historic gold mine workings) within the project disturbance area and that these sites are potentially of local significance only and do not have state or national significance.

As discussed in EAR Section 14.3.7, and consistent with the recommendations of the *Non-Indigenous Cultural Heritage Report*, SMC is proposing to inspect the 13 heritage sites within the project disturbance footprint prior to the commencement of the project to confirm and document the condition, features and significance of each site. SMC is also proposing to implement a Finds Strategy addressing the obligations under Section 89 of the *Queensland Heritage Act 1992* for discovery of an archaeological object during project construction and operations.

DETSI has subsequently agreed that no additional field survey is required, other than the pre-commencement inspection of the heritage sites within the project disturbance footprint.

40 Proposed Cover System and Seepage Collector Pad

DETSI's Comments

Section 4.10 indicates the proposal of a Store and Release (SAR) cover system that will be applied over the fill extents of the co-placement cell (CPC referred to the central and southern WRDs) however, the timeframe for installation of this cover system have not been identified. Given progressive rehabilitation of the CPC/WRDs are not proposed to commence until project year 7 (proposed PRCP schedule), it appears that co-disposed PAF and dewatered tailings material may be liable to react with water and oxygen to form acid during the operational phase.

It is further noted from section 4.6.2 that a Seepage Collection Pad (SCP) would be constructed on the base of the CPC to ensure drainage from the cell is collected and transferred to the mine water management system. Specification of the construction requirements for the SPC and a detailed design informed by geotechnical investigation is not available.

Further clarification on how drainage will be managed at the mine water management system including whether drainage or seepage collected will be managed on site is required. As identified in item 8, seepage collected from this system is proposed to be directed to sediment dams for the removal of suspended sediments prior to drainage from site however, the assessment provided in section 5.3.1 of the ATC Williams report states *it is however highly unlikely that seepage generated by the CPC would be suitable for direct release to the receiving environment*.

DETSI's Requested Actions

SMC has revised the WRD conceptual designs and the strategy for co-placement of PAF waste rock and dewatered tailings within the Central Waste Rock Dump (C-WRD). The revised conceptual design for the C-WRD, including the co-placement of PAF mine wastes, is described in the *C-WRD Conceptual Design Report* (PRCP Appendix E). The Northern and Southern WRDs will now only contain NAF waste rock and all WRDs will have final landforms with 20% maximum slopes.

40.1 Confirm the timing for installation of proposed SAR cover system.

The SAR cover system for the C-WRD is described in the *C-WRD Conceptual Design Report* (PRCP Appendix E). As explained in Sections 3.4 and 3.9.1 of the report, the SAR cover cannot be installed until the placement of PAF mine wastes in the Co-placement Cell (CPC) has finished after the completion of mining. Hence, the installation of the SAR cover will be part of the final rehabilitation of the C-WRD from Year 13 to Year 16, as indicated in the PRCP schedule.

40.2 Provide an assessment on potential impacts from the exposed co-placed material and management of potential acid mine drainage and mobilised salts and heavy metals generated during the operational phase of the mine. Further assessment of these impacts post mine closure must also be provided.

The management of contact water (surface runoff and seepage) from the PAF mine wastes stored within the CPC is described in Section 3.9.2 (and Appendix A Sheet 3) and Section 3.9.3 (and Appendix A Sheet 4) of the *C-WRD Conceptual Design Report* (PRCP Appendix E).

During operations, rainfall runoff from the active surface of the CPC will be contained and collected in a sump within the CPC and transferred by a pump and pipeline to the mine water management system. Once the SAR cover has been installed on the CPC during final rehabilitation of the C-WRD, there will be no further runoff generated from the PAF mine wastes within the CPC.

As explained in Section 3.8.2 of the design report, the PAF wastes stored in the CPC will be placed in 1 m lifts and compacted to minimise rainfall infiltration and seepage. During operations, any seepage from the CPC will be collected on a Seepage Collection Pad (SCP) constructed at the base of the CPC (Section 3.7.2 of the *C-WRD Conceptual Design Report* [PRCP Appendix E]). Any collected seepage will be transferred via pipelines to the mine water management system.

The SAR cover installed on the CPC during final rehabilitation will be designed to limit rainfall infiltration to the CPC, and associated potential seepage, during the post-mining phase. Seepage from the CPC is therefore expected to dissipate to negligible volumes after the installation of the SAR cover. Any minor seepage through the CPC during the post-mining phase would continue to collect on the SCP and would drain to the BVS Pit final void for containment (Section 6.1 of the *Surface Water Report* [EAR Appendix D]).

Overall, all contact water from the CPC will be collected and contained within the mine water management system over the mine life and in the BVS Pit final void post closure. Hence, there are no potential impacts from contact water from the CPC.

40.3 Propose appropriate measures to capture and manage seepage on site considering the predicted seepage quality is expected to be unsuitable for direct release into the receiving environment.

Refer to the response to 40.2, above.

40.4 Provide details on the specification and design of SCP including:

- Material availability and suitability assessment of material required for construction of the SCP; and
- Design requirements including performance criteria and QA/QC by a SQP.

The design of the SCP is described in Section 3.7.2 and Appendix A figures of the *C-WRD Conceptual Design Report* (PRCP Appendix E). As explained in Section 3.7.2, the NAF waste rock inventories are expected to be suitable and sufficient for the construction of the SCP. Design requirements, including construction management and monitoring, are discussed in Sections 3.6, 3.8.3 and 3.11 of the *C-WRD Conceptual Design Report*. Specification of QA/QC by an AQP will be an outcome of the detailed design process.

40.5 Propose field trials and/or modelling to confirm the drainage flux from the proposed cover system into the WRD;

Numerical modelling to confirm the optimum configuration of the SAR cover (i.e. materials and layer thickness of the cover elements) will be completed by an AQP using appropriate computer software as a component of the detailed design (Sections 3.6 and 4.3.5 of the *C-WRD Conceptual Design Report* [PRCP Appendix E]). As discussed in Section 4.3.5 of the *C-WRD Conceptual Design Report*, the SAR cover configuration is consistent with similar covers on WRDs at metalliferous mines in northern Australia.

40.6 Confirmation that infiltration through sloping sections of unvegetated batter will not allow excessive infiltration;

The revised C-WRD design includes construction of 20% maximum final landform slopes revegetated with endemic species. As illustrated in Appendix A Sheet 2 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), the CPC will not extend beyond the C-WRD plateau area and only NAF waste rock will be stored beneath the C-WRD final landform slopes. Hence, any infiltration into the final landform slopes of the C-WRD is not likely to migrate laterally to the CPC or generate any poor-quality seepage.

- 40.7** Confirmation that the cover system will be capable of establishing and maintaining the vegetation cover; and

As discussed in Section 4.3.5 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), vegetated SAR covers have been successfully installed at numerous northern Australian metalliferous mining operations including Century, Kidston, Frances Creek and Mt Whaleback.

- 40.8** As discussed in Section 4.4.3 of the *C-WRD Conceptual Design Report*, the SAR cover concept design includes a conservative Infiltration Storage Layer (ISL) 1,500 mm deep. The ISL growth media layer thickness will be confirmed during detailed design, with input from an AQP, to ensure sufficient depth for effective root development of the proposed revegetation species and preservation of the Reduced Permeability Layer (RPL). Confirmation the vegetation cover will not compromise the hydraulic properties of the cover.

Refer to the response to 40.7.

41 Seepage Containment System

DETSI's Comments

Section 4.5 proposes the seepage containment system to be in place during the operational phase of the mine therefore, clarification on whether seepage containment and management will continue post mine closure, the estimated volumes of seepage and length of time for the proposed seepage management is required.

Table 6 outlines post-construction monitoring of the final landform however, full duration over which monitoring would be undertaken and long-term management of seepage have not been provided.

DETSI's Requested Actions

- 41.1** Clarify if the seepage containment and management system will continue post-operational phase (i.e., completion of final landform) and the estimated volumes of seepage, length of time containment and what management measures post closure will be in place.

As explained in Section 3.9.3 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), the C-WRD CPC seepage collection system will remain in place in the post-mining phase. Following the installation of the SAR cover (which is specifically designed to limit rainfall infiltration to the CPC), seepage is expected to reduce to a negligible amount within 12 months. As explained in EAR Section 6.6.6, the SCP seepage collection pipe will discharge to Mine Water Dam 2 (MWD2) during operations and will be redirected to the BVS Pit final void for containment of any residual seepage in the post-mining phase, following the final rehabilitation of the C-WRD and decommissioning of MWD2.

The BVS Pit final void water balance includes a conservative allowance for CPC seepage in the post-mining phase based on operating experience from other similar SAR installations (6% of incident rainfall on the CPC surface). As explained in Section 6.2 of the *Surface Water Report* (Appendix D), the BVS Pit final void water balance modelling indicates the final lake will reach an equilibrium level well below the void spill point and well below the level of the pre-mining groundwater table (resulting in the void being a groundwater sink). Hence, there is no risk of contamination of groundwater or surface water from the void lake, including any CPC seepage water.

- 41.2** Provide an updated table including full duration of monitoring and long-term management of seepage.

Table 7 in Section 3.11 of the *C-WRD Conceptual Design Report* (PRCP Appendix E) has been updated to include the post-mining seepage monitoring. The long-term management of any residual seepage is described in the response to 41.1.

42 Application of Cover System

DETSI's Comments

Section 4.10 outlines the design of the SAR cover system which indicates inclusion of endemic trees in the design. It is noted the department could not locate reference to the inclusion of tree species on final landforms of waste structures in other application documents. Confirmation by an AQP is required on the suitability of including trees in the design and that it would not pose a long-term risk to the reduced permeability layer (RPL).

DETSI's Requested Actions

- 42.1** Confirm suitability of including trees in the design and whether long-term risk to RPL is expected, assessed and managed appropriately.

Revegetation of the WRDs, including endemic revegetation species, is addressed in Section 6.1.8 of the PRCP (EAR Appendix J).

As discussed in Sections 3.6, 4.3.5 and 4.4.3 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), detailed design of the SAR cover will include optimisation of the SAR cover design and geometry, including the Infiltration Storage Layer (ISL), Reduced Permeability Layer (RPL) and associated revegetation growth media layer. The detailed design process will include the consideration of appropriate endemic revegetation species and necessary rooting depth (with input from an AQP) to ensure the sustainability of the RPL.

43 Dewatered Tailings (Co-disposal)

DETSI's Comments

Section 5.1.3 indicates that tailings will undergo filtration step to dewater tailings to a moisture content of 20%. It states that filtered tailings behave more like a solid and are less likely to become flowable or unstable. Further clarity on the final form of tailings prior to disposal into the WRDs is required.

While some example trials for co-disposal of dewatered tailings in WRDs may be available, this method of mine waste management is considered an emerging technique in Queensland mineral mining. Therefore, additional information on the risks associated with co-disposal and stability of this material specific to the project site is required.

In addition, it is noted that the definition of dewatered tailings within the EAR and PRC plan is not consistent with the ATC Williams report:

- Dewatered tailings in the EAR glossary is defined as '*Tailings that have a reduced moisture content*'.
- Glossary within PRC plan defines dewatered tailings as '*Tailings that have a water content that is no more than 30% by weight*'.

DETSI's Requested Actions

43.1 Clarify the final form of tailings prior to disposal in the WRDs.

As discussed in Sections 3.8.2 and 4.1.3 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), the filtered tailings would be dewatered to a moisture content that is less than the liquid limit, at which the tailings would exhibit the geomechanical properties of a solid, rather than a liquid. Achieving this level of dewatering for the project tailings is not considered by ATC Williams to be either emerging technology or a significant risk. The dewatered tailings would be emplaced in the CPC as a low-moisture cake, would be non-flowable and would be suitable for emplacement and compaction using standard mobile equipment including front-end loaders, wheel graders and track dozers.

The definition of dewatered tailings in the EAR and PRCP glossaries has been updated to be consistent with the *C-WRD Conceptual Design Report* (PRCP Appendix E).

- 43.2** Provide further information that demonstrates both structural and geochemical stability of the dewatered tailings within the WRDs, impacts associated with proposed co-disposal, mitigation and management measures proposed to be implemented to minimise adverse environmental harm to the receiving environment. Consider matters including but not limited to:
- Water related failures including consideration of rainfall infiltration;
 - Tailings and waste rock geochemical properties including potential chemical leaching (e.g. AMD or metal leaching);
 - Long-term behaviour of co-disposed materials (including extreme climatic conditions); and
 - Monitoring and maintenance of facility to ensure they remain stable in the long-term.

As discussed in Section 3.8.2 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), the PAF wastes in the CPC, including the dewatered tailings, will be placed in 1 m lifts and compacted to reduce the permeability of the stored PAF materials and limit seepage flow through the CPC. The installation of the SAR cover at mine closure will further limit the infiltration of rainfall into the CPC. The CPC will also be surrounded by a substantial volume of NAF waste rock and hence “water related failures” are not likely to occur. Section 3.1 of the *Mine Waste Storage Facilities Geotechnical Stability Report* (PRCP Appendix I) confirms that the geotechnical stability of the CPC within the Central WRD was assessed. The assessment concluded that the minimum Factor of Safety for the Central WRD would exceed the geotechnical stability design criteria by a considerable margin.

The geochemical properties of the tailings and PAF waste rock are described in detail in the *Geochemistry Report* (EAR Appendix A). The CPC within the C-WRD has been specifically designed to manage the risks associated with storage of the PAF mine wastes and any associated AMD or metal leaching. The compaction of the PAF wastes in the CPC and the SAR cover will limit the potential for seepage through the CPC and any associated leaching. Water management for the CPC is described in Section 3.9 of the *C-WRD Conceptual Design Report* (PRCP Appendix E). Both rainfall runoff at the active surface of the CPC and any seepage from the CPC will be contained within the CPC, collected and transferred to the mine water management system for storage and/or re-use. The significant volume of NAF waste rock surrounding the CPC also has significant excess acid neutralising capacity, further reducing the risk of any migration of contact water away from the CPC. Hence, the C-WRD CPC is considered to be appropriately designed to manage any risk associated with the geochemistry of the stored PAF waste materials.

The design of the C-WRD and CPC is also considered appropriate for the long-term storage of PAF mine wastes. In addition to the design features described above, the C-WRD is located above the peak flood levels for the 0.1% annual exceedance probability (1 in 1,000 year) flood events for the Woolgar River and site drainage features (refer Figure A.5 of the *Final Landform Flood Modelling Report* [PRCP Appendix K]).

Monitoring and maintenance of the C-WRD are included in the WRD milestone criteria (PRCP Appendix A).

44 Water Flux – Capillary Action

DETSI's Comments

Section 5.3.4 indicates that risks associated with capillary action are unlikely to be significant due to relatively low capacity of the PAF waste rock and filtered tailings inventories however, the risk assessment have not been completed to explicitly state this low risk. Assessments including a numerical modelling of the cover system's water dynamics is required to determine the need for a capillary break in the final cover design.

DETSI's Requested Actions

- 44.1** Provide an assessment on the risk of capillary rise and a final cover design prepared by an AQP, taking into account numerical modelling assessments of the cover system's water dynamics.

As discussed in Sections 3.6, 4.3.3 and 4.3.4 of the *C-WRD Conceptual Design Report* (PRCP Appendix E), the detailed design of the SAR cover will include optimisation of the SAR cover geometry and infiltration barrier to address the risk of capillary action and limit infiltration flux. This would include numerical modelling of the cover by an AQP using specialist software and inclusion of a capillary break in the design, if warranted.

45 Proposed Store and Release Covers

DETSI's Comments

Section 5.3.5 references SAR covers in Northern Australia involving the use of RPL to control water ingress into the final landform that appears to be adopted for the project site. However, additional information on the water balance (where possible) from the example SARs and specifically the net percolation (or drainage flux density) to demonstrate the effectiveness of the SAR design is required. For example, drainage for Century mine (identified in the ATC Williams report and referenced literature) was about 6% of total rainfall however, further information that validates the referenced cover design or drainage flux target criteria have not been provided. If the proposal is to validate the referenced "hummocked" cover presented in section 5.3.5 of the report using numerical modelling then a suitable model should be identified or a field trial should be conducted to validate the cover design. SAR design validation with emphasis on infiltration into the final landform during the wet season of the year when infiltration will be optimal is required to ensure an appropriate drainage flux target criteria will be achieved and maintained in the longer term.

DETSI's Requested Actions

- 45.1** Further expand information on the past SAR covers presented as evidence including water balance, net percolation or drainage flux density to demonstrate the effectiveness of the SAR design proposed.

The information in Section 4.3.5 of the *C-WRD Conceptual Design Report* (PRCP Appendix E) is provided for context and demonstrates that SAR covers are not new and have been successfully deployed at numerous mine sites with similar climatic conditions to the project and with considerably greater waste geochemistry risk.

- 45.2** Provide numerical modelling to validate the proposed SAR that demonstrate appropriate drainage flux target criteria will be achieved and maintained in the long term.

Refer to the response to 44.1.

46 Appendix A – IWL Concept Drawings

DETSI's Comments

Further information on how the NAF waste rock batter will effectively control rainfall infiltration is required. The proposed designs indicate the NAF waste rock tipped at an angle of repose where rock placement is expected to be loose with significant segregation of rock sizes downslope. Further information including numerical modelling to estimate the volume of water that could be expected to flow laterally through the external batter face into the co-placement waste is required.

Where subsurface lateral flow is found to be significant (i.e., if subsurface lateral flow cannot be discounted in the overall water balance), consideration for a low permeability liner along the inside surface of the batter may be required.

DETSI's Requested Actions

46.1 Provide an estimate subsurface lateral flow from the external batters into the co-placement waste.

The revised C-WRD design includes an updated final landform design with external slopes of 20% (5H:1V), rather than angle of repose batters and berms. The revised design also limits the lateral extents of the CPC so that it is located, along with a NAF waste rock perimeter buffer, beneath the RPL in the SAR cover and does not extend beneath the external slopes of the C-WRD final landform (refer Drawing 2 Concept Sections in Appendix A of the *C-WRD Conceptual Design Report* [PRCP Appendix E]). Hence, significant subsurface lateral flow into the CPC from the NAF waste rock buffer surrounding the CPC is not expected to occur.

46.2 If applicable, propose additional mitigation measures to minimise subsurface lateral flow into the waste co-disposed in the WRDs.

As explained in the response to 46.1, additional mitigation measures to minimise lateral flow into the CPC are not expected to be required.

47 Co-placement Method

DETSI's Comments

The application material including MMMP, PRCP and section 3.7.1 of EAR indicate blending of PAF and dewatered tailings within a waste rock matrix. The ATC Williams report however, indicate that PAF and dewatered tailings will be placed (sequential) as layers of PAF waste rock followed by a layer of dewatered tailings which will be encapsulated by NAF waste rock. Further clarification or revision of application material on the proposed co-disposal method and design is required to ensure the proposed method and potential impact is fully understood.

Further, although conceptual designs of the WRDs have been provided within Appendix A of the ATC Williams report, it is unclear how the PAF and dewatered tailings will be placed in the WRDs. A schematic drawing of how the tailings and PAF will be placed sequentially in the WRDs is required to further understand the internal structure of the landform.

DETSI's Requested Actions

- 47.1** Clarify the process of co-disposing dewatered tailings and PAF material within the application material.

The co-placement of dewatered tailings and PAF waste rock in the CPC has been revised and is described in Section 3.8.2 and illustrated in the Appendix A drawings of the *C-WRD Conceptual Design Report* (PRCP Appendix E). It involves placement of dewatered tailings and PAF waste rock in 1 m lifts within the CPC. The majority of the PAF waste stored in the CPC will be dewatered tailings, and hence the revised CPC concept does not involve, or require, the placement of sequential layers of dewatered tailings and PAF waste rock. The PRCP and Section 3.7.1 of the EAR have been updated to align with the revised C-WRD concept design.

- 47.2** Provide schematic designs developed by an RPEQ of the WRDs depicting the proposed co-placement method.

Plans and cross sections of the co-placement concept design are provided in Appendix A of the *C-WRD Conceptual Design Report* (PRCP Appendix E). The concept design report was prepared by RPEQs from ATC Williams.

PRCP INFORMATION REQUEST AND RESPONSES

1 Community Consultation and Register

DETSI's Comments

Although section 3.1 of the PRC Plan identifies five relevant parties for the purpose of community consultation, it is unclear if all relevant members of the community have been consulted in relation to the rehabilitation and closure activities of the site. For example, Table 7 within section 3.1 identifies Richmond Community as a stakeholder however, Table 6 does not include record of consultation with this group.

Further section 3.1 further states – ‘Given no significant issues have been raised by stakeholders, the PMLUs and NUMAs are considered by SMC to be generally supported by the local community and consistent with the outcomes of the PRCP consultation.’ Details of information presented to the stakeholders with respect to each PMLU and NUMA have not been provided.

In addition, section 3.2 of the PRC Plan includes details of ‘general community consultation’. However, details of consultation do not include reference to the proposed PMLUs and NUMAs nor the details of the information presented to the community regarding the outcomes. Further information demonstrating the landowner and communities understanding of each NUMA and how it will be managed to minimise long-term risks and residual risks is required.

DETSI's Requested Actions

- 1.1** Clarify whether all relevant stakeholders have been consulted in relation to the rehabilitation and closure activities of the site. If it is identified that all relevant stakeholders have not been consulted provide details of the identified stakeholders.

PRCP Section 3.1 has been reviewed to ensure all relevant stakeholders have been consulted. Table 6 in Section 3.1 has been updated to include additional consultation undertaken with all relevant PRCP stakeholders regarding the proposed rehabilitation and closure activities for the site. The general community consultation information (previously included in PRCP Section 3.2 and Table 7) has been removed from the PRCP, as these stakeholders do not meet the definition of a PRCP stakeholder under the DETSI Community Consultation for PRCP Information Sheet.

- 1.2** Provide details of community consultation that meets the requirements under section 126C(1)(c)(ii) of the EP Act and section 3.5 of the PRCP Guideline. Ensure details of consultation with all relevant stakeholders in relation to rehabilitation and closure activities and details of each PMLU / NUMA outcome is included in the PRC Plan.

PRCP Table 6 provides a register of the consultation undertaken with relevant stakeholders in developing the PRCP. The Table 6 consultation register includes the specific requirements listed in Section 3.5 of the PRCP Guideline. As detailed in PRCP Table 6, consultation with the relevant PRCP stakeholders included discussion and provision of figures related to rehabilitation and closure activities for the PMLUs and NUMAs. Table 6 has been updated to include follow-up consultation conducted in mid-2026 in relation to recent amendments to the PMLU and NUMA areas.

- 1.3** Provide details of information provided to the community (i.e., PMLU options analysis for the PMLUs and NUMA including justification) to demonstrate stakeholders contribution to decision-making about rehabilitation and PMLU / NUMA outcomes.

The information provided to the PRCP stakeholders during consultation is described in the revised PRCP Table 6.

2 Community Consultation Plan

DETSI's Comments

Table 8 of the PRC Plan includes details of the proposed PRCP Community Consultation Plan that identifies the five relevant parties as community members however, no additional stakeholders are included. It is unclear whether all relevant stakeholders have been identified in the plan.

Clear objectives of consultation have not been included in the plan.

Consultation with the identified landholders is proposed to occur at a frequency of - as required typically at least annually or as part of a PRCP amendment process where there is a material change to PRCP outcomes. The plan is lacking details on how any feedback or complaints will be managed, any monitoring frameworks for measuring if objectives are being met, and how any incidents may be communicated with the community. Further information on commitments made with the stakeholders such as rehabilitation timeframes should be clearly identified and reflected in the PRCP schedule.

Sufficient details on how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan has not been included. Ongoing community consultation should continue throughout the stages of the mine life so that progressive rehabilitation and the socio-economic and environmental impacts related to mine closure can be discussed with the community. For example, how progressive rehabilitation will be implemented during the life of mine, rehabilitation methods (landform design, vegetation types, cover systems) and progress on rehabilitation milestones.

DETSI's Requested Actions

- 2.1** Provide a consultation plan that meets the requirements under section 126C(1)(c)(iv) of the EP Act and section 3.5 of the PRCP Guideline.

PRCP Section 3.2 and Table 7 have been revised and address each of the specific requirements of Section 126C(1)(c)(iv) of the EP Act and Section 3.5 of the PRCP Guideline. Table 7 specifically includes for each PRCP stakeholder the consultation objectives, engagement type, frequency, information and how feedback will be considered.

- 2.2** Clearly state the purpose and objectives of the consultation plan.

The purpose and objectives of the consultation plan are included in the revised PRCP Section 3.2.

- 2.3** Include information on any commitments made with the stakeholders with respect to rehabilitation timeframes.

All commitments made with stakeholders are provided in PRCP Table 6 (PRCP Section 3.1).

3 Proposed PMLU: Grazing

DETSI's Comments

Section 2.13 of the PRC plan and the proposed PRCP schedule identifies the post- mining land use (PMLU) as grazing however, the PMLU options analysis assessment in section 4.1 identifies the PMLU as low-intensity grazing. The proposed grazing PMLU requires further justification specifically in light of the assessed land use suitability class for the project site and whether the proposed rehabilitation will achieve a sustainable grazing PMLU. The following observations from section 5.4.16 of the Soils Report (Appendix D of the PRC plan) indicates areas may not be suitable for a sustainable grazing outcome:

- Soil samples SPCs 1, 2, 4, is that is suitable for a narrow range of crops or pastures. SPC 1, 2 and 4 covers 1,672ha with land use suitability class identified as 1-3.
- SPCs 5, 6 and 8 is land that is suitable for grazing of native pastures, with or without the introduction of pasture species. SPC 5, 6 and 8 covers 311ha with suitability class identified as 4/5.
- SPCs 3 and 9 is land that is suitable for light grazing of native pastures in accessible areas. SPC 3 and 9 covers 282ha with suitability class identified as 5.

Publication on grazing PMLU available at the Office of the Queensland Mine Rehabilitation Commissioner (QMRC) website indicates that land use suitability class 1-3 is considered leading practice for a sustainable grazing PMLU. Class 4 is not suitable for a sustainable grazing PMLU but may be grazed for short periods while Class 5 represents land that unsuitable for grazing use due to its extreme limitations. Further justification on the proposed grazing use in areas that may not represent land suitable for this use is required. Where applicable, alternative land use based on land suitability and capability assessment must be nominated.

In addition, it is encouraged to return disturbed land as close as possible to its pre- mining state. In accordance with Appendix D (Soils Report), the pre-mining state is largely consistent with native woodland, that may support opportunistic grazing.

DETSI's Requested Actions

- 3.1** Clarify the terminology of PMLU proposed throughout the application (i.e. grazing and low intensity grazing). Consider the land use suitability class identified in Appendix D of the PRC plan and Office of the Queensland Mine Rehabilitation Commissioner (QMRC) publication on Grazing as a post-mining land use and update the PRCP as required.

The terminology for the PMLU in relation to 'grazing' or 'low intensity grazing' has been amended throughout the PRCP document to 'Native Vegetation with Low Intensity Grazing'. This PMLU is consistent with the pre-mining land use. On this basis, DETSI confirmed during consultation on 27 August 2025 that the land use suitability classes identified in the QMRC publication on Grazing as a Post-Mining Land Use are not relevant to this amended PMLU.

4 Options Analysis (PMLU and NUMAs)

DETSI's Comments

Section 4.1 provides an assessment between low intensity grazing and native ecosystems as the two potential suitable PMLU for the project. As stated above, it is noted that the proposed cattle grazing PMLU is not included in this analysis.

The PMLU options are based on the likelihood of the PMLU suited for the area, having regard to adjacent landholders who operate large scale cattle grazing operations. The analysis states - The pre-mining land use (and ongoing surrounding land use) is not high intensity grazing on improved pasture free from other vegetation. Rather, it is low- intensity grazing where areas of native vegetation grows throughout the grazing areas. With that type of grazing livestock has unfettered access through those areas of native vegetation. As such re-instating a PMLU of low-intensity grazing, similar to pre-mining, does not preclude the co-existence of native vegetation.' There are further references to the co-existence of native ecosystem and low intensity grazing consistent with pre- mining land use in the assessment.

It is noted that the application identifies other PMLUs such as forestry, cropping and industrial activities as non-viable options, however it is unclear why PMLU options are limited to low intensity grazing and native ecosystem (with restricted cattle access).

Appendix D (Soils Report) of the PRC plan provides details of current land use being predominantly native woodland, with other current land uses including sparse woodland (two sites) and grazing (three sites), refer to the Table below. It is therefore considered that the pre-mining land use may be more consistent with native vegetation or native ecosystem with opportunistic grazing. It is noted that native ecosystem/vegetation outcome would not necessarily need to preclude cattle access (requiring fencing), however, could accommodate unfettered access of cattle through native vegetation similar to pre-mining use.

Identified alternative options from Appendix D have not been incorporated in the PRC plan including for areas that are currently proposed as NUMAs.

In addition, Queensland Government agricultural land use audit data available via AgTrends Spatial website identifies the project area (part of a broader grazing property) as grazing native vegetation.

According to section 3.3 of the PRCP Guideline, a NUMA can only be nominated after PMLU options have been assessed in accordance with criteria specified in section 3.2 of the guideline. A detailed options analysis identifying all alternative option for nominated NUMAs have not been provided.

DETSI's Requested Actions

- 4.1** Provide an options analysis using a structured approach (such as a multi-criteria analysis) that identifies and compares all feasible PMLU options for the nominated PMLUs and NUMAs with consideration to each criteria specified below:
- any regulatory constraints on, or objectives for, the proposed land use (e.g. Indigenous Land Use Agreements, site management plan (contaminated land), local and regional land use plans, endangered species, or registered heritage places);
 - physical constraints (e.g. slopes, voids, geology);
 - chemical characteristics (e.g. residual contamination from tailings or other waste disposal);
 - available rehabilitation methods, including best practice (e.g. backfill, profile, capping);
 - relative costs of each rehabilitation option;
 - potential economic benefits of each option for the community or landholder (e.g. tourism, public use, grazing);
 - potential environmental benefits of each option; (e.g. create wildlife corridors, revegetation);
 - potential social benefits of each option (e.g. recreational use, public amenity, employment);
 - compatibility with surrounding land uses (e.g. agriculture, ecosystem);
 - the land use before the mining activity commenced; and options for retaining/transitioning

infrastructure and utilities such as road and rail transport accessibility as well as power, communications and water management systems.

SMC has revised the proposed PMLUs and NUMAs for the project. The PMLU for the majority of the project site, including the WRDs, will now be Native Vegetation with Low Intensity Grazing, consistent with the underlying landholders pre-mining land use. The BVS Pit drainage diversion will now have a PMLU of Engineered Drainage Diversion and the TSC will have a PMLU of Engineered Waste Storage Facility. Importantly, NUMAs are now limited to the three open cut pit final voids and have been reduced from the original seven down to three.

The assessment of PMLU Options in PRCP Section 4.1 and Table 8 has been updated to address the revised PMLUs and include each of the options analysis criteria listed in the DETSI requested action and as outlined in the PRCP Guideline. PRCP Section 5 has been updated to address the revised NUMAs.

4.2 Evidence based comparison and justification for each proposed PMLU against alternative options.

Refer to the response to 4.1.

4.3 Identification of any statutory constraints that may need to be imposed to prevent or limit the likelihood of an inappropriate land use in the future.

Refer to the response to 4.1.

4.4 Provide a risk assessment for each option including potential risks, mitigation measures, residual risks and long-term monitoring requirements associated with the selected option (PMLU and NUMAs).

The risk assessment in PRCP Section 7 addresses each of the proposed PMLUs and NUMAs.

4.5 Provide information that demonstrates how the preferred option aligns with community consultation and best practice environmental management.

Refer to the response to 4.1.

5 Non-use Management Area (NUMA)

DETSI's Comments

The proposed PRC plan and schedule nominates seven (7) NUMAs which includes three (3) WRDs, three (3) voids, and one (1) TSC. However, sufficient level of information addressing the reasons for nominating NUMAs as outlined in section 3.3 of the PRCP Guideline have not been provided. The provided justification in section 5 of the PRC plan indicates the proposal of NUMAs based on the environmental harm being confined within the relevant resource tenure and public interest consideration.

Despite the public interest justification, it is a requirement of section 3.3 of the guideline that information listed under Reason – greater risk of environmental harm be provided to support Reason – public interest and that the risks are localised. A report prepared by an appropriately qualified person that satisfies (a) to (d) Reason—greater risk of environmental harm and (f) to (g) Reason—public interest outlined in section 3.3 of the PRCP Guideline have not been provided. Further, a detailed assessment on each of the public interest considerations outlined in section 316PA required by part (g) of section 3.3 of the guideline is required.

In addition, an assessment of the NUMA location options presented in section 5 of the PRC plan concludes that other viable position for NUMAs are unavailable due to constraint of the resource location and existing ML boundaries. Based on the provided mine plans presented in the PRC Plan, the central WRD and TSC are constrained by the ML boundary therefore, it is unclear whether environmental harm could be reasonably confined within the tenure boundaries, particularly considering the central WRDs proximity to Woolgar River. Details on the type and extent of environmental harm that is likely to occur and residual risks as a result of NUMAs is required. Information requirements outlined in section 3.3 of the guideline Requirements for a NUMA that includes an analysis of potential environmental harm for each alternative structure location, sensitivity of the surrounding environment of each option and evidence that proposed location will prevent or minimise environmental harm is required. Consider assessment of risks such as structural failure of high risk structures located near sensitive receptors, groundwater contamination or drawdown, hydrological impacts over time, slope failure or wall collapses, safety hazard (adjacent grazing properties), contamination from seepage (potential and actual), erosion and surface runoff, flood inundation and monitoring measures post closure and residual risks remaining post closure.

DETSI's Requested Actions

- 5.1** Provide a report by an AQP that addresses section 3.3 of the PRCP Guideline. This includes but is not limited to points a-d, f-g of the Guideline and a-d of section 316PA(2) of the EP Act.
 Reason—greater risk of environmental harm
 If an applicant is seeking approval of a NUMA ... include a report that:
- a) is prepared by an appropriately qualified person(s)
 - b) identifies
- Reason—public interest
 This section applies if a NUMA is being proposed because the environmental risks from the area are localised and the applicant considers that it is in the public interest for the land not to be rehabilitated to a stable condition. The rehabilitation planning part of the PRC plan must include, as per section 126C(1)(j) of the EP Act, a report that satisfies (a) to (d) above and must include the following:
- f) Information demonstrating that any contaminants associated with the NUMA will not cause environmental harm beyond the area of the relevant resource tenure. Examples of offsite impacts include, but are not limited to, airborne contamination/dust, impacts of erosion and sediment runoff on surface waters or seepage of contaminants into groundwater.
 - g) Consideration of each of the public interest considerations outlined in section 316PA of the EP Act.
- For information, public interest consideration is defined in section 316PA (2) and (3) of the EP Act.

SMC has revised the proposed NUMAs for the project, resulting in a reduction in the number of NUMAs from seven (7) to three (3). The three WRDs are now proposed to have a PMLU of Native Vegetation with Low Intensity Grazing and are no longer proposed to be NUMAs. The TSC is also proposed to have a PMLU of Engineered Waste Storage Facility. Hence, the project will now have only three (3) open cut pit final void NUMAs.

PRCP Section 5 has been updated to address the revised NUMAs.

SMC has also prepared a Public Interest Consideration Report that is included in Appendix K of the PRCP. The report addresses the relevant requirements of Section 3.3 of the PRCP Guideline and the public interest considerations specified in Section 126E of the EP Act in relation to the justification of the final void NUMAs.

6 Void in Flood Plains

DETSI's Comments

Floodplain modelling for the 0.1% Annual Exceedance Probability (AEP) (Appendix H, Surface Water Report of the PRC plan) required under section 41C of the EP Regulation does not include information requirements outlined in section 3.4 of the PRCP Guideline. This includes (but is not limited to):

- Details of the data used to develop the model;
- Identification of artificial features and all watercourses (stream order 4 or higher);
- Groundwater impacts on floodplain extent, details of model assumptions and justification;
- Details of model calibration for each event; and
- A sensitivity analysis where calibration have not occurred.

In addition, a drainage feature of stream order 4 that is located on the western boundary of ML100236 does not appear to be included in the provided model.

Section 3.6.1 flooding

Section 6.1.2 of the PRC Plan refers to the outcome of the 0.1% floodplain modelling that concludes that majority of the project site is located above the Woolgar River 0.1% AEP flood level. As such, no further flood assessment has been provided.

The requirement under section 3.4 and section 41C of the EP Regulation requires specific flood modelling for the purpose to determine if final voids are located within a floodplain and requirement to rehabilitate to a stable condition. The 0.1% event is a rare event and considers specific stream orders and does not consider the influence of other watercourses or drainage features across a broader catchment of the site.

Flooding information under section 3.6.1 of the PRCP Guideline requires information regarding the influence of flood flow through the site. Flood modelling is required to determine the influence of flood depth and velocity on the final landform. This includes all waterways and all final landforms. The PRC plan does not provide information on the long-term sustainability of the final landform under a variety of flood events.

DETSI's Requested Actions

- 6.1** Provide a revised floodplain modelling that complies with the requirements of the ARR Guideline and consideration to the climate change update (version 4.2) and requirements specified in section 3.4 of the PRCP Guideline:
- Details of the data used to develop the model in accordance with section 4.13.3. of the ARR;
 - Identification of all artificial features proposed or present within the tenure boundary;
 - Identification of all watercourses within the immediate catchment with the Strahler method of stream ordering applied;
 - Identification of any approved permanent watercourse diversions within the tenure boundaries and the relevant approval of the diversion;
 - Consideration of how groundwater may impact the flood plain extent;
 - A hydrologic model;
 - A hydraulic model;
 - Model assumptions and limitations;

- Model calibration and sensitivity analysis; and
- Spatial data outlining the extent of the flood plain.

A revised *Baseline Flood Assessment Report* is included in Appendix A of the Surface Water Report (PRCP Appendix H). The updated report addresses the relevant requirements of Section 3.4 of the PRCP Guideline. PRCP Section 5.2 includes the results of the *Baseline Flood Assessment Report* and confirms the final voids are all above the Woolgar River Q1,000 flood levels and are therefore not within a floodplain of a relevant watercourse.

- 6.2** Provide an assessment of flood susceptibility and influence on all mine features of the final landform in accordance with section 3.6.1 of the PRCP Guideline. This includes but is not limited to:
- The location of domains in relation to potential flood levels at closure (including artificial features, drainage lines and diversions included in model);
 - Alteration of flow upstream and downstream;
 - Model flood levels (including probable maximum flood levels 0.1%, 1% and 2%) for a range of design storm events (including flood depth and velocity);
 - Peak flood depths and velocities in the final landform (maps);
 - Develop a flooding risk profile; and
 - Provide ongoing erosion monitoring requirements, mitigation and management practice to ensure long- term stability of structures inundated or influenced by flooding (if applicable).

A *Final Landform Flood Assessment Report* has been prepared and is included in Appendix J of the revised PRCP. The flood assessment report addresses the relevant requirements of Section 3.6.1 of the PRCP Guideline. PRCP Section 6.1.1 has been updated to include the key conclusions from the Final Landform Flood Assessment Report.

- 6.3** Provide a revised PRC Plan that includes details of conclusions drawn from flooding assessments and final site design maps depicting floodplain extent for the PRCP schedule.

Figure 3.3 of the Baseline Flood Assessment Report (PRCP Appendix J) shows the Woolgar River 0.1% Annual Exceedance Probability (AEP) flood extent in relation to the open cut pit final voids. PRCP Figure 17 shows the Woolgar River 0.1% AEP flood extent in relation to the final landform. These figures show that the majority of the project site, including the final voids, is above the 0.1% AEP flood extent.

The flood extents for the local catchment drainage features for the 2%, 1%, and 0.1% AEP flood events and the Probable Maximum Flood (PMF), in relation to the final landform, are shown in Appendix A of the Final Landform Flood Assessment Report (PRCP Appendix J). The flood assessment report concludes that the mine features in the proposed final landform are not susceptible to either local catchment flooding (from site drainage features) or regional flooding (from the Woolgar River) from floods up to the 0.1% AEP event (Section 6 of the Final Landform Flood Assessment Report [PRCP Appendix J]).

The PMF for the regional catchment (i.e. Woolgar River flooding) does not interact with the mine features in the final landform. Minor interactions (less than 1 m flood depth) are predicted at the northern end of the Southern WRD and at the north-eastern corner of the Central WRD during the PMF in the local catchment site drainage features. The PMF is not considered an appropriate flood event for the design of final landforms given the exceptionally low probability of this upper limiting flood event (1:1,000,000 to 1:10,000,000 AEP).

- 6.4** Include further details regarding proposed rehabilitation activities to reduce the risk of impacts to the final landform stability as a result of flooding.

As discussed in the response to 6.3, the mine features of the final landform are not subject to any significant flood risk for floods up to the 0.1% AEP flood event. Therefore, rehabilitation activities to reduce flood risk are not warranted.

7 GDEs

DETSI's Comments

The potential residual impacts of long-term groundwater drawdown on GDEs are unknown. The rehabilitation milestone criteria should address monitoring of GDEs post rehabilitation. Further details and completion criteria are required with regard to GDE monitoring to demonstrate that there is no environmental harm to GDEs being caused by the final landform.

DETSI's Requested Actions

- 7.1** Provide an updated PRC plan and PRCP Schedule that includes details of GDE monitoring methodology and completion criteria.

The potential for long-term impacts on GDEs in the post-mining phase due to groundwater drawdown is known and are discussed in Section 2.5 of the Groundwater Dependent Ecosystem Report (GDE Report) that is included in Appendix K of the Environmental Assessment Report (EAR). A high-level summary of the GDE report is also included in EAR Section 7.7.

As discussed in Section 2.5 of the GDE Report, the maximum drawdown in the area of potential indirect impacts on GDEs due to groundwater drawdown will occur at the end of the mine life and there will be no additional drawdown or associated additional risk of GDE impacts post mine closure. Section 7.7.5 of the EAR explains that the proposed operational and post-closure groundwater monitoring programs will confirm the groundwater levels and would detect any groundwater drawdown that could result in impacts on GDEs. Monitoring results will be compared to the relevant groundwater quality and level trigger values to identify any unanticipated groundwater effects. If unanticipated effects are identified, this would enable further assessment of any unanticipated impacts on any GDEs.

8 Waste Characterisation

DETSI's Comments

Section 6.1.3 of the PRC plan references Appendix F (Geochemistry Report) within the PRC plan that is subject to further information request outlined in item 18 above for EAR Appendix A (Geochemistry Report). In addition to a revised report, a revised PRC plan that demonstrates how the sampling regime from this report meets leading practice standards and is capable of generating block models and estimating the volume of mine waste based on waste type.

DETSI's Requested Actions

- 8.1** Provide a revised PRC plan that includes information on waste characterisation as outlined in section 3.6.1 of the PRCP Guideline.

Refer to the response to EAR Requested Action 18 in relation to requested additional information for the geochemistry assessment and waste characterisation. The Geochemistry Report (PRCP Appendix F) has been updated to include additional information.

Section 6.1.3 of the PRCP has been updated to include additional information addressing the best practice geochemical sampling requirements and the development of an inventory of mine waste types (block model) in the Mine Waste Material Management Plan (MWMMP) prior to the commencement of mining activities.

9 Topsoil and Capping Material

DETSI's Comments

It is understood from section 6.1.4 of that PRC plan that all soils except subsoil at sample SPC6 are suitable for use in rehabilitation activities provided topsoils at SPC3, 6 and 9 are ameliorated to reduce sodicity and dispersive attributes. Further information on where the subsoil from SPC6 (23ha) will be used is required. It is noted that 300mm of topsoil is proposed to be completed in RM4(b) while amelioration of topsoil is proposed at a later stage as part of RM5(b) which occurs following seeding.

Section 6.1.4 states that sufficient material to cap and rehabilitate all RAs is available on site (topsoil 2,482,266m³ and subsoil 8,787,985m³) however, a materials balance including approximate estimate for capping material volume and topsoil for each mine feature have not been provided. As such, it is unclear to determine if sufficient material to cap and complete rehabilitation activities is present onsite. Information on where deficient material would be sourced from as contingency have not been identified either.

Further, although the soils report confirms material suitability for rehabilitation activities, no assessment of material suitability for capping of waste containing structures have been provided.

DETSI's Requested Actions

- 9.1** Provide a revised PRC plan that includes:
- Details of activities planned for subsoil from SPC6;
 - A detailed materials balance including quality and quantity of available material for capping and topsoil for each rehabilitation area;
 - Identification of material deficiency and source of additional suitable material;
 - Material suitability assessment for proposed capping layer / cover material for structures; and
 - A soil assessment demonstrating the relationship with establishing targeted vegetation communities

As indicated in PRCP Table 20, subsoil from SPC6 is not proposed to be used in rehabilitation as it is unsuitable. Very little SPC6 occurs within the project site and the topsoil stripping area (1.16 ha). Any SPC6 subsoil encountered within topsoil stripping areas would either be left in-situ or, if required to be excavated, disposed of in a WRD.

PRCP Table 20 provides a detailed break down of the available suitable rehabilitation topsoil and subsoil resources within each soil unit within the topsoil stripping area. Table 20 identifies a total of approximately 2.46 Mm³ of topsoil and 8.7 Mm³ of subsoil available for salvage within the project topsoil stripping area. PRCP Section 6.1.4 explains that sufficient volumes of topsoil and subsoil are available within the project

stripping area rehabilitation requirements. Section 6.1.4 has been updated to clarify that approximately 2.33 Mm³ of topsoil is required for rehabilitation areas and approximately 1.06 Mm³ of subsoil is required for capping the TSC.

There is no identified deficiency in the quantity of suitable topsoil or subsoil available to be salvaged from the project disturbance area and, therefore, no additional source of suitable material is required.

Rehabilitation milestone (RM) 4 requires an assessment of topsoil characteristics to confirm site-specific suitability requirements for rehabilitation purposes and the application of any necessary ameliorants such as lime, fertiliser, gypsum and/or organic matter at rates to be determined by an Appropriately Qualified Person (AQP), prior to placement of topsoil during rehabilitation.

PRCP Section 6.1.4 discusses the suitability of materials proposed for the TSC capping layer. This section of the PRCP has been updated to confirm there is sufficient suitable subsoil available for salvage within the project disturbance area to complete capping of the TSC. NAF waste rock would also be potentially suitable for the TSC capping layer. Approximately 80 Mm³ of the project waste rock is NAF and hence the TSC capping volume is a small proportion of the total NAF waste rock available.

PRCP Section 6.1.4 explains that the topsoil proposed to be used in rehabilitation will be salvaged from the project disturbance area and the revegetation species will be endemic to the project area. Hence, the topsoils will be suitable for the revegetation species that naturally grow in the same topsoil. Similarly, the proposed topsoil replacement depth in rehabilitation areas of 0.3 m is similar to the maximum natural topsoil depth in the project site that supports the endemic revegetation species.

10 Cover System

DETSI's Comments

Section 6.1.6 of the PRC Plan provides limited information on the proposed cover system for closure of mine waste structures including the three WRDs and a TSC. Further information outlined as per section 3.6.1 of the PRCP Guideline is required.

The capping methodology should consider the Global Industry Standard on Tailings Management (GISTM), the International Network for Acid Prevention (INAP), the Global Cover System Design and technical papers on mine waste cover system published by the QMRC.

DETSI's Requested Actions

- 10.1** Provide a revised PRC plan that includes a cover system design appropriate for each waste structure that is designed on a risk-based approach and in alignment with the requirement specified in section 3.6.1 of the PRCP Guideline.

The proposed cover design for the TSC is described in PRCP Section 6.1.6. As indicated in the Surface Water Report (PRCP Appendix H), the TSC will also be a regulated structure. Hence, the TSC will need a design report, including a plan for decommissioning and final rehabilitation, certified by an RPEQ prior to the commencement of TSC construction. The certified design, including the cover design, would be prepared in accordance with relevant standards.

The conceptual design of the store and release cover for the Central WRD has been updated and referenced in PRCP Section 6.1.6 and described in detail in Sections 3.10.1 and 4.3.5 of the Central WRD Conceptual Design Report (PRCP Appendix E).

The Northern and Southern WRDs will contain only NAF waste rock and hence the rehabilitation of these WRDs does not require a cover system.

11 Water Management

DETSI's Comments

Section 6.1.7 of the PRC plan indicates that - runoff from the rehabilitated areas will have a similar quality to runoff from the natural catchments and no require any ongoing management measures or treatments. It further states that there are no ongoing water management requirements or treatments for the post mining landform. It is unclear how the runoff quality for the final landform is proposed to be similar to the runoff from natural catchment in absence of monitoring post closure. Surface water and groundwater monitoring criteria including monitoring locations (downstream and upstream / reference sites), limits suitable for closure, and appropriate monitoring timeframe to demonstrate that the PMLU is stable and non-polluting is required.

In addition, it is unclear how no ongoing water management is proposed given the PRCP schedule includes a permanent diversion drain to divert water around the BVS pit. It is noted that the proposed milestone-criteria for the diversion that is nominated as grazing PMLU does not include milestones otherwise applied to other areas with grazing PMLU. The PMLU for the diversion should be reconsidered to ensure the structure is rehabilitated to pre-mining geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse. Further information on management of water in the proposed residual voids, runoff and seepage from waste containing structures is required. This includes but is not limited to management of runoff (pit inflows), dewatering, pumping between pits, seepage collection drainage.

It is unclear whether the management of water from seepage collection and runoff from the WRDs discussed in section 6.1.7 of the PRC plan relates to mine closure. A detailed assessment of water management for the final landform as specified in section 3.6.1 of the PRCP Guideline is required.

DETSI's Requested Actions

- 11.1** Provide a revised PRC plan that includes information on water management for the final landform in accordance with section 3.6.1 of the PRCP Guideline. This includes but is not limited to:
- A description of the contaminants that pose a risk to environmental values of the receiving environment;
 - Source, pathway and fate of contaminants that have the potential to impact environmental values;
 - Infiltration and seepage intervention and collection controls;
 - Surface water diversions and long-term management requirements;
 - Dewatering requirements; and
 - On-going water management and reduction requirements (i.e. treatment).

PRCP Section 6.1.7 has been updated to address the relevant information requirements for final landform water management.

- 11.2** Provide a revised PRCP schedule that includes appropriate milestone-criteria for the rehabilitation of the proposed diversion to a stable PMLU. This includes but is not limited to:
- Design and specification by a suitably qualified and experienced person;
 - Monitoring on the performance of the diversion (i.e., operating as designed and maintains sediment transport regime allowing diversion to be self- sustaining);

- Hydraulic characteristics of surface water and groundwater systems; and
- Hydraulic characteristics of the diversion being comparable with local watercourses.

The PMLU for the BVS Pit diversion drain has been changed from grazing to Engineered Drainage Diversion. The milestone criteria for the drainage diversion include criteria related to the appropriate design, construction and stabilisation of the diversion and are included in Appendix A – PRCP Schedule.

12 Revegetation

DETSI's Comments

Section 6.1.8 of the PRC plan identifies a species list that includes a combination of grazing and riparian species however, justification on whether the selected species mix is appropriate for the nominated PMLU have not been provided. For example, the seed mix for the grazing PMLU specified in Table 23 includes *Cenchrus ciliaris* (Buffel Grass) which has been identified as a key threatening process under the Environment Protection and Biodiversity Conservation Act 1999. Threat abatement advice relating to Buffel Grass can be found on the Department of Climate Change, Energy, the Environment and Water website - Ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*) - Introduction - DCCEEW. Further, the Queensland Government website has Buffel Grass identified as an environmental weed. Information can be found on Species profile— *Cenchrus ciliaris* | Environment, land and water | Queensland Government (des.qld.gov.au).

It is recommended that alternative plant species native to Australia such as Acacia, Eucalyptus and Corymbias, shrubs, native grasses and legumes are selected for revegetation at the Project which would provide more benefits to the environment. Information that demonstrates that the requirements of Schedule 8A, Part 3, Table 1 of the EP Reg have been considered should be provided.

Additional information on whether the targeted vegetation represents any fauna habitat, analogue sites (based on rehabilitation trials), seed density application rate and seeding timing, location of infrastructure (such as proposed temporary stock fencing) have not been provided. Further information on growth media availability, material suitability and topsoil application depth provided within the PRCP schedule and other supporting document have not been incorporated in section 6.1.8.

Furthermore, it is unclear whether the riparian species list presented in Table 23 of the PRC plan represent targeted vegetation similar to the pre-mining land use at the proposed pump station along the Woolgar River. Further details on the targeted vegetation (regional ecosystem) is required.

DETSI's Requested Actions

- 12.1** Provide a revised PRC plan that includes further information including but not limited to:
- A revised seed mix including justification for the nominated seed mix and whether it is appropriate to achieve the nominated PMLU;
 - Identification of fauna habitat and use requirements – where fauna habitat is proposed, a management and monitoring plan to describe how the rehabilitated areas will be utilised by fauna and what other management measures would need to be implemented;
 - Evidence and justification for any analogue sites of the monitoring plan or those proposed as part of rehabilitation trials;
 - Identification of adequate seed density application rate and timing of seeding;
 - Identification of proposed location of infrastructure required to protect revegetation;
 - Information on growth media suitable to sustain the PMLU and whether this is available on site;

- Topsoil depth requirements for revegetation success and sustainable PMLU; and
- Demonstrate that criteria specified in Schedule 8A, Table 1 of the EP Reg have been met.

A revised seed mix is provided in PRCP Table 21. It includes only native species which have been recorded within the project site. Given the revegetation species are present in the project site and will be present in the seed bank, the Native Vegetation with Low Intensity Grazing and Engineered Drainage Diversion PMLUs are similar to the pre-mining land use, the species mix is appropriate to achieve these PMLUs and the revegetation of the Engineered Waste Storage Facility PMLU with grass cover.

As mentioned in PRCP Section 6.1.8, the creation of fauna habitat is not a specific milestone criterion for the proposed PMLUs. However, potential use of rehabilitated areas by native fauna is expected as a positive and incidental consequence of establishing the nominated PMLUs and associated revegetation with native species.

As stated in PRCP Section 9.1.3, rehabilitation monitoring reference sites will comprise analogue sites for native vegetation condition and suitable reference sites will be selected by an AQP prior to finalisation of the monitoring program. A key purpose of the analogue sites is to assess the relative success of rehabilitation by taking into consideration local climatic conditions. For example, if rehabilitation success criteria aren't being met, it could be due to climatic conditions that are affecting all vegetation communities in the area and not a deficiency of rehabilitation methods. As explained in PRCP Section 8, rehabilitation trials are not proposed.

RM5 of the updated PRCP schedule (PRCP Appendix A) requires the seed application rate to be determined by an AQP. PRCP Section 6.1.8 states that seeding will ideally be undertaken immediately prior to the onset of the wet season (i.e. in September or October) to maximise germination success.

RM5 of the updated PRCP Schedule (PRCP Appendix A) requires that temporary stock fencing will be installed around the dams, haul roads/access tracks, WRDs, mine infrastructure and cleared areas, where required, to exclude cattle from revegetation areas and stock fencing will be installed around the TSC.

The topsoil resources available within the project disturbance area are discussed in PRCP Section 6.1.4. As explained in Section 6.1.4, the topsoil proposed to be used in rehabilitation will be salvaged from the project disturbance area and the revegetation species will be endemic to the project area. Hence, the topsoils will be suitable for the revegetation species that naturally grow in the same topsoil. Similarly, the proposed topsoil replacement depth in rehabilitation areas of 0.3 m is similar to the maximum natural topsoil depth in the project site that supports the endemic revegetation species. Given the proposed seed mix and topsoil replacement depth are similar to the natural pre-mining condition of the project site, the growth media is expected to be suitable for successful revegetation and to sustain the proposed PMLUs which are also consistent with the pre-mining land use.

Schedule 8A, Table 1 (Final Site Design Assessment) of the EP Regulation is reproduced below and identifies where each assessment criterion has been addressed within the updated PRCP.

Table 1 Final Site Design Assessment (Schedule 8A, Table 1 of the EP Regulation)

PRCP Objective	PRCP Reference
The PRCP schedule properly states a post-mining land use or non-use management area for each area of land to which the PRCP schedule relates.	Section 4
PRCP Performance Outcomes	
1) Each post-mining land use—	
a. is viable, having regard to the use of land in the surrounding region; and	Section 4.3.1, 4.4.1 and 4.5.1
b. satisfies at least 1 of the following—	

PRCP Objective	PRCP Reference
i. the use is consistent with how the land was used before a mining activity was carried out on the land;	Section 4.3.1, 4.4.1 and 4.5.1
ii. the use is consistent with a development approval relating to the land;	Not applicable
iii. the use is consistent with a use of the land, other than a use that is mining, permitted under a State or Commonwealth Act, including, for example, a planning instrument under the Planning Act;	Not applicable
iv. the use will deliver, or is aimed at delivering, a beneficial environmental outcome.	Not applicable
2) The total area of land proposed as a non-use management area is minimised to the extent possible by, for example, demonstrating that the land, or any part of the land, cannot be used for any post-mining land use.	Section 5.1.1
3) Each non-use management area is located to prevent or minimise environmental harm having regard to—	
a. all reasonably practical alternatives for the location; and	Section 5.1.1
b. the nature of the environmental harm that may be caused because of the proposed location; and	Section 5.1.1
c. the sensitivity of the environment surrounding the proposed location.	Section 5.1.1

13 Rehabilitation Trials

DETSI's Comments

Section 8 of the PRC plan indicates that rehabilitation at the northern WRD commencing in project year 3 will be monitored to confirm success of rehabilitation methodology and adjustments made to the methodology to improve success where necessary. It further states that at least 5 years of monitoring data will be available on the success of the proposed revegetation methodology, prior to commencement of rehabilitation of other areas of the mine. The PRC plan, however, does not state if rehabilitation trials are proposed or provide the information on rehabilitation trials specified in section 3.7.1 of the PRCP Guideline. The proposed monitoring of rehabilitation in the initial project years aligns with the concept of rehabilitation trials and therefore, adoption of rehabilitation trials at this site is recommended to measure success of the proposed rehabilitation strategies, identify gaps, improvements throughout the mine life and achieve stable conditions.

DETSI's Requested Actions

13.1 Clarify whether rehabilitation trials are proposed.

PRCP Section 8 has been updated to clarify that no rehabilitation trials are proposed. As explained in PRCP Section 8, the rehabilitation methods proposed for the project are well established within the mining industry and the rehabilitation monitoring and maintenance requirements included within the rehabilitation milestone criteria will ensure the effectiveness of the rehabilitation methods.

13.2 Pending response to (1) above, provide a revised PRC plan that includes information on rehabilitation trials including:

- The objective of the trial(s);
- The trial design including, but not limited to, the location, underlying land characteristics and potential issues;
- The details of how the trial(s) will be carried out;
- When the trial(s) will commence;
- The duration of the trial(s);
- How the trial(s) will be assessed for success;
- How the results of the trial(s) will be incorporated into rehabilitation strategies;
- Where the trials have previously been carried out by the applicant; and
- How proposed rehabilitation trials align with leading practice such as the mine waste cover systems technical papers published by the QMRC.

As explained in the response to 13.1, rehabilitation trials are not proposed.

14 Tailings Storage Cell

DETSI's Comments

Section 6.2 of the PRC plan refers to information in section 5.1 of the plan, that further refers to a conceptual design Appendix E (TSC and WRD Conceptual Design Report).

Appendix E states that the rehabilitation of TSC will involve covering the stored dried tailings with benign capping material (e.g. suitable subsoil) and topsoil and shaping the capped surface to promote runoff and minimise infiltration. The capping material is understood to be a minimum of 1 meter of inert cover material to create a free draining surface, followed by topsoiling and revegetation, as stated in section 2.3.4 of Appendix E. A detailed capping design is stated to be developed at the closure phase of the TSC life cycle.

Appendix E provides preliminary seismic and liquefaction assessment based on extrapolated parameters due to the absence of site-specific information with liquefaction susceptibility assessed based on soil characteristics only. It appears that in-situ density of soils below the TSC have not been investigated to eliminate potential triggers for liquefaction. Similarly, the conceptual design assumes the embankment of the TSC is constructed from mine waste. Testing of material to determine whether material is suitable for the construction of the TSC embankment have not been provided. Information on cover systems outlined in section 3.6.1 of the PRCP Guideline that is requested in item 10 of the PRCP information request above must also be provided for the proposed TSC. Further information specified in section 3.6.2 of the PRCP Guideline for proposed TSC structure is required.

DETSI's Requested Actions

- 14.1** Provide a revised PRC plan that includes information requirements specified in section 3.6.2 of the PRCP Guideline:
- A revised particle size distribution analysis based on conditions in the TSF. Particle size distribution of tailings affects their hydraulic sorting down the tailings beach, and their settling, consolidation and desiccation on atmospheric exposure;
 - Specific gravity testing of tailings;
 - The moisture content and dry density profiles with depth of the indicative tailings;
 - Settling and consolidation testing of the tailings;
 - Shear strength testing of the indicative tailings, both peak and remoulded shear strengths;
 - Soil water characteristic curve testing;

- Column testing of the tailings to assess their settling, self-weight consolidation and desiccation;
- Design of TSF including information on leak detection systems, seepage collection systems, design storage allowance, spillway location and width;
- Capping design including field trials; and
- Appropriate rehabilitation milestone-criteria in PRCP schedule.

The TSC conceptual design details are provided in PRCP Section 4.5. An updated geotechnical stability assessment for the TSC is included in the Mine Waste Storage Geotechnical Stability Report (PRCP Appendix I).

As discussed in PRCP Section 4.5, the TSC will be a regulated structure and subject to the standard EA regulated structure conditions. These include the requirement for a certified design plan to be prepared for the TSC prior to the commencement of construction. The certified design plan is required to address the relevant construction and tailings material geomechanical properties and TSC design components listed above. The detailed design process will therefore include detailed TSC site investigations and characterisation of construction and capping materials.

TSC rehabilitation milestone criteria are included in PRCP Table 14 and the PRCP Schedule (PRCP Appendix A).

15 Void Closure Plan / Final Voids

DETSI's Comments

Sections 6.3 and 5.2 of the PRC plan provides an overview of the proposed voids and NUMA assessment for BVS, BV1 and BV2 pits, however, a comprehensive assessment of options available to minimise void areas, geotechnical and hydrological assessment requirements specified in section 3.6.3 of the PRCP Guideline have not been provided. Appendix G (Final Void Stability Report) within the PRC Plan includes limited information on the pit geometrics, geotechnical stability assessment and projected water levels. For example, although the geotechnical model in Appendix G extends to slope stability considering weathering, the report does not consider effects of long-term erosion, weathering of the pit walls and the effects of significant hydrological events on void stability.

Further, Appendix G indicates that the pit slopes are designed to meet a factor of safety (FoS) 1.2 having regard to the resource location, shallower slope (requiring a larger footprint of pit) and extraction of additional overburden and storage. As such, the design indicates areas of potentially unstable zones for which at least 10 metres of stand-off from the exclusion zone is recommended. Further information on how options available to minimise the void area that may result in FoS of 1.5 and subsequently stable exclusion zones have not been provided. In addition, clarification on whether the conservatism exclusion zone have been accounted for in the void footprint (NUMA) is required.

Section 5.2 of the PRC plan identifies the BVS pit as a permanent groundwater sink however, no determination for the satellite pits have been made. It is noted from section 6.2 of the surface water report that the satellite pits BV1 and BV2 are not predicted to support a permanent final void lake as these voids will be subject to periodic filling and drying resulting in a temporary void lake. It is stated that these voids are expected to have temporary saline water due to concentrated salt on pit floor from dry period however, evidence including a water balance for the satellite pits with predicted timeframe for dry periods and water quality (pH, salinity and metal concentration) have not been provided to support the assumptions. The water quality for BVS pit is also limited to salinity, which is based on an assumed electrical conductivity adopted from calibrated water balance model for Ravenswood Gold Mine (section 6.1 of the surface water report).

Further information to demonstrate how the adopted value is representative of the predicted conditions at the Big Vein project pits is required.

Section 6.2 of the PRC plan further indicates an assumed hydraulic connectivity of seepage loss through pit floors. Further information on the contaminant pathway and interaction between void surface and groundwater to determine whether the pits will pose risk to offsite receptors is required.

DETSI's Requested Actions

15.1 Provide a void closure plan that includes the following:

- Options available for minimising final void area and volume (where a final void is proposed);
- Pit wall geotechnical and geochemical stability, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events including flooding;
- Void hydrology, addressing the long-term water balance and water level in the voids, stratification connections to groundwater resources and potential for overflow;
- Groundwater modelling to determine whether the void is acting as a sink or a source for groundwater;
- A water balance study including an assessment of void surface and groundwater interactions;
- Predicted water quality in the long-term including potential stratification (pH, salinity and metal concentration) for all pits; and
- A 3D void design plan.

The information listed above, including comprehensive technical assessments, is addressed in Section 5.1 of the PRCP, as follows:

- Optimisation of the final voids to the minimum area necessary for the extraction of ore is discussed in PRCP Section 5.1.1.
- As discussed in PRCP Section 5.1, the geotechnical stability of the final void walls is addressed in the Final Void Stability Report (PRCP Appendix G) that delineates geotechnical stability buffer zones for each final void NUMA.
- As discussed in PRCP Section 5.2, the Baseline Flooding Report (Appendix A of the PRCP Surface Water Report [PRCP Appendix H]) shows that the final voids are well above the 0.1% AEP flood levels for the relevant watercourses (PRCP Figure 19). The Final Landform Flood Assessment Report (PRCP Appendix J) also shows that the final voids are above the 0.1% AEP flood levels from the local catchment drainage features.
- PRCP Section 5.1 states that the final void lake water level predictions (final void water balances) are provided in the Surface Water Report (PRCP Appendix H). Section 6.2 of the Surface Water Report concludes that the final void lake levels are well below the void overflow levels and hence the voids are not likely to overflow. The report also provides the predicted increases in void lake salinities (EC) over time due to evapo-concentration.
- PRCP Section 5.1.1 also explains that the groundwater assessment (Groundwater Report [PRCP Appendix C]) concludes that the BVS final void will be a groundwater sink in the post-mining phase. It also explains that the groundwater assessment concluded that there would be very limited potential seepage of void water from the BV1 and BV2 final voids and that any seepage would migrate to the BVS final void. Hence the final voids are not expected to result in any adverse groundwater impacts in the post-mining phase.

- PRCP Section 5.1.1 explains that the groundwater assessment concluded that regardless of the deterioration of void water quality over time due to evapo-concentration, this will not result in any potential groundwater contamination as the BVS final void will act as a groundwater sink.
- Final void plans are shown in PRCP Figures 8 and 18.

The abovementioned information and additional data collected during operations will inform a void closure plan.

15.2 Clarify whether the additional 10m of exclusion zone have been accounted for in the void footprint.

The final void NUMA areas include the geotechnical stability buffer (exclusion) zones determined in the Final Void Stability Report (PRCP Appendix G).

15.3 Provide justification for the selected EC value to ensure the predicted water quality at the mine voids are suitable and represents a close estimate of water quality at Big Vein pits to assess the potential impact to the receiving environment.

The basis for the selected EC values for inputs to the final void water balance modelling is provided in the footnotes to Table 25 of the Surface Water Report (PRCP Appendix H). The groundwater inflows and surface water runoff are based on the averages of site groundwater and surface water quality monitoring.

As discussed in the response to 15.1, whilst the final void lake water quality will deteriorate over time due to evapo-concentration, the void lake water is not a potential source of groundwater contamination as the BVS final void will act as a groundwater sink and hence groundwater will flow to the BVS final void in the post-mining phase. Section 6.2 of the Surface Water Report concludes that the final void lake levels are well below the void overflow levels and hence the voids are not likely to overflow.

15.4 Provide a detailed assessment on the potential contaminant pathway from satellite pit floors and interaction between void surface and groundwater.

As discussed in the response to 15.1, the groundwater assessment concluded that due to the low permeability of the BV1 and BV2 void floor geology, there would be very limited potential seepage of void water from the BV1 and BV2 final voids and that any seepage would migrate to the BVS final void. Hence, the final voids are not expected to result in any adverse groundwater impacts in the post-mining phase.

16 Built Infrastructure

DETSI's Comments

Section 4 and 6.5 of the PRC plan includes limited information on the methods of decommissioning of built infrastructure. Further information including identification and methods of decommissioning for infrastructure including but not limited to power plant, fuel stations, solar farm, processing facilities, accommodation camps, STPs is required.

It is not clear if any infrastructure is proposed to be retained by the underlying landholder. Infrastructure (such as buildings, roads, dams, and power lines) may be accepted as part of a PMLU where the relevant landholder has agreed through a signed landholder statement declaring that they will accept responsibility for the infrastructure once mining has ceased. All infrastructure to be retained onsite should be safe, stable and not cause environmental harm.

It is further noted that the permanent diversion is proposed to remain in perpetuity after the cessation of mining however, information on any ongoing maintenance and performance of this diversion is not

provided. Further information requirements for this diversion is detailed in item 11 of the PRCP information request above.

DETSI's Requested Actions

16.1 Identify all infrastructure that is proposed to be decommissioned and provide details on its decommissioning methods.

Section 6.5 of the PRCP has been revised to include a table summarising the built infrastructure within the project site. As stated in PRCP Sections 2.13 and 6.5, all the infrastructure within the project site is proposed to be decommissioned and removed as part of mine closure. However, should this approach change in the future, landholder approval will be obtained for any infrastructure proposed to be retained. As outlined in PRCP Section 6.5 and the rehabilitation milestones contained in the PRCP Schedule (PRCP Appendix A), rehabilitation of the infrastructure areas will include the following components:

- Remove all waste not authorised to be disposed of on-site under the EA.
- All machinery and equipment not required for rehabilitation works removed from site.
- Disconnect and terminate services, including water, electricity and gas.
- Demolish and remove buildings, including the processing plant.
- Remove bitumen, aggregate, concrete, etc and dispose in the TSC or WRDs.
- Desilt dams and pump mine-affected water to the BVS Pit.
- Complete contaminated land investigation document in accordance with the Environmental Protection Act 1994, including a site investigation report and, where required, a validation report and/or a draft site management plan.
- Contaminated and hazardous material either remediated in-situ or removed/transported to facility lawfully able to accept the material.
- Remove any contaminated soil that cannot be remediated in-situ and dispose of in the TSC.
- A declaration from an SQP that no contamination remains.
- All major earthworks completed to achieve final landform design.
- 20% (11.5°) maximum slope achieved on batters (unless an alternate slope is recommended by an RPEQ).
- Drainage works within rehabilitation areas completed.
- Assessment of topsoil characteristics and the development of an amelioration and physical treatment plan is completed by an AQP every 3 years.
- Application of soil ameliorants to topsoil such as lime, fertiliser, gypsum and/or organic matter at rates to be determined by an AQP.
- Deep ripping to <400 mm (or refusal*) into soil/subsoil profile along contour of slopes, as required.
- Placement of a minimum of 300 mm of topsoil where topsoil has been stripped.
- Direct seeding with native species, at a rate recommended by an AQP.
- Install temporary stock fencing to exclude cattle from revegetation areas, if required.

16.2 Where infrastructure is proposed to be retained as part of the PMLU, a contemporary landholder statement undertaking the responsibility of the relevant infrastructure must be provided.

As discussed in the response to 16.1, all infrastructure within the project site is proposed to be decommissioned and removed as part of mine closure.

17 Risk Assessment

DETSI's Comments

A comprehensive risk assessment that identifies performance measures and constraints for each of the risk and contingency plans identifying additional controls than those listed in section 7 of the PRC plan is required. Further details on the proposed actions, reporting and monitoring, timing and schedule have not been provided.

- Additional risks resulting in environmental, safety, structural stability and achievement of PMLU and NUMA is required. This includes (but is not limited to):
- Safety risk from surface roughness (rockiness, depressions) to human, stock and wildlife;
- Downstream water quality impacts due to erosion and sedimentation from rehabilitation areas;
- Surface water contamination from building and processing areas;
- Hazard for stock and wildlife from presence of noxious weeds and pests;
- Failure to establish required surface conditions to achieve nominated PMLU;
- Inadequate species density; and
- Significant slope failure high risk structures.

DETSI's Requested Actions

- 17.1** Provide an updated risk assessment that:
- Addresses additional risks associated with environmental, safety, structural stability and achievement of PMLU and NUMA impacts;
 - Provide an assessment of identifies performance measures and constraints for each risk identified;
 - Identify additional contingency controls;
 - Provide further details on the proposed actions, reporting and monitoring, timing and schedule; and
 - Identify any assumptions made in analysing risks in the provided assessment.

The risk assessment in PRCP Table 25 already includes the risk of not meeting the groundcover requirements (i.e. inadequate species density), geotechnical stability of the WRDs and TSC, and weed contamination.

PRCP Table 25 has been updated to include safety risks from surface roughness, downstream water quality impacts due to erosion and sedimentation from rehabilitation areas, failure to establish required surface conditions to achieve the proposed PMLUs and surface water contamination from buildings and processing areas. Contingency controls are discussed in Section 9.4.

18 Landform Evolution Modelling (LEM)

DETSI's Comments

The LEM provided as Appendix I of the PRC plan requires further justification and revision based on the following observations:

- More detailed discussion is required to demonstrate how the nominated erosion threshold of 4m³/ha/yr supports the long-term stability and performance of the landforms and cover systems.
- LEM predicts that the armour layer will be incised on all landforms, however, no further information on long-term stability and erodibility of material is provided. It is unclear whether the underlying material may be more erodible than the armour layer, or if erosion rate can be expected to increase once the armour material is exposed (e.g. if moderate-high stability (MHSR) rock is placed under high stability rock (HSR), erosion rate may be up to 5 times greater once the MHSR layer has been exposed, as indicated for the southern WRD in the provided LEM). This risk of exposure of underlying material, encapsulated or suboptimal material and on-site and off-site impacts have not been addressed. If it is expected that the armour will be rendered ineffective, further information such as consideration of alternative slope configuration/geometry of the structures and final landform is required.
- LEM considers sections of each landform (TSC and 3 WRDs) only. Modelling of entire landform is required to demonstrate that the design does not include/create areas of greater risk (e.g. drainage structures, other areas of flow concentration).
- There is no discussion of the how the drainage structures proposed on the WRD's (described in Section 5.3.1 of the PRC Plan as drainage along the outer slope benches to designated rock lined chutes that will convey drainage down the slopes and shown in figure 14 of Appendix I) will be expected to remain functional and stable in a post-closure context.
- Growth medium volume requirements presented in Section 7 and Table 7 (assumed thickness of growth medium layer of 150 mm and 200 mm) are not consistent with the 300mm depth discussed in section 4 of Appendix I. The application does not include information on potential material deficit as it is expected that sufficient material will be available on site.
- For most modelled areas, only average erosion rates are presented. Peak erosion rates (highest rate at any point on the slope) is required for a complete assessment of risk for all landforms and development of a measurable rehabilitation milestone-criteria.
- WRD geometry described in Section 5.3.1 of the PRC plan are not consistent with that modelled in Appendix I (LEM). For example, the angle of repose batters indicated in section 5.3.1 and 5.3.2 is 25% while angle of repose modelled in LEM (section 4) is approximately 57%.

DETSI's Requested Actions

18.1 Provide a revised LEM that includes optimal landform designs targeted to achieve long-term stability of the proposed landforms.

SMC has revised the WRD final landforms so that they will have maximum 20% slopes that are fully revegetated, in order to improve WRD landform erosional stability. SMC commits to undertaking LEM of the revised final landform of the WRDs and the TSC, based on site-specific data, within 5 years of the commencement of the project. The requirement for LEM of the WRDs and TSC final landforms has been included in PRCP Section 4.5.1 and in RM3 for the WRDs and TSC in the PRCP Schedule (PRCP Appendix A).

- 18.2** Provide further information that addresses comments from adjacent column including:
- Information that demonstrates how the nominated erosion threshold supports a stable landform;
 - Detailed information on material erodibility of proposed armour and underlying material;
 - Information that demonstrates the risk of gully erosion on the batters;
 - Revised LEM for entire landform including ramps or drains on the final landform to demonstrate concentrated surface flow will not be an issue of concern; and
 - Discussion on long-term functionality and stability of drainage structures proposed on WRDs;
 - Clarification on growth media throughout the PRC plan, PRCP schedule and that modelled in LEM;
 - Average and peak erosion rates predicted for the final landform;
 - Clarification on WRD geometry throughout the PRC plan and that modelled in the LEM;
 - A risk assessment that addresses potential risks associated with compromised cover design, exposure of underlying material, encapsulated or suboptimal material and on-site and off-site impacts; and
 - Trial methodology to verify the predicted success of the final landform designs.

Refer to the response to 18.1. The above-mentioned information will be provided in the LEM that will be undertaken within the first 5 years of operation.

- 18.3** Provide an updated PRC plan and PRCP schedule that includes cover design and vegetation cover milestone criteria that are informed by the findings and recommendations of the erosion assessment and material characterisation studies to ensure that the final landform will be erosionally stable.

Refer to the response to 18.1. The above-mentioned information will be provided in the LEM that will be undertaken within the first 5 years of operation.

19 Monitoring and Maintenance

DETSI's Comments

Section 9.1.3 of the PRC plan states that monitoring reference sites will be chosen to be appropriate analogues to the areas being monitored and on-the-ground assessments will be required to select the most appropriate locations. The location of reference sites will be determined during monitoring works ...Section 9.1.6 further indicates that a Rehabilitation Monitoring Program (RMP) will be developed and implemented for the project site which will include monitoring of rehabilitation areas (broken down into management units) and reference sites and will collect the information required to comply with the rehabilitation completion criteria. Additional information requirements outlined in section 3.8 of the PRCP Guideline is required to demonstrate proposed milestone criteria can be achieved.

In addition, monitoring of the residual void water quality is not included in the monitoring and maintenance program. The residual void water quality should be monitored as the monitoring results will be required to demonstrate that the proposed NUMA is not causing environmental harm. As raised in other items of the information request, CoC (contaminants of concern) have not been sufficiently identified or addressed in developing groundwater and surface water monitoring parameters. In addition to that work, water quality indicators based on the CoC should be developed and monitored for the residual voids. SMART criteria

should be developed for the PRCP Schedule to ensure monitoring undertaken at sufficient intervals demonstrates that the NUMA is non- polluting.

DETSI's Requested Actions

- 19.1** Provide a revised PRC plan that includes information on monitoring and maintenance in accordance with section 3.8 of the PRCP Guideline.
- Schedule of monitoring, reporting and review for each milestone;
 - Description of methodologies and standards, which could include field-based assessments and the application of new remote sensing, GIS and other relevant emerging technologies;
 - Monitoring that enables the repeatable collection of relevant statistically valid data;
 - Monitoring using appropriate quality assurance and data management processes and systems;
 - Regular analysis of site data including multi-year comparison trends and benchmarking against analogue/reference sites;
 - Contingency strategies if monitoring data indicates milestone criteria are not being met;
 - Post-closure monitoring to ensure milestone criteria has been demonstrated; and
 - Intent of monitoring reports, such as provision of results and key findings.

The revised PRCP includes the following information in accordance with Section 3.8 of the PRCP Guideline:

- Schedule of monitoring, reporting and review for each milestone: Table 26 in Section 9.1.7 has been updated to align with the revised PRCP schedule.
- Description of methodologies and standards, which could include field-based assessments and the application of new remote sensing, GIS and other relevant emerging technologies: Sections 9.1.3, 9.1.4, and 9.1.6 of the PRCP have been updated to align with revised PRCP schedule.
- Monitoring that enables the repeatable collection of relevant statistically valid data: Rehabilitation monitoring is described in Section 9.1.4. This monitoring allows for the repeatable collection of relevant statistically valid data.
- Monitoring using appropriate quality assurance and data management processes and systems: Section 9.1.4 has been updated to ensure appropriate quality assurance and data management processes and systems are used.
- Regular analysis of site data including multi-year comparison trends and benchmarking against analogue/reference sites: The regular analysis of site data is included in Section 9.1.6 and Table 26. PRCP Section 9.1.3 has been updated to confirm that rehabilitation monitoring reference sites will be used as a point of comparison to assess performance of the rehabilitated areas and to take account of seasonal fluctuations.
- Contingency strategies if monitoring data indicates milestone criteria are not being met: Section 9.4 describes contingency strategies if monitoring data indicates milestone criteria are not being met.
- Post-closure monitoring to ensure milestone criteria has been demonstrated: Section 9 describes the post-closure monitoring to ensure the milestone criteria have been met.
- Intent of monitoring reports, such as provision of results and key findings: Section 9.1.5 describes the intent of the monitoring reports.

- 19.2** Provide a revised PRC plan and PRCP schedule that includes:
- A list of water quality indicators (based on CoC) to be monitored in the residual voids; and
 - A monitoring program that specifies the frequency of water quality monitoring at sufficient

intervals to be able to gather data to demonstrate that NUMA is not causing environmental harm.

Water management for the final voids, including groundwater and surface water monitoring, is discussed in PRCP Section 6.1.7.

20 KCB Report

DETSI's Comments

Section 11 of the PRC Plan makes reference to a report prepared by (KCB 2024) however, a copy of this report has not been provided for assessment. It is noted that the only reference to the KCB report is made in the Landform Evolution Modelling for TSC and WRD landforms.

It is unclear whether the report includes information relevant to the assessment of the PRCP schedule or a reference for data input in the LEM.KCB (2024). TSC & WRD Concept Design Report. Ref: DX70102A01. Kohn Crippen Berger Australia Pty Ltd.

DETSI's Requested Actions

20.1 Provide a copy of the referenced KCB 2024 report (or updated version if relevant).

The KCB report has been superseded in the revised PRCP by the Central WRD Conceptual Design Report (PRCP Appendix E) and the Mine Waste Storage Facilities Geotechnical Stability Report (PRCP Appendix I).

21 SMART Milestone Criteria

DETSI's Comments

Not all criteria proposed in the schedule meet SMART principles. It is considered that in some instances, further criteria require development to ensure each necessary aspect of rehabilitation is addressed by a criteria.

This includes revision of criteria including but not limited to:

- RM1 – the inclusion of removal of waste, machinery and equipment;
- RM1 – inclusion of decommissioning and removal of all processing plant;
- RM1 – new milestone (RM2) for 'contaminated land investigation and remediation', inclusion of hazardous material and removal of wording "if required" for the contaminated land investigation;
- RM2 – inclusion of desilting / removal of liner associated with structures such as heap leach pond and TSC stormwater pond;
- RM4 – sampling of topsoils (to determine suitability and/or need for amelioration) needs to be completed by an AQP;
- RM4 – specific details relating to the proposed ripping to compacted surface (depth) is required;
- MM1 – inclusion of topsoil depth;
- MM1 / MM3 – inclusion of specific capping criteria including capping material characteristics and specification of geotechnical criteria (maximum slope embankments, vertical height, FoS);

- RM6 / RM7 / MM6 – inclusion of weed criteria. Ensure criteria relating to measuring plant pest species within the rehabilitation areas are in accordance with the QMRC's published recommendations regarding best practice methods for grazing as a PMLU ([see: Grazing as a post-mining land use | Queensland Mine Rehabilitation Commissioner \(qmrc.qld.gov.au\)](#)). Monitoring and modelling of rehabilitation should show that the pasture yields are sufficient for grazing and are predicted to remain so throughout the year.

DETSI's Requested Actions

- 21.1** Provide an updated PRCP schedule and where appropriate PRC plan that includes SMART milestone criteria, including but not limited to, the following:
- SMART infrastructure (including dam) decommissioning criteria;
 - SMART contaminated land criteria;
 - SMART surface preparation criteria;
 - SMART revegetation criteria;
 - SMART soil criteria;
 - SMART capping criteria;
 - SMART geotechnical criteria; and
 - SMART weed criteria.

The milestone criteria in the updated PRCP schedule have been revised to include SMART criteria for decommissioning, contaminated land, surface preparation, revegetation, soils, capping, geotechnical stability and weeds.

- 21.2** Demonstrate consideration and application of the QMRC guidance.

As discussed in the response to 3.1, the PMLU has been revised from 'Grazing' to 'Native Vegetation with Low Intensity Grazing' and DETSI has indicated that the QMRC guidance is not relevant to this revised PMLU.

22 Area Available for Rehabilitation Satellite Pits

DETSI's Comments

The PRC plan indicates that the satellite pits BV1 and BV2 will be mined in projects initial years 1 and 2 after which the main BVS pit will be operational. As such, the satellite pits will only remain a contingency / additional buffer for mine affected water storage as required, refer to section 4.3.3 of the surface water report. Mine affected water is otherwise proposed to be stored in a designated structure, the MWD. Justification for the selected date available to commence improvement of the satellite pits along with the BVS pit in IA2 of the schedule is required.

DETSI's Requested Actions

- 22.1** Provide justification for the delayed rehabilitation and improvement milestones applied to the satellite pits.

The timing for MM1 (achievement of final landform design) for the BV1 and BV2 pit voids has been updated in the PRCP Schedule (PRCP Appendix A) and will commence in Project Year 3 and be completed by end of Project Year 7. MM2 (achievement of safety requirements) and MM3 (achievement of sufficient improvement) will remain post mine closure (i.e. commence in Project Year 12) to allow continued access to

the voids throughout the operational life of the mine as BV1 and BV2 pits will be used as water storages during operations.

23 PRCP Rehabilitation Schedule

DETSI's Comments

It appears that prior rehabilitation milestones are repeated as the rehabilitation area progresses to the next milestone. For example, RM2 in RA1 that is proposed to be completed by 9/12/2038 is repeated when the next milestone (RM3) is available for commencement. RM2 is repeated until 10/12/2042. This applies to all milestones in RA1, RA2, RA4, RA5, IA1, IA2 and IA3.

In addition, IA3 has a total rehabilitation area of 344 ha however, the PRCP schedule includes rehabilitation in both cumulative areas (222.1 ha) and collective rehabilitation of 344 ha over different timeframes. IA3 require clarification as it is unclear why 344 ha of WRDs are applied to recommence improvement in 10/12/2037 following completion of MM1 and MM2 over approximately 222.1 ha of WRDs cumulatively. Timeframes associated with the cumulative areas require further clarification. Where timeframes are not progressive due to WRDs available at different stages of mine life, it is practical to separate the individual WRD into its specific RA/IA.

DETSI's Requested Actions

23.1 Provide a revised PRCP schedule with rehabilitation / improvement milestones applied to each RA / IA in a progressive manner.

The PRCP Schedule (PRCP Appendix A) has been updated so that the rehabilitation/improvement milestone areas have been applied to each RA/IA in a progressive manner.

23.2 Clarify the rehabilitation area applied on IA3 ensuring the cumulative areas equate to identified total area of the relevant activity.

IA3 previously related to the WRD NUMAs. As explained in the response to PRCP requested action 5, the WRDs are now part of the Native Vegetation with Low Intensity Grazing PMLU and are now included within RA3 in the revised PRCP.

The total area of RA3 is 364.1 ha, comprising:

- 20.8 ha for the Northern WRD
- 281.5 ha for the Central WRD (57.9 ha for stage 1 rehabilitation and 223.6 ha for stage 2 rehabilitation)
- 61.8 ha for the Southern WRD (24.8 ha for stage 1 rehabilitation and 37.0 ha for stage 2 rehabilitation).

The PRCP Schedule (PRCP Appendix A) has been updated to clarify that the rehabilitation areas applied to RA3 cumulatively equate to the total area of RA3 (i.e. 364.1 ha).

23.3 If applicable, separate the improvement areas for WRDs depending on when each WRD becomes available for rehabilitation / improvement.

Not applicable.

24 Timeframe to Achieve Stable Condition

DETSI's Comments

The PRCP schedule proposes variable completion timeframes for seeding, achieving surface requirements and stable conditions. It is unclear how the timeframes for achievement of each milestone for the same rehabilitation methodology applied to different RAs have differing timeframes. For example, RA1 includes a 5 year timeframe to achieve stable conditions following completion of RM5 (revegetation), RA2 includes 1 year timeframe for the same purpose, RA4 includes 2 year timeframe, and RA5 includes 1 year timeframe.

DETSI's Requested Actions

- 24.1** Provide a revised PRCP schedule allocating sufficient time to complete and establish the targeted vegetation, groundcover and a PMLU to stable conditions. Provide justification for the proposed timeframes.

The PRCP Schedule (PRCP Appendix A) has been updated to ensure sufficient time has been allocated to complete revegetation (RM5), establish the targeted vegetation (RM6), and establish groundcover to achieve a PMLU to stable condition (RM7). The justification for these timeframes is provided below:

- RM5: The timeframe for RM5 varies between 2 years (RA1 – dams), 3 years (RA2 – haul roads and access tracks, RA4 – mine infrastructure), and 5 years (RA3 – WRDs, RA5 – cleared areas, RA6 – TSC). These timeframes reflect that rehabilitation will be conducted progressively over time, rather than across each rehabilitation area simultaneously, and the size of the rehabilitation area. For example, RA2 - haul roads and access tracks will be progressively rehabilitated over 3 years based on ongoing access requirements for rehabilitation and the relatively small rehabilitation area (64.4 ha), whereas RA5 - cleared areas which will be progressively rehabilitated over 5 years due to the substantially larger rehabilitation area (519.8 ha).
- RM6: The timing has been updated to 5 years for all rehabilitation areas, consistent with the revised milestone criteria.
- RM7: The timing has been updated to 5 years for all rehabilitation areas.

25 Drainage Diversion

DETSI's Comments

The rehabilitation milestone-criteria proposed for RA3 associated with the diversion is limited to an advanced milestone for assessment of stability in accordance with the RPEQ design plan. As outlined in item 11 of the PRCP information request, the nominated PMLU of grazing for the diversion is not appropriate for the purpose of the permanent diversion. The diversion is indicated to remain in perpetuity to convey flood water around the BVS pit, which is a proposed residual void. As such, it is unclear how the diversion would be available for grazing purpose.

DETSI's Requested Actions

- 25.1** Clarify the proposed PMLU for RA3.

The BVS Pit drainage diversion was previously included within the Grazing PMLU. SMC has revised the PMLU for the drainage diversion to Engineered Drainage Diversion.

25.2 If grazing, provide rehabilitation milestone to complete rehabilitation to a grazing standard demonstrating the diversion will be available for cattle grazing and remain stable under grazing conditions

Not relevant as the PMLU for the drainage diversion has been revised from Grazing to an Engineered Drainage Diversion.

25.3 Alternatively, provide an updated PRCP schedule with a revised PMLU suited to the purpose of the diversion in alignment with the information requirements specified in item of the PRCP information request.

As discussed in the response to 25.1, the PMLU for the BVS Pit drainage diversion has been changed from Grazing to Engineered Drainage Diversion. The milestone criteria for the Engineered Drainage Diversion PMLU require the construction and stabilisation of the drainage diversion in accordance with a Design Plan prepared by an RPEQ. The RPEQ Design Plan will include diversion stabilisation measures, together with a monitoring and maintenance program, to ensure the long-term stability and functionality of the drainage diversion following mine closure.

26 Cleared Areas

DETSI's Comments

RA5 of the proposed PRCP schedule references the relevant activities as cleared areas. It is noted from Table 11 within the PRC plan that the cleared areas will be required for the life of the mine however, justification on activities / mine features this area includes and the delay in rehabilitation have not been provided.

In addition, clarification on whether the sediment control structures including sediment traps, sumps, settling ponds and sediment dams have been included in the PRCP schedule is required.

DETSI's Requested Actions

26.1 Clarify the activities included within the footprint for cleared areas.

RA5 – cleared areas includes allowance for fire breaks between mine facilities and adjacent woodland, room for construction activities, potential laydown areas, topsoil stockpiles, etc., and also provides allowance for operational flexibility for the location and sizing of mine infrastructure.

26.2 Provide justification for the selected date area becomes available for rehabilitation.

The areas within RA5, described in the response to 26.1, are required throughout the operational life of the mine and will not be available for rehabilitation until the end of the mine life (i.e. rehabilitation will commence in Project Year 12).

26.3 Clarify where identified sediment control structures are included in the PRCP schedule.

Unless specifically listed in the RA1 – Dams mine features, sediment and catch dams are included in the footprints of their associated mine infrastructure/mine features. For example, the 3 catch dams associated with the Central WRD have been included in the 281.5 ha rehabilitation area for the Central WRD.

The rehabilitation requirements for the catch/sediment dams are addressed through the following rehabilitation milestones:

- RM1 – mine infrastructure decommissioning and removal, including the desilting of dams and pumping of mine-affected water to the BVS Pit
- RM2 – identification, remediation and removal of contaminated land, including the in-situ remediation or disposal of any contaminated material associated with the catch/sediment dams
- RM3 – earthworks to achieve the final landform designs, including any catch/sediment dams that are required to be removed as part of rehabilitation.

27 Water Quality Monitoring Criteria

DETSI's Comments

The water quality monitoring criteria in proposed RM7 is considered inappropriate to demonstrate that the final landform has achieved a stable and non-polluting condition. The proposed criteria references monitoring from operational and up to rehabilitation establishment. Monitoring of final landform post closure is not proposed. For water quality criteria to meet the SMART principles, the locations, frequency, quality characteristics and limits and required to be specified in the Schedule. This is applicable to both surface water and groundwater criteria. The purpose of the water quality criteria is to demonstrate that the land surface has achieved surface requirements and is non-polluting. Therefore, robust water quality monitoring should be undertaken over the short/medium term to confirm there are no effects from the land surface run-off on the receiving environment surface water and groundwater to provide a level of confidence in the future.

DETSI's Requested Actions

- 27.1** Provide an updated PRCP Schedule to include groundwater and receiving water quality criteria including monitoring locations, quality characteristics, limits and frequency of monitoring that is appropriate for closure.

RM7 of the PRCP Schedule (PRCP Appendix A) has been updated to include groundwater and surface water monitoring including monitoring locations, quality characteristics, limits and frequency of monitoring that is appropriate for closure.

28 Erosion Criteria

DETSI's Comments

The proposed PRCP schedule does not include a milestone criteria for the monitoring of soil loss (rate). A robust erosion criteria to demonstrate that land is stable and non-polluting including average and peak erosion rates is required.

DETSI's Requested Actions

- 28.1** Provide an updated PRCP Schedule to include SMART erosion criteria.

RM7 of the updated PRCP Schedule (PRCP Appendix A) has been updated to reference SMART erosion criteria, which are provided in Appendix 2 – Erosion Classification Framework.

29 Vegetation Criteria

DETSI's Comments

RM5 refers to the revegetation species list from 6.1.8 of the PRC plan however, seeding rates and density application rates have not been stipulated.

DETSI's Requested Actions

- 29.1** Provide an updated PRCP Schedule to provide vegetation species and seeding rates required to achieve the nominated PMLU.

RM5 of the updated PRCP Schedule (PRCP Appendix A) has been updated to reference revegetation species and seeding rates to achieve the nominated PMLUs and these are provided in Appendix 1 – Species List and Seeding Rates.

30 Groundwater Dependent Ecosystems Criteria

DETSI's Comments

Completion criteria are required with regards to groundwater dependent ecosystems to demonstrate that there is no environmental harm being caused by the final landform.

DETSI's Requested Actions

- 30.1** Provide an updated PRCP Schedule to include SMART criteria regarding groundwater dependent ecosystems

As discussed in Section 6.2.1 of the Groundwater Report (PRCP Appendix C), groundwater levels around the BVS Pit final void will recover post mining in line with the establishment of a groundwater pit lake. Hence, the maximum drawdown in the area of potential indirect impacts on GDEs due to groundwater drawdown will occur at the end of the mine life and there will be no additional drawdown or associated risk of GDE impacts post mine closure. Section 6.4 of the Groundwater Report (PRCP Appendix C) addresses impacts on groundwater quality and concludes that the project will not result in any groundwater contamination over the life of the mine or post closure.

As explained in Section 2.6 of the GDE Report (EAR Appendix K), the PRCP groundwater monitoring program for the post-closure phase includes continuation of groundwater level and quality monitoring and limits related to groundwater quality/levels. The PRCP post-closure groundwater monitoring and comparison of monitoring results with relevant groundwater limits and milestone criteria will identify any unanticipated groundwater drawdown effects or quality issues arising from the project and ensure the early identification of any potential groundwater contamination or unexpected groundwater drawdown effects. If identified, this would enable further assessment of the potential for any associated unanticipated impacts on GDEs and, where necessary, suitable management measures for any significant impacts.

31 Groundcover

DETSI's Comments

RM6 refers to obtaining an average groundcover of greater than 50% or is greater than grazed reference site (currently unknown). QMRC guidance recommends maintaining at least 70% groundcover to prevent erosion which should be assessed by well-defined monitoring methods.

DETSI's Requested Actions

31.1 Demonstrate that the average total groundcover proposed in RM6 aligns with the recommendations detailed within the QMRC guidance.

SMC has revised the previous Grazing PMLU to Native Vegetation with Low Intensity Grazing. As discussed in the response to 3.1, DETSI has confirmed the QMRC guidance in relation to grazing as a post-mining land use is not relevant to this amended PMLU.

32 Landform Criteria

DETSI's Comments

It is unclear whether the criteria for the landform design in RM3, MM1, MM2 and MM3 (for example geometry of structures such as slopes, angle of repose, embankment slopes etc) are proposed to be constructed in accordance with the recommendations of site-specific erosion assessment (LEM). A specific landform criteria that demonstrates that the landform is stable and suitable for the PMLU is required.

DETSI's Requested Actions

32.1 Provide an updated PRCP Schedule which includes SMART landform criteria in accordance with recommendations from a site-specific erosion assessment.

As discussed in the response to 18.1, SMC has committed to undertaking LEM of the revised final landforms of the WRDs and TSC, based on site-specific data, within 5 years of the commencement of the project. If necessary, based on the results of LEM, additional landform criteria will be developed and included in the rehabilitation methods in the PRCP schedule for the WRD and TSC.

33 Achievement of Grazing PMLU

DETSI's Comments

As identified in item 3 of the PRCP information request, some areas within the proposed grazing PMLU includes land suitability of ≥ 4 which may not be supportive of the proposed grazing PMLU. In addition, a suitability assessment for the mined lands ability to sustain other PMLU have not been conducted. For further details, see [Agricultural Land Evaluation in Queensland \(Second Edition\)](#) guideline.

Considering the above, it is unclear:

- a) Why an alternative land outcome such as native ecosystem, woodland, native vegetation, woodland vegetation, native grassland have not been considered; and
- b) How the proposed unsuitable land classes will sustainably support the proposed PMLU of grazing.

DETSI's Requested Actions

- 33.1** Provide a revised PRC plan and PRCP schedule to include a rehabilitation methodology and criteria that ensure the rehabilitated land will achieve land suitability class of ≤ 3 as per the Agricultural Land Evaluation in Queensland (Second Edition) guideline and therefore be able to sustain the proposed grazing PMLU in the long term.
- Or
- Propose an alternative PMLU that is likely to achieve long-term sustainability of the rehabilitated area. Provide an updated PRC plan and schedule which include rehabilitation methodology and SMART criteria (e.g. BioCondition Framework) for the alternative use.

As discussed in response to PRCP IR Issue 3.1, SMC has revised the previous Grazing PMLU to Native Vegetation with Low Intensity Grazing. The PRCP and PRCP schedule have been updated to include this revised PMLU. The PRCP schedule has also been updated to include SMART completion criteria for the Native Vegetation with Low Intensity Grazing PMLU.

34 Achievement of Sufficient Improvement (IA2 – Final Voids)

DETSI's Comments

MM8 does not include surface and groundwater quality monitoring criteria for the final void. Water quality results from the monitoring of the void lake and surrounding groundwater will be required to demonstrate that the proposed NUMA is not causing environmental harm.

DETSI's Requested Actions

- 34.1** Provide an updated PRCP Schedule which includes void surface water and ground water quality criteria and ensure it aligns with SMART principles.

The updated PRCP schedule (PRCP Appendix A) includes groundwater and surface water quality criteria (RM7) that will align with SMART principles. Final void lake water monitoring and groundwater monitoring, for the purposes of informing modelling to demonstrate the final voids function collectively as a groundwater sink, is included in MM3.

35 Achievement of Sufficient Improvement (IA1, IA2 and IA3)

DETSI's Comments

Additional criteria are required to ensure the stability of the proposed NUMA with consideration of potential flooding.

DETSI's Requested Actions

- 35.1** Provide an updated PRCP Schedule which includes flood protection criteria and ensure it aligns with SMART principles.

The updated PRCP schedule (PRCP Appendix A) includes flood protection criteria (MM3) for the final voids that align with SMART principles.

36 Inconsistent Total Disturbance Area

DETSI's Comments

The maximum disturbance footprint identified in the spatial file (layer: life of mine disturbance) is 1,340.599 ha. however, the total area of rehabilitation and NUMA in the PRCP schedule equate to 1,317.60 ha. The EAR indicates the total life of mine disturbance as approximately 1,341 ha which appears to be consistent with the spatial file.

In addition, a footprint of all individual features included in RA1 to RA5 is required.

DETSI's Requested Actions

36.1 Provide an updated PRC plan, spatial files and schedule as necessary to remove inconsistency in disturbance areas.

The maximum disturbance footprint in the revised PRCP is 1,340.9 ha. The revised PMLUs/RAs and NUMAs/IAs are shown in PRCP Figure 18 and listed in PRCP Table 9. These areas align with the maximum disturbance footprint of 1,340.9 ha.

The PRCP spatial files have been updated and are included in the submission to DETSI.

36.2 Provide the footprint of individual features included within each RA in a table format.

The disturbance footprints for individual features in each rehabilitation area are listed in PRCP Table 9 and shown in PRCP Figure 18.

Annexure A INFORMATION REQUEST NOTICE

Notice

Environmental Protection Act 1994

Information request

This information request is issued by the administering authority under section 140 of the Environmental Protection Act 1994 to request further information needed to assess an application for a site-specific environmental authority and proposed PRC plan.

To: Strategic Minerals Corporation
Pty Ltd
Level 15, 40 Creek Street
Brisbane QLD 4000

Via electronic transmission only

Cc: The Mining Registrar
Department of Natural Resources and Mines,
Manufacturing, and Regional and Rural
Development
Mineral Assessment Hub
Email: MineralHub@resources.qld.gov.au

ATTN: Trent Cini

Your Reference: P-EA-100363263; A-EA-NEW-100363198

Our reference: 101/0041342

Further information is required to assess an application for environmental authority and proposed PRC plan.

1. Application details

The application for a site-specific environmental authority and proposed PRC plan was received by the administering authority on 6 January 2023.

The application reference number is: A-EA-NEW-100363198.

Land description: Mining Lease (ML)100236, ML2729, ML2739 and ML90238.

2. Information request

The administering authority has considered the abovementioned application and is writing to inform you that further information is required to assess the application (an information request).

The information required is outlined in Attachment 1 of this notice.



3. Action(s)

The abovementioned application will lapse unless you respond by giving the administering authority -

- (a) all of the information requested; or
- (b) part of the information requested together with a written notice asking the authority to proceed with the assessment of the application; or
- (c) a written notice –
 - i. stating that you do not intend to supply any of the information requested; and
 - ii. asking the administering authority to proceed with the assessment of the application.

Should the information request require an EIS process or applicant to submit a progressive rehabilitation and closure (PRC) plan then it must be completed and submitted.

A response to the information requested must be provided by **22 June 2026** (the information response period). If you wish to extend the information response period, a request to extend the period must be made at least 10 business days before the last day of the information response period.

The response to this information request or a request to extend the information response period can be submitted to the administering authority by email to ESCairns@des.qld.gov.au.

If the information provided in response to this information request is still not adequate for the administering authority to make a decision, your application may be refused as a result of section 176 of the *Environmental Protection Act 1994*, where the administering authority must have regard to any response given for an information request.

4. Human rights

A human rights assessment was carried out in relation to this decision and it was determined that the decision is compatible with human rights.

If you require more information, please contact the department on the telephone number listed below.



Signature

20 June 2025

Date

Rebecca McAuley
Department of the Environment, Tourism, Science
and Innovation
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Minerals Business Centre
PO Box 7230, Cairns QLD 4870
Phone: (07) 42225352
Email: ESCairns@des.qld.gov.au

Attachments

Attachment 1: Information Request - P-EA-100363263 Strategic Minerals Corporation Limited: Big Vein South Gold (BVS) project

- Appendix 1: Environmental Authority (Site-specific EA)
- Appendix 2: Progressive Rehabilitation and Closure Plan (PRCP)

Notice
Information request

Attachment 1: Information Request - P-EA-100363263 Strategic Minerals Corporation Limited: Big Vein South Gold (BVS) project

Appendix 1: Environmental Authority (Site-specific EA)		
Item#	Matter	Information Request
Environmental Authority Report (EAR)		
1	<u>Project disturbance footprint</u> The footprint of each mine infrastructure within the Environmental Authority Report (EAR) and supporting information documents requires clarification to ensure the disturbance area and infrastructure location is clear. For example, the footprint of structures within the project description is not consistent with the accompanying PRCP schedule and planning part.	Provide a schedule of disturbance that includes the disturbance footprint of each mine feature that is consistent with the PRCP application and spatial information. Include each mine domain, mine feature name on relevant mining lease, location (northing and easting) and maximum disturbance area in hectares (ha). Further, ensure the disturbance footprint of mine structures such as pits, waste rock dumps and tailings facility include sufficient area for rehabilitation of the land and mine closure.
2	<u>Cyanide destruction</u> The EAR indicates that the Carbon In Leach (CIL) Plant will include a cyanide destruction circuit that will reduce weak acid dissociable (WAD) cyanide levels in tailings to below <u>50 mg/L</u>. However, the Mine Materials Management Plan (MMMP) states that <i>tailings will undergo cyanide detoxification before being deposited in the TSC, with WAD cyanide concentrations reduced to below 0.5 mg/L</i>. In addition, it is noted that the MMMP makes reference to tailings deposited in tailing storage cell (TSC) for cyanide destruction. Clarification on the WAD cyanide concentration of tailings at all disposal locations, is required to ensure the impacts and associated risk of environmental harm is understood.	Confirm the concentration of cyanide expected in all tailings stream (slurry and dewatered tailings) .
3	<u>Heap leach facilities</u>	1. Given other lower risk (closed system) gold processing / extraction methods are readily available, provide justification

The application proposes on-site ore processing using heap leach facilities (HLF) in initial project years prior to commissioning of CIL plant in year 3 and tailings dewatering system in year 4. Spent heap leach residue is proposed to be reprocessed through the CIL plant over the life of mine. Despite the HLF being proposed to be used in initial years, progressive rehabilitation of HLF have not been contemplated. Based on the proposed PRCP schedule (Appendix J), it appears that rehabilitation of heap leach pads and ponds are not proposed to commence until project year 12 (Rehabilitation Area 4). In addition, the application provides limited environmental impact assessment associated with the risks from operation of the HLF. For example, section 3.6.1 of the EAR states: <i>Both the heap leach pads and heap leach ponds will be lined with a synthetic liner to ensure there is no loss of the leaching solution and therefore no contamination of the respective foundations underlying natural material or groundwater... These ponds have been sized (modelled) to contain the maximum volumes of pregnant and barren leaching solutions generated from the heap leach process and also have additional freeboard capacity to ensure total containment. The Storm Water Pond has been sized with sufficient capacity to contain the runoff from the modelled worst rainfall sequence (Section 6 – Surface Water).</i> A comprehensive risk assessment associated with seepage, release of contaminants, overtopping, drainage failure, liner failure, residual cyanide contamination, long-term monitoring and management measures to be in place to minimise environmental impacts has not been provided. It is unclear whether reliance on the functionality of the liner is an appropriate measure to conclude that there will be no contamination to the underlying material and groundwater. The presented assessment in the current application generally does not appear to align with best practice environmental management therefore, justification on how the HLF is designed to operate in accordance with leading practice environmental management is required. Based on the presented waste characterisation in Appendix A (Geochemistry Report), it is plausible that significant acid generation may not be expected however, the results from kinetic tests indicate potential for neutral and saline drainage. As such, an assessment of potential or actual environmental harm to the relevant environmental values from the operation of heap leach facilities is required. Appropriate mitigation measures including a broader groundwater network than the current proposal is required	why such measures have been discounted in the context of the risk of environmental harm. 2. Clarify the timeframe over which spent residue will be processed through the CIL Plant and provide justification for the appropriateness of this timeframe considering the risks of unrehabilitated HLF in the environment e.g. presenting an ongoing contaminant source, and an expectation that disturbed land should be progressively rehabilitated. 3. Provide a detailed risk assessment of potential environmental harm associated with the operation of the HLF on the environmental values, mitigation measures and management practices proposed to be implemented to minimise adverse environmental harm. Ensure risks such as overflow during heavy rainfall accounts for extreme weather events and climate change impacts, direct or indirect release of contaminants to groundwater from the operation of the activity are included. 4. Provide details of long-term monitoring (monitoring of liners, pads and leachate collection systems) and measures in place to monitor residual cyanide in leach and that will prevent or minimise adverse effects to groundwater or any associated surface ecological systems. 5. Provide conceptual designs of heap leach facilities including adequate measures to capture seepage (such as seepage interception and drainage). 6. Provide details of heap leach material characterisation in accordance with information requirements in item 18 below. 7. Provide justification on how the HLF is designed to operate in a manner that aligns with best practice environmental management and prevents adverse effects on adjacent areas.
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	to determine potential contamination pathway and source during operation and monitoring post closure to ensure stable conditions are achieved. In addition, the referenced model or information presented in section 6 - surface water does not include information on the modelled worst rainfall sequence, sizing or how the capacity of heap leach or storm water ponds were determined.	8. Provide the referenced model or additional information on how the capacity of heap leach or storm water ponds were determined. 9. Consider progressive rehabilitation of HLF following commissioning of CIL Plant and earlier processing of spent heap leach residue.
4	<u>Flood protection levee – permanent diversion</u> Section 3.6.2 states there are no flood protection levees required for the project due to the proposed pits being situated above the Woolgar River 0.1% (1 in 1,000) Annual Exceedance Probability (AEP) flood level. However, it is noted that the application proposes a permanent drainage diversion around the BVS Pit that appears to be for the purpose of preventing the ingress of clean water. It is further noted that the permanent drainage diversion will be designed with capacity to convey the 0.1% AEP flow event and will remain in place after mine closure. Given the proposed purpose and size of the permanent diversion drain it appears to meet the requirements of a regulated structure (levee) and therefore, assessment against the <i>Manual for assessing consequence categories and hydraulic performance of structures</i> (the Manual)¹ is required to ensure the structure is appropriately designed and operated. For information, it should be noted that the EP Act (and therefore the Manual) has a broader definition for a watercourse and as such, the 0.1% AEP under the Manual is expected to have different flood levels to the flood modelling provided in the application material.	Provide a detailed assessment of the proposed diversion by a suitably qualified and experienced person in accordance with the <i>Manual for assessing consequence categories and hydraulic performance of structures</i>. Provide a cost benefit analysis where it is identified that the operational area is encroached by a flood event with probability less likely than 0.1% AEP to determine if a levee is to be constructed.
5	<u>GHG emission reduction: diesel consumption</u> A power station including diesel generators with an average generation load of 8.75 MW, supplemented with a 2.5 MW solar farm is proposed to be constructed to power the mine. It is noted from Appendix G (Air Quality Report) that diesel consumption accounts for most of Scope 1 emissions. The proposed mitigation measures in section 7.6 of	Provide details of additional mitigation measures to reduce GHG emissions associated with diesel consumption.

¹[Manual: Manual for assessing consequence categories and hydraulic performance of structures, ESR/2016/1933, version 5.03.](#)

	Appendix G appear to have limited impacts on reducing Greenhouse Gas (GHG) emissions therefore, additional mitigation measures such as reconsideration of diesel consumption, increasing capacity of solar farms (with battery storage) may be required.	
6	<u>Solar farm</u> Limited information is included in the application on the proposed 2.5 MW solar farm. Information is required to demonstrate how the solar farm will be managed in a way to prevent environmental harm. For example, it is not clear how erosion and runoff will be managed, implications of runoff on the mines water management infrastructure, and flood model considerations.	1. Provide a risk assessment for the construction and operation of the proposed solar farm on the environmental values, mitigation measures and management practices proposed to be implemented to minimise adverse environmental harm. Ensure risks such as erosion and water runoff are included. 2. Clarify if additional infrastructure, e.g. battery storage is required to support the solar farm. Include location and information as required by (1) on any additional infrastructure.
7	<u>Proposed airstrip</u> It is noted from section 3.6.5 and 13.3 of the EAR that an onsite airstrip designed to cater for the largest aircraft - ATR 72 will be constructed to transport workers (to and from) and gold bars from the site. Community engagement with the landholder of the Peterfield airstrip dated 26 November 2023 provided in Appendix J (PRC Plan) indicates the landholders offer to use his airstrip as an option. It appears that the Peterfield airstrip that is located approximately 6 km east of the southern end of the project is of similar size as the proposed onsite airstrip and may be suitable for the intended use. However, further commentary on the landholders offer to use the existing airstrip, whether Peterfield airstrip is a suitable option and justification for a new airstrip requiring proposed 48.12ha of land clearing have not been provided. In addition, the proposed airstrip is located immediately south of the TSC that will contain tailings (slurry). It appears that the application does not consider the impact of the proposed airstrip on the structural stability and integrity of the TSC and its embankment. A risk assessment and a detailed geotechnical assessment on the TSC's susceptibility of vibration and potential risks associated with compromised TSC is required.	1. Provide justification on the proposed airstrip and its location having considered the landholders proposal. 2. Provide a risk assessment and a detailed geotechnical assessment to demonstrate the structural integrity of the TSC and its susceptibility of vibration from the proposed aircraft activities. 3. Provide appropriate mitigation and management measures for risks identified in (2) above that would be implemented to minimise environmental harm.

8	<u>Water management strategies</u> Information on water management strategies provided within the EAR and section 4.3 of the surface water report require further justification. Water management strategies included as <i>italics</i> text are inappropriate measures to manage water on site. This includes but is not limited to: • Section 3.7.1 of EAR states <i>A seepage collection system will be installed along the toe of the external WRD embankment slopes ... Seepage water captured in the seepage collection system will be directed to sediment dams for the removal of suspended sediments.</i> It is unclear how seepage from WRDs that are proposed to contain PAF and co-disposed dewatered tailings will be treated in a sediment dam given the seepage is likely to contain elevated electrical conductivity, trace metals and potentially low pH. • Section 3.7.1 of EAR states <i>mine dewatering during operations and the subsequent establishment of a post mining final void lake will create a hydraulic groundwater gradient and induce groundwater flow towards the BVS Pit and its final void. Any water seepage from the WRDs into the underlying geology will therefore migrate towards the BVS Pit and its final void.</i> However, this statement does not appear to be correct based on the predicted drawdown from the BVS pit, in particular, within the weathered profile. • Section 5 of EAR states <i>seepage from the WRDs is therefore comparable to existing groundwater quality and is not expected to present any significant environmental risks to surrounding groundwater quality.</i> This is not supported by the waste characterisation data and the metal concentrations observed which indicate enrichment of several contaminants including elevated trace metals and metalloids (such as aluminium, arsenic, copper, cadmium, zinc etc) that are greater than 95% species protection value ANZG (2018). Appropriate water quality objectives for measurement against seepage quality must be provided to demonstrate seepage is of similar quality to the existing groundwater quality. • Section 4.3.4 of Appendix D states <i>sediment-affected runoff (including runoff from the waste rock dumps and low grade ore stockpiles) is expected to be</i>	1. Please refer to the publication <i>Technical Guideline for wastewater release to Queensland waters</i>² for guidance on providing the information requested in this section. 2. Provide a revised risk assessment that considers the risk of mine-affected water from the sediment dams being released into the receiving environment. Additionally, consider: a. Identification of all potential CoC from the activity. b. Indirect releases (surface and groundwater) to the receiving environment; c. Uncontrolled release of contaminant-affected and sediment-affected water from sediment and erosion control structures (for example; overflow); d. Additional contingency measures to prevent or minimise adverse effects on the environment due to unplanned releases or discharges of contaminants to water; e. Clearing of vegetation associated with mining areas leading to erosion and sediment release; and f. Operation of haul roads and other infrastructure. 3. Provide an updated supporting document that provides appropriate risk assessment and mitigation strategies that addresses concerns identified in adjacent comments. Include additional assessment on the release of potential contaminants of concerns during rainfall events and discharges or overflow of sediment dams into the Woolgar River and measures to prevent or minimise adverse effect beyond the boundaries of the site. 4. If required, develop water quality objectives such as pH, EC, and any other CoC such as metals or nutrients to protect the environmental values of the receiving waters.
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² Technical Guideline: Wastewater release to Queensland waters; ESR/2015/1654; version 2.06.

	<i>suitable for discharge following primary treatment for suspended solids through an erosion and sediment control system.</i> It is unclear how runoff from WRDs and ore stockpiles are classified as sediment-affected water, given the nature of the materials contained in the WRDs and low grade ore stockpiles, and how quality is determined suitable for discharge. It is noted that Appendix D describes the site as nil discharge system. - Section 4.3.4 of Appendix D states <i>runoff will be directed via gravity flow to sediment dams ... Overflow and pumped dewatering of the sediment dams will be directed to the receiving environment, typically via a natural drainage line or gully.</i> The direct and indirect release does not align with nil discharge system. Further, a risk assessment on indirect releases such as indicated overflow into the receiving environment have not been provided. - Section 6 of the EAR states <i>the results of the geochemical testing indicate that runoff from the WRDs and low grade ore will be benign and will not contain any concentrations of contaminants that could pose a risk to the downstream receiving environment. Based on these results, runoff from the WRDs and low grade ore is not 'mine-affected' water and does not require particular contaminant management measures or total containment on site. Runoff from the WRDs and low grade ore may contain suspended sediment and may be managed in accordance with the EA requirements for 'sediment-affected' water.</i> It is contended that runoff from mine waste structures is considered mine-affected water. In addition, figure 6-4 of the EAR illustrates site drainage which is consistent with the information presented in Appendix D, outlined above. It appears that all drainage ultimately flows to the Woolgar River however, water quality indicators and contaminants of concerns (CoC) to mitigate environmental impacts on the Woolgar river system have not been provided. It is also noted that ATC Williams report identifies the seepage quality from the seepage collection system at the WRDs as unsuitable to be directly released into the receiving environment. The classification of stormwater runoff from disturbed mining-related areas such as WRDs, temporary low grade ore stockpiles, mine pre-stripping, soil stockpile areas and disturbed areas undergoing rehabilitation as 'sediment-affected water' is not supported as water encountering mining processes are considered mine-affected water that should	- If required, develop conditions upon which a release occurs e.g. background stream flow conditions, release water quality, dilution, etc to ensure the site is designed in a manner that contains and treats hazardous contaminants in accordance with best practice environmental management. - Pending response to (4) above, provide the locations for controlled releases and associated release limits. - Provide a sediment and erosion control plan (ESCP) that demonstrates how erosion and sediment control measures detailed in the plan adequately minimises the release of sediment to the receiving waters and includes the following information: - An assessment of the size and characteristics of all catchment areas; - An assessment of relevant properties of soils and waste materials; - An identification of receiving waters environmental values, water quality objectives and management intent; - Specification of minimum design criteria for erosion and sediment control structures to achieve the management intent of receiving waters; - Locations and descriptions of all erosion and sediment control measures; - An audit schedule to ensure erosion and sediment control measures are maintained; and - A process of regular review and updates to the Erosion and Sediment Control Plan. - Provide a water management that:
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	be managed separately from sediment dams that deal with sediment and erosion control. Sediment dams are not designed to treat or manage dissolved contaminants such as metals and nutrients found in mine-affected water. Therefore, any wastewater, generated during the mining operations (including runoff), must be classified as contaminated water, and be managed accordingly. The risk of mixing of surface water from the sediment dams and contaminated water from the storage facilities has not been sufficiently addressed in the application. Appropriate mitigation strategies to prevent contaminant release to receiving waters have not been clearly addressed in the submitted documentation, especially in the context of ephemeral Woolgar River which flows only following significant events (3 months in a year). In addition, the application does not identify release points for the indicated release of treated sediment affected water, release limits and predicted frequency of release.	a. Provides for effective water management of actual and potential environmental impacts resulting from the activity; and b. Include: • A study of the source of contaminants; • A water balance model for the site; • A water management system for the site, which includes stormwater management; • Measures to manage and prevent saline mine drainage; • Measures to manage and prevent neutral mine drainage; • Measures to manage and prevent acid rock drainage; • Contingency procedures for incidents and emergencies; and • A program for monitoring and review of the effectiveness of the Water Management Plan.
9	<u>Consequence Category Assessment (CCA)</u> It is noted that some mine structures are proposed to be constructed within close proximity of the tenure boundaries. This includes but is not limited to the raw water dam (approximately 280m from western boundary), TSC (approximately 270m from southern boundary) and TSC storm water pond (approximately 285m from southern boundary). The application does not appear to consider risks associated with overtopping or compromised structures resulting in greater environmental harm. A detailed and certified CCA a suitably qualified and experienced person in accordance with the Manual has not been provided. The preliminary CCA provided within Appendix D is limited to adequately assess risks associated with each structure. For example;	1. Provide a revised risk assessment and mitigation measures to be implemented to minimise environmental harm from structures proposed to be constructed within close proximity of to the tenure boundary. 2. Provide a certified CCA for all proposed regulated structures undertaken in accordance with the Manual. 3. Provide justification for the assessment for the PWD considering information on how process water will be managed during operation.

	Section 4.3.6 and 4.4.5 of Appendix D (Surface water report) indicates that the Process Water Dam (PWD) will receive pumped inflow from the TSC Stormwater Pond and Mine Water Dam (MWD). The preliminary CCA for TSC stormwater pond is assessed as high and MWD as significant. Given PWD will receive water from both regulated structures, it is expected that the PWD will contain the same or similar concentrations of contaminants as TSC stormwater and MWD. Therefore, it is unclear how the PWD has been assessed as low consequence and subsequently not a regulated dam.	4. Pending response to item (8) of this information request above, provide a revised CCA for all sediment dams that are currently assessed as low CCA.
10	<u>Aquatic and Terrestrial Groundwater Dependant Ecosystems (GDEs)</u> There is a high level of uncertainty regarding potential impacts to GDEs as a consequence of the proposed activities. Matters requiring further detailed information include, but are not limited to: • It is unclear whether the GDE mapping presented in figures 7-8 to 7-10 represent all potential GDEs presently mapped on BoM GDE Atlas for aquatic and terrestrial GDEs. • Despite the mapped moderate potential aquatic and terrestrial GDEs across most of the site, the application only identifies potential adverse impact to terrestrial GDEs across 43 ha north-west of the BVS pit. It is unclear whether potential GDEs on the east (including off lease predicted drawdown) have potential to be impacted by the proposed mining activities. • It is unclear whether GDEs that are concluded to have potential adverse impact identified above have been considered for environmental offsets. As highlighted elsewhere in this information request, further mitigation measures such as implementation of additional control measures to minimise seepage from high risk structures is required. This includes consideration for interception bores or trenches. Impact to potential GDE's may require further consideration from impacts associated with the operation of seepage interception measures (if proposed).	Provide assessment of potential impacts and risks to GDEs from the proposed mining activity. Include: • Confirmation on whether presented figures capture the Queensland GDE map and BoM GDE Atlas for all potential GDEs; • Consideration of potential groundwater impacts and predicted drawdown including on the east (and off lease); • A risk assessment that identifies all potential GDEs (surface expression and terrestrial); • Deficiencies in desktop analysis; • Undertake field studies to examine in detail what GDEs are present in locations and areas that could potentially be impacted by the project; • Details of requested field surveys (including methods, results and assessment for potential GDEs, assumptions, constraints or limitations); • Details of management and mitigation strategies for GDEs that are found to be present. Demonstrate that the mitigation measures would avoid impacts to the greatest extent practicable; and • Propose a management and/or mitigation plan to manage and monitor impacts to GDEs for the life of mine and post mine closure.

		For significant impacts on prescribed environmental matters, assess the offsets requirements in accordance with the <i>Environmental Offsets Act 2014</i> and the latest version of the <i>Queensland Environmental Offsets Policy</i> (EPP/2015/1658) (DES 2023). Describe in detail how the offsets were determined or justify why no offsets are proposed.
11	<u>Tailings storage cell seepage</u> Section 5.6.7 of the EAR states - <i>Geochemical testing results show that water from the stored tailings will be pH neutral to slightly alkaline, with low salinity and low concentrations of metals and metalloids. The TSC liner will prevent seepage of water from the TSC to the underlying groundwater regime.</i> It is unclear how the quality of TSC seepage is comparable to underlying groundwater regime as the water quality data set to support the above statement have not been provided. In addition, the application does not identify the potential for seepage or contaminant to be released from the TSC and where seepage may be intercepted or expressed to surface water. Further information on the water quality limits and strategies to minimise seepage to the receiving environment is required.	Provide further details including but not limited to: - Propose water quality limits for the TSC water quality at the TSC (including quality characteristics, contaminant limit and monitoring frequency); - Provide an impact assessment for the potential failure of indicated liner system (potential and actual), and mitigation measures to be implemented to detect, minimise and manage seepage, manage direct or indirect release of contaminants to groundwater and minimise adverse effects on groundwater or any associated surface ecological systems; and - Provide advice on the considerations of secondary containment and / or other seepage interception to prevent or minimise releases to the environment to demonstrate that the activity, and components of the activity, are carried out on the site in a way that prevents or minimises adverse effects on the use of surrounding land and waters and allows for effective management of the environmental impacts of the activity.
12	<u>Road crossings</u> Section 6.4.3 of the EAR proposes construction of seven new road crossings of drainage features: One (1) haul road crossing of the BVS Pit Drainage Diversion and six (6) local access road crossings on Drainage Features 1, 2 and 3.	- Provide details of the crossing design including size (widths) and location (GPS coordinates and maps). - Provide information on hydrological changes associated with road crossings. - Provide an updated risk assessment that considers risks associated with the operation and design of the road

	However, information including but not limited to crossing designs, potential risks associated with the use of road crossings (for example spillage and potential contamination of waterways), vegetation clearance, potential biodiversity offsets, mitigation measures and treatment plans to minimise impacts have not been provided.	crossings including appropriate mitigation measures and treatment plans to be implemented to minimise environmental harm to waterways including impacts to fauna, e.g. waterway barriers, and riparian flora. 4. If applicable, provide a significant residual impact assessment for regulated vegetation where regional ecosystems are located within defining banks of relevant drainage features at the proposed road crossings.
13	<u>Aboriginal cultural heritage matters</u> Section 14 of the EAR includes limited information on aboriginal cultural heritage and consultation with relevant parties regarding the potential impacts of the project on aboriginal culture heritage. A search of the Aboriginal and Torres Strait Islander cultural heritage register and database available at the Queensland Governments website identified mapped cultural heritage site points within the boundaries of ML2739 and ML90238. These attributes are identified as artefact scatters (in two areas) and a quarry. The relevant party identified via the database is Ngawun Mbara People Core Country Claim. Section 14 of the EAR indicates that the proponent holds an existing agreement with the Woolgar valley Aboriginal Corporation to access the mining leases for mining activities and that Aboriginal cultural heritage clearances will be conducted in accordance with the <i>Aboriginal Cultural Heritage Act</i>. For Aboriginal and Torres Strait Islander peoples, water bodies such as rivers, creeks and groundwater systems often hold profound cultural and spiritual significance. Section 6.3.1 of the EAR states <i>There are no known significant cultural or spiritual values associated with the Woolgar River and its tributaries</i>. However, it is not clear if the relevant parties have been engaged with in relation to all cultural and spiritual values of air, land, and water of the project site. Further information including records of consultation with all relevant parties (including Ngawun Mbara People Core Country Claim) on the potential project impact to known and unknown aboriginal cultural values is required. Cultural and spiritual values are an environmental value therefore, an assessment of impact on these matters (and other	1. Provide evidence to demonstrate consultation with all relevant parties associated with the: a. Project and potential impacts to the cultural matters; b. Potential impacts to cultural and spiritual values of waters, including (but not limited to) impact to water quality and stream hydrology components of these values. Identify concerns raised by relevant parties and how these have been addressed in the application. 2. Provide information on proposed management and protection measures of the aboriginal cultural matters.

	unidentified matters that may be present on site), and mitigation and management measures implemented to protect aboriginal cultural values must be provided.	
14	<u>Waste and Resource Management Hierarchy</u> Section 15.2.5 of the EAR states that mine haul truck tyres will either be removed offsite or potentially disposed of (encapsulated) within the WRD, which includes tracking and quantities and surveying of locations. Disposing of tyres in a WRD is not considered leading practice due to potential environmental risks and long term closure implications (e.g. leachate generation, decomposition, stability). It is unclear whether any risk assessment associated with disposal of tyres in WRD (with PAF and dewatered tailings co-disposal in southern and central WRDs) have been conducted. Further clarity on the disposal strategy and a risk assessment is required.	1. Clarify if tyres are proposed to be disposed in WRDs and if proposed, provide details of how the waste and resource management hierarchy³ has been considered in determining the appropriateness of disposal and how the disposal prevents adverse impacts to environmental values. 2. Where disposal is required, of the three proposed WRDs, clearly identify the WRD that will contain tyres. 3. If applicable, provide justification for the proposed disposal of tyres in WRDs (such as an options analysis) and a comprehensive risk assessment including geotechnical and structural stability of WRDs with particular consideration to co-disposed PAF and dewatered tailings.
15	<u>ERA 60: waste disposal</u> The application seeks approval for waste disposal under <i>ERA 60(1)(a)(a) – Waste Disposal for operating a facility for disposing of, in a year, less than 50,000 t of waste</i>. According to section 13.2.2 and submitted mine layouts, all waste including general, sludge/solids from STPs will be removed from the project site and transported to existing waste facilities in Richmond via the Yan Yean-Burleigh-Mt Norman Rd and the Richmond-Woolgar Road. Scrap metal and oil waste will be transported to Townsville via the Flinders Highway. The application does not make reference to an onsite landfill therefore, clarity for requesting ERA 60 is required. It is further noted that the application references implementation of a waste management system however, it is unclear whether the waste management system or plan is proposed to be developed and implemented in accordance with Part 5 of the <i>Environmental Management (Waste Management) Policy 2000</i>.	1. Clarify the request for ERA60. 2. Confirm whether an onsite landfill is being proposed. If so: a) Provide an assessment against the waste and resource management hierarchy to justify the proposed landfill; and b) An updated application material that includes the design and location, risks associated with operation of landfill, impacts to environmental values, management and mitigation strategies, and rehabilitation of the facility in accordance with the departments <i>landfill siting, design, operations, and rehabilitation</i> guideline⁴.

³ Section 9 Waste Reduction and Recycling Act 2011.

⁴ Guideline: Landfill siting, design, operation and rehabilitation; ESR/2015/1627; version 5.01. [Landfill siting, design, operations and rehabilitation guidance | Environment | Department of the Environment, Tourism, Science and Innovation, Queensland](#)

		3. Confirm whether the proposed waste management system will be developed and implemented in accordance with the waste management policy.
16	<u>Sewage treatment plants (STP)</u> Sections 15.3 of the EAR does not include sufficient information on the sewage treatment activities and infrastructure associated with the facilities. In addition, the application does not provide justification for the proposed treated sewage water quality criteria referred to in Table 15-2 with respect to proposed nutrient concentrations (total nitrogen, total phosphorous). No information is provided as to the exact locations of the three sewage treatment plants (STPs), locations and volumes of the three suitable wet weather storages and the location and sizes of the sewage irrigation areas further discussed in item 17 below. Specific information including but not limited to the plant design, capacity, suitability of STP locations, operation and maintenance have not been provided. An assessment of compliance with conditions contained within the Model operating conditions (ERA 63—Sewage Treatment)⁵ and Model mining conditions (Schedule G - Sewage treatment)⁶ should be provided. In addition, a detailed waste management program that includes (but not limited to) the following information is required: • Details of waste generated (such as treated sewage/effluent, recycled water, grit, screenings, biosolids, etc), storage method/s; • Odour generation and controls (a list of all potential odour sources associated with the sewage pumping station and related infrastructure and measures that will be taken to control odour impacts); • Recycle/reuse or disposal method/s; • Details of how waste is managed with reference to the waste management hierarchy and 'cleaner production'; • Procedures for improving waste management practices;	1. Provide a scale site plan which includes location of all sewage treatment infrastructure, sensitive features within 200m of the proposed sewage pumping station, floodplain extent (1% and 0.1% events). 2. Provide information on the expected effluent quality for parameters including BOD₅, TSS, turbidity, dissolved oxygen, total nitrogen and phosphorus, E.Coli, sodium adsorption ratio, electrical conductivity and other analytes (including viruses, protozoans or suitable indicators of viruses and protozoans) and a description of how influent volumes were determined. 3. A description of the 'class' of treated sewage/recycled water that will be generated and its uses. Class of recycled water as defined in the Technical Guideline for disposal of effluent using irrigation⁷. 4. Provide information on how treated sewage/wastewater will be delivered to the proposed irrigation areas. 5. A description of the method of disposal of grits, screenings, scums and sludges. 6. Provide a quantitative description of expected average and peak wastewater flows associated with the STPs. 7. Further description of the effluent disinfection method/s that will be used to ensure that 'effective' disinfection will be achieved.

⁵ Model Operating Conditions: ERA 63 – Sewage Treatment; ESR/2015/1668; Version 3.06.

⁶ Guideline: Model mining conditions; Schedule G – Sewage treatment; ESR/2016/1936; Version 6.03.

⁷ Technical Guideline: Disposal of effluent using irrigation; DES 2020; [Disposal of effluent using irrigation, Technical Guideline - Dataset - Publications | Queensland Government](#)

	- Provides details on the grit and solids screening process (if any) including the frequency for screen maintenance and the process of removal of the grit and solids; and - If applicable, a Site-Based Management Plan (SBMP), a Contingency Plan and an Emergency Response Plan.	- A description of alarm systems and details of power backup facilities. - Information on peak design capacities and details of emergency storage capacities (volumes and time) in the pump station for peak dry and wet weather flows. - Information on the chemicals and polymers to be used in the treatment processes, chemical storage, containment and disposal. - Monitoring of inflow and outflow of sewage from pumping station and wastewater generation, measures to minimise risks to public health. - A detailed waste management plan.
17	<u>Proposed irrigation of treated effluent</u> Section 15.3.2 of the EAR proposes effluent irrigation in areas such as the gardens and landscaping areas in the accommodation camp area and the MIA, or a dedicated irrigation area via ERA 63(1)(b)(i). However, the application lacks information to support the irrigation proposal including but not limited to environmental risk assessment, the exact discharge locations, size of irrigation areas, effluent data, climate data used for designing the scheme, flooding history, soil characteristics of proposed irrigation locations, proposed vegetation for irrigation areas, groundwater interactions, irrigation management, wet weather storage and duration of the proposed activity. Further information including a risk assessment associated with the proposed effluent irrigation in accordance with the available Technical Guideline for disposal of effluent using irrigation is required to adequately perform an environmental risk assessment and determine whether the irrigation proposal is sustainable. Where preliminary risk assessment identifies the proposed irrigation is not low risk, a complex mathematical modelling such as Model for Effluent Discharge through Land Irrigation (MEDLI) must be provided to assess the environmental impacts and sustainability of treated sewage irrigation schemes.	- Provide detailed information requirements specified in Appendix 1 of the Technical Guideline for Disposal of effluent using irrigation. - Conduct a preliminary risk assessment considering information outlined in section 3.2 of the technical guideline. - If applicable, provide a detailed risk assessment including MEDLI modelling (scenario and output files). - MEDLI output file (*.medr) - MEDLI scenario file (*.med) - Demonstrate the suitability of the locations and designs of sewage treatment, wet weather storage and irrigation site/s. - Provide evidence to demonstrate how/why the maximum 40 mg/L of total nitrogen and 12 mg/L of total phosphorus value were chosen/derived. - Provide the electrical conductivity (EC) or TDS and sodium adsorption ratio (SAR) of the treated sewage irrigation water.

7. Provided a revised EAR that includes the most locally relevant climate data. This can be obtained and assessed from the Silo DataDrill ([web link](#)) data.
8. Provide information on proposed grown crop species in the treated sewage irrigation areas.
9. Provide details of groundwater depth, quality and uses at the irrigation sites.

Appendix A: Geochemistry Report

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Waste characterisation

Geochemical analysis found most waste rock materials are classed as non-acid forming (NAF) but the tailings (dewatered) exhibit near-neutral pH and can be saline (EC 1680 $\mu\text{S}/\text{cm}$). Two of the three samples tested were classed as potentially acid forming (PAF) with low metal/metalloid concentrations. Elevated chromium (Cr(VI)) was detected in one tailings sample and the sulfate generation and oxidation rates were low.

Given tailings are proposed to be co-disposed with NAF, the potential acidity associated with PAF oxidation is understood to be limited however, the extent of this is unknown. The geochemical analysis considers the release of acidic seepage as comparable to underlying groundwater regime which appears to be based on the neutralising effect of NAF waste rock. Kinetic column leach (KCL) tests involving NAF/PAF mixtures to confirm the potential seepage quality have not been provided. Treatment KLC16 represented a composite of NAF and PAF however, no information on the ratio of these materials was provided so the neutralising effect is not able to be evaluated.

Section 7.2.3 of Appendix J (MMMP within PRCP Plan) states *the dewatered tailings will be co-disposed with NAF waste rock in a ratio of 1:5* however, validation of this ratio (such as KLC) have not been provided.

It is further stated in section 3.7.1 of EAR that the geochemical test results from Appendix A indicate all of the waste rock from the BV1 and BV2 Pits will be non-acid forming with significant excess acid neutralising capacity.

The application indicates that a total of seven (7) ore and mine waste samples were prepared for use in the geochemical assessment as follows:

1. Provide additional sample analysis for all mine waste. The minimum number of regularly spaced samples collected from each rock/overburden type during initial sampling should generally be as follows:

Mass of each separate rock type (tonnes)	Minimum number of samples
<10,000	3
<100,000	8
<1,000,000	26
<10,000,000	80

2. Provide additional tests (including KLC) analysis of NAF/PAF mixtures to demonstrate expected WRD seepage quality.
3. Provide information on the ratio of materials analysed in sample KLC16.
4. Clarify the co-disposal strategy for dewatered tailings and subsequently revised application documentation for the selected co-disposal method.

	• 3 tailings samples (Tailings Sample 1 to 3); • 2 spent heap leach residue samples (Spent Heap Leach Residue Sample 1 and 2); • 1 low-grade ore sample; and • 1 high-grade ore sample Further geochemical assessment of waste rock characterisation that is undertaken at a minimum rate of eight (8) regularly spaced samples per 100,000 tonnes of waste rock is required to validate the analysis presented in Appendix A. Further, a progressive sampling program that validates pre-mine waste rock characterisation should be included in the MMMP. In addition, geochemistry of waste rock indicates that NAF has potential to generate alkaline/saline drainage. The geochemistry of NAF waste rock KLC tests releases leachate with a pH ≈ 9 and EC up to 4,600 $\mu\text{S}/\text{cm}$. Further information is required on the potential for and quality of drainage from the NAF external batter into the receiving environment and whether this seepage poses an environmental risk that also needs to be managed. It is noted that section 5.3 of the ATC Williams report (April 2025) states that <i>RGS also reported limited testing of the high-grade ore (n = 1) which returned a PAF classification and low-grade ore (n = 1) stream which returned a classification of NAF. These results were in accord with the tailings testing (n = 3) that classified the tailings as PAF... While significant acid generation is not expected, the results from kinetic testing <u>did</u> indicate that neutral/saline drainage may be encountered during operations and placement of the cover system ... It is however highly unlikely that seepage generated by the CPC would be suitable for direct release to the receiving environment. Formation of acidic drainage is less likely but formation of neutral of saline drainage should be expected.</i> Therefore, having considered the limited testing and identified variability in sulfur content that are liable to react with water and oxygen forming sulfuric acid which could in turn, mobilise salts and heavy metals, further analysis of regularly spaced samples and assessment of neutral and saline drainage and mitigation measure to be implemented to minimise environmental harm is required.	5. Pending response to (4) provide information on validation of the proposed co-disposal ratio 1:5. 6. Provide information on the expected quality of drainage from NAF batter into the receiving environment. If applicable, provide mitigation and management measures to be implemented to minimised harm to the receiving environment.
Appendix C: Groundwater Report		

19	<u>Groundwater bore network</u> There are around 14 bores used for baseline monitoring (paired bores shallow and deep). Most of the bores are located within the project footprint and are likely to be directly impacted by mining activities during operation. It is unclear how the continuity of the groundwater quality monitoring program for various water bearing units will be achieved into the future. The proposed monitoring network is insufficient to determine contaminant pathway, potential impacts and monitoring during operation and post closure. It is noted that a network for groundwater monitoring post mine closure have not been proposed. <u>Groundwater interim limits</u> The interim limits presented in Table 1 of Appendix C for copper, molybdenum, and selenium have been adopted from the guidelines for livestock drinking water, which is not appropriate. All of these indicators frequently fall below the detection limits in the monitored waters and are not adequate to protect aquatic ecosystems and groundwater values.	Provide the following information: 1. A revised groundwater network including additional upstream and downstream bores surrounding regulated structures. 2. Groundwater monitoring bore locations for existing and new bores including coordinates (easting and northing), installation phase for each bore, surface RL (mAHD), screened interval RL (mAHD), target formation and monitoring frequency, quality characteristics, limit type and proposed site-specific limits (95th percentile of background). 3. Update Table 1 to include metals with limit values for the 95% species protection in the national guidelines (ANZG, 2018), similar to the other indicators mentioned in Table 1. 4. Provide a groundwater management plan that includes the following information (but is not limited to): • Potential sources of contamination to groundwater from the activity; • Potential groundwater impacts due to the activity are identified, monitored and mitigated; • Sampling and monitoring methodology; • Adequate groundwater monitoring and data analysis is undertaken to detect any impacts to groundwater levels and quality due to the activity and determine trends in groundwater quality; • Appropriate quality assurance and quality control program; • Conceptual groundwater model (3D); and • Review process to identify and implement improvements to the program.
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20	<u>Groundwater model</u> The scaled root mean squared error (SRMS) is calculated as 9.83% (section D2.6 of the groundwater modelling results) however, justification for the selected target SRMS has not been provided. It is also noted that the groundwater model does not identify the convergence criterion for the numerical model nor discusses the correlation referenced in section D2.6. The convergence criterion for the numerical model should generally be less than 1% and reported at all times and cumulatively over the whole simulation for the error to be acceptable⁸. In addition, Table D8 of the model identifies that validation of long term trends replication and temporal discretization have not been undertaken. Justification for the absence of this validation have not been provided. Furthermore, section 5.6.7 of the EAR states that any limited water seepage from the satellite pit final voids into the underlying geology will migrate towards the BVS Pit over time. This is justified on the location of the satellite pits being hydraulically upgradient of the BVS Pit final void and the associated groundwater sink. However, section 5.5.3 states that - <i>the water level within the BVS Pit final void is predicted to recover to a quasi-equilibrium elevation of approximately 230 mAHD. Hence, the predicted final void lake elevation is approximately 120 m lower than the pre-mining groundwater level within the BVS Pit footprint. This difference in groundwater elevation will generate a <u>post mining hydraulic gradient</u> that induces groundwater flow towards the BVS Pit final void.</i> Further information on whether the potential for seepage generation during the operational phase of mine have been assessed is required. An assessment of the hydraulic connectivity between the pits and groundwater including surface and groundwater interaction at the satellite pits to address potential risks associated with the proposed activities is required.	1. Provide justification for the selected target SRMS of 9.83% and details of the correlation between measured and modelled hydrographs. 2. Provide the level of convergence for the numerical model. 3. Provide justification for the validation of model for long term trend projection. 4. Confirm whether satellite pits BV1 and BV2 are a groundwater sink or source. 5. Provide information on surface water and groundwater interaction at the satellite pits and an assessment of the hydraulic connectivity between the satellite pits and groundwater to address potential risks associated with the proposed activities.
21	<u>Drawdown</u> The predicted drawdown in the groundwater report includes sensitivity scenarios for the extent of the drawdown based on the worst-case scenario for the Proterozoic basement. However, limited interpretation of the results presented in Figure D 16-19 is provided.	1. Provide additional interpretation of the predicted worst-case drawdown scenarios. 2. Propose period validation of drawdown model.

⁸ Barnett, B., Hunt, R.J., Townley, L.R., Peeters, L., (2012) *Australian Groundwater Modelling Guidelines: (No. Waterlines Report Series No. 82)*. National Water Commission, Canberra, ACT, Australia.

	Further interpretation such as the worst case scenario for hydraulic conductivity (kx and kz) that projects drawdown beyond tenure boundaries and into the Woolgar river is required. In addition, it is recommended that periodic validation of the drawdown model and management measure including a contingency plan for the worst-case drawdown scenario be provided to ensure adverse effects from drawdown is minimised.	3. Provide management measures and contingency plan for the management of drawdown based on the worst-case drawdown extent.
22	<u>Table 3 – Summary of bores and VWPs</u> In Table 3 of the Appendix C, around 14 bores and 3 vibrating wire piezometer (VWP) arrays for various aquifers have been designated for groundwater monitoring. However, it is unclear how many of these bores would serve as interpretation bores, which are often up-gradient to the activities. At any given point, up-gradient bores provide information about the natural, unaffected groundwater quality of a water bearing unit and are important for the interpretation of changes in water quality at the compliance bores.	Clearly identify interpretation bores and compliance bores.
23	<u>Compliance strategy – limit monitoring</u> The application does not propose a compliance strategy against all proposed groundwater quality indicators. For example, three (3) consecutive exceedances of an indicator would trigger a non-compliance to the limit, in line with DES (2021) groundwater guideline⁹. A comprehensive groundwater monitoring and compliance strategy should be developed in future to ensure long-term management.	Provide a compliance strategy for each groundwater quality indicator. The following is recommended: • Groundwater samples obtained from monitoring bores must not exceed Limit A specified in Table 1 of Appendix C on any five (5) consecutive sampling occasions. • Samples obtained from monitoring bores must not exceed Limit B specified in Table 1 of Appendix C on any three (3) consecutive sampling occasions. • If groundwater samples from any monitoring bore exceeds Limit B specified in Table 1 of Appendix C on any one (1) sampling occasion then resample the groundwater within the monitoring bore for all exceeding parameters
Appendix D: Surface Water Report		
24	<u>Surface water monitoring</u> Appendix D indicates that the proposed monitoring program during the operation will include monthly monitoring for water storage levels and volumes, but quarterly for water	1. Provide an updated supporting document and surface water report that provides justification for the proposed monitoring frequencies.

⁹ Guideline: Groundwater quality assessment; Using monitoring data to assess groundwater quality and potential environmental impacts;
<https://www.publications.qld.gov.au/dataset/groundwater-quality-assessment-guideline/resource/472cc88a-000a-4bb8-a60d-204cfe7e0238>

	quality. Considering that the periods of water flow in the Woolgar River (8 weeks throughout the year) and tributaries, the surface water monitoring regime appears insufficient. Further, section 3.1.1 acknowledges the limited existing baseline surface water quality and therefore proposes interim water quality guideline values until sufficient data is available from the Receiving Environment Monitoring Program (REMP). Although the justification for inadequate samples at the time of application lodgement is understood, it is unclear why the sampling program is delayed until REMP is implemented. The application does not provide justification for this delay. For establishing limits for the physicochemical indicators, water quality guidelines recommend <i>“that estimates of 80th percentiles should be based on a minimum of 18 samples collected at 1 to 2 reference sites over at least 12 months but preferably over 24 months (to capture 2 complete annual cycles).”</i> The 95th percentiles from dissolved concentrations of metals and metalloids is recommended to determine site-specific water quality objectives. <u>Proposed interim limits</u> The proposed interim trigger value for selenium does not consider the bioaccumulation potential of the selenium in accordance with the ANZG, 2018 guidelines¹⁰. For selenium, ANZG recommends applying the 99% species protection level (instead of 95%) for a slightly to moderately disturbed ecosystem to allow for adjustment for bioaccumulation at the site.	2. Provide justification for the delayed baseline data collection. 3. Pending response to (2) above, provide baseline dataset as detailed in adjacent comments and site-specific limits for physicochemical indicators. Note that data should be obtained under base-flow conditions and the flow during sampling should be recorded. 4. Provide a revised limit for dissolved selenium concentrations that considers the bioaccumulation potential in accordance with the ANZG 2018 guideline. It is recommended that limit of 5 µg/L is appropriate to protect the 99% of the species population (section 8.3.5.7 of ANZECC & ARMICANZ 2000 guidelines¹¹).
25	<u>Surface water monitoring locations</u> The proposed monitoring program includes insufficient monitoring locations. Some observations are listed below: • Monitoring location(s) in the northern catchment on site have not been proposed.	1. Provide an updated supporting document and surface water report that provides further justification on monitoring locations and regime. 2. Identify additional monitoring locations upstream and downstream of the proposed mining area.

¹⁰ Water quality Guidelines; Australian and New Zealand Guidelines for Fresh and Marine Water Quality; <https://environment.desi.qld.gov.au/management/water/quality-guidelines>

¹¹ ANZECC & ARMICANZ (2000) Water Quality Guidelines: Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMICANZ).

	- Monitoring location further downstream of SW1 is required to measure effectiveness of water management implemented on site. SW1 is likely to capture potential impact from the site at the confluence of western tributary to Woolgar river. - Monitoring location(s) to detect potential pathway in the southern catchment have not been provided.	3. Provide location for reference and compliance sites including monitoring location, monitoring description and coordinates (easting and northing).
26	<u>Processing chemicals</u> There is insufficient information provided on the process chemicals to fully understand the potential contaminants pathways and environmental impacts associated with the extraction processing on site, heap leach facilities and CIL Plant.	Provide an updated supporting document and surface water report that provides further information on the process chemicals, identification of potential CoC to determine the potential contaminants, pathways, and environmental impacts. In addition, provide further information to demonstrate hazardous materials are stored in safe area taking into consideration the likelihood of flooding.
Appendix E: Terrestrial Ecology Report		
27	<u>Field-validated survey</u> Appendix E and EAR indicates that the assessment for regulated vegetation, habitat mapping for threatened fauna species were based on field-validated vegetation mapping. The field-validated also referred to as ground-truthing regional ecosystem (RE) map is shown in figure 7-4 of EAR and figure 6 of Appendix E. The REs recognised as mapped under the <i>Vegetation Management Act 1999</i> (the VM Act) comprises of larger areas that have not been identified during field survey. In addition, it is noted from Table 1 of Appendix E that ground truthing surveys identified areas of REs with greater extents and different REs than government mapped RE's. The impact assessments to flora and fauna habitat appear to be based on the field survey that has not been validated by the relevant agency for the survey (Queensland Herbarium as the lead agency for survey, mapping and monitoring of vegetation). In the absence of a validated map from the Herbarium, impact assessment must be based on RE currently mapped under the VM Act. Therefore, the impact assessment including	Provide confirmation on the validation of the field survey from the Queensland Herbarium. If this process has not commenced for the validation of ground truthed data, please engage directly with the department to facilitate this process. Please note, it is strongly recommended to engage in this process at the earliest convenience to avoid potential project delays. Alternatively, provide a revised flora and fauna impact assessment including revised SRI assessment for Matters of State Environmental Significance (MSES) in accordance with the SRI Guideline¹² and environmental offsets that align with the current mapped RE and fauna habitat for the proposed impact area. In addition, provide a map identifying proposed biodiversity offsets for the respective REs.

¹² Guideline: *Significant Residual Impact* (2014); *Queensland Environmental Offsets Policy*; *Nature Conservation Act 1992* *Environmental Protection Act 1994* *Marine Parks Act 2004*; [Significant residual impacts | Environment, land and water | Queensland Government](#).

	significant residual impacts (SRI) and proposed environmental offsets provided in Appendix E and EAR is invalid until the field survey is verified with the Herbarium.	
28	<u>Field survey results: <i>Drummondita calida</i></u> The EAR and Appendix E indicates that although potential habitat for a threatened flora species (<i>Drummondita calida</i>) was identified on the sandstone plateaus within the project site, field surveys did not record this species as present on site. Section 4.2.2 of Appendix E identifies a small section of sandstone scarps that were not surveyed due to accessibility issues (shown in figure 8 of Appendix E). The report further assumes that this species is unlikely to be recorded in large numbers at the unsurveyed areas given it was not identified in other parts of the surveyed site. This species has been recorded at a number of locations with the nearest being recorded 25km east of the project (CSIRO 2022). The application does not provide clear determination on the potential impact on <i>Drummondita calida</i>. As such, further information including a map illustrating full extent of the identified species (123.6ha) and a targeted survey for <i>Drummondita calida</i> is required for a detailed assessment of impact and the likely SRI on these species.	1. Provide a map of identified <i>Drummondita calida</i> (total). 2. Provide details of a targeted field survey including survey methodology in alignment with minimum survey standards and guideline requirements in accordance with the flora survey guideline for protected plants¹³ and a revised SRI assessment based on the results of the survey.
29	<u>Ghost bat <i>Macroderma gigas</i> (endangered: Nature Conservation Act 1992): survey effort</u> The survey for identifying ghost bats at the site has been identified as inadequate effort to support the conclusion that Ghost bats are absent from the proposed project area. Appendix E indicates the use of incorrect and outdated information in forming the conclusion that ghosts bats unlikely to occur in the project site. This includes but is not limited to known roosts in Queensland and roosts observed at abandoned mines. Information available through Queensland Government WildNet platform indicates that at least 11 colony sites are known in Quensland. Similarly, the statement that there are no known records at abandoned mine roosts also appear incorrect. Furthermore, the literature reviews included as reference to four surveys listed in Table D2 (Mammals: Ghost Bat) of Appendix E are greater than 100km from the proposed project area that are not located in the Gulf Plans Bioregion (applicable to proposed	Conduct and provide details of a targeted survey in accordance with the Targeted species survey guidelines¹⁴ and contemporary national guideline <i>Northern Territory guidelines for surveying for the ghost bat at the landscape scale</i>¹⁵. Consider the following: • Include broadband recordings during active surveys (detailing equipment and analysis setting used); • Conduct at least 100 hours of attended survey over 1,300ha area (including walking transects combined with species-specific techniques);

¹³ Guideline: [Flora survey guidelines – protected plants; Nature Conservation Act 1992](#).

¹⁴ Guideline: Hourigan, C. 2011 Ghost bat, *Macroderma gigas*. Targeted species survey guidelines. Queensland Herbarium, Department of Environment and Science, Brisbane.

¹⁵ Guideline: Ruykys, L., Hanrahan, N. and Stokeld, D. 2024 *Northern Territory guidelines for surveying for the ghost bat at the landscape scale*. Technical Report 05/2024, Department of Environment, Parks and Water Security, Palmerston, Northern Territory and Charles Darwin University, Brinkin, Northern Territory.

	mine site). The initial likelihood of occurrence analysis based on these references do not support the survey effort. Where available, surveys for bats for the eastern half of the Gulf Plains Bioregion must be used as reference surveys. Therefore, a comprehensive survey of bats to clearly determine the occurrence likelihood and an appropriate SRI assessment to adequately assess the impact to this species is required. In addition, the provided survey reports state that no evidence of bats of any species was found in caves, overhangs or cave-like structures. However, Table F3 and F6 of Appendix E identifies cave roosting bats such as Eastern Horse-shoe Bat during seasonal surveys in 2017, 2019 and 2021. This species has a limited foraging range from roost. Further species including the Eastern Bent-winged Bat and Troughton's Sheath-tailed Bat have roosting preferences for caves and cave-like structures. All these species have been observed sharing roosts with ghost bats. Further commentary is required on the noted presence of cave roosting bats at the study site in light of no suitable structure being found and no microbat use of caves or cave-like structure being observed.	• Include adequate number of harp trap nights and mist net hours (at least 104 as per the survey guideline); • Include foraging roosts (tree scratches) in searches across the site; and • Use lured traps as part of the survey. Refer to national guideline for further details on effective surveying methods.
30	<u>Significant residual impact assessment</u> The submitted documents state there would be significant direct impacts to a range of MSES such as regulated vegetation (watercourse). There is limited analysis of potential indirect impacts to adjacent environmental values / MSES including <i>Drummondita calida</i> and Ghost bat <i>Macroderma gigas</i> provided in the reports. Further potential indirect impacts to these values include: • Habitat fragmentation and loss of connectivity, including along the Woolgar River which is a mapped ecological corridor; • Potential for reduced condition of surrounding habitat due to the introduction of weeds and pests; • Noise and vibration impacts on local fauna; • Increased risk of bushfire, linked to equipment operation and other accidental ignition sources; and • Potential impacts on fauna from artificial lighting.	Provide an updated supporting document and Terrestrial Ecology Report that provides further information on indirect impacts to <i>Drummondita calida</i> and Ghost bat <i>Macroderma gigas</i> in relation to the project.
Appendix G: Air Quality Report		
31	<u>Air quality standards and criteria</u>	1. Provide an updated air quality assessment including revised air quality objective in alignment with the latest EPP Air

	Air quality standards and criteria discussed in section 2.3 and Table 1 <i>Air quality objectives used in the assessment</i> are based on a previous version of <i>Queensland Environmental Protection (Air) Policy 2019</i> and <i>National Environment Protection (Ambient Air Quality) Measure (Air NEPM) 2021</i>. Recently (1 January 2025), the EEP Air including the quality objectives of PM_{2.5}, SO₂ and NO₂ have been revised. For example, the EPP (Air) PM_{2.5} objectives are reduced from 25 to 20 µg/m³ (24-hour average) and from 8 to 7 µg/m³ (annual average). The EPP (Air) SO₂ objectives are reduced from 570 to 214 µg/m³ (1-hour average) and 229 to 57 µg/m³ (24-hour average). Similarly, the NO₂ objectives are reduced to from 250 to 164 µg/m³ (1-hour average) and from 62 to 31 µg/m³ (annual average). Therefore, a revised air quality impact assessment that aligns with the revised criteria specified in the current EPP Air objectives is required. In the event EPP Air objectives cannot be complied with, additional information including site-specific limits, release locations, description of contaminant source and appropriate monitoring must be provided.	objectives. Following revision, confirm whether the air pollutants can be complied with the EPP Air objectives. 2. Pending response to (1) above, provide: • Release source description and locations; • Source description; • Mitigation measures to reduce emission and protection of the receiving environment; • Receiving environment monitoring location, limits and frequency; and • Dust deposition monitoring location, limits and frequency.
32	<u>Emissions inventory</u> Section 5.3 provides an estimated 99% reduction in dust emission generated from drilling by using a fabric filter when drilling. The estimated 99% reduction is significant emission reduction value from drilling source however, it is unclear how on what basis the emission reduction efficiency was selected. The report does not make any further reference to the application of this fabric filter nor the extraction system. Further information on the extraction system and fabric filter efficiency is required to understand the significant estimate of the reduction.	Provide details of the extraction system and fabric filter efficiency to support the 99% reduction of emission.
33	<u>Emissions inventory</u> It is unclear how the estimates for mass emissions of NO_x, SO₂ and CO from the diesel fired generator (8.75MW capacity) provided in Table 14 <i>Emission rates for combustion gases</i> and stack parameters in Table 15 <i>Stack characteristics for diesel generators</i> were estimated.	Provide information on how the mass emissions and stack parameters in Tables 14 and 15 were estimated.
34	<u>Emissions inventory: power generation</u> Air emission limits for the power generators must be based on best practice emission standards such as those specified in the NSW Protection of the Environment Operations	Provide information on the pollutants concentration values in alignment with the best practice emission standards.

	(Clean Air) Regulation 2021 (NSW POEO Regulation) Group 6 Standard of Concentration. It is unclear whether the proposed power generator meets the best practice source emission standards. Further information including the pollutants concentration values and its comparison against the NSW POEO Regulation is required.	
35	<u>Heavy metal composition</u> The report does not include information on heavy metal composition of the mined ore. The presence of metals and metalloids in the mined ore has the potential to become airborne during the mining and material processing operation which can pollute the receiving environment. The heavy metals released from the site activities may include Arsenic (As) Cadmium (Cd), Cobalt (Co), Chromium (Cr), Copper (Cu), Manganese (Mn), Nickel (Ni), Lead (Pb), Selenium (Se), Zinc (Zn) and Boron (B). Further information on the potential heavy emissions from the site and their impact on the receiving environment is required.	Provide an assessment on potential heavy metal emissions for the mined ore and assessment of impact on the receiving environment.
<i>The department has now published a Guideline on Greenhouse Gas Emissions (ESR/2024/6819)¹⁶, (the GHG Guideline) which sets out the minimum expectations for GHG information to be provided for new EA applications. As such, below information gaps require further assessment and update as requested.</i>		
36	Based on the GHG emissions estimate from the Air Quality Report, the project falls within a medium to high emitter (>25,000 t CO₂-e/year) category and as such, specific application requirements apply to this project. These requirements are outlined in <i>Table 3: Application requirements for low and medium to high emitters</i> of the GHG guideline, which includes the need for a GHG abatement plan. The content requirements for this plan are detailed in Appendix A, including emissions reduction targets for Scope 1 and Scope 2 (not relevant for this project as the site is not connected to the grid) emissions, as well as an emissions reduction program. A Scope 3 emissions inventory is also needed. Given the report was drafted in 2022, some references and data sources appear out of date and require update.	1. Revise the report to cover all required information for a medium to high emitter setting in the GHG emissions guideline, including: - A comprehensive Scope 1 emissions inventory over the lifespan of the project (construction and decommissioning); e.g. please justify the emissions from wastewater treatment plants and carbonates within the ore (if any); - Scope 3 emissions inventory (e.g. capital goods, purchased goods and services, fuel and energy, upstream and downstream transport etc);

¹⁶ Guideline, [Greenhouse Gas Emissions](#), ESR/2024/6819, version 1.00 dated 15 May 2024.

		• GHG emission mitigation and management practices (including Scope 3 where possible); • GHG abatement plan including an emissions reduction program; and • A risk assessment that outlines the scale of expected GHG emissions from the project and how they are expected to contribute to climate change impacts on Queensland's environmental values. 2. Update relevant references and data sources. 3. Provide detailed input information for the FullCAM model.
37	<u>Safeguard facility</u> <i>Scope 1 GHG emissions associated with the project (excluding land clearing) are not expected to exceed the Safeguard Mechanism facility threshold of 100 ktCO₂-e/yr. The project would not be subject to the requirements of the Safeguard Mechanism in its current format.</i> The estimated maximum annual scope 1 emissions are 89,797 t CO₂-e <u>excluding</u> land clearing, which is close to the threshold of safeguard facility (over 100,000 t CO₂-e). Safeguard facility faces stricter emissions requirements and increased compliance obligations, including a declining baseline and best-practice emission intensity for new facilities. Following assessment of Scope 1 and revision of report per GHG Guideline, it may be necessary to reassess the likelihood of the project being a safeguard facility.	1. Provide a revised Scope 1 emissions with a comprehensive inventory; and 2. Provide justification for the projects likelihood as a safeguard facility. Revise the report to accurately reflect the implications of safeguard facility status, if applicable.
Appendix H: Noise and Vibration Report		
38	<u>Assessment of existing noise environment</u> An assessment of the existing noise environment was not included in the noise assessment report. The report uses the criteria from the Acoustic Quality Objectives (AQO) which is set for all of Queensland and is not specific for the protection of the existing environmental values at the site. As per section 3 of the Application	1. Undertake and provide an assessment of whether the proposal would comply with the acoustic quality objectives prescribed in the <i>Environmental Protection (Noise) Policy 2019</i>¹⁷ (limits as per calculated using the information provided and the methods within ESR/2016/1936¹⁸).

¹⁷ Policy, [Environmental Protection \(Noise\) Policy 2019](#).

¹⁸ Guideline, [Model Mining Conditions](#), ESR/2016/1936, version 6.03, dated 19 February 2024.

	requirements for activities with noise impacts guideline, an assessment of the existing environment should be provided. The purpose of an application assessment process is not just to set an EA noise limit, but to assess if an impact of the development is sustainable to the surrounding environment. Further, it is noted that actual levels were not measured as part of this report and assessment was based on the assumptions from previous measurements conducted in central Queensland. Values from the previous measurements were not provided either. Measured levels of the existing environment to form baseline assessment is required. When considering site remoteness (and likely low background noise) and absence of site-specific measurements and assessment of EVs of the site, the predicted levels at Receptor 2 (Middle Park) in adverse weather conditions (37dBA) and night (35dBA) may impact the environmental values of the receptor adversely and cause environmental nuisance on the receptor. As such, a noise monitoring station at this receptor may be required.	2. Provide a noise and vibration management plan. Pertaining response to predicted noise levels described in adjacent comments: 3. Provide further information on the likeliness of the predicted level and whether this represents a realistic worst case scenario. Consider conducting an assessment at the sensitive receptor(s). 4. If revised levels exceed AQO, conduct further investigation into the noise source and provide mitigation measures to reduce noise impacts. 5. Provide information on the receiving environment monitoring locations, limits for day, evening and night times.
Appendix I: Non-Indigenous Cultural Heritage Report		
39	Appendix I identifies forty-seven (47) abandoned mine working associated with the Woolgar Goldfields that are located within the project site. The statement of significance which was assessed to determine the potential for each site to be classified as local heritage significance appears to be based on assumptions that features identified in previous records (Denaro 2001 and Taylor 2013 report) are still present on site. Contemporary ground survey to confirm these recordings, its conditions and features or identify additional workings have not occurred. The report recommends a site-inspection to be conducted to complete the significance assessment as the abandoned mine working may reach the threshold to be classified as local heritage significance. However, it is unclear whether further investigation to confirm this preliminary assessment have occurred. Given that thirteen (13) of the known abandoned sites are located within the proposed disturbance footprint, it is vital that contemporary ground survey to determine their condition, archaeological significance, identification of unknown sites or artefacts (if any) and a detailed impact assessment including management measures be provided.	Provide a contemporary ground survey identifying: • Known abandoned mine sites, conditions and features (i.e., artifacts etc) present within the proposed disturbance footprint; • Unknown abandoned mine sites, conditions and features (if identified in survey); • Detailed heritage significance assessment including assessment of local heritage significance; • Archaeological significance assessment in accordance with DETSI Guideline: Archaeological investigations (if applicable); and • Management measures to be implemented during mine operation.
Integrated Waste Landforms Concept Study (ATC Williams April 2025)		

40	<u>Proposed cover system and seepage collector pad</u> Section 4.10 indicates the proposal of a Store and Release (SAR) cover system that will be applied over the fill extents of the co-placement cell (CPC referred to the central and southern WRDs) however, the timeframe for installation of this cover system have not been identified. Given progressive rehabilitation of the CPC/WRDs are not proposed to commence until project year 7 (proposed PRCP schedule), it appears that co-disposed PAF and dewatered tailings material may be liable to react with water and oxygen to form acid during the operational phase. It is further noted from section 4.6.2 that a Seepage Collection Pad (SCP) would be constructed on the base of the CPC to ensure drainage from the cell is collected and transferred to the mine water management system. Specification of the construction requirements for the SPC and a detailed design informed by geotechnical investigation is not available. Further clarification on how drainage will be managed at the mine water management system including whether drainage or seepage collected will be managed on site is required. As identified in item 8, seepage collected from this system is proposed to be directed to sediment dams for the removal of suspended sediments prior to drainage from site however, the assessment provided in section 5.3.1 of the ATC Williams report states <i>it is however highly unlikely that seepage generated by the CPC would be suitable for direct release to the receiving environment</i>.	1. Confirm the timing for installation of proposed SAR cover system. 2. Provide an assessment on potential impacts from the exposed co-placed material and management of potential acid mine drainage and mobilised salts and heavy metals generated during the operational phase of the mine. Further assessment of these impacts post mine closure must also be provided. 3. Propose appropriate measures to capture and manage seepage on site considering the predicted seepage quality is expected to unsuitable for direct release into the receiving environment. 4. Provide details on the specification and design of SPC including: • Material availability and suitability assessment of material required for construction of the SCP; and • Design requirements including performance criteria and QA/QC by a SQP. 5. Propose field trials and/or modelling to confirm the drainage flux from the proposed cover system into the WRD; 6. Confirmation that infiltration through sloping sections of unvegetated batter will not allow excessive infiltration; 7. Confirmation that the cover system will be capable of establishing and maintaining the vegetation cover; and 8. Confirmation the vegetation cover will not compromise the hydraulic properties of the cover.
41	<u>Seepage containment system</u> Section 4.5 proposes the seepage containment system to be in place during the operational phase of the mine therefore, clarification on whether seepage containment	1. Clarify if the seepage containment and management system will continue post-operational phase (i.e., completion of final landform) and the estimated volumes of seepage, length of

	and management will continue post mine closure, the estimated volumes of seepage and length of time for the proposed seepage management is required. Table 6 outlines post-construction monitoring of the final landform however, full duration over which monitoring would be undertaken and long-term management of seepage have not been provided.	time containment and what management measures post closure will be in place. 2. Provide an updated table including full duration of monitoring and long-term management of seepage.
42	<u>Application of cover system</u> Section 4.10 outlines the design of the SAR cover system which indicates inclusion of endemic trees in the design. It is noted the department could not locate reference to the inclusion of tree species on final landforms of waste structures in other application documents. Confirmation by an AQP is required on the suitability of including trees in the design and that it would not pose a long-term risk to the reduced permeability layer (RPL).	Confirm suitability of including trees in the design and whether long-term risk to RPL is expected, assessed and managed appropriately.
43	<u>Dewatered tailings (co-disposal)</u> Section 5.1.3 indicates that tailings will undergo filtration step to dewater tailings to a moisture content of 20%. It states that filtered tailings behave more like a solid and are less likely to become flowable or unstable. Further clarity on the final form of tailings prior to disposal into the WRDs is required. While some example trials for co-disposal of dewatered tailings in WRDs may be available, this method of mine waste management is considered an emerging technique in Queensland mineral mining. Therefore, additional information on the risks associated with co-disposal and stability of this material specific to the project site is required. In addition, it is noted that the definition of dewatered tailings within the EAR and PRC plan is not consistent with the ATC Williams report: • Dewatered tailings in the EAR glossary is defined as '<i>Tailings that have a reduced moisture content</i>'. • Glossary within PRC plan defines dewatered tailings as '<i>Tailings that have a water content that is <u>no more than 30% by weight</u></i>'.	1. Clarify the final form of tailings prior to disposal in the WRDs. 2. Provide further information that demonstrates both structural and geochemical stability of the dewatered tailings within the WRDs, impacts associated with proposed co-disposal, mitigation and management measures proposed to be implemented to minimise adverse environmental harm to the receiving environment. Consider matters including but not limited to: • Water related failures including consideration of rainfall infiltration; • Tailings and waste rock geochemical properties including potential chemical leaching (e.g. AMD or metal leaching); • Long-term behaviour of co-disposed materials (including extreme climatic conditions); and • Monitoring and maintenance of facility to ensure they remain stable in the long-term.

44	<u>Water flux – capillary action</u> Section 5.3.4 indicates that risks associated with capillary action are unlikely to be significant due to relatively low capacity of the PAF waste rock and filtered tailings inventories however, the risk assessment have not been completed to explicitly state this low risk. Assessments including a numerical modelling of the cover system’s water dynamics is required to determine the need for a capillary break in the final cover design.	Provide an assessment on the risk of capillary rise and a final cover design prepared by an AQP, taking into account numerical modelling assessments of the cover system’s water dynamics.
45	<u>Proposed store and release covers</u> Section 5.3.5 references SAR covers in Northern Australia involving the use of RPL to control water ingress into the final landform that appears to be adopted for the project site. However, additional information on the water balance (where possible) from the example SARs and specifically the net percolation (or drainage flux density) to demonstrate the effectiveness of the SAR design is required. For example, drainage for Century mine (identified in the ATC Williams report and referenced literature¹⁹) was about 6% of total rainfall however, further information that validates the referenced cover design or drainage flux target criteria have not been provided. If the proposal is to validate the referenced “hummocked” cover presented in section 5.3.5 of the report using numerical modelling then a suitable model should be identified or a field trial should be conducted to validate the cover design. SAR design validation with emphasis on infiltration into the final landform during the wet season of the year when infiltration will be optimal is required to ensure an appropriate drainage flux target criteria will be achieved and maintained in the longer term.	1. Further expand information on the past SAR covers presented as evidence including water balance, net percolation or drainage flux density to demonstrate the effectiveness of the SAR design proposed. 2. Provide numerical modelling to validate the proposed SAR that demonstrate appropriate drainage flux target criteria will be achieved and maintained in the long term.
46	<u>Appendix A – IWL Concept Drawings</u> Further information on how the NAF waste rock batter will effectively control rainfall infiltration is required. The proposed designs indicate the NAF waste rock tipped at an angle of repose where rock placement is expected to be loose with significant segregation of rock sizes downslope. Further information including numerical modelling to estimate the volume of water that could be expected to the flow laterally through the external batter face into the co-placement waste is required.	1. Provide an estimate subsurface lateral flow from the external batters into the co-placement waste. 2. If applicable, propose additional mitigation measures to minimise subsurface lateral flow into the waste co-disposed in the WRDs.

¹⁹ Rohde, TK, Defferrard, PL & Lord, M (2016), 'Store and release cover water balance for the south waste rock dump at Century mine', in AB Fourie & M Tibbett (eds), *Mine Closure 2016: Proceedings of the 11th International Conference on Mine Closure, Australian Centre for Geomechanics, Perth*, pp. 47-59, https://doi.org/10.36487/ACG_rep/1608_0.6_Rohde

	Where subsurface lateral flow is found to be significant (i.e., if subsurface lateral flow cannot be discounted in the overall water balance), consideration for a low permeability liner along the inside surface of the batter may be required.	
47	<u>Co-placement method</u> The application material including MMMP, PRCP and section 3.7.1 of EAR indicate blending of PAF and dewatered tailings within a waste rock matrix. The ATC Williams report however, indicate that PAF and dewatered tailings will be placed (sequential) as layers of PAF waste rock followed by a layer of dewatered tailings which will be encapsulated by NAF waste rock. Further clarification or revision of application material on the proposed co-disposal method and design is required to ensure the proposed method and potential impact is fully understood. Further, although conceptual designs of the WRDs have been provided within Appendix A of the ATC Williams report, it is unclear how the PAF and dewatered tailings will be placed in the WRDs. A schematic drawing of how the tailings and PAF will be placed sequentially in the WRDs is required to further understand the internal structure of the landform.	1. Clarify the process of co-disposing dewatered tailings and PAF material within the application material. 2. Provide schematic designs developed by an RPEQ of the WRDs depicting the proposed co-placement method.
Appendix 2: PRCP		
1	<u>Community consultation and register</u> Although section 3.1 of the PRC Plan identifies five relevant parties for the purpose of community consultation, it is unclear if all relevant members of the community have been consulted in relation to the rehabilitation and closure activities of the site. For example, Table 7 within section 3.1 identifies Richmond Community as a stakeholder however, Table 6 does not include record of consultation with this group. Further section 3.1 further states – ‘<i>Given no significant issues have been raised by stakeholders, the PMLUs and NUMAs are considered by SMC to be generally supported by the local community and consistent with the outcomes of the PRCP consultation.</i>’ Details of information presented to the stakeholders with respect to each PMLU and NUMA have not been provided. In addition, section 3.2 of the PRC Plan includes details of ‘<i>general community consultation</i>’. However, details of consultation do not include reference to the proposed PMLUs and NUMAs nor the details of the information presented to the community	1. Clarify whether all relevant stakeholders have been consulted in relation to the rehabilitation and closure activities of the site. If it is identified that all relevant stakeholders have not been consulted provide details of the identified stakeholders. 2. Provide details of community consultation that meets the requirements under section 126C(1)(c)(ii) of the EP Act and section 3.5 of the PRCP Guideline. Ensure details of consultation with all relevant stakeholders in relation to rehabilitation and closure activities and details of each PMLU / NUMA outcome is included in the PRC Plan. 3. Provide details of information provided to the community (i.e., PMLU options analysis for the PMLUs and NUMA including justification) to demonstrate stakeholders contribution to

	regarding the outcomes. Further information demonstrating the landowner and communities understanding of each NUMA and how it will be managed to minimise long-term risks and residual risks is required.	decision-making about rehabilitation and PMLU / NUMA outcomes.
2	<u>Community consultation plan</u> Table 8 of the PRC Plan includes details of the proposed PRCP Community Consultation Plan that identifies the five relevant parties as community members however, no additional stakeholders are included. It is unclear whether all relevant stakeholders have been identified in the plan. Clear objectives of consultation have not been included in the plan. Consultation with the identified landholders is proposed to occur at a frequency of - as required typically at least annually or as part of a PRCP amendment process where there is a material change to PRCP outcomes. The plan is lacking details on how any feedback or complaints will be managed, any monitoring frameworks for measuring if objectives are being met, and how any incidents may be communicated with the community. Further information on commitments made with the stakeholders such as rehabilitation timeframes should be clearly identified and reflected in the PRCP schedule. Sufficient details on how the applicant will undertake ongoing consultation in relation to the rehabilitation to be carried out under the plan has not been included. Ongoing community consultation should continue throughout the stages of the mine life so that progressive rehabilitation and the socio-economic and environmental impacts related to mine closure can be discussed with the community. For example, how progressive rehabilitation will be implemented during the life of mine, rehabilitation methods (landform design, vegetation types, cover systems) and progress on rehabilitation milestones.	1. Provide a consultation plan that meets the requirements under section 126C(1)(c)(iv) of the EP Act and section 3.5 of the PRCP Guideline. 2. Clearly state the purpose and objectives of the consultation plan. 3. Include information on any commitments made with the stakeholders with respect to rehabilitation timeframes.
3	<u>Proposed PMLU: Grazing</u> Section 2.13 of the PRC plan and the proposed PRCP schedule identifies the post-mining land use (PMLU) as grazing however, the PMLU options analysis assessment in section 4.1 identifies the PMLU as low-intensity grazing. The proposed grazing PMLU requires further justification specifically in light of the assessed land use suitability class for the project site and whether the proposed rehabilitation will achieve a sustainable grazing PMLU. The following observations from section 5.4.16 of the Soils Report	Clarify the terminology of PMLU proposed throughout the application (i.e. grazing and low intensity grazing). Consider the land use suitability class identified in Appendix D of the PRC plan and Office of the Queensland Mine Rehabilitation Commissioner (QMRC) publication on Grazing as a post-mining land use and update the PRCP as required.

	(Appendix D of the PRC plan) indicates areas may not be suitable for a sustainable grazing outcome: • <i>Soil samples SPCs 1, 2, 4, is that is suitable for a narrow range of crops or pastures. SPC 1, 2 and 4 covers 1,672ha with land use suitability class identified as 1-3.</i> • <i>SPCs 5, 6 and 8 is land that is suitable for grazing of native pastures, with or without the introduction of pasture species. SPC 5, 6 and 8 covers 311ha with suitability class identified as 4/5.</i> • <i>SPCs 3 and 9 is land that is suitable for light grazing of native pastures in accessible areas. SPC 3 and 9 covers 282ha with suitability class identified as 5.</i> Publication on grazing PMLU available at the Office of the Queensland Mine Rehabilitation Commissioner (QMRC) website²⁰ indicates that land use suitability class 1-3 is considered leading practice for a sustainable grazing PMLU. Class 4 is not suitable for a sustainable grazing PMLU but may be grazed for short periods while Class 5 represents land that unsuitable for grazing use due to its extreme limitations. Further justification on the proposed grazing use in areas that may not represent land suitable for this use is required. Where applicable, alternative land use based on land suitability and capability assessment must be nominated. In addition, it is encouraged to return disturbed land as close as possible to its pre-mining state. In accordance with Appendix D (Soils Report), the pre-mining state is largely consistent with native woodland, that may support opportunistic grazing.	
4	<u>Options analysis (PMLU and NUMAs)</u> Section 4.1 provides an assessment between low intensity grazing and native ecosystems as the two potential suitable PMLU for the project. As stated above, it is noted that the proposed cattle grazing PMLU is not included in this analysis. The PMLU options are based on the likelihood of the PMLU suited for the area, having regard to adjacent landholders who operate large scale cattle grazing operations. The analysis states - <i>The pre-mining land use (and ongoing surrounding land use) is not high</i>	1. Provide an options analysis using a structured approach (such as a multi-criteria analysis) that identifies and compares all feasible PMLU options for the nominated PMLUs and NUMAs with consideration to each criteria specified below: • any regulatory constraints on, or objectives for, the proposed land use (e.g. Indigenous Land Use Agreements, site management plan (contaminated

²⁰ Publication: *Grazing as a post-mining land use. Implications for leading practice (July 2024).* Office of the Queensland Mine Rehabilitation Commissioner. [Grazing as a post-mining land use | Queensland Mine Rehabilitation Commissioner](#)

intensity grazing on improved pasture free from other vegetation. Rather, it is low-intensity grazing where areas of native vegetation grows throughout the grazing areas. With that type of grazing livestock has unfettered access through those areas of native vegetation. As such re-instating a PMLU of low-intensity grazing, similar to pre-mining, does not preclude the co-existence of native vegetation. There are further references to the co-existence of native ecosystem and low intensity grazing consistent with pre-mining land use in the assessment.

It is noted that the application identifies other PMLUs such as forestry, cropping and industrial activities as non-viable options, however it is unclear why PMLU options are limited to low intensity grazing and native ecosystem (with restricted cattle access).

Appendix D (Soils Report) of the PRC plan provides details of current land use being predominantly native woodland, with other current land uses including sparse woodland (two sites) and grazing (three sites), refer to the Table below. It is therefore considered that the pre-mining land use may be more consistent with native vegetation or native ecosystem with opportunistic grazing. It is noted that native ecosystem/vegetation outcome would not necessarily need to preclude cattle access (requiring fencing), however, could accommodate unfettered access of cattle through native vegetation similar to pre-mining use.

Site number	Current land use
C22-C28, C46-C56, C58, C60, C61, C63-C67, C69-C82, C84-C94	Native woodland
C57	Tall, very sparse woodland, steep low rolling hills 13%, simple slope
C59, C68 and C83	Grazing
C62	Native sparse tall woodland consisting of Ironbark

Identified alternative options from Appendix D have not been incorporated in the PRC plan including for areas that are currently proposed as NUMAs.

land), local and regional land use plans, endangered species, or registered heritage places);

- physical constraints (e.g. slopes, voids, geology);
- chemical characteristics (e.g. residual contamination from tailings or other waste disposal);
- available rehabilitation methods, including best practice (e.g. backfill, profile, capping);
- relative costs of each rehabilitation option;
- potential economic benefits of each option for the community or landholder (e.g. tourism, public use, grazing);
- potential environmental benefits of each option; (e.g. create wildlife corridors, revegetation);
- potential social benefits of each option (e.g. recreational use, public amenity, employment);
- compatibility with surrounding land uses (e.g. agriculture, ecosystem);
- the land use before the mining activity commenced; and
- options for retaining/transitioning infrastructure and utilities such as road and rail transport accessibility as well as power, communications and water management systems.

2. Evidence based comparison and justification for each proposed PMLU against alternative options.
3. Identification of any statutory constraints that may need to be imposed to prevent or limit the likelihood of an inappropriate land use in the future.

	In addition, Queensland Government agricultural land use audit data available via AgTrends Spatial website²¹ identifies the project area (part of a broader grazing property) as grazing native vegetation. According to section 3.3 of the PRCP Guideline, a NUMA can only be nominated after PMLU options have been assessed in accordance with criteria specified in section 3.2 of the guideline. A detailed options analysis identifying all alternative option for nominated NUMAs have not been provided.	4. Provide a risk assessment for each option including potential risks, mitigation measures, residual risks and long-term monitoring requirements associated with the selected option (PMLU and NUMAs). 5. Provide information that demonstrates how the preferred option aligns with community consultation and best practice environmental management.
5	<u>Non-use management areas (NUMA)</u> The proposed PRC plan and schedule nominates seven (7) NUMAs which includes three (3) WRDs, three (3) voids, and one (1) TSC. However, sufficient level of information addressing the reasons for nominating NUMAs as outlined in section 3.3 of the PRCP Guideline have not been provided. The provided justification in section 5 of the PRC plan indicates the proposal of NUMAs based on the environmental harm being confined within the relevant resource tenure and public interest consideration. Despite the public interest justification, it is a requirement of section 3.3 of the guideline that information listed under <i>Reason – greater risk of environmental harm</i> be provided to support <i>Reason – public interest</i> and that the risks are localised. A report prepared by an appropriately qualified person that satisfies (a) to (d) <i>Reason—greater risk of environmental harm</i> and (f) to (g) <i>Reason—public interest</i> outlined in section 3.3 of the PRCP Guideline have not been provided. Further, a detailed assessment on each of the public interest considerations outlined in section 316PA required by part (g) of section 3.3 of the guideline is required. In addition, an assessment of the NUMA location options presented in section 5 of the PRC plan concludes that other viable position for NUMAs are unavailable due to constraint of the resource location and existing ML boundaries. Based on the provided mine plans presented in the PRC Plan, the central WRD and TSC are constrained by the ML boundary therefore, it is unclear whether environmental harm could be reasonably confined within the tenure boundaries, particularly considering the central WRDs proximity to Woolgar River.	Provide a report by an AQP that addresses section 3.3 of the PRCP Guideline. This includes but is not limited to points a-d, f-g of the Guideline and a-d of section 316PA(2) of the EP Act. Reason—greater risk of environmental harm <i>If an applicant is seeking approval of a NUMA ... include a report that:</i> a) <i>is prepared by an appropriately qualified person(s)</i> b) <i>identifies ...</i> Reason—public interest <i>This section applies if a NUMA is being proposed because the environmental risks from the area are localised and the applicant considers that it is in the public interest for the land not to be rehabilitated to a stable condition. The rehabilitation planning part of the PRC plan must include, as per section 126C(1)(j) of the EP Act, a report that satisfies (a) to (d) above and must include the following:</i> <i>f) Information demonstrating that any contaminants associated with the NUMA will not cause environmental harm beyond the area of the relevant resource tenure. Examples of offsite impacts include, but are not limited to, airborne contamination/dust, impacts of erosion and sediment runoff on surface waters or seepage of contaminants into groundwater.</i>

²¹ QSpatial: Queensland Government. Department of Primary Industries. [Important agricultural areas - Queensland - Dataset - Open Data Portal | Queensland Government](#)

	Details on the type and extent of environmental harm that is likely to occur and residual risks as a result of NUMAs is required. Information requirements outlined in section 3.3 of the guideline <i>Requirements for a NUMA</i> that includes an analysis of potential environmental harm for each alternative structure location, sensitivity of the surrounding environment of each option and evidence that proposed location will prevent or minimise environmental harm is required. Consider assessment of risks such as structural failure of high risk structures located near sensitive receptors, groundwater contamination or drawdown, hydrological impacts over time, slope failure or wall collapses, safety hazard (adjacent grazing properties), contamination from seepage (potential and actual), erosion and surface runoff, flood inundation and monitoring measures post closure and residual risks remaining post closure.	<i>g) Consideration of each of the public interest considerations outlined in section 316PA of the EP Act.</i> For information, public interest consideration is defined in section 316PA (2) and (3) of the EP Act.
6	<u>Void in flood plains</u> Floodplain modelling for the 0.1% Annual Exceedance Probability (AEP) (Appendix H, Surface Water Report of the PRC plan) required under section 41C of the EP Regulation does not include information requirements outlined in section 3.4 of the PRCP Guideline. This includes (but is not limited to): • Details of the data used to develop the model; • Identification of artificial features and all watercourses (stream order 4 or higher); • Groundwater impacts on floodplain extent, details of model assumptions and justification; • Details of model calibration for each event; and • A sensitivity analysis where calibration have not occurred. In addition, a drainage feature of stream order 4 that is located on the western boundary of ML100236 does not appear to be included in the provided model. <u>Section 3.6.1 flooding</u>	1. Provide a revised floodplain modelling that complies with the requirements of the ARR Guideline²² and consideration to the climate change update (version 4.2) and requirements specified in section 3.4 of the PRCP Guideline: • Details of the data used to develop the model in accordance with section 4.13.3. of the ARR; • Identification of all artificial features proposed or present within the tenure boundary; • Identification of all watercourses within the immediate catchment with the Strahler method of stream ordering applied; • Identification of any approved permanent watercourse diversions within the tenure boundaries and the relevant approval of the diversion; • Consideration of how groundwater may impact the flood plain extent; • A hydrologic model; • A hydraulic model; • Model assumptions and limitations; • Model calibration and sensitivity analysis; and

²² Guideline: (2019) *Australian Rainfall and Runoff: A Guide to Flood Estimation. Version 4.2. Commonwealth of Australia (Geosciences Australia)*. [ARR Guidelines - Australian Rainfall and Runoff](#)

	Section 6.1.2 of the PRC Plan refers to the outcome of the 0.1% floodplain modelling that concludes that majority of the project site is located above the Woolgar River 0.1% AEP flood level. As such, no further flood assessment has been provided. The requirement under section 3.4 and section 41C of the EP Regulation requires specific flood modelling for the purpose to determine if final voids are located within a floodplain and requirement to rehabilitate to a stable condition. The 0.1% event is a rare event and considers specific stream orders and does not consider the influence of other watercourses or drainage features across a broader catchment of the site. Flooding information under section 3.6.1 of the PRCP Guideline requires information regarding the influence of flood flow through the site. Flood modelling is required to determine the influence of flood depth and velocity on the final landform. This includes all waterways and all final landforms. The PRC plan does not provide information on the long-term sustainability of the final landform under a variety of flood events.	• Spatial data outlining the extent of the flood plain. 2. Provide an assessment of flood susceptibility and influence on all mine features of the final landform in accordance with section 3.6.1 of the PRCP Guideline. This includes but is not limited to: • The location of domains in relation to potential flood levels at closure (including artificial features, drainage lines and diversions included in model); • Alteration of flow upstream and downstream; • Model flood levels (including probable maximum flood levels 0.1%, 1% and 2%) for a range of design storm events (including flood depth and velocity); • Peak flood depths and velocities in the final landform (maps); • Develop a flooding risk profile; and • Provide ongoing erosion monitoring requirements, mitigation and management practice to ensure long-term stability of structures inundated or influenced by flooding (if applicable). 3. Provide a revised PRC Plan that includes details of conclusions drawn from flooding assessments and final site design maps depicting floodplain extent for the PRCP schedule. 4. Include further details regarding proposed rehabilitation activities to reduce the risk of impacts to the final landform stability as a result of flooding.
7	<u>GDEs</u> The potential residual impacts of long-term groundwater drawdown on GDEs are unknown. The rehabilitation milestone criteria should address monitoring of GDEs post rehabilitation. Further details and completion criteria are required with regard to GDE monitoring to demonstrate that there is no environmental harm to GDEs being caused by the final landform.	Provide an updated PRC plan and PRCP Schedule that includes details of GDE monitoring methodology and completion criteria.

8	<u>Waste characterisation</u> Section 6.1.3 of the PRC plan references Appendix F (Geochemistry Report) within the PRC plan that is subject to further information request outlined in item 18 above for EAR Appendix A (Geochemistry Report). In addition to a revised report, a revised PRC plan that demonstrates how the sampling regime from this report meets leading practice standards and is capable of generating block models and estimating the volume of mine waste based on waste type.	Provide a revised PRC plan that includes information on waste characterisation as outlined in section 3.6.1 of the PRCP Guideline.
9	<u>Topsoil and capping material</u> It is understood from section 6.1.4 of that PRC plan that all soils except subsoil at sample SPC6 are suitable for use in rehabilitation activities provided topsoils at SPC3, 6 and 9 are ameliorated to reduce sodicity and dispersive attributes. Further information on where the subsoil from SPC6 (23ha) will be used is required. It is noted that 300mm of topsoil is proposed to be completed in RM4(b) while amelioration of topsoil is proposed at a later stage as part of RM5(b) which occurs following seeding. Section 6.1.4 states that sufficient material to cap and rehabilitate all RAs is available on site (topsoil 2,482,266m³ and subsoil 8,787,985m³) however, a materials balance including approximate estimate for capping material volume and topsoil for each mine feature have not been provided. As such, it is unclear to determine if sufficient material to cap and complete rehabilitation activities is present onsite. Information on where deficient material would be sourced from as contingency have not been identified either. Further, although the soils report confirms material suitability for rehabilitation activities, no assessment of material suitability for capping of waste containing structures have been provided.	Provide a revised PRC plan that includes: • Details of activities planned for subsoil from SPC6; • A detailed materials balance including quality and quantity of available material for capping and topsoil for each rehabilitation area; • Identification of material deficiency and source of additional suitable material; • Material suitability assessment for proposed capping layer / cover material for structures; and • A soil assessment demonstrating the relationship with establishing targeted vegetation communities.
10	<u>Cover system</u> Section 6.1.6 of the PRC Plan provides limited information on the proposed cover system for closure of mine waste structures including the three WRDs and a TSC. Further information outlined as per section 3.6.1 of the PRCP Guideline is required. The capping methodology should consider the Global Industry Standard on Tailings Management (GISTM), the International Network for Acid Prevention (INAP), the Global	Provide a revised PRC plan that includes a cover system design appropriate for each waste structure that is designed on a risk-based approach and in alignment with the requirement specified in section 3.6.1 of the PRCP Guideline.

	Cover System Design and technical papers on mine waste cover system published by the QMRC ²³ .	
11	<u>Water management</u> Section 6.1.7 of the PRC plan indicates that - <i>runoff from the rehabilitated areas will have a similar quality to runoff from the natural catchments and no require any ongoing management measures or treatments</i>. It further states that <i>there are no ongoing water management requirements or treatments for the post mining landform</i>. It is unclear how the runoff quality for the final landform is proposed to be similar to the runoff from natural catchment in absence of monitoring post closure. Surface water and groundwater monitoring criteria including monitoring locations (downstream and upstream / reference sites), limits suitable for closure, and appropriate monitoring timeframe to demonstrate that the PMLU is stable and non-polluting is required. In addition, it is unclear how no ongoing water management is proposed given the PRCP schedule includes a permanent diversion drain to divert water around the BVS pit. It is noted that the proposed milestone-criteria for the diversion that is nominated as grazing PMLU does not include milestones otherwise applied to other areas with grazing PMLU. The PMLU for the diversion should be reconsidered to ensure the structure is rehabilitated to pre-mining geomorphologic, hydraulic, hydrologic and ecological components of a local watercourse. Further information on management of water in the proposed residual voids, runoff and seepage from waste containing structures is required. This includes but is not limited to management of runoff (pit inflows), dewatering, pumping between pits, seepage collection drainage. It is unclear whether the management of water from seepage collection and runoff from the WRDs discussed in section 6.1.7 of the PRC plan relates to mine closure. A detailed assessment of water management for the final landform as specified in section 3.6.1 of the PRCP Guideline is required.	1. Provide a revised PRC plan that includes information on water management for the final landform in accordance with section 3.6.1 of the PRCP Guideline. This includes but is not limited to: • A description of the contaminants that pose a risk to environmental values of the receiving environment; • Source, pathway and fate of contaminants that have the potential to impact environmental values; • Infiltration and seepage intervention and collection controls; • Surface water diversions and long-term management requirements; • Dewatering requirements; and • On-going water management and reduction requirements (i.e. treatment). 2. Provide a revised PRCP schedule that includes appropriate milestone-criteria for the rehabilitation of the proposed diversion to a stable PMLU. This includes but is not limited to: • Design and specification by a suitably qualified and experienced person; • Monitoring on the performance of the diversion (i.e., operating as designed and maintains sediment transport regime allowing diversion to be self-sustaining); • Hydraulic characteristics of surface water and groundwater systems; and • Hydraulic characteristics of the diversion being comparable with local watercourses.

²³ Technical papers: Mine waste cover systems; [Mine waste cover systems | Queensland Mine Rehabilitation Commissioner](#).

12	<u>Revegetation</u> Section 6.1.8 of the PRC plan identifies a species list that includes a combination of grazing and riparian species however, justification on whether the selected species mix is appropriate for the nominated PMLU have not been provided. For example, the seed mix for the grazing PMLU specified in Table 23 includes <i>Cenchrus ciliaris</i> (Buffel Grass) which has been identified as a key threatening process under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>. Threat abatement advice relating to Buffel Grass can be found on the Department of Climate Change, Energy, the Environment and Water website - Ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (Cenchrus ciliaris and C. pennisetiformis) - Introduction - DCCEEW. Further, the Queensland Government website has Buffel Grass identified as an environmental weed. Information can be found on Species profile— Cenchrus ciliaris Environment, land and water Queensland Government (des.qld.gov.au). It is recommended that alternative plant species native to Australia such as Acacia, Eucalyptus and Corymbias, shrubs, native grasses and legumes are selected for revegetation at the Project which would provide more benefits to the environment. Information that demonstrates that the requirements of Schedule 8A, Part 3, Table 1 of the EP Reg have been considered should be provided. Additional information on whether the targeted vegetation represents any fauna habitat, analogue sites (based on rehabilitation trials), seed density application rate and seeding timing, location of infrastructure (such as proposed temporary stock fencing) have not been provided. Further information on growth media availability, material suitability and topsoil application depth provided within the PRCP schedule and other supporting document have not been incorporated in section 6.1.8. Furthermore, it is unclear whether the riparian species list presented in Table 23 of the PRC plan represent targeted vegetation similar to the pre-mining land use at the proposed pump station along the Woolgar River. Further details on the targeted vegetation (regional ecosystem) is required.	Provide a revised PRC plan that includes further information including but not limited to: • A revised seed mix including justification for the nominated seed mix and whether it is appropriate to achieve the nominated PMLU; • Identification of fauna habitat and use requirements - where fauna habitat is proposed, a management and monitoring plan to describe how the rehabilitated areas will be utilised by fauna and what other management measures would need to be implemented; • Evidence and justification for any analogue sites of the monitoring plan or those proposed as part of rehabilitation trials; • Identification of adequate seed density application rate and timing of seeding; • Identification of proposed location of infrastructure required to protect revegetation; • Information on growth media suitable to sustain the PMLU and whether this is available on site; • Topsoil depth requirements for revegetation success and sustainable PMLU; and • Demonstrate that criteria specified in Schedule 8A, Table 1 of the EP Reg have been met.
13	<u>Rehabilitation trials</u>	1. Clarify whether rehabilitation trials are proposed.

	Section 8 of the PRC plan indicates that rehabilitation at the northern WRD commencing in project year 3 will be monitored to confirm success of rehabilitation methodology and adjustments made to the methodology to improve success where necessary. It further states that at least 5 years of monitoring data will be available on the success of the proposed revegetation methodology, prior to commencement of rehabilitation of other areas of the mine. The PRC plan, however, does not state if rehabilitation trials are proposed or provide the information on rehabilitation trials specified in section 3.7.1 of the PRCP Guideline. The proposed monitoring of rehabilitation in the initial project years aligns with the concept of rehabilitation trials and therefore, adoption of rehabilitation trials at this site is recommended to measure success of the proposed rehabilitation strategies, identify gaps, improvements throughout the mine life and achieve stable conditions.	2. Pending response to (1) above, provide a revised PRC plan that includes information on rehabilitation trials including: • The objective of the trial(s); • The trial design including, but not limited to, the location, underlying land characteristics and potential issues; • The details of how the trial(s) will be carried out; • When the trial(s) will commence; • The duration of the trial(s); • How the trial(s) will be assessed for success; • How the results of the trial(s) will be incorporated into rehabilitation strategies; • Where the trials have previously been carried out by the applicant; and • How proposed rehabilitation trials align with leading practice such as the mine waste cover systems technical papers published by the QMRC.
14	<u>Tailings storage cell</u> Section 6.2 of the PRC plan refers to information in section 5.1 of the plan, that further refers to a conceptual design Appendix E (TSC and WRD Conceptual Design Report). Appendix E states that the rehabilitation of TSC will involve covering the stored dried tailings with benign capping material (e.g. suitable subsoil) and topsoil and shaping the capped surface to promote runoff and minimise infiltration. The capping material is understood to be a minimum of 1 meter of inert cover material to create a free draining surface, followed by topsoiling and revegetation, as stated in section 2.3.4 of Appendix E. A detailed capping design is stated to be developed at the closure phase of the TSC life cycle. Appendix E provides preliminary seismic and liquefaction assessment based on extrapolated parameters due to the absence of site-specific information with liquefaction susceptibility assessed based on soil characteristics only. It appears that in-situ density of soils below the TSC have not been investigated to eliminate potential triggers for liquefaction. Similarly, the conceptual design assumes the embankment of the TSC is constructed from mine waste. Testing of material to determine whether material is	Provide a revised PRC plan that includes information requirements specified in section 3.6.2 of the PRCP Guideline: • A revised particle size distribution analysis based on conditions in the TSF. Particle size distribution of tailings affects their hydraulic sorting down the tailings beach, and their settling, consolidation and desiccation on atmospheric exposure; • Specific gravity testing of tailings; • The moisture content and dry density profiles with depth of the indicative tailings; • Settling and consolidation testing of the tailings; • Shear strength testing of the indicative tailings, both peak and remoulded shear strengths; • Soil water characteristic curve testing; • Column testing of the tailings to assess their settling, self-weight consolidation and desiccation;

	suitable for the construction of the TSC embankment have not been provided. Information on cover systems outlined in section 3.6.1 of the PRCP Guideline that is requested in item 10 of the PRCP information request above must also be provided for the proposed TSC. Further information specified in section 3.6.2 of the PRCP Guideline for proposed TSC structure is required.	• Design of TSF including information on leak detection systems, seepage collection systems, design storage allowance, spillway location and width; • Capping design including field trials; and • Appropriate rehabilitation milestone-criteria in PRCP schedule.
15	<u>Void closure plan / Final voids</u> Sections 6.3 and 5.2 of the PRC plan provides an overview of the proposed voids and NUMA assessment for BVS, BV1 and BV2 pits, however, a comprehensive assessment of options available to minimise void areas, geotechnical and hydrological assessment requirements specified in section 3.6.3 of the PRCP Guideline have not been provided. Appendix G (Final Void Stability Report) within the PRC Plan includes limited information on the pit geometrics, geotechnical stability assessment and projected water levels. For example, although the geotechnical model in Appendix G extends to slope stability considering weathering, the report does not consider effects of long-term erosion, weathering of the pit walls and the effects of significant hydrological events on void stability. Further, Appendix G indicates that the pit slopes are designed to meet a factor of safety (FoS) 1.2 having regard to the resource location, shallower slope (requiring a larger footprint of pit) and extraction of additional overburden and storage. As such, the design indicates areas of potentially unstable zones for which at least 10 metres of stand-off from the exclusion zone is recommended. Further information on how options available to minimise the void area that may result in FoS of 1.5 and subsequently stable exclusion zones have not been provided. In addition, clarification on whether the conservatism exclusion zone have been accounted for in the void footprint (NUMA) is required. Section 5.2 of the PRC plan identifies the BVS pit as a permanent groundwater sink however, no determination for the satellite pits have been made. It is noted from section 6.2 of the surface water report that the satellite pits BV1 and BV2 are not predicted to support a permanent final void lake as these voids will be subject to periodic filling and drying resulting in a temporary void lake. It is stated that these voids are expected to have temporary saline water due to concentrated salt on pit floor from dry period however, evidence including a water balance for the satellite pits with predicted	1. Provide a void closure plan that includes the following: • Options available for minimising final void area and volume (where a final void is proposed); • Pit wall geotechnical and geochemical stability, considering the effects of long-term erosion and weathering of the pit wall and the effects of significant hydrological events including flooding; • Void hydrology, addressing the long-term water balance and water level in the voids, stratification connections to groundwater resources and potential for overflow; • Groundwater modelling to determine whether the void is acting as a sink or a source for groundwater; • A water balance study including an assessment of void surface and groundwater interactions; • Predicted water quality in the long-term including potential stratification (pH, salinity and metal concentration) for all pits; and • A 3D void design plan. 2. Clarify whether the additional 10m of exclusion zone have been accounted for in the void footprint. 3. Provide justification for the selected EC value to ensure the predicted water quality at the mine voids are suitable and represents a close estimate of water quality at Big Vein pits to assess the potential impact to the receiving environment.

	timeframe for dry periods and water quality (pH, salinity and metal concentration) have not been provided to support the assumptions. The water quality for BVS pit is also limited to salinity, which is based on an assumed electrical conductivity adopted from calibrated water balance model for Ravenswood Gold Mine (section 6.1 of the surface water report). Further information to demonstrate how the adopted value is representative of the predicted conditions at the Big Vein project pits is required. Section 6.2 of the PRC plan further indicates an assumed hydraulic connectivity of seepage loss through pit floors. Further information on the contaminant pathway and interaction between void surface and groundwater to determine whether the pits will pose risk to offsite receptors is required.	4. Provide a detailed assessment on the potential contaminant pathway from satellite pit floors and interaction between void surface and groundwater.
16	<u>Built infrastructure</u> Section 4 and 6.5 of the PRC plan includes limited information on the methods of decommissioning of built infrastructure. Further information including identification and methods of decommissioning for infrastructure including but not limited to power plant, fuel stations, solar farm, processing facilities, accommodation camps, STPs is required. It is not clear if any infrastructure is proposed to be retained by the underlying landholder. Infrastructure (such as buildings, roads, dams, and power lines) may be accepted as part of a PMLU where the relevant landholder has agreed through a signed landholder statement declaring that they will accept responsibility for the infrastructure once mining has ceased. All infrastructure to be retained onsite should be safe, stable and not cause environmental harm. It is further noted that the permanent diversion is proposed to remain in perpetuity after the cessation of mining however, information on any ongoing maintenance and performance of this diversion is not provided. Further information requirements for this diversion is detailed in item 11 of the PRCP information request above.	1. Identify all infrastructure that is proposed to be decommissioned and provide details on its decommissioning methods. 2. Where infrastructure is proposed to be retained as part of the PMLU, a contemporary landholder statement undertaking the responsibility of the relevant infrastructure must be provided.
17	<u>Risk assessment</u> A comprehensive risk assessment that identifies performance measures and constraints for each of the risk and contingency plans identifying additional controls than those listed in section 7 of the PRC plan is required. Further details on the proposed actions, reporting and monitoring, timing and schedule have not been provided.	Provide an updated risk assessment that: • Addresses additional risks associated with environmental, safety, structural stability and achievement of PMLU and NUMA impacts;

	Additional risks resulting in environmental, safety, structural stability and achievement of PMLU and NUMA is required. This includes (but is not limited to): • Safety risk from surface roughness (rockiness, depressions) to human, stock and wildlife; • Downstream water quality impacts due to erosion and sedimentation from rehabilitation areas; • Surface water contamination from building and processing areas; • Hazard for stock and wildlife from presence of noxious weeds and pests; • Failure to establish required surface conditions to achieve nominated PMLU; • Inadequate species density; and • Significant slope failure high risk structures.	• Provide an assessment of identifies performance measures and constraints for each risk identified; • Identify additional contingency controls; • Provide further details on the proposed actions, reporting and monitoring, timing and schedule; and • Identify any assumptions made in analysing risks in the provided assessment.
18	<u>Landform Evolution Modelling (LEM)</u> The LEM provided as Appendix I of the PRC plan requires further justification and revision based on the following observations: • More detailed discussion is required to demonstrate how the nominated erosion threshold of 4m³/ha/yr supports the long-term stability and performance of the landforms and cover systems. • LEM predicts that the armour layer will be incised on all landforms, however, no further information on long-term stability and erodibility of material is provided. It is unclear whether the underlying material may be more erodible than the armour layer, or if erosion rate can be expected to increase once the armour material is exposed (e.g. if moderate-high stability (MHSR) rock is placed under high stability rock (HSR), erosion rate may be up to 5 times greater once the MHSR layer has been exposed, as indicated for the southern WRD in the provided LEM). This risk of exposure of underlying material, encapsulated or suboptimal material and on-site and off-site impacts have not been addressed. If it is expected that the armour will be rendered ineffective, further information such as consideration of alternative slope configuration/geometry of the structures and final landform is required.	1. Provide a revised LEM that includes optimal landform designs targeted to achieve long-term stability of the proposed landforms. 2. Provide further information that addresses comments from adjacent column including: • Information that demonstrates how the nominated erosion threshold supports a stable landform; • Detailed information on material erodibility of proposed armour and underlying material; • Information that demonstrates the risk of gully erosion on the batters; • Revised LEM for entire landform including ramps or drains on the final landform to demonstrate concentrated surface flow will not be an issue of concern; and • Discussion on long-term functionality and stability of drainage structures proposed on WRDs;

	• LEM considers sections of each landform (TSC and 3 WRDs) only. Modelling of entire landform is required to demonstrate that the design does not include/create areas of greater risk (e.g. drainage structures, other areas of flow concentration). • There is no discussion of the how the drainage structures proposed on the WRD's (described in Section 5.3.1 of the PRC Plan as <i>drainage along the outer slope benches to designated rock lined chutes that will convey drainage down the slopes</i> and shown in figure 14 of Appendix I) will be expected to remain functional and stable in a post-closure context. • Growth medium volume requirements presented in Section 7 and Table 7 (<i>assumed thickness of growth medium layer of 150 mm and 200 mm</i>) are not consistent with the 300mm depth discussed in section 4 of Appendix I. The application does not include information on potential material deficit as it is expected that sufficient material will be available on site. • For most modelled areas, only average erosion rates are presented. Peak erosion rates (highest rate at any point on the slope) is required for a complete assessment of risk for all landforms and development of a measurable rehabilitation milestone-criteria. • WRD geometry described in Section 5.3.1 of the PRC plan are not consistent with that modelled in Appendix I (LEM). For example, the angle of repose batters indicated in section 5.3.1 and 5.3.2 is 25% while angle of repose modelled in LEM (section 4) is approximately 57%.	• Clarification on growth media throughout the PRC plan, PRCP schedule and that modelled in LEM; • Average and peak erosion rates predicted for the final landform and incorporate the thresholds in the PRCP schedule; • Clarification on WRD geometry throughout the PRC plan and that modelled in the LEM; • A risk assessment that addresses potential risks associated with compromised cover design, exposure of underlying material, encapsulated or suboptimal material and on-site and off-site impacts; and • Trial methodology to verify the predicted success of the final landform designs. 3. Provide an updated PRC plan and PRCP schedule that includes cover design and vegetation cover milestone criteria that are informed by the findings and recommendations of the erosion assessment and material characterisation studies to ensure that the final landform will be erosionally stable.
19	<u>Monitoring and maintenance</u> Section 9.1.3 of the PRC plan states that <i>monitoring reference sites will be chosen to be appropriate analogues to the areas being monitored and on-the-ground assessments will be required to select the most appropriate locations. The location of reference sites will be determined during monitoring works ...</i> Section 9.1.6 further indicates that a Rehabilitation Monitoring Program (RMP) will be developed and implemented for the project site which will include monitoring of rehabilitation areas (broken down into management units) and reference sites and will collect the information required to comply with the rehabilitation completion criteria.	1. Provide a revised PRC plan that includes information on monitoring and maintenance in accordance with section 3.8 of the PRCP Guideline. • Schedule of monitoring, reporting and review for each milestone; • Description of methodologies and standards, which could include field-based assessments and the application of new remote sensing, GIS and other relevant emerging technologies;

	Addition information requirements outlined in section 3.8 of the PRCP Guideline is required to demonstrate proposed milestone criteria can be achieved. In addition, monitoring of the residual void water quality is not included in the monitoring and maintenance program. The residual void water quality should be monitored as the monitoring results will be required to demonstrate that the proposed NUMA is not causing environmental harm. As raised in other items of the information request, CoC (contaminants of concern) have not been sufficiently identified or addressed in developing groundwater and surface water monitoring parameters. In addition to that work, water quality indicators based on the CoC should be developed and monitored for the residual voids. SMART criteria should be developed for the PRCP Schedule to ensure monitoring undertaken at sufficient intervals demonstrates that the NUMA is non-polluting.	• Monitoring that enables the repeatable collection of relevant statistically valid data; • Monitoring using appropriate quality assurance and data management processes and systems; • Regular analysis of site data including multi-year comparison trends and benchmarking against analogue/reference sites; • Contingency strategies if monitoring data indicates milestone criteria are not being met; • Post-closure monitoring to ensure milestone criteria has been demonstrated; and • Intent of monitoring reports, such as provision of results and key findings. 2. Provide a revised PRC plan and PRCP schedule that includes: • A list of water quality indicators (based on CoC) to be monitored in the residual voids; and • A monitoring program that specifies the frequency of water quality monitoring at sufficient intervals to be able to gather data to demonstrate that NUMA is not causing environmental harm.
20	Section 11 of the PRC Plan makes reference to a report prepared by (KCB 2024) however, a copy of this report have not been provided for assessment. It is noted that the only reference to the KCB report is made in the Landform Evolution Modelling for TSC and WRD landforms. It is unclear whether the report includes information relevant to the assessment of the PRCP schedule or a reference for data input in the LEM. <i>KCB (2024). TSC & WRD Concept Design Report. Ref: DX70102A01. Klohn Crippen Berger Australia Pty Ltd.</i>	Provide a copy of the referenced KCB 2024 report (or updated version if relevant).

PRCP Schedule		
21	Not all criteria proposed in the schedule meet SMART principles. It is considered that in some instances, further criteria require development to ensure each necessary aspect of rehabilitation is addressed by a criteria. This includes revision of criteria including but not limited to: • RM1 – the inclusion of removal of waste, machinery and equipment; • RM1 – inclusion of decommissioning and removal of all processing plant; • RM1 – new milestone (RM2) for ‘contaminated land investigation and remediation’, inclusion of hazardous material and removal of wording “if required” for the contaminated land investigation; • RM2 – inclusion of desilting / removal of liner associated with structures such as heap leach pond and TSC stormwater pond; • RM4 – sampling of topsoils (to determine suitability and/or need for amelioration) needs to be completed by an AQP; • RM4 – specific details relating to the proposed ripping to compacted surface (depth) is required; • MM1 – inclusion of topsoil depth; • MM1 / MM3 – inclusion of specific capping criteria including capping material characteristics and specification of geotechnical criteria (maximum slope embankments, vertical height, FoS); • RM6 / RM7 / MM6 – inclusion of weed criteria. Ensure criteria relating to measuring plant pest species within the rehabilitation areas are in accordance with the QMRC’s published recommendations regarding best practice methods for grazing as a PMLU (see: Grazing as a post-mining land use Queensland Mine Rehabilitation Commissioner (qmrc.qld.gov.au)). Monitoring and modelling of rehabilitation should show that the pasture yields are sufficient for grazing and are predicted to remain so throughout the year.	1. Provide an updated PRCP schedule and where appropriate PRC plan that includes SMART milestone criteria, including but not limited to, the following: • SMART infrastructure (including dam) decommissioning criteria; • SMART contaminated land criteria; • SMART surface preparation criteria; • SMART revegetation criteria; • SMART soil criteria; • SMART capping criteria; • SMART geotechnical criteria; and • SMART weed criteria. 2. Demonstrate consideration and application of the QMRC guidance.
22	<u>Area available for rehabilitation: satellite pits</u>	Provide justification for the delayed rehabilitation and improvement milestones applied to the satellite pits.

	The PRC plan indicates that the satellite pits BV1 and BV2 will be mined in projects initial years 1 and 2 after which the main BVS pit will be operational. As such, the satellite pits will only remain a contingency / additional buffer for mine affected water storage as required, refer to section 4.3.3 of the surface water report. Mine affected water is otherwise proposed to be stored in a designated structure, the MWD. Justification for the selected date available to commence improvement of the satellite pits along with the BVS pit in IA2 of the schedule is required.	
23	It appears that prior rehabilitation milestones are repeated as the rehabilitation area progresses to the next milestone. For example, RM2 in RA1 that is proposed to be completed by 9/12/2038 is repeated when the next milestone (RM3) is available for commencement. RM2 is repeated until 10/12/2042. This applies to all milestones in RA1, RA2, RA4, RA5, IA1, IA2 and IA3. In addition, IA3 has a total rehabilitation area of 344 ha however, the PRCP schedule includes rehabilitation in both cumulative areas (222.1 ha) and collective rehabilitation of 344 ha over different timeframes. IA3 require clarification as it is unclear why 344 ha of WRDs are applied to recommence improvement in 10/12/2037 following completion of MM1 and MM2 over approximately 222.1 ha of WRDs cumulatively. Timeframes associated with the cumulative areas require further clarification. Where timeframes are not progressive due to WRDs available at different stages of mine life, it is practical to separate the individual WRD into its specific RA/IA.	1. Provide a revised PRCP schedule with rehabilitation / improvement milestones applied to each RA / IA in a progressive manner. 2. Clarify the rehabilitation area applied on IA3 ensuring the cumulative areas equate to identified total area of the relevant activity. 3. If applicable, separate the improvement areas for WRDs depending on when each WRD becomes available for rehabilitation / improvement.
24	<u>Timeframe to achieve stable condition</u> The PRCP schedule proposes variable completion timeframes for seeding, achieving surface requirements and stable conditions. It is unclear how the timeframes for achievement of each milestone for the same rehabilitation methodology applied to different RAs have differing timeframes. For example, RA1 includes a 5 year timeframe to achieve stable conditions following completion of RM5 (revegetation), RA2 includes 1 year timeframe for the same purpose, RA4 includes 2 year timeframe, and RA5 includes 1 year timeframe.	Provide a revised PRCP schedule allocating sufficient time to complete and establish the targeted vegetation, groundcover and a PMLU to stable conditions. Provide justification for the proposed timeframes.
25	<u>Drainage diversion</u> The rehabilitation milestone-criteria proposed for RA3 associated with the diversion is limited to an advanced milestone for assessment of stability in accordance with the RPEQ design plan. As outlined in item 11 of the PRCP information request, the	1. Clarify the proposed PMLU for RA3. 2. If grazing, provide rehabilitation milestone to complete rehabilitation to a grazing standard demonstrating the

	nominated PMLU of grazing for the diversion is not appropriate for the purpose of the permanent diversion. The diversion is indicated to remain in perpetuity to convey flood water around the BVS pit, which is a proposed residual void. As such, it is unclear how the diversion would be available for grazing purpose.	diversion will be available for cattle grazing and remain stable under grazing conditions 3. Alternatively, provide an updated PRCP schedule with a revised PMLU suited to the purpose of the diversion in alignment with the information requirements specified in item 11 of the PRCP information request.
26	<u>Cleared areas</u> RA5 of the proposed PRCP schedule references the relevant activities as cleared areas. It is noted from Table 11 within the PRC plan that that the cleared areas will be required for the life of the mine however, justification on activities / mine features this area includes and the delay in rehabilitation have not been provided. In addition, clarification on whether the sediment control structures including sediment traps, sumps, settling ponds and sediment dams have been included in the PRCP schedule is required.	1. Clarify the activities included within the footprint for cleared areas. 2. Provide justification for the selected date area becomes available for rehabilitation. 3. Clarify where identified sediment control structures are included in the PRCP schedule.
27	<u>Water quality monitoring criteria</u> The water quality monitoring criteria in proposed RM7 is considered inappropriate to demonstrate that the final landform has achieve a stable and non-polluting condition. The proposed criteria references monitoring from operational and up to rehabilitation establishment. Monitoring of final landform post closure is not proposed. For water quality criteria to meet the SMART principles, the locations, frequency, quality characteristics and limits and required to be specified in the Schedule. This is applicable to both surface water and groundwater criteria. The purpose of the water quality criteria is to demonstrate that the land surface has achieved surface requirements and is non-polluting. Therefore, robust water quality monitoring should be undertaken over the short/medium term to confirm there are no effects from the land surface run-off on the receiving environment surface water and groundwater to provide a level of confidence in the future.	Provide an updated PRCP Schedule to include groundwater and receiving water quality criteria including monitoring locations, quality characteristics, limits and frequency of monitoring that is appropriate for closure.
28	<u>Erosion criteria</u>	Provide an updated PRCP Schedule to include SMART erosion criteria.

	The proposed PRCP schedule does not include a milestone criteria for the monitoring of soil loss (rate). A robust erosion criteria to demonstrate that land is stable and non-polluting including average and peak erosion rates is required.	
29	<u>Vegetation criteria</u> RM5 refers to the revegetation species list from 6.1.8 of the PRC plan however, seeding rates and density application rates have not been stipulated.	Provide an updated PRCP Schedule to provide vegetation species and seeding rates required to achieve the nominated PMLU.
30	<u>Groundwater dependent ecosystems criteria</u> Completion criteria are required with regards to groundwater dependent ecosystems to demonstrate that there is no environmental harm being caused by the final landform.	Provide an updated PRCP Schedule to include SMART criteria regarding groundwater dependent ecosystems.
31	<u>Groundcover</u> RM6 refers to obtaining an average groundcover of greater than 50% or is greater than grazed reference site (currently unknown). QMRC guidance recommends maintaining at least 70% groundcover to prevent erosion which should be assessed by well-defined monitoring methods.	Demonstrate that the average total groundcover proposed in RM6 aligns with the recommendations detailed within the QMRC guidance.
32	<u>Landform criteria</u> It is unclear whether the criteria for the landform design in RM3, MM1, MM2 and MM3 (for example geometry of structures such as slopes, angle of repose, embankment slopes etc) are proposed to be constructed in accordance with the recommendations of site-specific erosion assessment (LEM). A specific landform criteria that demonstrates that the landform is stable and suitable for the PMLU is required.	Provide an updated PRCP Schedule which includes SMART landform criteria in accordance with recommendations from a site-specific erosion assessment.
33	<u>Achievement of grazing PMLU</u> As identified in item 3 of the PRCP information request, some areas within the proposed grazing PMLU includes land suitability of ≥ 4 which may not be supportive of the proposed grazing PMLU. In addition, a suitability assessment for the mined lands ability to sustain other PMLU have not been conducted. For further details, see Agricultural Land Evaluation in Queensland (Second Edition) guideline. Considering the above, it is unclear:	Provide a revised PRC plan and PRCP schedule to include a rehabilitation methodology and criteria that ensure the rehabilitated land will achieve land suitability class of ≤ 3 as per the Agricultural Land Evaluation in Queensland (Second Edition) guideline and therefore be able to sustain the proposed grazing PMLU in the long term. Or Propose an alternative PMLU that is likely to achieve long-term sustainability of the rehabilitated area. Provide an updated PRC plan

	(a) Why an alternative land outcome such as native ecosystem, woodland, native vegetation, woodland vegetation, native grassland have not been considered; and (b) How the proposed unsuitable land classes will sustainably support the proposed PMLU of grazing.	and schedule which include rehabilitation methodology and SMART criteria (e.g. BioCondition Framework) for the alternative use.
34	<u>Achievement of sufficient improvement (IA2 - final voids)</u> MM8 does not include surface and groundwater quality monitoring criteria for the final void. Water quality results from the monitoring of the void lake and surrounding groundwater will be required to demonstrate that the proposed NUMA is not causing environmental harm.	Provide an updated PRCP Schedule which includes void surface water and ground water quality criteria and ensure it aligns with SMART principles.
35	<u>Achievement of sufficient improvement (IA1, IA2 and IA3)</u> Additional criteria are required to ensure the stability of the proposed NUMA with consideration of potential flooding.	Provide an updated PRCP Schedule which includes flood protection criteria and ensure it aligns with SMART principles.
36	<u>Inconsistent total disturbance area</u> The maximum disturbance footprint identified in the spatial file (layer: life of mine disturbance) is 1,340.599 ha. however, the total area of rehabilitation and NUMA in the PRCP schedule equate to 1,317.60 ha. The EAR indicates the total life of mine disturbance as approximately 1,341 ha which appears to be consistent with the spatial file. In addition, a footprint of all individual features included in RA1 to RA5 is required.	1. Provide an updated PRC plan, spatial files and schedule as necessary to remove inconsistency in disturbance areas. 2. Provide the footprint of individual features included within each RA in a table format.

Please note: the approval sought for under the application subject to this Notice, only provides approval under the *Environmental Protection Act 1994* (the EP Act). The information provided in the application indicates several other approvals may be required in order to lawfully operate. This includes (but is not limited to):

- Water licenses of permits: if the project involves taking or interfering with water from a river, stream or underground source you may need a water licence or water permit under the *Water Act 2000*;
- Riverine protection permit: if the project involves removing vegetation, excavating or placing fill in a watercourse, a riverine protection permit may be required under the *Water Act 2000*;
- Cultural heritage approvals: if the project is near areas of cultural significance, such as Aboriginal or Torres Strait Islander cultural heritage sites, compliance with the *Aboriginal Cultural Heritage Act 2003* and/or the *Torres Strait Islander Cultural Heritage Act 2003* is required. For more information on your obligations under this legislation, please visit the Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism webpage at, <https://www.tatsipca.qld.gov.au/>.
- Environmental offsets: if the project has significant residual impacts on MSES, an environmental offset may be required under the *Environmental Offsets Act 2014*.
- Commonwealth approval: if the project has potential impacts on MNES, approval under the *Environment Protection and Biodiversity Conservation Act 1999* may be required.

It is recommended that engagement with the relevant administering authorities commence as soon as possible to minimise potential project delays.

In addition, please be aware your application may be subject to the following process:

Public interest evaluation (PIE): In exceptional cases, where an area of disturbance cannot be rehabilitated to a stable condition, a non-use management area (NUMA) may be proposed. An applicant may seek approval to leave a NUMA only if grounds exist under section 126D(2) of the EP Act. As part of the assessment process for your application, the department must engage an independent qualified entity (QE) to carry out a public interest evaluation and provide a recommendation as to whether the proposed NUMA is in the public interest. As part of this evaluation, the QE will review and verify the justification provided for the NUMA in the application. The QE will also consider any relevant information contained in the economic, environmental and social impact assessments undertaken as part of the EA application and may request supplementary information from you as required.

It is important to note that, as the applicant, you will be required to reimburse the department for the cost of the PIE. The Department will provide you with an estimate of the cost before engaging the QE. The length of time that it will take for the QE to complete a PIE will be determined by factors such as the number and type of NUMA proposed. The Department cannot make a decision on your application until the PIE report is received. If the PIE report concludes that it is not in the public interest to approve the proposed NUMA, the department cannot approve your application. When the PIE is completed you (and any submitters for your application) will be notified and provided with an opportunity to request a review of the original PIE report (if grounds exist).