

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 proposed PRC plan.

To: MMG Dugald River Pty Ltd
Level 23, 28 Freshwater Place
SOUTHBANK VIC 3006

Email: gemma.green@mmg.com

ATTN: Gemma Green

Your reference: EPML00731213
Our reference: 101/0008757

Further information is required to assess an application for a PRCP schedule

1. Application details

The application for a proposed rehabilitation and closure plan (PRC plan), made by MMG Dugald River Pty Ltd, was received by the administering authority on 26 February 2021.

The application reference number is: EPML00731213.

Land description: Mineral Development license (MDL) 79; Mining Lease (ML) 2467; ML2468; ML2469; ML2470; ML2471; ML2477; ML2478; ML2479; ML2480; ML2481; ML2482; ML2496; ML2497; ML2498; ML2499; ML2500; ML2501; ML2502; ML2556; ML2557; ML2558; ML2559; ML2596; ML2599; ML2601; ML2638; ML2684; ML2685; ML7496; ML90047; ML90049; ML90050; ML90051; ML90211; ML90212; ML90213; ML90218; ML90220; ML90230; ML90231, and ML90237.

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 requested is specified in Attachment 1 to this notice.

3. Actions

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.

A response to the information requested must be provided by **30 June 2022** (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 Minerals Business Centre on the telephone number or email address listed below.



Signature

Chris Wake
Department of Environment and Science
Delegate of the administering authority
Environmental Protection Act 1994

15/11/2021

Date

Enquiries:
Minerals Business Centre
PO Box 7230, Cairns QLD 4870
Phone: (07) 4222 5352
Email: ESCairns@des.qld.gov.au

Attachments

Attachment 1: Additional information requested for proposed PRC plan – Dugald River Mine

Attachment 1: Additional information requested for proposed PRC plan – Dugald River Mine

Item #	Relevant section (proposed PRC plan)	Matter	Information Request
General			
1	All sections	MMG Dugald River Pty Ltd (MMG) submitted an amendment application on 1 October 2021, which is currently under assessment. If approved the amendment will change multiple areas of disturbance and in particular will increase the area of the NAF Waste Rock Dump.	Following any approvals from the current amendment application, all aspects of the PRC plan, spatial data, and PRCP Schedule must be updated where relevant to reflect the new areas of disturbance.
2	All sections	Section 126C and 126D of the <i>Environmental Protection Act 1994</i> (the EP Act) requires the PRC plan and PRCP Schedule to include all tenures. Mineral Development Licence (MDL) 79 is listed as a current tenure on the environmental authority (EA) although no details have been provided on the activities and disturbance undertaken on this tenure.	Provide additional information about the activities and disturbance on MDL 79 and where necessary, incorporate into PRCP schedule and spatial data.
3	Various	Across the PRCP Schedule and the planning part of the PRC plan there are inconsistencies with data used. This includes: - In section 3.6.1.6, the TSF cover option 1 has a capillary break layer of 0.4m thick and topsoil of 0.1m thick. However, Table 52 in section 3.6.6.7 suggests that the capillary break layer will be 0.3m and the topsoil layer will be 0.1m; and - Rehabilitation Area 8 (RA8) in the PRCP Schedule suggests that the TSF area is 44ha, however, section 3.1.5.3 Table 24 of the PRC	Clarify the numbers provided and update all sections of the PRC plan and PRCP Schedule to ensure that numbers are consistent.

		plan lists the area as 44.1ha. Appendix A Table 68 also refers to an area of 44.1ha.	
Rehabilitation Planning Part			
General			
4	Section 3.6.1.2 (c) and Appendix F	Section 3.6.1.2 (c) states that the proposed spillway design is suitable to safely convey design events up to and including the probable maximum flood (PMF). However, Appendix F states that peak flood flow velocity of water down the tailings storage facility (TSF) spillway channel is predicted to reach 6.2 m/s and that alterations to the spillway design is required to ensure a stable condition is achieved.	Provide further detail regarding how the TSF spillway will be designed to ensure a stable condition is achieved. Provide criteria in the rehabilitation milestones that reflect the design features (e.g. erosional velocity dampeners/rock diameter size) necessary to achieve a stable condition.
5	Section 3.6.1.3	This section provides information about the current soil and non-acid forming (NAF) material available on site and tables 38 and 39 provide estimated quantities to achieve the cover design. Subsection (f) notes that the soil balance is in deficit and section 3.6.1.6 states that borrow material assessments should be done closer to the date of closure. However, to implement the proposed rehabilitation strategy and achieve a stable condition there must be sufficient material for each layer of the two proposed cover system options. Hence the PRCP guideline requires this information in accordance with section 3.6.1 <i>Soil and Capping Material Assessment and Landform Design</i> .	In accordance with section 3.6.1 – Soil and capping material assessment, provide: - the quality and quantity of available resources (such as topsoil, clay material and competent rock) required to complete the target rehabilitation methodology including the ability to achieve the required landform design outcomes, and - the location and accessibility of all cover material required to implement the proposed cover design options.
6	Section 3.6.1.6, 3.6.1.8 & 3.6.6.7	It is unclear how the species selected for revegetation of the TSF are suitable for the proposed cover system and information is not provided regarding how vegetation will be managed to facilitate removal of infiltration and prevent compromising the low permeability layer. Completion criteria relating to the minimum vegetation	Provide further information regarding the rehabilitation strategy for the TSF including justification for the species selected having consideration for needing to maintain the integrity of the cover system and minimum vegetation cover requirements to ensure

		cover required to remove water from the infiltration storage layer (ISL) layer is also not provided.	moisture is removed from the ISL layer to prevent infiltration.
7	Section 3.6.1.7 and Table 54	Section 3.6.1.7 states that the risk of acid mine drainage (AMD) conditions developing in the potentially acid forming (PAF) waste rock dump (WRD) during operations is low. However, page 34 of Appendix G states a high level of management will be required to minimise the risk of acid rock drainage (ARD) generation if PAF material is brought to the surface. This is supported by section 3.6.1.4 which acknowledges that the tailings have such high magnitude of sulphides that acid generation will exceed neutralisation when exposed to atmospheric conditions. Hence there is a risk that WRD and tailings material may be undergoing oxidation when used to backfill the underground workings. This risk is not recognised in the risk assessment and information regarding how the PAF WRD will be managed to minimise the risk of oxidation and minimise the risk of groundwater contamination is not provided.	Provide detailed information regarding how PAF stockpiles will be managed to prevent oxidation to minimise the risk of groundwater contamination caused by backfilling of oxidising PAF material.
8	Sections 3.6.1.5, 3.6.6.7 & 3.8.5	The landform design part of section 3.6.1 of the PRCP guideline requires monitoring to determine performance of measures implemented to control environmental impacts. Section 3.6.1.5 of the proposed PRCP application provides information on the landform design and section 3.6.6.7 states that the rehabilitation goal of the TSF is to be safe, stable and non-polluting. However, the PRCP application does not detail proposed detection methods or monitoring of seepage that may occur at the toe of each of the embankments or elsewhere on the mining tenures.	Provide additional information relating to the post closure monitoring program to determine whether milestone criteria and rehabilitation goals for the TSF have been achieved.
9	Figure 17 and section 3.1.4.1	Figure 17 provides a final landform visualisation of the TSF after closure. It is noted that there appears to be embankments designed for the eastern side and northern	Provide information regarding the embankments on the eastern side and northern end of the TSF that meets the requirements of the PRCP

		end of the TSF. Section 3.1.4.1 describes these as the eastern decant access embankment and the northern discharge bunds. There is no information regarding the design and function of these structures and how seepage from these structures will be managed.	guideline including how they will achieve a stable condition.
10	Section 3.6.1.6	This section describes two proposed cover systems that will be trialled on site. However, neither option appears to include a working layer or the potential for a thicker ISL to be required to reduce the risk of infiltration.	Provide additional information demonstrating how either of these options reflects best practice for acidic tailings cover systems having regard to the international network for acid prevention (INAP) Global Acid Rock Drainage (GARD) Guide and the INAP Global Cover System Design.
11			Provide justification for the absence of a working layer or the investigation of ISL layer thickness.
12	Section 3.6.6.7 and Table 52	This section describes the rehabilitation strategy for the TSF. It reflects only one cover system, however other sections of the PRC plan indicate that two cover systems are being trialled to determine the most likely to achieve a stable condition. Furthermore, this section does not include the results of the hydraulic modelling undertaken and consequential changes that will need to be incorporated to achieve a stable condition.	Provide further information regarding the selected rehabilitation strategy proposed for the TSF having regard to the INAP Global Acid Rock Drainage Guide and the INAP Global Cover System Design. Provide information demonstrating the two cover design options being considered reflect best practice.
13			Provide updated information regarding the design of the TSF spillway following the hydraulic modelling results and how the landform will achieve a stable condition.

Revegetation			
14	Section 3.5.1	Specific ecosystems have not been considered in the objectives and specific details of habitat requirements for fauna are not considered.	Provide further information on which specific regional ecosystems are being considered in the relevant objectives.
15		Reference sites have been proposed, however their attributes have not been measured nor discussed.	Provide details of the habitat requirements of the fauna referred to, and the use of revegetation by fauna.
16		There is a lack of detail on site preparation, seed mixes used and management of plants to ensure success.	Reference sites need to have their attributes measured and discussed.
17			Provide details on site preparation for all areas regarding profiles, depth, sources of materials etc.
18			Provide details on seed mixes, sources, and how germinating plants and young growing plants will be managed and protected.
19			Further information is required regarding soil/growth medium profiles including depths and how they will be prepared. References to achieving post mine land uses and achievement of milestones with techniques used for specific areas are required.
20	Section 3.8.1, 3.8.7	Whilst analogue sites, and example calculations to determine compliance, have been provided, it is not clear which methods will be used to collect data from reference sites or rehabilitation areas (e.g. quadrats, or transects etc).	Provide further detail on how data from analogue sites will be captured
Risk Assessment			
21	Table 54 – Risk Assessment	The planning part of the PRC plan describes the use of NAF material in rehabilitation activities. However, no information is provided regarding the sampling that will be undertaken to classify the material and inform accurate	Provide information regarding the sampling regime used to determine PAF/NAF material on site and how material is selectively handled to

		selective handling of PAF/NAF material. Table 54 does not recognise the risk of PAF/NAF material being mixed and the potential for PAF material to be incorporated into NAF material and used in rehabilitation activities.	ensure PAF material is not accidentally incorporated into NAF material.
22	Section 3.7.4	This section provides the risk treatment plan and, in some cases, appears to rely on the estimated rehabilitation cost (ERC) to mitigate consequences should the risk be realised. The ERC is also noted as a resource to address the risk, a performance measure and for monitoring and reporting. In some instances, the control measures proposed in the risk treatment plan to reduce the residual risk are standard operational risk treatment measures that are not included in the risk assessment. For example, the control measures for risks 13-17 include establishing design, appropriately qualified person (AQP) certification and survey control. QA/QC is also basic operational risk treatment method but is listed in the treatment plan suggesting it will be implemented if needed to treat the residual risk. In some instances, proposed risk treatments are unlikely to alter the risk profile (e.g. the treatment for risk 36 includes developing a rehab vision, landform design and monitoring) and no remedial actions to achieve the post-mine land use (PMLU) are proposed. The risk treatment plan is to provide remedial actions that will be undertaken should operational risk mitigation measures fail to prevent the risk occurring and is not related to the ERC. Some remedial measures are included in Tables 59 – 66 as contingency strategies.	Provide a risk treatment plan that includes remedial measures that will be undertaken should standard operational risk mitigation measures fail to prevent the risk occurring.
23	Section 3.7.5	It is noted that trials are intended to be undertaken to test the effectiveness of the proposed cover systems. However, there is no information demonstrating that either	Ensure the trial includes at least one cover design that reflects best practice and provide a

		of these proposed cover systems reflects best practice. Section 3.7 of the PRCP guideline states the information required when trials are proposed. Section 3.7.5 provides limited detail regarding the TSF cover design trial. It is noted the objective in section 3.7.5.1 is to assess the effectiveness but there are no criteria provided to determine how effectiveness will be determined (i.e., infiltration rate, prevention of capillary rise, ability to sustain vegetation without compromising design criteria). Section 3.7.5.2 states sensors will be installed at discrete intervals but there is no information regarding what the sensors will be measuring or how often the data will be collected. Section 3.7.5.3 states the trial will likely run for a minimum period of 18-24 months. However, this is not a sufficient period for vegetation to establish and determine whether the thickness of the ISL is appropriate for the proposed vegetation type. Further, the INAP Global Cover System Design recommends at least 3-5 years of field trials acknowledging cover materials evolve after placement.	detailed cover design trial that follows the INAP Global Cover System Design.
Spatial			
24	Spatial data	According to satellite imagery there appears to be multiple areas that have been disturbed, however these areas are located in the “undisturbed” category of the spatial data. It is noted that there are no landholder agreements to take on responsibility of infrastructure. The PRC Plan also refers to exploration areas that have been rehabilitated, however the location of these areas is not clear. The areas that appear to have been disturbed are: - Immediately north of the access road into site, east of the office and administration area. The disturbance includes a cleared area possibly for car parking. There is also some disturbance,	Clarification is required for the identified areas, which have not been included as disturbance in the spatial data. Provide details and locations of rehabilitation previously undertaken for exploration areas.

		including a small building, to the south of this area, directly east of the core yard; - To the south and adjacent to the north decline to the west of the ROM haul road, there appears to be a cleared area and buildings present; - To the west of the workshop, vehicle maintenance area there appears to be three buildings and a road; - There appears to be a road that links the core yard and the sewage treatment plant (STP) dams; and - In many locations, largely south of the main operational area, there appears to be exploration disturbance.	
Water Management			
25	Rehabilitation Milestone (RM8)	The targets for groundwater quality are based on EA conditions and refer to a range between ANZECC or reference, whichever is higher. There is no identification of what reference sites might apply to these targets and there is insufficient detail on what the end point for rehabilitation in relation to groundwater quality might be. All environmental values appear not to have been considered. Additionally, some parameters are elevated and appear to have been trending upwards. Data from impacted bores cannot be used to determine completion criteria. Similar issues for surface water have been identified. Reference sites have not been listed, nor do all environmental values appear to have been considered.	Provide completion criteria for groundwater and surface water quality that are specific and measurable, and protect all environmental values of groundwater.

26	RM8	Groundwater milestones are only stipulated for MB2 and MB4 that are limited to the mine operational area. No bores or milestone criteria have been included for the TSF area. The underlying geology of the TSF is reported to be low to moderate permeability. MB9 has been reported to respond to rainfall, however it is suggested that the surface water enters the bore as a result of poor construction. No other supporting information has been provided. Conceptual modelling has only been provided for site context pre-mining. No conceptual or numerical modelling has been conducted to inform the hydrological processes that would occur post-closure. The Dugald River Mine Groundwater Monitoring Program (BDH 2014) identifies that “Groundwater travels primarily within fracture zones within the basement metasediment rocks, which include the Knapdale Quartzite and calcareous silicates associated with the Mount Roseby Schist. These fracture zones occur predominantly within 30m of surface.” There has been no assessment provided of whether these fractures exist beneath the TSF and whether seepage from the TSF could enter the fracture zones and travel away from the TSF in these fractures.	Provide appropriate bores and groundwater quality milestone criteria for the TSF area that protect all environmental values of groundwater and are specific and measurable.
27	RM8	Surface water monitoring locations are only listed as DR-18 and DR-22, which is not adequate to pick up on potential contaminants from all disturbed areas, including the TSF.	Provide appropriate surface water monitoring sites that are capable of identifying contamination from all disturbed areas.
28	Groundwater Modelling (s3.1.4.1)	Conceptual modelling has only been provided for site context pre-mining. No conceptual or numerical modelling	Provide conceptual and numerical modelling to enable analytical assessment of the hydrological evolution within the underground workings post

		has been conducted to inform the hydrological processes that would occur post-closure. The BDH 2014 groundwater monitoring program identifies that “Groundwater travels primarily within fracture zones within the basement metasediment rocks, which include the Knapdale Quartzite and calcareous silicates associated with the Mount Roseby Schist. These fracture zones occur predominantly within 30m of surface.” No assessment provided of whether these fractures exist beneath the TSF and whether seepage from the TSF could enter the fracture zones and travel away from the TSF in these fractures.	closure. The conceptual modelling should consider the PAF material being placed underground, and should include the TSF to specify the expected movement of groundwater (and potential seepage) beneath and in proximity to the TSF.
29	Receiving waters monitoring (s3.8.4.1)	No assessment of current surface water quality and how the proposed objectives for surface water quality (RM8) will potentially impact environmental values has been provided. There is also no reference to the downstream environments, including from the TSF. The endangered Red River Gum regional ecosystem is located downstream, though has not been considered.	Provide further information on the downstream aquatic communities present in the receiving environment, including the location of downstream waterholes and permanent waters. Consider the vulnerability of any aquatic and riparian communities to water quality impacts resulting from the rehabilitation activities and post-mining landform.
Monitoring and Maintenance			
30	Section 3.8.8	The cover design part of section 3.6.1 of the PRCP guideline requires information about identification and specification of the objectives of the cover system, construction methodology and proposed QA/QC for the construction of the cover system. The PRCP application does not provide specific objectives that the cover design is designed to meet. Section 3.6.1.4 states that “the tailings would be likely to re-acidify to a pH of <4 and continue to generate leachate with elevated sulphate for	Provide information about the specific performance objectives of the cover system required to achieve a stable condition.
31			Provide design specifications for each of the layers proposed for the each of the cover options.
32			Provide detail regarding proposed QA/QC sampling and testing rates to ensure each layer

		a number of decades". To achieve a non-polluting condition, infiltration rates will need to be minimised. The application does not provide infiltration rates the cover is designed to achieve or the level of compaction for the reduced permeability layer. RM4 includes the criteria that an AQP certifies the cover layers have been constructed according to design. However, there is no inspection and testing plan provided demonstrating an appropriate level of testing will be undertaken to ensure the cover system is constructed according to design.	is constructed according to design specifications.
33	Section 3.8.8	Section 3.8.8 appears to provide a monitoring program to demonstrate the TSF cover system meets performance objectives. However, this section does not include information required by section 3.6.2 and 3.8 of the PRCP guideline.	Provide a post-closure monitoring program to demonstrate the performance of the cover system including the parameters and spatial distribution that complies with best practice (for example, section 8.3.2. of the Global Cover System Design – Technical Guidance Document published by (November 2017)).
34	Section 3.6.6, Table 54 and section 3.8	For the land to achieve a stable condition the cover system must prevent seepage and oxidation and be able to sustain a resilient vegetation cover. However, the risk assessment does not recognise the potential of the cover system failing to meet the required performance criteria in the long term. The risk assessment does not recognise the potential for the cover system to be compromised by vegetation (particularly tree species). The section 3.6.6 does not include actions that may need to be taken to maintain or repair the cover system and section 3.8 does not include monitoring of factors that may indicate failure of the cover system (even if it is constructed according to design).	Provide information regarding the monitoring, maintenance for the TSF cover system and a risk assessment of the potential for the cover system failing to meet a stable condition.

35	Section 3.8.4	The monitoring plan does not include the necessary parameters (e.g. monitoring for the presence of seepage at the toe of all embankments, quality and quantity, monitoring demonstrating the cover system is performing according to the required specifications, monitoring to demonstrate soil profile development has occurred to sustain vegetation) required to demonstrate the land has achieved a stable condition.	Provide a water monitoring program that will demonstrate the land has achieved a stable condition and provide sufficient data to support a surrender application.
36	Section 3.8.4 and Figure 23	Surface water quality monitoring points do not appear to include the decant pond from the TSF or a downstream location adjacent to the eastern decant access embankment and the northern discharge bunds. It appears there is potential for seepage to occur at these locations which may express at the toe of the bunds.	To demonstrate the land has achieved a stable condition, surface water quality monitoring points at locations where potential seepage may express must be included in the surface water quality monitoring program.
37	Section 3.8.	The proposed objectives of soil monitoring are focused on stockpile monitoring. Monitoring of soil development is required to demonstrate the land will be able to/has achieved the PMLU. This section does not appear to include erosion monitoring of the TSF surface. As the cover proposes 20cm of topsoil ensuring erosion does not occur is key to the effectiveness of the cover and achieving a stable condition. This section also proposes mitigation work for erosion that is >1m deep. Should this erosion occur on the TSF it would mean the reduced permeability layer (RPL) would be exposed and potentially compromise the integrity of the cover system.	Provide a monitoring plan that collects data to demonstrate the land has achieved a stable condition.
38			To demonstrate the TSF has achieved a stable condition, results from erosion monitoring of the TSF surface over time must be provided. Hence, erosion monitoring of the TSF surface must be undertaken.
39			Provide information demonstrating that erosion gullies <1m in depth or width can be considered having a stable condition.

40	Section 3.8.9, Table 58	The proposed frequency of monitoring (annually) is unlikely to be sufficient to capture seasonal (wet season/dry season) changes and therefore is also unlikely to provide sufficient data to demonstrate a stable condition has been achieved. Furthermore, the proposed frequency is unlikely to allow for rapid intervention should monitoring indicate a risk event is occurring.	Provide a monitoring program with a frequency suitable to consider seasonal variations and provide an appropriate timeframe for response.
PRCP Schedule			
41	General	For many rehabilitation areas (RA's) the schedule only allows one year to achieve milestones. The risk assessment does not acknowledge the potential for weather to influence whether the milestones can be achieved.	Provide information demonstrating milestones for each RA can be achieved by the stated date and update the risk assessment to include risk mitigation measures.
42		It is also noted that the land is anticipated to meet the completion criteria in rehabilitation milestone (RM) 8 within three years of planting. It is unlikely that three years will be sufficient time to demonstrate the land has achieved a stable condition.	Provide further information demonstrating that 3 years will be sufficient to demonstrate the PMLU has been achieved (e.g., vegetation has achieved canopy cover, maturity, production capacity and is demonstrating resilience and sustainability at a level that is similar to surrounding PMLU).
43		Rehabilitation milestones have been applied to different PMLUs which does not allow for specific criteria to be developed and applied. Rehabilitation milestones for landform development, revegetation, achievement of surface requirements and achievement of stable condition should specifically reflect the PMLU for that RA.	Provide RMs that are specific and reflect the PMLU being achieved.
44		Throughout the schedule, reference is made to "agreed" design or "agreed" specifications. It is unclear what the term "agreed" is referring to.	Remove reference to "agreed".

45	RM1	Reaching legal agreements with landholders is not a criterion that contributes to achieving a stable condition. The PRCP must reflect all infrastructure being removed and must be amended should an agreement with the landholder be reached in the future.	Remove criterion g) from the rehabilitation milestone.
46	RM3	The finalisation of documentation including designs is not an appropriate criterion for this milestone. To achieve compliance with the proposed criteria within the timeframe proposed, design would already have been undertaken. Further, criteria must demonstrate progressive rehabilitation of the land and not the development of documentation.	Remove criterion a) from the rehabilitation milestone.
47	RM3	It is noted that detailed design has yet to be completed. To ensure the land will be shaped in a way that will achieve a stable condition additional criteria are required in lieu of a finalised design. Criteria f) does not follow the SMART principles and further detail is required (for example, the standard that will be used to design and implement erosion and sediment control measures).	Include criteria for the landform that reflect conditions necessary to achieve a stable condition and meet the SMART principles such as: • ability to convey PMF flows and maintain a stable condition permanently; • maximum slope angles; • reinstatement of surface drainage; • installation of erosion and sediment control structures that comply with the Best Practice Erosion and Sediment Control published by the Australasian International Erosion Control Association (IECA); and • achievement of the specific factor of safety for structures/embankments.
48	RM4	This milestone only includes criteria that reflects one cover design. However, the trial is proposed to assess two TSF cover options.	Provide criteria that reflect best practice cover design for acid producing tailings in the climatic conditions experienced at the mine.
49		There are no engineering specifications or specified depths provided for each layer. There is no requirement for as constructed drawings demonstrating the TSF has been built in accordance with the design.	Provide engineering specification to be met by each layer and nominate QA/QC measures that will be used (e.g. only NAF material of a specific diameter size used for capillary break layers, reduced permeability layer compacted to achieve a specified permeability).

50		Criteria reflecting the design requirement to minimise ponding and promote water shedding have not been included.	Provide criteria for the surface characteristics of the TSF cover system (for example no ponding).
51		The criteria do not include the installation of monitoring equipment to monitor cover system over the long term to demonstrate a stable condition has been achieved.	Provide criteria requiring the location and type of monitoring that will be installed in the cover system to demonstrate the effectiveness.
52			Provide criteria that include the provision of as constructed drawings.
53	RM4 and RM5	There does not appear to be any proposed actions to ensure the embankments include habitat features to achieve the PMLU.	Provide actions necessary to ensure the embankments achieve the PMLU.
54	RM5	Specification of ripping depth is not provided and reference to an “agreed” specification is included.	Specific depths must be provided for ripping without reference to an “agreed” specification.
55	RM6	The criteria do not follow the SMART principles.	Provide further detail regarding seeding rates for each species type (tree, shrub, groundcover), timing of seeding, and types of amelioration required.
56	RM7	Ground cover required includes “all ground cover categories” with no explanation in the PRC plan of what a groundcover category is.	Provide criteria that follow the SMART principles.
57			
58	RM7	Percentiles/percentages of analogues sites have been nominated as objectives, however no justification has been provided for the values. This includes: - No less than 15th percentile of soft spinifex or total ground cover; - No more than 70th percentile for either buffel grass or kapok bush cover; and - A minimum of 70% of target species.	Provide justification for the target values nominated

59	RM7	Whilst target species percentage has been nominated as an objective, an important criterion to consider is spatial considerations of the diversity of species. Without this as an objective, it will be unclear as to how spatially diverse the species are.	Propose objectives for achieving an appropriate level of spatial diversity of species.
60	RM8	RM8 does not include suitable completion criteria to demonstrate the land has achieved a stable condition and is suitable for surrender.	Update criteria for RM8 to include: • specific factors of safety to be achieved for each of the embankments; • minimum vegetation cover to reflect the PMLU. For the TSF, minimum vegetation required to ensure the ISL layer limits infiltration; • criteria for the performance of each layer of the cover system as determined by in situ monitoring; • for the TSF, criteria for the surface condition that supports the rehabilitation objectives. For example, the absence of ponding and the absence of bare earth; • criteria regarding the absence of seepage from the TSF demonstrating it is non-polluting; • criteria for species mix having regard for the need to achieve each PMLU; • for the TSF, species mix having consideration for the need to achieve the PMLU and ensure the long term integrity of the cover system; • criteria that demonstrate the vegetation is mature, resilient and self-sustaining (e.g. biomass production, soil profile

			development, natural recruitment of native species, seed bank development, drought and bushfire tolerance, etc); • criteria that demonstrate erosional stability including gully, rill and sheet erosion and an erosion rate that reflects the landform evolution modelling (LEM); • for the PMLU of native habitat, features that provided fauna habitat; and • for the PMLU of grazing, criteria that reflect the productivity the land will be able to sustain.
61			Remove criterion d) as it a requirement of the EP Act.
62			Provide a revised PRC plan to – • Update the relevant sections of the Rehabilitation planning part to include the resultant changes to Milestone criteria in the PRCP Schedule.
63	RM8. PRC Plan section 3.2.7, Table 31 and section 3.6.1.5	There is a proposal for completion criterion requiring erosion to be <10 t/ha/yr. The justification provided in Table 31 is that this is considered stable. There is no reference to erosion rates in similar topography with similar land uses in the surrounding area and no reference to the results of the LEM.	Provide further information demonstrating that an erosion rate of <10 t/ha/yr is considered a stable condition compared to undisturbed land taking into consideration the landform evolution modelling (LEM) indicates rates of erosion are likely to be <5 t/ha/yr.
64	RM8	Whilst proposed water quality objectives have been proposed, it is not clear how compliance will be measured in terms of whether each sampling event must comply, or whether it is based on consecutive sampling events. It is also not clear how seasonal variation will affect determination of compliance	Provide further clarity on how compliance will be achieved with groundwater and surface water quality objectives.

65	RA2	The date the area is available appears to change for the same parcel of land.	Amend the PRCP Schedule to remove any dates that are not relevant in relation to the dates for when the areas become available.
66	RA4	The date the area is available is nominated as 1/01/2022, but rehabilitation works are not proposed to commence until 2030.	Provide information demonstrating the proposed timeframe is as soon as practicable in accordance with section 126D(4) of the EP Act.
67	RA8	It is noted that construction of the cover will commence in 2042 and is anticipated to be completed within 1 year. The risk assessment does appear to acknowledge the potential for weather to impact on the construction of the TSF cover or the growth of newly seeded/planted vegetation. It is also noted that the land is anticipated to meet the completion criteria in RM8 within 3 years of planting. Given section 3.6.1.4 states that “the tailings would be likely to re-acidify to a pH of <4 and continue to generate leachate with elevated sulphate for a number of decades” it is unlikely that 3 years of cover system performance data will be sufficient to demonstrate the land has achieved a stable condition.	Provide further information demonstrating 1 year is sufficient to construct the cover system and risks that may impact the timing of the construction have been considered.
68			Provide criteria relevant to the performance of the cover system.