APPENDIX D: IMPACT ASSESSMENT TABLES

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Table 1: Impact Assessment during Construction Phase

CONSTRUCTION PHASE: SITE ACCESS AND SITE ESTABLISHMENT		
Potential impact and risk: Loss of topsoil, increased dust levels, and soil compaction	IMPACT 1: SOIL EROSION & SOIL COMPACTION: The clearing of areas for new access tracks and the mining of ka will result in the removal of existing vegetation and topsoil, which will disturb the soil increasing the potential feerosion by wind and loss of soil in the event of rainfall. Soil compaction will result from repeated use of access tracks.	
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site and Short term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Probable	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Low	N/A
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	Dust impacting on adjacent vegetation and causing a nuisance to workers. Compaction of topsoil where vehicles drive outside demarcated areas damages seed bank and habitat for invertebrates.	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation	Medium	
(e.g. Low, Medium, Medium-High, High, or Very-High)		
Degree to which the impact can be avoided :	High	N/A
Degree to which the impact can be managed :	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	 After clearing, the affected area shall be stabilized to prevent any erosion or sediment runoff. Stabilized areas shall be demarcated accordingly. Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces. Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and potential stormwater run-off. Top soil shall be removed separately and stockpiled separately from other soil base layers. The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid erosion of the material. Topsoil storage areas must be convex and should not exceed 2m in height. Topsoil must be treated with care, must not be buried or in any other way be rendered unsuitable for further use (e.g. by mixing with spoil) and precautions must be taken to prevent unnecessary handling and compaction. In particular, topsoil must not be subject to compaction greater than 1 500 kg/m² and must not be pushed 	N/A

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A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the access road and entering the site will be informed of the speed limit.	
Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation.	
Potential loss of invertebrates that live in the top lavers of the soil.	N/A
	N/A
Low	N/A
IMPACT 2: WATER RESOURCES: Potential for ground water pollution due to oil spills during	routine maintenance of
· ·	
	The mining method
makes use of a dry primary processing technique.	
PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Negative	N/A
Site & Short term	N/A
Loss	N/A
Unlikely	N/A
Low	N/A
Reversible	N/A
Rainfall is very seldom and evaporation rate is very high. Indirect impacts on surface water are very unlikely.	N/A
Low	N/A
Low	
Medium	N/A
High	N/A
High	N/A
ü	N/A
 Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose contaminated material (soil, etc.) at licensed sites only. Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. Ensure that good housekeeping rules are applied. Minimise storage of hazardous substances onsite during construction. Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. Waste separation must be undertaken if practical for recycling. 	
Provide all workers with environmental awareness training and comply with the requirements of the EMPr.	
	the access road and entering the site will be informed of the speed limit. Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. Potential loss of invertebrates that live in the top layers of the soil. Low IMPACT 2: WATER RESOURCES: Potential for ground water pollution due to oil spills during equipment. No surface water resources are in close proximity to the proposed mining site. makes use of a dry primary processing technique. PREFERRED AND ONLY ALTERNATIVE Negative Site & Short term Loss Unlikely Low Reversible Rainfall is very seldom and evaporation rate is very high. Indirect impacts on surface water are very unlikely. Low Medium High High High Pigh Place oil traps under stationary machinery, only re-fuel machines at fuelling station, construct structures to trap fuel spills at fuelling station, immediately clean oil and fuel spills and dispose contaminated material (soil, etc.) at licensed sites only. Take care that temporary onsite sanitation facilities are well maintained and serviced regularly. Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. Ensure that good housekeeping rules are applied. Minimise storage of hazardous substances onsite during construction. Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. Waste separation must be undertaken if practical for recycling.

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	No sewage system will be required and a dry enviro loo system will be developed.	
	Water for dust suppression to be sourced from recycled grey water system.	
	Potable water to be sourced from rain collection or trucked in from outside sources.	
	Waste water (i.e., including process water and grey water)	
	By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the	
	flow and end destination of decontamination washing water will be controlled.	
	Although erosion and runoff are natural processes it should be managed by maintaining topsoil in any areas	
	not in use and maintaining maximum existing vegetation coverage.	
	Slow storm water runoff with contoured, low-gradient drains and channels.	
	Storm water diversion and erosion control contour berms separate clean and contaminated water systems	
	around the pit and infrastructure areas.	
Residual impacts:	Disposal of contaminated soil on site in bio-cells requires existing infrastructure, which are already available on the adjacent mine.	N/A
Cumulative impact post mitigation:	Very Low	N/A
Significance rating of impact after mitigation	Very Low	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Potential impact and risk:	IMPACT 3: IMPACT ON NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING IN A CRITIC	AL BIODIVERSITY AREA 2
Potential Impacts on Biodiversity	(CBA 2): The mining footprint will be cleared and topsoil stockpiled for rehabilitation as rec	uired.
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site & Short term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact may cause	Low	N/A
irreplaceable loss of resources:		
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation.	N/A
	Removal of alien invasive vegetation if required, is a positive impact, and will benefit the ecological	
	functioning.	
	The only identified land use is small stock grazing and due to the restoration in land use and small scale of the	
	operation mining will not have any additional impact and the land will revert back to its former use grazing	
	with an improvement in production.	
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation	Medium	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Degree to which the impact can be avoided :	Low	N/A
Degree to which the impact can be managed :	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	Refer to Diagrams 6a and 6b , which indicates the area for mining and the existing farm tracks that will be used wherever possible.	N/A
	Remove topsoil and store it for the rehabilitation components, therefore protecting any seed banks that may be stored.	
	be stored.	

Residual impacts:	 No indigenous plants outside of the demarcated work areas may be damaged. The noise and vibration caused by the earthmoving equipment will disturb smaller animals. These will move away whilst operations are in progress. Should any animals be encountered these should be moved away by a suitably trained nature conservation officer, if necessary. Impact on ecological functioning will be at a local level during the construction process, and for a short time period, with sequential rehabilitation using the site's topsoil. The only identified land use is small stock grazing and due to the restoration in land use the mining will not have any additional impact and the land will revert back to its former use grazing with an improvement in 	N/A
	production. The clearing of alien invasive vegetation is a positive impact.	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	N/A
Potential impact and risk: Contamination & Pollution	IMPACT 4: POTENTIAL FOR SOIL CONTAMINATION AND SOLID WASTE POLLUTION DURING	CONSTRUCTION PHASE
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site & Short term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Possible	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Low	N/A
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	Windblown litter will cause visual blight. Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning.	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	N/A
Degree to which the impact can be avoided :	High	N/A
Degree to which the impact can be managed:	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	 Oils and lubricants must be stored within sealed containment structures of the demarcated areas of the adjacent mine. Any mechanical equipment maintenance must be undertaken on drip trays or UPVC sheets to prevent spills/leaks onto the soil. When not in use, a drip tray must be placed beneath mechanical equipment and vehicles. Machinery must be kept in good working order and regularly inspected for leaks. A spill kit will be available on each site where mining activities are in progress. Any spillages will be cleaned up immediately. Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. Waste separation must be undertaken if practical for recycling 	N/A

	Provide a bin at the site.	
	Regularly dispose of any solid waste at a municipal waste disposal site.	
	Ensure all workers comply with the requirements of the EMPr.	
	Provide a mobile ablution facility.	
Residual impacts:	A lack of waste food management encourages vermin.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Potential impact and risk:	IMPACT 5: VISUAL IMPACT: Caused by the front-end loader, topsoil stockpiles, cleared are	•
Potential Impacts on Visual	on site during preparation of site access and site establishment. The site is however, remo	te and rural in nature with
Landscape	very few receptors (people) as it is located on private property.	
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site & Short term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact may cause	Low	N/A
irreplaceable loss of resources:		•
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	There are few indirect impacts as the area is remote and rural, with no people (receptors) living near the site.	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation	Low	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Degree to which the impact can be avoided :	Medium	N/A
Degree to which the impact can be managed:	Medium	N/A
Degree to which the impact can be mitigated :	Medium	N/A
Proposed mitigation:	The construction areas shall be kept neat and tidy at all times. Equipment must be kept in designated areas	N/A
	and storing/stockpiling shall be kept orderly.	
	Restrict working hours to normal work day hours with no work over weekends when holidays occur to	
	minimize hauling trucks along access roads.	
Residual impacts:	Good housekeeping will ensure a neat and well-maintained construction area reducing visual impact.	N/A
Cumulative impact post mitigation:	Very Low	N/A
Significance rating of impact after mitigation	Very Low	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Potential impact and risk:	IMPACT 6: EMMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by mir	ing equipment (e.g. front
Potential Impacts on Social, and	end loaders) and vehicles, which will emit Greenhouse Gases.	
Biophysical Environments		
	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	PREFERRED AND ONLY ALTERNATIVE Negative	NO-GO ALTERNATIVE N/A
	Negative	N/A
Nature of impact: Extent and duration of impact: Consequence of impact or risk:		

Degree to which the impact may cause irreplaceable loss of resources:	Low	N/A
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	 Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Local residents along the access tracks and roads would be impacted on by noise, dust and vehicle emissions during the construction activities. Increase in Greenhouse Gas Emissions from vehicles. 	N/A
Cumulative impact prior to mitigation:	Low	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	N/A
Degree to which the impact can be avoided :	Medium	N/A
Degree to which the impact can be managed :	Medium	N/A
Degree to which the impact can be mitigated :	Medium	N/A
Proposed mitigation:	 The Contractor shall adhere to the local by-laws and regulations regarding the noise and associated hours of operations. The Contractor shall limit noise levels (e.g. install and maintain silencers on machinery). The provisions of SANS 1200A Sub clause 4.1 regarding "built-up" area shall apply to all areas within audible distance of residents whether in urban, peri-urban or rural areas. Construction and demolition activities generating output of 85dB or more, shall be limited to normal working hours and not allowed during weekends to limit the impact of noise of neighbours. Should the Contractor need to work outside normal working hours, the surrounding neighbours shall be informed prior to the work taking place. No amplified music shall be allowed on site. Hauling vehicles shall adhere to municipal and provincial traffic regulations including speed limits. Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions. Stockpiles must be maintained (covered where necessary) to avoid wind erosion of the material. Incremental clearing of ground cover should take place to avoid unnecessary exposed surfaces. 	N/A
Residual impacts:	Carbon emissions have impact on climate change.	N/A
Cumulative impact post mitigation:	Very Low	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low	N/A
Potential impact and risk:	IMPACT 7: POTENTIAL FOR HERITAGE, PALAEONTOLOGICAL AND CULTURAL IMPACTS:	
Potential Impacts on Heritage,	Refer to Appendix C1.	
Paleontological and Cultural	neici to Appendix e1.	
landscape	DEFFERENCE AND ONLY ALTERNATIVE	NO CO ALTERNATIVE
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Neutral Site & Long torm	N/A
Extent and duration of impact:	Site & Long term	N/A
Consequence of impact or risk:	Loss	N/A N/A
Probability of occurrence: Degree to which the impact may cause	Definite Low	N/A N/A
irreplaceable loss of resources:	Low	IN/A

Degree to which the impact can be reversed:	Irreversible	N/A
Indirect impacts:	Excavations provide opportunities to observe buried surfaces containing stone artefacts.	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (Mine Pit only - all other areas are insignificant pre-mitigation)	N/A
Degree to which the impact can be avoided :	Low	N/A
Degree to which the impact can be managed:	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	 The following recommendations are made in Appendix C1: Archaeological monitoring of the mine pit to record the presence (or not) of buried surfaces containing stone artefacts must take place when topsoil stripping reaches the buried aeolian/silcrete interface. This monitoring to take place at intervals to be agreed with the mine. A Fossil Chance Find Protocol should be implemented in the unlikely event of fossil material being encountered (Appendix C2). Should any archaeological material, including human burials, be accidentally exposed during the course of mining, work must cease in that area until the project archaeologist and SAHRA have been notified, the find has been assessed by the archaeologist, and agreement has been reached on how to deal with it. These proposed mitigation measures must be included in the Environmental Management Plan for the mine. ACO Associates concluded that it is their reasoned opinion that the proposed activities may be authorised. The archaeological resources are not highly significant in themselves, although their relationship to silcrete outcrops in factors. 	N/A
Residual impacts:	is of interest. There are no areas that need to be avoided or buffer zones that need to be implemented. Dependent upon whether or not heritage resources are encountered and on the recommendations to be implemented.	N/A
Cumulative impact post mitigation:	None, depending on any findings.	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (-) (Mine Pit area – all other areas require no mitigation and rating post mitigation is N/A.)	N/A
Potential impact and risk:	IMPACT 8: CREATION OF EMPLOYMENT & JOB SECURITY DURING CONSTRUCTION PHASE	WITH LOCAL AND
Potential Impacts on Socio-	REGIONAL ECONOMIC SPIN-OFFS	
Economic Environment		
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Positive Positive	Negative
Extent and duration of impact:	Local, District and Short term	Local, District & Short Term
Consequence of impact or risk:	Gain	Loss
Probability of occurrence:	Definite	Definite
Degree to which the impact may cause irreplaceable loss of resources:	No Loss	Medium
Degree to which the impact can be reversed:	Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible)	Reversible
Indirect impacts:	Upskilling Local economic spin-offs through increased income earned, and through purchasing of local materials	No upskilling No local economic spin-offs due to lack of income earned, and limited supply of kaolin materials. Opportunity cost for

		landowner and applicant.
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)
Significance rating of impact prior to mitigation	Low (-)	Medium (-)
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Degree to which the impact can be avoided :	Very low	Medium
Degree to which the impact can be managed :	High	Medium
Degree to which the impact can be mitigated :	High	Medium
Proposed mitigation:	Employment of local previously disadvantaged labour wherever possible, with provision of training	No mitigation possible with No-
	(upskilling)	Go alternative.
Residual impacts:	The upliftment of unemployed people, with positive impact on standard of living for their families.	No job creation or potential for
	Increase in local building materials, which reduce economies of scale for building projects in the region, such as	upskilling of previously
	for the renewable energy sector.	disadvantaged labour, and no
		supply of Kaolin.
Cumulative impact post mitigation:	Medium (+)	Medium (-)
Significance rating of impact after mitigation	Medium (+)	Medium (-)
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		

Table 2: Impact Assessment during Operational Phase

OPERATIONAL PHASE		
Potential impact and risk: Loss of soil, increased dust levels, and soil compaction	IMPACT 1: SOIL EROSION, SOIL COMPACTION & GEOLOGICAL SEQUENCE: The mining of Kaolin will result in the removal of topsoil, overburden and the sub-layers of Kaolin. Impacts are the potential for soil erosion by wind and loss of soil in the event of rainfall; soil compaction from repeated use of access tracks; and changes in the landscap and topography from overburden and waste dumps, stockpiles and the open pit.	
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site & Long term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Medium	N/A
Degree to which the impact can be reversed:	Reversible	N/A
Indirect impacts:	 Dust impacting on adjacent vegetation and causing a nuisance to workers. Compaction of topsoil damages seed bank and habitat for invertebrates. 	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	N/A
Degree to which the impact can be avoided :	Medium	N/A
Degree to which the impact can be managed:	Medium	N/A
Degree to which the impact can be mitigated :	Medium	N/A
Proposed mitigation:	The focus of topographic rehabilitation may not be obvious at the time of mine planning and must be addressed as the mine develops and the Closure Plan (Appendix E) must be reviewed periodically for continued relevance	N/A

	The Baltin Colonial and a state of the second and a second and a second as	T
	in the light of changed mine path or long-term plans.	
	Mine pit to be developed in benches not exceeding 3m in height. At final class with a side of the horses with a class of the form as a considerable with a class of the constant of the	
	 At final closure the sides of the burrow pit will be sloped to form an even depression without any steep high walls. 	
	Actions to mitigate the risk of erosion on waste dumps will be through implementation of practices such as	
	leaving the profiling contours created by equipment tracks.	
	Waste dumps must be designed to meet minimum slope stability and safety standards and vegetated with	
	reduce erosion and runoff.	
	The main closure objective is to leave the site in as safe and self-sustaining a condition as possible and in a	
	situation where no post-closure intervention is required. The aim is to ensure that the affected	
	environment is maintained in a stable condition that will not be detrimental to the safety and health of	
	humans and animals and that will not pollute the environment or lead to the degradation thereof. The	
	aesthetic value of the area will also be reinstated.	
	The basic rehabilitation methodology will therefore strive to replicate the pre-mining topography,	
	wherever possible, or at least not to increase overall slope gradients without emplacement of adequately	
	designed erosion control or runoff diversion structures.	
	 After clearing, the affected area shall be stabilized to prevent any erosion or sediment runoff. Stabilised areas shall be demarcated accordingly. 	
	 Incremental clearing of vegetation should take place to avoid unnecessary exposed surfaces. 	
	Reasonable measures must be undertaken to ensure that any exposed areas are adequately protected against the wind and stormwater run off	
	 against the wind and stormwater run-off. The stockpile areas for topsoil are temporary as they will be re-used on a cut and fill basis. 	
	Stockpiles should ideally be located to create the least visual impact and must be maintained to avoid	
	erosion of the material.	
	Reduce drop height of material to a minimum.	
	Temporarily halt material handling in windy conditions.	
	A speed limit of 30km/hour will be displayed and enforced through a fining system. All vehicle drivers using the acceptance of a device of the city of the control of	
	the access road and entering the site will be informed of the speed limit.	
	 Compacted areas that are not required for access shall be scarified after use during decommissioning and rehabilitation. 	
	No industrial or mine waste is generated during the mining process.	
	Processing shall include the spreading of Kaolin to dry out where after it will be screened and bagged to be	
	sold as a FoT product.	
	Product stockpiles shall form part of the drying area that shall also serve as a dispatch yard. The stockpiles shall form part of the drying area that shall also serve as a dispatch yard.	
	Primary processing shall include screening by means of a "trommel screen" provided as part of the discost prossion so no Fine Residue Rumps (FRR) will be exceeded.	
	 adjacent operation so no Fine Residue Dumps (FRD) will be created. Unmanaged soil erosion will result in loss of topsoil. 	N/A
Residual impacts:	Unmanaged dust will cause a nuisance and impact on the health of the workers.	17/0
Nesidual Impaces.	 Visual change in landscape and topography following rehabilitation. 	
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A
(e.g. Low, Medium, Medium-High, High, or Very-High)		
Potential impact and risk:	IMPACT 2: WATER RESOURCES: Potential for ground water pollution due to oil spills duri	ng routine maintenance of
-	equipment. No surface water resources are in close proximity to the proposed mining site	e. The mining method makes
Potential Impacts on Water	use of a dry primary processing technique. No Water Use License is required.	.
Resources		

ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Unlikely	N/A
Degree to which the impact may cause	Low	N/A
irreplaceable loss of resources:		
Degree to which the impact can be reversed:	Irreversible	N/A
Indirect impacts:	 Rainfall is very seldom and evaporation rate is very high. Indirect impacts on surface water are very unlikely. 	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	N/A
Degree to which the impact can be avoided :	Medium	N/A
Degree to which the impact can be managed:	Medium	N/A
Degree to which the impact can be mitigated :	Medium	N/A
Proposed mitigation:	 Implement and follow water saving procedures and methodologies. Place oil traps under stationarry machinery, only re-fuel machines at fueling station, construct structures to trap fuel spills at fueling station, immediately clean oil and fuel spills and dispose contaminated material (soil, etc.) at licensed sites only. Take care that any temporary onsite sanitation facilities are well maintained and serviced regularly. Draw-up and strictly enforce procedures for the storage, handling and transport of different hazardous materials. Ensure vehicles and equipment are in good working order and drivers and operators are properly trained. Ensure that good housekeeping rules are applied. Minimise storage of hazardous substances onsite during construction. Service and refuel construction vehicles at a fit-for-purpose facility to minimise pollution risks. Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility. Waste separation must be undertaken if practical for recycling. Provide all workers with environmental awareness training and comply with the requirements of the EMPr. No sewage system will be required and a dry enviro loo system will be developed. Water for dust suppression to be sourced from recycled grey water system. Potable water to be sourced from rain collection or trucked in from outside sources. Waste water (i.e., including process water and grey water) By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the flow and end destination of decontamination washing water will be controlled. A Standard French drain system will be developed for grey water disposal. Although erosion and runoff are natural processes it should be managed by maintaining topsoil in an	N/A
Residual impacts:	around the pit and infrastructure areas Disposal of contaminated soil on site in bio-cells requires existing infrastructure, which are already available on the adjacent mine.	N/A

Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	N/A
Potential impact and risk: Potential Impacts on Biodiversity	IMPACT 3: IMPACT ON NATURAL VEGETATION AND ECOLOGICAL FUNCTIONING IN AN CR (CBA 2): The proposed mining area footprint will be cleared, mined and rehabilitated wit resulting in a short-term impact on localised ecological functioning. Transport of materia access tracks resulting in little impact on ecological functioning at a local level during the machinery and trucks will disturb local fauna however, the adjacent area is already being	h the topsoil from the site, Is will be along existing operation phase. The
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	N/A
Extent and duration of impact:	Site & Short term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact may cause irreplaceable loss of resources:	Low	N/A
Degree to which the impact can be reversed:	Irreversible	N/A
Indirect impacts:	 Soil disturbance caused by vegetation clearing will provide suitable conditions for the establishment and spreading of alien invasive vegetation. Removal of alien invasive vegetation is a positive impact, and will benefit the ecological functioning. The only identified land use is small stock grazing and due to the restoration in land use and small scale of the operation mining will not have any additional impact and the land will revert back to its former use grazing with an improvement in production. 	N/A
Cumulative impact prior to mitigation:	Medium	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	N/A
Degree to which the impact can be avoided :	Low	N/A
Degree to which the impact can be managed :	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	 Refer to Diagrams 6a and 6b, which indicates that existing farm tracks will be used, and the existing infrastructure. Remove topsoil and store it for the rehabilitation components, therefore protecting any seed banks that may be stored. The mining area and stockpile areas must be demarcated and the footprint contained within the demarcated area. The annual rehabilitation plan must be implemented. Remove alien invasive vegetation, and ensure ongoing alien vegetation clearing in the area. No indigenous plants outside of the demarcated work areas may be damaged. The noise and vibration caused by the earthmoving equipment will disturb smaller animals. These will move away whilst operations are in progress. Should any animals be encountered these should be moved away by a suitably trained nature conservation officer, if necessary. 	N/A
Residual impacts:	The only identified land use is small stock grazing and due to the restoration in land use and small scale of the operation mining will not have any additional impact and the land will revert back to its former use grazing with an improvement in production. The clearing of alien invasive vegetation is a positive impact and will benefit the ecological functioning.	N/A

Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation	Low	N/A
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Potential impact and risk: Contamination & Pollution	IMPACT 4: POTENTIAL FOR SOIL CONTAMINATION AND SOLID WASTE POLLUTION DURING OPERATIONAL PHASE	
	DREFERRED AND ONLY ALTERNATIVE	NO CO ALTERNATIVE
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE Negative	NO-GO ALTERNATIVE
Nature of impact:	Site & Short term	
Extent and duration of impact:		
Consequence of impact or risk:	Loss	
Probability of occurrence:	Possible	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:	Windblown litter will cause visual blight. Hydrocarbons are toxic and will cause vegetation die-back and soil poisoning.	
Cumulative impact prior to mitigation:	Medium	
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	
Degree to which the impact can be avoided :	High	
Degree to which the impact can be managed:	High	
Degree to which the impact can be mitigated :	High	
Proposed mitigation:	 Oils and lubricants must be stored within sealed containment structures of the demarcated areas of the adjacent mine. Any mechanical equipment maintenance must be undertaken on drip trays or UPVC sheets to prevent spills/ leaks onto the soil. When not in use, a drip tray must be placed beneath mechanical equipment and vehicles. Machinery must be kept in good working order and regularly inspected for leaks. A spill kit will be available on each site where mining activities are in progress. Any spillages will be cleaned up immediately. Unwanted steel, sheet metal and equipment need to be stored in a demarcated salvage yard, and will need to be sold or disposed of as scrap metal. Recycling and reusing materials may reduce garbage haul fees or generate income through the sale of scrap metal and old equipment. All equipment and other items used during the mining operation needs to be removed from the site during rehabilitation. Waste material of any description, including receptacles, scrap, rubble and tyres, must be removed entirely from the mining area and disposed of at a recognised landfill facility. It will not be buried or burned on the site. All temporary waste storage areas need to be cleaned out and waste removed. Tyres to be return to supplier or a company that uses old tyres for making door mats, shoes, swings, etc. Batteries to be return to supplier or dispose at a permitted hazardous waste facility. Fluorescent tubes to be collected in sealed containers (stored on concrete slabs) and removed from site for disposal at a permitted hazardous waste facility. 	

	disposing of the waste. (DO NOT sell chemical containers to workers or communities). • Laboratory waste (chemicals) - Returned to supplier or disposed of at a permitted facility that is capable of	
	disposing of the waste. Industrial chemicals (laboratory waste) - Returned to supplier or disposed of at a permitted facility that is	
	capable of disposing of the waste.	
	Used oils / hydrocarbons fuels / liquids are to be collected in sealed containers (stored on concrete slabs)	
	and removed from site for recycling by a reputable company.	
	 All waste in the temporary storage area for used lubrication products and other hazardous chemicals will be disposed of at a collection point from where it will be collected by a waste recycling company. 	
	Generator bays will be constructed with the necessary pollution control measures (drip trays).	
	Hydrocarbon contaminated sludge (collected in oil traps) - Removed from the oil traps and removed from	
	site for recycling (if possible) or disposal at a suitably permitted facility.	
	Equipment used in the mining process will be adequately maintained in the workshops of the company so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid.	
	By keeping contaminated and clean water separate and establishing controlled runoff washing bays, the	
	flow and end destination of decontamination washing water will be controlled.	
	Oils and lubricants must be stored within sealed containment structures of the demarcated areas of the adjacent mine.	
	Waste materials generated on site must be stored in suitable lidded containers and removed off site to a suitable disposal facility.	
	Waste separation must be undertaken if practical for recycling.	
	Provide all workers with environmental awareness training.	
	 In order to ensure that waste classes are kept in separate streams, communication will be passed on and people will be trained on the different waste classes. 	
	 Ensure all workers comply with the requirements of the EMPr. Training of personnel in the implementation of the Closure Plan will done and the implementation of the environmental awareness plan will be an ongoing process. 	
	Regularly dispose of any solid waste at a municipal waste disposal site.	
	Provide a mobile ablution facility.	
Residual impacts:	A lack of waste food management encourages vermin.	
Cumulative impact post mitigation:	Low	
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Potential impact and risk:	IMPACT 5: VISUAL INTRUSION: Caused by the machinery, topsoil and rock stockpiles, clear	red areas, and movement of
Potential Impacts on Visual	trucks on site. The site is however, remote and rural in nature with no receptors (people)	
Landscape	property.	
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Negative	
Extent and duration of impact:	Site & Short term	
Consequence of impact or risk:	Loss	
Probability of occurrence:	Definite	
Degree to which the impact may cause irreplaceable loss of resources:	Low	
Degree to which the impact can be reversed:	Reversible	
Indirect impacts:	There are few indirect impacts as the area is remote and rural, with no people (receptors) living near the site.	

Cumulative impact prior to mitigation:	Low	
Significance rating of impact prior to mitigation	Low	
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
Degree to which the impact can be avoided :	Medium	
Degree to which the impact can be managed :	Medium	
Degree to which the impact can be mitigated :	Medium	
Proposed mitigation:	Maintain the height of the stockpile areas at a maximum of 2 metres.	
· -	The site shall be kept neat and tidy at all times. Equipment must be kept in designated areas and	
	storing/stockpiling shall be kept orderly.	
	Restrict working hours to normal work day hours with no work over weekends when holidays occur to	
	minimize hauling trucks along access roads.	
	The impact is temporary and after mining the excavations will be sloped, all oversize material and	
	overburden will be backfilled, top soiled and allowed to re-vegetate naturally resulting in an even	
	depression with no residual impact.	
Residual impacts:	Good housekeeping will ensure a neat and well-maintained construction area reducing visual impact.	
Cumulative impact post mitigation:	Very Low	
Significance rating of impact after mitigation	Very low	
(e.g. Low, Medium, Medium-High, High, or		
Very-High)		
	TRADACTIC FRANCICIONIC (DUCT VICINICIES O MOJES) N	ning equinment (e.g. front
Potential impact and risk:	IMPACT 6: EMMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by mil	
	IMPACT 6: EMMISSIONS (DUST, VEHICLES & NOISE): Noise and dust will be created by min	mig equipment (e.g. none
Potential Impacts on Social, and	end loaders) and vehicles, which will emit Greenhouse Gases.	mig equipment (e.g. none
Potential Impacts on Social, and Biophysical Environments	end loaders) and vehicles, which will emit Greenhouse Gases.	
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative	NO-GO ALTERNATIVE
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term	NO-GO ALTERNATIVE N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss	NO-GO ALTERNATIVE N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite	NO-GO ALTERNATIVE N/A N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss	NO-GO ALTERNATIVE N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer.	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed:	PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise,	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions.	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation:	PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise,	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Low Low	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High) Degree to which the impact can be avoided:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Medium	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High) Degree to which the impact can be avoided: Degree to which the impact can be managed:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Medium Medium	NO-GO ALTERNATIVE N/A N/A N/A N/A N/A N/A N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High) Degree to which the impact can be avoided: Degree to which the impact can be managed: Degree to which the impact can be mitigated:	PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low • Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. • Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Medium Medium Medium Medium	NO-GO ALTERNATIVE N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High) Degree to which the impact can be avoided: Degree to which the impact can be managed: Degree to which the impact can be mitigated:	end loaders) and vehicles, which will emit Greenhouse Gases. PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Low Medium Medium Medium Medium Medium Medium Preferred AND ONLY ALTERNATIVE Negative Site and Short term Loss Definite Low Low Ensure Kaolin hauling is during normal working hours and not on weekends.	NO-GO ALTERNATIVE N/A N/
Potential Impacts on Social, and Biophysical Environments ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed: Indirect impacts: Cumulative impact prior to mitigation: Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High) Degree to which the impact can be avoided: Degree to which the impact can be managed: Degree to which the impact can be mitigated:	PREFERRED AND ONLY ALTERNATIVE Negative Site and short term Loss Definite Low Carbon emissions from vehicle exhausts have a negative impact on the ozone layer. Residents and occupants of work places along the access tracks and roads would be impacted on by noise, dust and vehicle emissions. Low Medium Medium Medium Medium Medium Medium Person Residents and in auling is during normal working hours and not on weekends. No amplified music shall be allowed on site.	NO-GO ALTERNATIVE N/A N/

	 limits. Vehicles used on site for the construction related activities shall be maintained and in a good working condition so as to reduce emissions. Engines shall be turned off when the vehicle is temporarily parked or stationery for long periods. 	
	Ensure bagged Kaolin is properly secured for hauling.	
Residual impacts:	Dust settling on adjacent vegetation can impact on vegetative growth, which is a short-term impact until the rainfall season.	N/A
Cumulative impact post mitigation:	Low	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	
Potential impact and risk:	IMPACT 7: LIMITED POTENTIAL FOR HERITAGE, PALAEONTOLOGICAL AND CULTURAL IMP	PACTS:
Potential Impacts on Heritage,		ACIS.
	Refer to Appendix C1.	
Paleontological and Cultural		
landscape		
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Neutral	N/A
Extent and duration of impact:	Site & Long term	N/A
Consequence of impact or risk:	Loss	N/A
Probability of occurrence:	Definite	N/A
Degree to which the impact may cause	Low	N/A
irreplaceable loss of resources:		1 21/2
Degree to which the impact can be reversed:	Irreversible	N/A
Indirect impacts:	Excavations provide opportunities to observe buried surfaces containing stone artefacts.	N/A
Cumulative impact prior to mitigation:	Medium (Mine Pit only - all other areas are insignificant pre-mitigation)	N/A
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	N/A
Degree to which the impact can be avoided :	Low	N/A
Degree to which the impact can be managed :	High	N/A
Degree to which the impact can be mitigated :	High	N/A
Proposed mitigation:	 The following recommendations are made in Appendix C1: Archaeological monitoring of the mine pit to record the presence (or not) of buried surfaces containing stone artefacts must take place when topsoil stripping reaches the buried aeolian/silcrete interface. This monitoring to take place at intervals to be agreed with the mine. A Fossil Chance Find Protocol should be implemented in the unlikely event of fossil material being encountered (Appendix C2). Should any archaeological material, including human burials, be accidentally exposed during the course of mining, work must cease in that area until the project archaeologist and SAHRA have been notified, the find has been assessed by the archaeologist, and agreement has been reached on how to deal with it. These proposed mitigation measures must be included in the Environmental Management Plan for the mine. ACO Associates concluded that it is their reasoned opinion that the proposed activities may be authorised. The archaeological resources are not highly significant in themselves, although their relationship to silcrete outcrops is of interest. There are no areas that need to be avoided or buffer zones that need to be implemented. 	

Residual impacts:	Dependent upon whether or not heritage resources are encountered and on the recommendations to be	N/A
Cumulative impact post mitigation:	implemented. None, depending on any findings.	N/A
Significance rating of impact after mitigation	Low (-) (Mine Pit area – all other areas require no mitigation and rating post mitigation is N/A.)	N/A
(e.g. Low, Medium, Medium-High, High, or Very-High)		
Potential impact and risk:	IMPACT 8: CREATION OF EMPLOYMENT & JOB SECURITY DURING OPERATIONAL PHASE \	WITH LOCAL AND REGIONAL
Potential Impacts on Socio-	ECONOMIC SPIN-OFFS	
Economic Environment		
ALTERNATIVE	PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Nature of impact:	Positive	Negative
Extent and duration of impact:	Local, district and Short term	Local, District & Short Term
Consequence of impact or risk:	Gain	Loss
Probability of occurrence:	Definite	Definite
Degree to which the impact may cause	No loss	Medium
irreplaceable loss of resources:		
Degree to which the impact can be reversed:	Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible)	Reversible
Indirect impacts:	 Upskilling Local economic spin-offs through increased income earned, and through purchasing of local materials required for the construction activities. 	 No upskilling No local economic spin-offs due to lack of income earned, and limited supply of Kaolin materials. Opportunity cost for landowner and applicant.
Cumulative impact prior to mitigation:	Medium (-)	Medium (-)
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (-)	Medium (-)
Degree to which the impact can be avoided :	Very low	Medium
Degree to which the impact can be managed:	High	Medium
Degree to which the impact can be mitigated :	High	Medium
Proposed mitigation:	Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling)	No mitigation possible with No- Go alternative.
Residual impacts:	The upliftment of unemployed people, with positive impact on standard of living for their families. Increase in local building materials, which reduce economies of scale for building projects in the region, such as for the renewable energy sector.	No job creation or potential for upskilling of previously disadvantaged labour, and no supply or purchasing of local materials.
Cumulative impact post mitigation:	Medium (+)	Medium (-)
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (-)

Table 3: Impact Assessment during Decommissioning and Closure Phase

DECOMMISSIONING & CLOSURE PHASE		
IMPACT 1: REHABILITATION OF MINED AND CLEARED AREAS: As per Rehabilitation, Deco	ommissioning and Mine	
•	· ·	
South France (Control of the Control		
ALTERNATIVE 1 (PREFERRED)	NO-GO ALTERNATIVE	
Positive	N/A	
Local & short term	N/A	
Gain	N/A	
Definitely	N/A	
No loss	N/A	
Reversible	N/A	
 Biodiversity of area and grazing for stock will improve due to improved soil properties mixed with low grade Kaolin. Fauna will return to the disturbed areas. 	N/A	
Medium	N/A	
Medium	N/A	
Very low (rehabilitation is mandatory)	N/A	
High	N/A	
High	N/A	
 Implementation of Final Rehabilitation, Decommissioning and Mine Closure Plan (Appendix E). Compacted areas shall be scarified after use during decommissioning and rehabilitation. Any stored topsoil shall be spread over the scarified surface. Ongoing removal of alien invasive vegetation as required. After mining the excavations will be sloped, all oversize material and overburden will be backfilled, top soiled and allowed to re-vegetate naturally resulting in an even depression with no residual impact. Distinguished between farming and mining infrastructure and waste, and in consultation with landowner Identify infrastructure and services to remain after closure. The cement structures for the fuel supply including service apron/wash bay will remain as part of farm improvement and the mine will only be responsible for maintenance and waste management. Redundant structures, buildings and civil foundations (down to one meter below surface for subsurface infrastructure) will be removed for use elsewhere or demolished and discarded. All redundant infrastructure and services need to be demolished including ruins, buildings, foundations, footings. Building rubble will be used as backfill in excavations or removed from site in the absence of excavations. All steel structures and reinforcing will be discarded or sold as scrap. Remove all power supply installations not to be retained by landowner in terms of section 44 of the MPRDA. Excavations created by removing subsurface infrastructure needs to be filled, levelled and compacted. Implementing screening as part of the cleaning activities before materials are moved from the mine. 	N/A	
	IMPACT 1: REHABILITATION OF MINED AND CLEARED AREAS: As per Rehabilitation, Deco Closure Plan (Appendix E) ALTERNATIVE 1 (PREFERRED) Positive Local & short term Gain Definitely No loss Reversible Biodiversity of area and grazing for stock will improve due to improved soil properties mixed with low grade Kaolin. Fauna will return to the disturbed areas. Medium Medium Very low (rehabilitation is mandatory) High High Implementation of Final Rehabilitation, Decommissioning and Mine Closure Plan (Appendix E). Compacted areas shall be scarified after use during decommissioning and rehabilitation. Any stored topsoil shall be spread over the scarified surface. Ongoing removal of alien invasive vegetation as required. After mining the excavations will be sloped, all oversize material and overburden will be backfilled, top soiled and allowed to re-vegetate naturally resulting in an even depression with no residual impact. Distinguished between farming and mining infrastructure and waste, and in consultation with landowner identify infrastructure and services to remain after closure. The cement structures for the fuel supply including service apron/wash bay will remain as part of farm improvement and the mine will only be responsible for maintenance and waste management. Redundant structures, buildings and civil foundations (down to one meter below surface for subsurface infrastructure) will be removed for use elsewhere or demolished and discarded. All redundant infrastructure and services need to be demolished including ruins, buildings, foundations, footings. Building rubble will be used as backfill in excavations or removed from site in the absence of excavations. All steel structures and reinforcing will be discarded or sold as scrap. Remove all power supply installations not to be retained by landowner in terms of section 44 of the MPRDA. Excavations created by removing subsurface infrastructure needs to be filled, levelled and compacted.	

	 and levelled. Decontaminate oil and diesel contaminated soils and structures with biochemical agents prior to removal. Final walk through of complete mining lease area to ensure no mining related waste and of re-usable infrastructure remain on site. Coarse natural material used for the construction of ramps must be removed and dumped into the excavations. Reshaping of the mine pit to create shallow depressions. Level the complete disturbed areas and restore the original profile to blend in with the natural topography. On completion of mining operations, the surface of the disturbed areas especially if compacted due to hauling and dumping operations, shall be scarified to a depth of at least 300mm and the previously stored topsoil will be returned to its original depth over the area. To ensure long-term stability, the restored soil cover should attempt to mimic the pre-mining distribution of soil texture and thickness Unnecessary destruction of vegetation should be avoided by ensuring that traffic and personnel movement be restricted to demarcated areas. No traffic should be allowed on the rehabilitated areas. Minimise noise disturbance: limiting earth moving to day time. 	
Residual impacts:	The only identified land use is small stock grazing and due to the restoration in land use and small scale of the operation mining will not have any additional impact and the land will revert back to its former use grazing with an improvement in production.	N/A
Cumulative impact post mitigation:	Very Low	N/A
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Very Low	N/A
Potential impact and risk:	IMPACT 2: ONGOING EMPLOYMENT WITH LOCAL AND REGIONAL ECONOMIC SPIN-OFFS I	DURING DECOMMISSIONING
•	IMPACT 2: ONGOING EMPLOYMENT WITH LOCAL AND REGIONAL ECONOMIC SPIN-OFFS I & CLOSURE PHASE	DURING DECOMMISSIONING
Potential impact and risk: Potential Impacts on Socio- Economic Environment		DURING DECOMMISSIONING
Potential Impacts on Socio-		NO-GO ALTERNATIVE
Potential Impacts on Socio- Economic Environment	& CLOSURE PHASE	
Potential Impacts on Socio- Economic Environment ALTERNATIVE	& CLOSURE PHASE PREFERRED AND ONLY ALTERNATIVE	NO-GO ALTERNATIVE
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk:	& CLOSURE PHASE PREFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term Gain	NO-GO ALTERNATIVE Negative
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence:	& CLOSURE PHASE PREFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term	NO-GO ALTERNATIVE Negative Local, District & Short Term
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk:	& CLOSURE PHASE PREFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term Gain Definite No loss	NO-GO ALTERNATIVE Negative Local, District & Short Term Loss
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause	& CLOSURE PHASE PREFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term Gain Definite	NO-GO ALTERNATIVE Negative Local, District & Short Term Loss Definite
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources:	REFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term Gain Definite No loss Irreversible (employment can be lost by an individual due to non-performance but the job provision is	NO-GO ALTERNATIVE Negative Local, District & Short Term Loss Definite Medium
Potential Impacts on Socio- Economic Environment ALTERNATIVE Nature of impact: Extent and duration of impact: Consequence of impact or risk: Probability of occurrence: Degree to which the impact may cause irreplaceable loss of resources: Degree to which the impact can be reversed:	REFERRED AND ONLY ALTERNATIVE Positive Local, district and Short term Gain Definite No loss Irreversible (employment can be lost by an individual due to non-performance but the job provision is irreversible) • Upskilling.	NO-GO ALTERNATIVE Negative Local, District & Short Term Loss Definite Medium Reversible No upskilling No local economic spin-offs due to lack of income earned, and limited supply of Kaolin materials. Opportunity cost for

Degree to which the impact can be avoided :	Very low	Medium
Degree to which the impact can be managed:	High	Medium
Degree to which the impact can be mitigated :	High	Medium
Proposed mitigation:	Employment of local previously disadvantaged labour wherever possible, with provision of training (upskilling)	No mitigation possible with No-Go alternative.
Residual impacts:	The upliftment of unemployed people, with positive impact on standard of living for their families.	No job creation or potential for upskilling of previously disadvantaged labour, and no supply or purchasing of local materials.
Cumulative impact post mitigation:	Medium (+)	Medium (-)
Significance rating of impact after mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (-)