Vulcan Complex Project – EA Application (APP0051420) Change RFI – Response Table – 16 April 2021

Vitrinite Pty Ltd (Vitrinite) lodged an EA application change notice on 5 March 2021 with the Department of Environment and Science (DES). Vitrinite received an information request from DES on 19 March 2021. The detail of the information request is replicated below (Information Request Notice Appendix A) along with responses from Vitrinite.

Selected responses are supported by further technical assessment documents, which are appended to this Response Table. These comprise:

- Appendix A - VCP Disturbance Footprint Figure (METServe)
- Appendix B - Terrestrial Ecology Assessment (METServe)
- Appendix C - Groundwater Assessment Responses (Hydrogeologist.com)
- Appendix D - Surface Water Assessment Responses (WRM Water and Environment)
- Appendix E - Progressive Rehabilitation and Closure Plan (METServe)

Table 1 - VCP EA Change RFI - Responses

EA Application **General**				
RFI Item	**Section**	**Comment**	**Requirement**	**Vitrinite Response**
1	Disturbance Footprint	The maximum extent of impact (ha) has not been provided as a total revised footprint.	Provide: - total area of disturbance proposed over the mine life in hectares; and - a disturbance footprint figure and shapefiles to include in the environmental authority.	The total disturbance area of the Vulcan Complex Project is 199.7ha. Note this excludes disturbance authorised by environmental authorities associated with the Bulk Sample Project on MDL3039 and EPC1732. A disturbance footprint figure is provided in **Appendix A**. Shape files will be supplied accordingly.
2	Scale and intensity	No clarification has been provided if the proposed increase in disturbance footprint will change the proposed rate of mining.	Confirm if there are changes to the rate of mining activities including coal extraction and transport of coal due to re-location and re-alignment of domains. If the proposed changes result in an increase in the rate of mining, provide an evaluation of whether the changes still meet the predicted modelling and impact evaluations for each environmental value (EV) as provided in the original EA application.	There are no proposed changes to the rate of ROM Coal extraction being applied for. There are no proposed changes to the transport of product coal. An alternative (safer) site access has been proposed, however all proposed vehicle types, traffic volumes and off-lease haulage routes remain unchanged.
3	Infrastructure, haul roads and access tracks.	The change application proposes realignment and re-location of various mine domains. The change application does not adequately assess the impacts to EVs of air and noise generated as a result of the proposed changes.	Provide further justification that the realignment and re-location of various mine domains will not change and if they do change provide details of: - the predicted impacts to noise and air; and - the noise and air limits proposed in the original EA application.	The proposed changes are immaterial to the outcomes of the previously submitted air quality and noise impact assessments. The nearest sensitive receptors are a significant distance (over 10km) from the proposed activities. There is no proposed increase in the intensity of the proposed activities and therefore the noise and particulate emissions predicted to be generated. The proposed modified activities are not proposed to be undertaken any closer to the sensitive receptors than was previously proposed. Therefore the predicted impacts previously assessed are considered to be

<table>
<tr><td></td><td></td><td></td><td></td><td>representative of the proposed modified activities and the noise and air quality limits previously proposed are considered to remain fit for purpose.</td></tr>
<tr><td>4</td><td>Re-alignment of Pit Shell and Water infrastructure.</td><td>Limited assessment of potential impacts to terrestrial ecology due to the change re-alignment of pit shell and water infrastructure.</td><td>Identify and quantify potential impacts to terrestrial ecology due to the re-alignment.</td><td>An updated assessment of potential impacts to terrestrial ecology is provided in Appendix B.</td></tr>
<tr><td colspan="5">EA Application
Groundwater</td></tr>
<tr><td>RFI Item</td><td>Section</td><td>Comment</td><td>Requirement</td><td>Vitrinite Response</td></tr>
<tr><td>5</td><td>Groundwater</td><td>Limited information has been provided to justify any potential impacts to groundwater due to proposed changes in footprint and re-alignments of domains.</td><td>Detail the potential impacts and risk of increased impacts on groundwater quality and drawdown resulting from:
- change in footprint,
- re-alignment of water structures,
- realignment of pit shell; and
- realignment of other infrastructure.</td><td>Please refer to Section 5 of Appendix C.</td></tr>
<tr><td>6</td><td></td><td>The application did not detail whether the changes would result in updated to the proposed groundwater monitoring network.</td><td>Review and provide bore information. Details of the bore network should be provided in the following table to be conditioned in the EA:
<table>
<tr><th>Bore</th><th>Latitude</th><th>Longitude</th><th>Aquifer</th><th>Surface TL (mADH)</th><th>Depth (mbGL)</th><th>Monitored unit</th><th>Monitoring Frequency</th></tr>
<tr><td colspan="7">Background Bores</td><td>*D/Q</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
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<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="7">Compliance Bores</td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table></td><td>The proposed monitoring bore network is provided in Section 2 of Appendix C.</td></tr>
<tr><td>7</td><td></td><td>Site specific groundwater monitoring program: Bore grouping and utilising bore monitoring data for site specific limit derivation.
It is important to highlight that if the application is anticipating utilising site-specific limits extensive groundwater bore monitoring and data collection and analysis is required to be completed.
To determine site-specific groundwater limits/triggers from</td><td>Provide:
- trigger and limit values for each parameter in the following table to be conditioned in the EA; and
- update and provide justification for each value proposed where data collected has identified levels lower or higher than the Water Quality Objectives.
<table>
<tr><th>Parameter</th><th>Bores</th><th>Interim Trigger limit 80th percentile</th><th>Interim Limit Value 90th percentile</th></tr>
<tr><td>pH (pH units)</td><td>All bores</td><td>6.5-8.0</td><td>6.5-8.5</td></tr>
<tr><td>Electrical Conductivity</td><td></td><td></td><td></td></tr>
<tr><td colspan="4">Metals and Metalloids</td></tr>
<tr><td>Sulphate</td><td></td><td></td><td></td></tr>
<tr><td>Iron</td><td></td><td></td><td></td></tr>
<tr><td>Lead</td><td></td><td></td><td></td></tr>
</table></td><td>Please refer to Section 4 of Appendix C.</td></tr>
</table>

		baseline data, full consideration of bore grouping and QA/QC of data will be necessary (refer to the Groundwater Guidelines (DSITI 2017) for specific criteria and methodology. The department recommends the applicant acquire more bore specific data from the future proposed monitoring bores before activities commence. Where available from collected groundwater monitoring, site-specific EA condition triggers and limits are required. Were site-specific values cannot be provided, the applicant is requested to propose interim triggers and limits.	<table><tr><td>Mercury Total µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>Arsenic Total µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>Aluminium Total µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>Molybdenum Total µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>Selenium Total µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>*TRH C6-C9 µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td>*TRH C10-C36 µg/L</td><td>All bores</td><td></td><td></td></tr><tr><td colspan="4">Major Ions</td></tr><tr><td>Bicarbonate</td><td>All bores</td><td></td><td></td></tr><tr><td>Sodium</td><td>All bores</td><td></td><td></td></tr><tr><td>Carbonate</td><td>All bores</td><td></td><td></td></tr><tr><td>Calcium</td><td>All bores</td><td></td><td></td></tr><tr><td>Chloride</td><td>All bores</td><td></td><td></td></tr><tr><td>Potassium</td><td>All bores</td><td></td><td></td></tr><tr><td>Magnesium</td><td>All bores</td><td></td><td></td></tr></table>	
8		Groundwater Level trigger thresholds have not been provided for monitoring potential groundwater drawdown.	Provide details for level monitoring: - monitoring location, monitored unit, baseline, and trigger thresholds to be included in table below. - justification for the trigger thresholds proposed for each bore should also be provided in response to information request. The following table to be conditioned in the environmental authority: <table><tr><th>Monitoring Location</th><th>Monitored unit</th><th>Pre-mining baseline level (mAHD or mBDL)</th><th>Level Trigger Threshold[1]</th></tr><tr><td>MB1</td><td></td><td></td><td>X m drawdown from the pre-mining baseline level</td></tr><tr><td>Etc.</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Please refer to **Section 3** of **Appendix C**.
	EA Application **Surface Water Management**			
RFI Item	**Section**	**Comment**	**Requirement**	**Vitrinite Response**

9	Section 2.3 Surface Water Management	The change application proposed an increase in the size of MWD5, re-alignment of MDW1 and re-location of MWD4. Further information is required on the management of the mine water dams and the management of potential uncontrolled releases.	Further clarification is required on the management of the mine water dams. Provide justification on the ability of MDW5 and MWD1 to contain mine affected water in high rainfall events; and ensure contingency planning is included if all MAW cannot be reused on-site i.e. during long periods of wet weather when use for dust suppression is not appropriate.	The mine water management is described in **Section 2.3** of **Appendix D**, including the management of MWD1, MWD2 and MWD3. The water balance model has been updated to include the mine affected water dams. Updated water balance model results indicate that the proposed mine water storage system has a low risk of the mine affected water system reaching capacity. The updated results indicate the mine affected water dams will reach capacity and cause short periods of inundation of the pit under only the wettest (5%ile) conditions.
10	Section 3.1 Surface Water	The change application proposes five (5) additional water storage dams that have been categorised as sediment dams. The department requires further clarification on the management of sediment dams.	Review the site water balance model relating specifically to site discharge and MAW. Provide the below as a minimum: - An updated Site Water Balance Model. - Clarification on which areas are reporting to which dams—this is to confirm those classified as sediment dams and those classified MAW dams. - Detail how clean water is diverted around site. - Clarify if the water management is reliant on geography of land to manage the direction of water runoff or other management practices. - Provide further details and justification on how the waste rock dump run off water can be classified as 'surface water runoff'. If no evidence is available for this classification, then including the waste rock dump area within the MAW footprint area is recommended.	The site water balance model has been updated to reflect the revised water management system and the updated results are presented in **Section 3** of **Appendix D**. Details regarding which areas report to which dams are described in **Section 2** of **Appendix D**. Further detail is also provided in this section regarding clean water, surface water and mine affected water management. The areas which have been classified as 'surface water' and 'mine water' are also described as per the definitions provided in DES (2017). Water management at the Project is reliant on geography, as well as constructed surface water, diverted water and mine water drains as shown in **Figure 2.1, Figure 2.2** and **Figure 2.3** of **Appendix D**. The waste rock dump has been classified as 'surface water runoff' as it will be managed by sediment control structures in accordance with an Erosion and Sediment Control Plan and will not be mixed with tailings, pit or processing water. This is consistent with the definitions provided by DES (2017).
11		Limited discussion has been provided on changes proposed to clean water storage and diversions on site.	Provide details of DD1 with the new design and how DD1 will not collect runoff from mine affected activities. Clarify the movement and storage of undisturbed water onsite and how this associates with DD1.	The function of DD1 has been described in **Section 2.4** of **Appendix D**. DD1 collects runoff from peripheral areas of the Project such as areas that are undisturbed by mining and surface water catchments that are first managed through erosion and sediment control measures. DD1 will also prevent diverted water from entering the pit in the event that flood waters overtop the existing drainage diversion. DD1 will be dewatered to the existing drainage diversion.
12	Figure 2-1	The sediment dam numbering jumps from SD4 to SD6.	Confirm whether there is an SD5.	Sediment dam numbering is shown in **Figure 2.1, Figure 2.2** and **Figure 2.3** of **Appendix D.**
13		MWD4 points to an area not mapped.	Confirm location of MWD4 and include in figure 2-1 of the supporting documentation.	MWD4 has been removed due to the updated mine plan. Runoff from the workshop area in the northern infrastructure area is managed by MWD3. Runoff from the office area to the southeast of the workshop will pass through a sediment trap.
14	Surface water	It is acknowledged that the	Review and provide interim release (runoff) limits and receiving water trigger limits included in	**Section 4** of **Appendix D** presents a review of the available

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<td>proposed project has no authorised release of MAW, however the application is proposing to release water from onsite sediment dams through water runoff.

It was also proposed in the original application that all MAW and sediment dams are proposed to be monitored.

The information provided provides minimal justification that water from sediment dams will not be mine affected water. As such, the department would advise the inclusion of conditions to monitoring water quality of sediment dams. It was interpreted that if sediment dam water quality were to exceed certain limits of parameters, then the dam would be classified as a mine affected water dam.

Interim values are required for surface water trigger and limits - due to limited data to establish site specific data - in order to ensure that the quality of water runoff during high rainfall events will not cause impacts to environmental values in the receiving waterways.</td>
<td>the following table for water releases from sediment dams.
<table>
<tr><th>Parameter</th><th>Sediment Dam Quality Limit</th><th>Limit Quality of Runoff</th></tr>
<tr><td>pH (pH units)</td><td>6.5-8.5</td><td>6.5-8.0</td></tr>
<tr><td>Electrical Conductivity</td><td></td><td></td></tr>
<tr><td>Sulphate</td><td></td><td></td></tr>
<tr><td>Iron</td><td></td><td></td></tr>
<tr><td>Lead</td><td></td><td></td></tr>
<tr><td>Mercury Total µg/L</td><td></td><td></td></tr>
<tr><td>Arsenic Total µg/L</td><td></td><td></td></tr>
<tr><td>Aluminium Total µg/L</td><td></td><td></td></tr>
<tr><td>Molybdenum Total µg/L</td><td></td><td></td></tr>
<tr><td>Selenium Total µg/L</td><td></td><td></td></tr>
<tr><td>*TRH C6-C9 µg/L</td><td></td><td></td></tr>
<tr><td>*TRH C10-C36 µg/L</td><td></td><td></td></tr>
<tr><td>Bicarbonate</td><td></td><td></td></tr>
<tr><td>Sodium</td><td></td><td></td></tr>
<tr><td>Carbonate</td><td></td><td></td></tr>
<tr><td>Calcium</td><td></td><td></td></tr>
<tr><td>Chloride</td><td></td><td></td></tr>
<tr><td>Potassium</td><td></td><td></td></tr>
<tr><td>Magnesium</td><td></td><td></td></tr>
</table>
</td>
<td>reference receiving waters data used to develop interim locally derived receiving waters trigger limits. The proposed receiving waters trigger limits are based on locally derived values, as well as WQOs default trigger values from ANZG (2018) and MMC (DES, 2017) default trigger values. These trigger values are provided in Table 4.2 of Appendix D. Note that due to the limited availability of water quality data, further monitoring of receiving waters is required to obtain a sufficient data set to confirm the interim locally derived trigger values.

Recommended measures to manage sediment dam release water quality and sediment dam trigger limits are discussed in Section 4.6 of Appendix D.</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Upstream and downstream monitoring locations have not been provided for conditioning in the EA.</td>
<td>Provide the following details:
- Differentiate which bores will be monitoring background data and which will be utilised for compliance
- monitoring locations (lat/long) in the following table to be conditioned in the environmental authority:
<table>
<tr><th>Description</th><th>Latitude</th><th>Longitude</th><th>Frequency</th><th>Description</th></tr>
<tr><td colspan="5">Receiving Waters</td></tr>
<tr><td colspan="5">Background Monitoring</td></tr>
<tr><td>VSW1</td><td>-22.276605</td><td>148.174505</td><td></td><td>Diversion bund approximately 3.1km upstream of North Creek and upstream of downstream monitoring point VSW2</td></tr>
</table>
</td>
<td>Proposed upstream and downstream receiving waters monitoring locations have been listed in Table 2.5 and Figure 2.4 of Appendix D.</td>
</tr>
</table>

			VSW2	-22.301059	148.195230		North Creek located upstream of the railway	
			VSW3				Drainage Line 3 upstream of Saraji Road	
			VSW4					
			VSW5					
			VSW6					
			VSW7					
			VSWX					
			VSW8	-22.278613	148.187818		Minor drainage line upstream of the railway	
			Compliance Monitoring					
16		Surface water runoff locations have not been updated to reflect the proposed changes to the water management onsite.	Provide location points and other values in the table below to be conditioned in the EA:					Sediment dam locations have been tabulated in **Table 2.3** of **Appendix D**.
			Runoff Point	Latitude	Longitude	Sediment Dam Water Source	Receiving Waters Description	
			e.g. Water storage name			e.g. overburden runoff		
	EA application **Terrestrial Ecology & Environmental Offsets Strategy**							
RFI Item	**Section**	**Comment**			**Requirement**			**Vitrinite Response**
17	Section 3.3 Supporting Information Terrestrial Ecology – Significant Residual Impacts to Prescribed Environmental Matters	The application does not include an assessment of how the proposed changes to the disturbance footprint impact on the maximum extent of impact to prescribed environmental matters located within the mining tenure. This should include a demonstration of how impacts have been avoided in the first instance; if avoidance cannot be reasonably achieved, there is a requirement to demonstrate that impacts have been carefully managed and minimised (mitigated). If there is still a residual impact on a prescribed environmental matter after all reasonable avoidance and mitigation measures have been taken, impacts should be assessed using the Significant Impact Assessment			Provide an assessment of how the change in disturbance footprint impacts on the maximum extent of impact to prescribed environmental matters. Justify how each impact will be avoided or alternatively, managed, or minimised (mitigated). If residual impacts to prescribed environmental matters re-assess their offset requirements. Provide shapefiles of the location and area (ha) of impact of prescribed environmental matters.			An updated assessment of potential impacts to terrestrial ecology is provided in **Appendix B**.

		Guideline. An offset may be required where the impact is or is likely to be significant. Refer to the general guide for the Queensland Environmental Offsets Framework to assist in interpreting and implementing the Queensland environmental offsets framework.		
	Closure and PRCP			
RFI Item	**Section**	**Comment**	**Requirement**	**Vitrinite Response**
18	Section 4 Supporting Document	Whilst the applicant identifies that no significant changes to PRCP are required, there are changes to the projection and timing of stages. Expansion on this has not been provided.	Provide updated timings of milestones and domains involved in each stage of rehabilitation milestones due to the mentioned re-locations and re-alignments. Revise and provide updated PRC plan and/or schedule accordingly.	**Appendix E** has been updated in accordance with the changes to the boundaries of rehabilitation areas and the schedule of land availability for rehabilitation within each.
19		Limited information was provided regarding the revision of areas available for rehabilitation due to re-alignments and re-locations.	Provide discussion on changes to the cumulative areas available for rehabilitation based on the revised pit shell dimensions, out of pit dump dimensions. Revise and provide updated PRC plan and/or schedule accordingly.	**Appendix E** has been updated in accordance with the changes to the boundaries of rehabilitation areas and the schedule of land availability for rehabilitation within each.
20		No updated rehabilitation layout plans have been provided.	Please provide updated rehabilitation layout plans. This is inclusive of any spatial information files that are required to be updated accordingly.	**Figure 10-2** within **Appendix E** has been updated to show the revised rehabilitation area boundaries. New spatial files are provided for the three components of the Project that have changed, namely: • maximum extent of the disturbance footprint; • rehabilitation areas; and • post-mining land use.
21		Further information should be provided regarding the addition of the water pipeline and associated corridor and whether this needs a separate rehabilitation area or can be amalgamated with an existing rehabilitation area. Based on the information provided in Figure 2-1 of the notice of change to an Environmental authority Application, the spatial extent of the corridor was difficult to ascertain.	Detail the rehabilitation methodology reflective of the pipeline construction methodology - aboveground pipeline.	The pipeline from BMA's Windsor Dam to the VCP Mine Water Dam has been approved as part of Bulk Sample activities and will be established during these works. The pipeline will comprise a 6 to 8 inch poly pipe that will be temporary in nature. It will simply be rolled out onto the surface with no excavation or permanent footings required. The pipe is anticipated to have contact with a ground at a width of approximately 5cm. The 'pipeline corridor' has been proposed to provide some alignment flexibility as there are a number of existing tracks that would be suitable to run the pipe along. Furthermore, the northern end of the pipe traverses BMA operational areas and some flexibility with the location is preferable should BMA require it to be realigned in the north to avoid potential future

				activities. Rehabilitation of the pipe will simply constitute disconnection and removal onto a small service vehicle. No earthworks will be required. Given the pipe is proposed to be established along existing farm tracks, further rehabilitation activities, beyond removal of the pipe, are not warranted or proposed. The pipeline corridor is not a material consideration for the PRCP and does not warrant establishment of a dedicated rehabilitation area.
22		As the in-pit dump and out of pit dump domains now have an altered landform, further information should be provided as to the final slopes to be achieved, how water it so be shed from landforms and if additional drainage reinforcement is proposed. It is understood that MWD5 is located adjacent to the in-pit dump to the south and appears sized to take a majority of the water runoff from the structure, whilst the previous landform drainage plan indicated that ultimately water would daylight into DD1 located to the north west. With the reconfiguration of the mine water dams and sediment dams, further information should be provided on any additional rehabilitation methods and milestone criteria to support progressive rehabilitation of this domain.	Provide updated final landform drainage plans demonstrating the revised water management strategy. Provide detail into additional rehabilitation methods and milestone criteria that will need to be include in the PRC plan and schedule to support the progressive rehabilitation of this domain.	Updated final landform drainage plans are provided in **Section 6.1.6** of **Appendix E**. An updated description of final landform drainage rehabilitation activities is also provided in **Section 6.1.6** of **Appendix E.** There are no significant changes to the rehabilitation methods or milestone criteria proposed.
	Provide an updated PRC plan and schedule with the following changes:			
RFI Item	**Section**	**Comment**	**Requirement**	**Vitrinite Response**
23	PRC Plan – rehabilitation planning part	**Landform Design** Information relating to landform design guideline requirements has not been completely addressed. Reference to the predicted geotechnical stability has been presented but there is no discussion on landform design limitations, assumptions and QA/QC requirements.	Address the information requirements for landform design as prescribed in 3.6.1. Where requirements are not relevant, provide justification.	Further information relating to the landform design limitations has been added as **Section 6.1.2** of **Appendix E**. QA/QC procedures have been added to **Section 6.1.8** of **Appendix E**.
24	PRC Plan – rehabilitation planning part	**Landform Design Erosion Rates** There is information provided in Section 6.1.7 of the planning part related to expected Bowen Basin erosion rates, however there is an expectation that a quantitative projected erosion loss rate is developed which will be carried through as a milestone to validate that land can reach a stable condition.	Consider developing a site-specific erosion rate that can be incorporated as a milestone as per the example provided in **Appendix 2** of the PRCP guideline.	The Revised Universal Soil Loss Equation (RUSLE) has been used to estimate background rates of average annual soil loss caused by hillslope and rill erosion in the vicinity of the VCP. This erosion assessment has been added to **Section 6.1.8** of **Appendix E**. The erosion estimates are best used for comparative purposes (e.g., comparing different cover options, or comparing post-mining with pre-mining landforms), rather than for providing absolute estimates of erosion rates. Consequently, it is not reasonable to use these estimates as milestone criteria for erosion rates. Rather, the predictions of

				the comparisons (amount of cover that will result in erosion rates comparable to background levels) have been used to produce milestone criteria based on target groundcover.
25	PRC Plan – rehabilitation planning part	**Predicted Stability** The predicted stability of the final landform is based on the preface that the final landform is similar to the naturally stable topography of the surrounding areas. However, the Limpopo unit which covers the majority of the disturbed area of the project, and from which topsoil and subsoil material will be used to construct the final landform, naturally occurs on lower gradient (0 – 10% slopes) areas (refer to Figure 6-9 and Figure 1-9). Information regarding the Limpopo SMU in section 1.2.6 identifies the dominance of sand, with some silt and a low proportion of clay in the surface horizons and dispersive subsoil properties. A statement is made regarding the risk of slumping associated with the weakly structured soil. The data plotted in Figure 6 – 11 which identify 'no relationship between slope and percentage groundcover' is likely a function of (or partially related to) the surface soil characteristics on these slopes. The discussion should link the physicochemical characteristics of the Limpopo soil with its suitability for use as a stable medium on landforms with 15% slopes.	Provide further information to demonstrate the suitability of Limpopo soil for its use as a stable medium on the final landform.	A new assessment of the erodibility and erosion risk of the Limpopo SMU has been assessed to **Section 6.1.8** of **Appendix E**. This found that the proposed slopes and cover will result in an erosion rate similar to surrounding landscapes.
26	PRC Plan – rehabilitation planning part	**Risk Assessment** The risk assessment in Section 8 of the planning part has not included an assessment of risks associated with failure to achieve stable condition for RM9 - Fulfillment of Isaac Regional Council requirements for Saraji Road	Update the risk assessment	The risk assessment (**Table 8-2** in **Appendix E**) has been updated with an additional risk relating to failure to fulfil IRC's requirements for Saraji Road.
27	PRCP Schedule	**Final site design** The final site design references one PMLU for Cattle grazing occurring across most of the ML, however the schedule refers to two separate PMLU being low-intensity cattle grazing and low-intensity grazing with habitat for Koalas and Squatter Pigeons.	Provide a final site design map that delineates the different PMLU	The final site design maps (**Figure 10-1** and **Figure 10-2** in **Appendix E**) have been amended to differentiate the two different grazing PMLUs.
28	PRCP Schedule	**Rehabilitation Area 1** There is a discrepancy between the total rehabilitation area size (30.36 ha), and the final cumulative area available (30.63ha). Possibly could be attributed to a typographical error.	This may be a typographical error to be amended.	The sizes of most rehabilitation areas have changed since the previous PRC plan due to alterations to the mine layout. The sizes of all rehabilitation areas have been recalculated and checked to ensure that they match the cumulative area available.
29	PRCP Schedule	**Rehabilitation Area 1 - Applicability of RM5 and RM7 to RA1** The planning part states that no trees are proposed for RA1	Consider rewording RM5 to distinguish that tubestock to support tress species is not required for this Rehabilitation Area. Consider rewording RM7 to reflect that the establishment of *Eucalyptus*	Additional text has been added under RM5 (**Section 9.1.5**) and RM7 (**Section 9.1.7**) within **Appendix E**, as well as in **Table 5-1**, to clarify that, while RM5 and RM7 are applicable

		(the Ex-pit Dump) and that the rehabilitation of Squatter Pigeon and Koala habitat is not an objective for the rehabilitation area RA1. The milestones do not reflect the different intent for vegetation outcomes for this Rehabilitation Area in contrast to other Rehabilitation Areas	species is not required for this Rehabilitation Area	to RA1, specific benchmarks relating to trees are not.
30	PRCP Schedule	**Rehabilitation Area 3 - Applicability of RM4 to RA3** Based on the proposed schedule, it appears that no bulk earthworks or landform development is necessary for RA3. It is anticipated that following removal of aggregates/bitumen etc and demolition of buildings (assume this include footings) there will be some type of shaping or re-profiling works to be undertaken. Clarification needed to ensure that no 'general reshaping to achieve final landform' is needed to prepare RA3 prior to commencing RM4 activities.	Clarify the extent of earthworks required for RA3	**Table 10-2** and the PRCP schedule (in **Appendix E**) have been amended to add RM4 as a milestone relevant to RA3. Text has also been added to **Section 6.1.1** to clarify that minor landform reshaping may be required in RA3 following infrastructure removal.
31	PRCP Schedule	**Rehabilitation Area 5 - Applicability of RM8 to RA5** The schedule has only applied RM8 to this rehabilitation area, despite indications in both the schedule and rehabilitation planning part that there is a specific milestone RM9 for the Saraji Road (RM9 = Fulfilment of all conditions of the agreement with Isaac Regional Council for the construction and commissioning of Saraji Road)	This may be a typographical error to be amended.	The PRCP schedule has been corrected (changed to RM9 for RA5).
32	PRCP Schedule	**Rehabilitation Milestone 3** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions, made in red text below, should be considered to meet the definitions of SMART criteria. The milestones should be written in future tense. • *Subsoil has been applied and spread to RA2 (the in-pit dump)* at a depth of 300mm • *All erosion and sediment control systems have been installed*; • *The final landform has been constructed as per the design plan and has been certified by an appropriately qualified person* • *The back-filled pit ~~is to be~~* has been *certified as geotechnically stable by a suitably qualified person.* It is recommended that milestone criteria is added/or existing criteria revised to reflect the intent outlined by section 6.1.1 of the planning part – 'final landform geometry will be surveyed progressively to maintain adherence to the final landform and surface water management design'. The detailed final design plans which have yet to be prepared will	Implement changes	All milestone criteria (**Table 10-3** in **Appendix E**) have been converted to past tense as per the examples provided. The milestone criteria for RM3 have been edited to include a specific criterion for the survey and certification of the final landform design in accordance with **Section 6.1** of **Appendix E**.

		be important to achieving the necessary stable landform.		
33	PRCP Schedule	**Rehabilitation Milestone 4** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions, made in red text below, should be considered to meet the definitions of SMART criteria. Additionally, there are other considerations for re-phrasing the criteria to facilitate that compliance obligations are clearer. The milestones should be written in future tense. The proposed milestone criteria are: • *250 mm of topsoil* (minimum depth) ~~*is to be*~~ *placed over all surfaces* following amelioration of subsoils in accordance with the recommendations of an appropriately qualified person. • *Slopes greater than 10%* ~~*are to*~~ *have* an average competent *rock mulch cover of 30%;* • *Any fertilisers/ameliorants recommended as a result of the soil assessment* ~~*are to*~~ *have been applied at the rate recommended by the appropriately qualified person.* Regarding the criteria - *No areas are to have a rock mulch cover exceeding 50%, to facilitate the safe movement of cattle and production of pasture.* It is recommended that this milestone criteria is modified to make it clear that this applies just to slopes. Recommend additional criteria (refer to section 6.2.4 & 6.2.6 of the planning part): • Topsoil has been stored separately from subsoils and managed in accordance with a Topsoil Management Plan to reduce the risk of soil degradation. • Contour ripping (depth of 0.4 – 0.5m) to areas following topsoil application. • Recommend adding criteria that any erosion or subsidence is remediated prior to topsoil application.	Implement changes	The suggested changes have been made to the milestone criteria listed in **Table 10-3** of **Appendix E**.
34	PRCP Schedule	**Rehabilitation Milestone 5** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions should be considered to meet the definitions of SMART criteria. Additionally, there are other considerations for re-phrasing the criteria to facilitate that compliance obligations are clearer. The milestones should be written in future tense. • *Completed seeding at a rate of 16.7 kg/ha;* This is not	Implement changes	Buffel Grass has been removed from the seed mix and legumes added, as requested (**Section 6.2.7** of **Appendix E**). The milestone criteria for seeding now explicitly refer to the seed mixes listed in the PRC plan (**Table 10-3** of **Appendix E**). The milestone criteria for tubestock planting has been updated to refer to species identified during monitoring 12 months after seeding that fail to colonise via seed. The criterion also specifically mentions the rehabilitation areas to

		specific enough – needs to reference a species list that demonstrates the PMLU will be achieved. Recommend removal of Buffel grass from the seed mix and instead sow a native range of 3P grasses and added legumes (section 6.2.7 identifies the risks associated with buffel and it is likely that buffel grass will establish anyway without purposefully being added to the seed mix). • *Tubestock planted at a density of 20-100 seedlings/ha;* This is not specific enough – needs to reference a species list that demonstrates the PMLU will be achieved and is specific to the rehabilitation area (i.e. no trees and shrubs on RA2 as proposed in Table 6-6)		which it pertains (**Table 10-3** of **Appendix E**).
35	PRCP Schedule	**Rehabilitation Milestone 6** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions, made in red text below, should be considered to meet the definitions of SMART criteria. Additionally there are other considerations for re-phrasing the criteria to facilitate that compliance obligations are clearer. The milestones should be written in future tense. The milestone criteria are proposed as: • *All corrective actions that are recommended by suitably qualified persons in response to erosion or deficient vegetation cover identified through the monitoring program ~~are to~~ have been implemented;* *With regards to the following criteria - Erosion monitoring to demonstrate any detected erosion is classified as no higher than 'Moderate'* The criteria needs to state what is meant by 'moderate'. Suggest the criteria is amended to say – *i) Erosion monitoring is undertaken in accordance with the Field Assessment Methodology, Table 74 of the Vulcan Complex Soil and Land Suitability Assessment AARC August 2020. AND* *ii) Erosion monitoring to demonstrate any detected erosion is classified as no higher than 'Moderate'. That is the number of rills/gullies is between 15 – 30 and the average depth of erosion is 10 -30cm.* With regards to the following criteria - *Rehabilitated areas are to have a pasture mass that is not statistically significantly different (with adequate sampling to detect ≤10% difference between groups) from unmined areas within the same soil*	Implement changes	The milestone criteria pertaining to corrective actions and erosion have been edited in accordance with the suggestions (**Table 10-3** of **Appendix E**). The monitoring methodology for pasture mass (**Section 9.1.6** of **Appendix E**) has been amended so that pasture is measured in two different seasons (wet season and dry season). The milestone criteria (**Table 10-3**) have also been amended so that rehabilitation sites must have similar productivity to reference sites across both seasons. The criterion for tree height has been retained for the following reasons: • Before the introduction of cattle, trees must be tall enough to escape browsing by stock. • Trees must reach 4 m before they are likely to be utilised by Koalas. • The PRCP schedule allows 10 years for trees to reach this height. This is generous, given that at other Queensland sites with similar climate, heights of 5-10 m are reached within seven years (Mulligan et al. 2006), and cattle have been successfully reintroduced after 4 years in timber plantations (Donaghy et al. 2010). Justification for this criterion has been added to **Table 5-1** and **Section 10.2.1**, and a description of the monitoring methods added to **Section 9.1.6** (**Appendix E**). The milestone criterion for groundcover (**Table 10-3** of **Appendix E**) now assigns different targets for slopes than flat areas. A new criterion for land suitability class has been added to **Table 5-1** and **Table 10-3**, and reference to methodologies to be adopted has been added to **Section 9.1.8** (**Appendix E**).

		management unit measured at the same time; It is recommended that this criteria is reported as a trend over time to show how pasture mass changes with season and how it tracks against the reference sites during all disturbances (drought, summer, winter etc) With regards to the following criteria - *Trees are to be, on average, at least 4 m tall;* Considering that all milestone criteria must be achieved to demonstrate EA surrender, there is a risk that this criteria may not be achievable. There are other criteria provided in RM7 related to vegetation health to support an ecosystem that are more relevant and achievable. Additionally, there is no justification in the planning part for this criteria. Consideration should be given for removing this criteria. Need a measure for groundcover – and potentially with a different requirement for slopes (70% as per the soils assessment report for the sandy Limpopo soil type) than for flatter areas. There are no measures here for soil health (eg PAWC, pH, % organic carbon, EC, exchangeable cations, total N, total P etc) which is key to sustainable pasture and there is no mention of soil sampling in the monitoring program. Alternatively provide criteria which demonstrate that land suitability of at least Class 4 has been reinstated. Criteria and thresholds are identified in the Soil and Land Use Assessment appendix.		
36	PRCP Schedule	**Rehabilitation Milestone 7** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions should be considered to meet the definitions of SMART criteria. Additionally, there are other considerations for re-phrasing the criteria to facilitate that compliance obligations are clearer. The milestones should be written in future tense. • *The species richness of grasses within 10 m x 50 m plots in rehabilitated areas is to equal or exceed the 10th percentile among equivalent plots in reference sites on the same soil management unit;* (how does this link to the seed mix originally sown in RM5?) Criteria should be written to demonstrate that a productive and sustainable pasture can be achieved. Are palatable, perennial, productive and legumes present?	Implement changes	The seed mix in **Table 6-8** of **Appendix E** contains a mix of annual and perennial grasses, and palatable legumes. It is based on the dominant pasture species growing on the soil management unit pre-mining. It is expected that many species will colonise rehabilitated areas via the soil seed bank rather than the seed mix, so only dominant species are included in the seed mix. The productivity of the post-mining pastures is likely to be constrained by the physical and chemical properties of the sandy soils of the local area. The intention is to recreate pastures that resemble the productivity and sustainability of the original site. Additional information has been added to **Section 9.1.6** of **Appendix E** to explain why species richness is a useful indicator of pasture sustainability. Regarding the use of 10th percentiles, it is our intention to

		Equal or exceed the 10th percentile appears to represent the lower limit of a normal distribution, and there is no justification in the planning part that this percentile reflects the no of species in reference sites typically required for self-sustaining pasture. This does not appear to meet the rehabilitation objective as per Table 5 -1 ("the species richness of grasses that make up the pasture in rehabilitated areas is to be as high as in neighbouring unmined areas within the same soil management unit").		devise criteria that unmined reference sites typically achieve. While it is correct that this results in a score that is at the lower end of the observed range in reference sites, higher scores would result in an unacceptable failure rate among reference sites, and are therefore unreasonable targets for rehabilitated sites. For example, it is unreasonable to expect all rehabilitated sites to achieve the median diversity among reference sites (if this was to be used as the criterion), when by definition half of all reference sites would fail. In the absence of data on the minimum number of species required for a self-sustaining pasture, background values observed in reference sites (even those at the lower end of diversity) represent our best estimate.
37	PRCP Schedule	**Rehabilitation Milestone 8** The desire to ensure that milestones are specific is to reduce ambiguity when they become compliance obligations. The following suggestions, made in red text below, should be considered to meet the definitions of SMART criteria. Additionally there are other considerations for re-phrasing the criteria to facilitate that compliance obligations are clearer. The milestones should be written in future tense. The milestone criteria are proposed as: • *All corrective actions that are recommended by suitably qualified persons in response to erosion or deficient vegetation cover identified through the monitoring program ~~are to~~ have been implemented* • *The forecast sigmoidal curve, fitted to the stability index data, demonstrates a predicted plateau at a value that is equivalent to or exceeds the target value, defined by the range observed in analogue sites that have not been mined;* Note that there are 2 other indices in LFA – Infiltration Index and Nutrient Cycling Index which could be tracked if perennial grass basal and tree and shrub foliage cover was added to the monitoring and Soil texture identified. Together this will provide a complete LFA assessment as detailed by Tongway. • *Erosion monitoring to demonstrate any detected erosion is classified as no higher than 'Moderate'*^. Consideration should be given to include reference to the Erosion Monitoring Classifications – Section 9.6.1, Table 74 Vulcan Complex Project Soil and Land Suitability Assessment, AARC August 2020) Recommended milestone criteria is *Erosion monitoring is undertaken in accordance with the Field Assessment*	Implement changes	The milestone criteria have been updated in **Table 10-3** of **Appendix E** in the following ways: • Past tense has been used in the milestone criteria as per the examples; • All three indices of landscape function analysis have been added as additional criteria (with additional monitoring information added to **Section 9.1.8**); • The wording of the erosion monitoring has been revised to reflect the suggested wording; • A higher percentage ground cover has been added for slopes between 10-15%; • Preliminary specific surface water and groundwater quality attributes have been added as milestone criteria; and • Weed and erosion criteria have been added to RM8 as requested.

		Methodology, Table 74 of the Vulcan Complex Soil and Land Suitability Assessment AARC August 2020. AND *ii) Erosion monitoring to demonstrate any detected erosion is classified as no higher than 'Moderate'. That is the number of rills/gullies is between 15 – 30 and the average depth of erosion is 10 -30cm.* • *Grazed land maintains a percentage ground cover of between 50% and 96%;* potentially with a different requirement for slopes (70% as per the soils assessment report for the sandy Limpopo soil type) than for flatter areas. • *Surface water in downstream monitoring locations is to remain within site-specific water quality monitoring limits, once established;* Need to have values in the schedule • *Groundwater in downstream monitoring locations is to remain within site-specific water quality monitoring limits, once established;* Need to have values in the schedule Criteria should be included to indicate erosional stability as per RM6 and RM7. Criteria should be included regarding weeds as per RM6 and RM7.		
38	PRCP Schedule	**Rehabilitation Milestone 9** Due to a typo RM9 needs to be applied to RA5 (Saraji Road). Currently the schedule nominates RM8 as the only milestone for this rehabilitation areas. The proposed milestone criteria is: • *Vitrinite completes all works within the realigned road reserve required under agreement between Isaac Regional Council and Vitrinite*. There needs to be evidence in the milestone criteria that this work has been completed to council's satisfaction. Need to ensure that the conditions imposed by Isaac Regional Council will achieve the requirement for stable condition.	Implement changes	The RM numbering has been corrected. Detail has been added to **Section 9.1.9** of **Appendix E** summarising the contents of a formal, signed, compensation agreement between Vitrinite and council, which stipulates the conditions under which council will accept the realignment. **Table 10-2** and **Table 10-3** of **Appendix E** have also been updated with details about this agreement.