		E			ITAL S MITIC			CE		Ei		NMENTA FTER M			ANCE	Ξ
ACTIVITY	POTENTIAL IMPACT(S)	М	D	S	Р	TOTAL	STATUS	SP	RECOMMENDED MITIGATION MEASURES	М	D	S	TOTAL	I O I AL	STATUS	SP
									Construction							
Surface Water																
Site establishment	•Increase in surface runoff and velocity, leading to erosion	4	2	1	4	28	-	L	 Restrict vegetation clearing to specific footprints. Undertake continual monitoring to identify erosion as early as possible to remedy. Implement the necessary stormwater control measures 	2	2	1	2 10	0	-	L
Fauna																
Site establishment	 Increase in human activity. Disturbance or possible mortality incidents of terrestrian fauna. 	4	2	1	4	28	•		 Restrict all movement of vehicles and heavy machinery to permissible, designated areas. No off-road driving beyond designated areas may be allowed. Strict speed limits must be set and adhered to. Driving between dusk and dawn should be permissible to emergency situations only. 	4	2	1	2 1	4	-	L
Flora																
Site establishment	•Increase in alien invasive vegetation on cleared sites	6	3	2	3	33	,		 Restrict all movement of vehicles and heavy machinery to permissible areas. No off-road driving beyond designated areas may be allowed. Parking areas and vehicles should be regularly inspected for oil spills and covered with an impermeable or absorbent layer (with the necessary storm water control) if oil and fuel spillages are highly likely to occur. Re-fuelling must take place on a sealed surface or drip trays should be used to prevent infiltration of hydrocarbons into topsoil. Footprint areas should be kept as small as possible when removing alien plant species. 	3	2	1	3 1	8	-	L
Site establishment	•Loss of indigenous vegetation due to clearing of the site	8	2	1	4	44	-	М	 Provision must be made for concurrent rehabilitation of the mined operations which will ensure that the area is mined in the designated sections. The EMPR for the quarry operations will make provision for the rehabilitation measures to be implemented at the operations. These must be made applicable to the proposed quarry pit extension. A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from it must be managed as follows: The Mining Permit footprint must be clearly surveyed and demarcated before any construction or operations are set to commence, to ensure that the area to be cleared is limited to only the areas that are necessary for the mining activities. The cleared areas must be regularly monitored for the establishment of alien plant species. These must be cleared when they appear. olf alien invasive plant species become a problem on the site, a formal Alien Invasive Management Plan must be set up 	3	2	1	3 18	8	-	L
Site establishment Rivers and Wetlands	Contamination of the area by domestic waste	4	2	1	3	21		L	and implemented. This plan must make provision for the identification and eradication of these species. •Even though the impacts of contamination of the area by domestic waste are considered to be low pre-mitigation, the following mitigation measures must be included to further reduce the significance of the impact: oA designated eating area must be established within the mining area. oCovered domestic waste bind must be present at the eating area to receive all the domestic waste generated by the labour. oThe capacity of these domestic bins must be monitored on a daily basis to ensure they are emptied timeously. oThe domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker.	2	1	1	2 8	8	-	L

Geology and Topography Site establishment •Cha	ange in baseline topography where the mining will take	2	2	1	2	10		L	- e	Plant indigenous trees common to the habitat to replace riparian vegetation. Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative naterial can be formed, destroy all material to prevent re-establishment. Undertake continual monitoring to identify erosion as early as possible to remedy. Implement the necessary stormwater control measures to ensure no uncontrolled discharge of stormwater takes place. PRestrict disturbance to designated footprint.	2	2	1	1	5		L
place		4	2	1	4	28		L		Strict adhereance to the EMPr. Ensure proper access control to the development area DFencing. DSecurity. DBarriers. Ensure warning signs are erected on the perimeter of these areas. Estructural safety to be ensured according to engineering standards.	4	2	1	4	28		L
	intamination of the area by petrochemical spillages	4	1	1	3	18			f f f c c c c c c c c c c c c c c c c c	Material excavated from the pit is to be stockpiled separately i.e. Overburden and topsoil Topsoil stockpiles must be clearly demarcated and situated away from any operational areas to avoid mixing. The ollowing will be implemented: An inventory will be kept of the topsoil thickness, organic content, texture and fertility status before stripping the oil. And or the surface soil horizon will be stripped first (approximately 50-100mm thick). Thereafter, the A2 soil horizon will be stripped to ensure no mixing of horizons. The subsoil/BC horizon will then be stripped and stockpiled. This layer is required for the profiling of areas when ehabilitated. All topsoil from any operations such as construction of haul roads and ramps will be excavated and stored as above. Soil stockpiles will be protected from erosion by runoff by installing adequate stormwater management systems. The soil and overburden stockpiles will be kept at less than 2m thick with slopes limited to 1:2.5 gradient. The top of the stockpiles should be flattened to reduce the height and length of slopes. Stockpiles will be revegetated with an appropriate mix of perennial grasses and leguminous plants to minimize erosion and reduce visibility, as well as enhance fertility and maintain soil biota. All plant and equipment that make use of petrochemical substances must be checked leakages on a daily basis before operations commence. All plants and equipment that are found to be leaking must be removed from the property and only returned once the eakages have been addressed. All refuelling of plant and equipment must be conducted over a drip-tray. If any plant or equipment is to be parked on the site, these must be parked within the demarcated construction outprint that has been cleared. If any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service orovider.	4	1	1	3	18		L
Land Use Site establishment •Cha	ange in land use from disturbed area to mining									Restrict disturbance to designated footprint. Restrict vehicle movement to designated access roads.							
		4	1	1	2	12	-	L	_ •	Strict adherence to the EMPr. All areas disturbed by activities must be subject to rehabilitation.	2	2	1	1	5	-	L

Site establishment	•Slight increase in trucks on the road.	2	2	2	1	6	-		 The road is designed according to the specifications of a provincial road. The applicant will assist where feasibly possible to repair and maintain the road. The current number of trucks entering and leaving site is expected to be maintained. Restrict the speed of trucks on site. 	2	2	1	1	5	-	L
Cultural and Heritage																
Site establishment	Disturbance of palaeontological material	4	2	1	1	7			 Adhere to footprint areas. A Chance find procedure should be implemented for the duration of the project with inputs from stakeholders and the local community, should there be a heritage resource identified. For any chance finds of heritage resources, such as graves, all work must cease in the affected area and the Contractor must immediately inform the Project Manager/Developer. A heritage specialist must be called to site for inspection. The relevant heritage resource agency (SAHRA) must also be informed about the finding. Should any recent remains be found on site that could potentially be human remains, the South African Police Service (SAPS) as well as SAHRA and AMAFA must be informed. No SAPS official may remove remains until the correct permit/s have been obtained. A Paleontologucal Impact Assessment (PIA) should be undertaken prior to commencement of the construction activities. 		2	1	1	5	-	L
Socio-Economic																
Site establishment	Continuation of employment of current workers	4	2	2	2	16	+	L	Positive impact, so no mitigation measures required.	4	2	2	2	16	+	L
Noise																
Clearing of vegetation	Continuation of current noise levels	6	2	2	3	30	-	М	 The Contractor must keep noise level within acceptable limits. Comply with ECA (GN R154 of 10 January 1992) and all local noise bylaws. Restrict the use of sound amplification equipment for communication and emergency only. Any complaints received by the Contractor regarding noise must be recorded and communicated to the SS and PM. Develop a Code of Conduct for the site establishment phase in terms of the behaviour of construction staff. 	4	2	2	2	16	-	L
Visual																
Clearing of vegetation	•Visual intrusion.	6	1	2	3	27	-	L	 Limit the site footprint to the designated works area. Limit the site establishment duration. Reinstating and rehabilitating disturbed areas as soon as possible. Limiting site establishment activities to working hours. Ensure that the site is in a visually acceptable state at all times. Ensure a complaints register is in place to record and address complaints. Undertake rehabilitation efforts as soon as feasibly possible 	4	2	1	2	14	-	L
Air																
Clearing of vegetation	Generation of dust.Air pollution from equipment.	6	2	2	2	20	-	L	 Implement dust suppression measures. Ensure a complaints register is in place to record and address complaints. Fuel-saving through optimal vehicle and equipment use scheduling. Servicing and maintenance of vehicles, and machinery. 	4	2	1	1	7	-	L
Vehicle movements		6	2	2	2	20	-	L	 Use of fuel-saving technology. Use of low carbon and sulphur fuels. Restricting vehicle speeds on access routes and other unsurfaced areas of the work site. Restrict vehicle access to defined areas to avoid unnecessary off-road vehicle movements outside of the active work sites. 	4	2	1	1	7	-	L

		E		NMEN EFORE				ICE		El		NMENT AFTER I				Ε
ACTIVITY	POTENTIAL IMPACT(S)	М	D	S	P	TOTAL	STATUS	SP	RECOMMENDED MITIGATION MEASURES	М	D	S	Р	TOTAL	STATUS	SP
									Operation							
Surface Water																
Mining activities	Compaction of bare earth leading to increased surface runoff velocity Potential pollution from hydrocarbons	4	2	1	4	28	-	L	 Measures should be put in place to prevent and contain spills and facilitate the safe collection and disposal of waste. Restrict vehicle movement to designated access roads. No vehicles should be allowed to indiscriminately drive through the drainage lines or riparian areas. Restrict vegetation clearing to specific footprints. Minimise areas where spills might occur. 	2	2	1	2	10	-	L
Vehicle Movements		4	2	1	4	28	-	L	Capture and contain runoff from these areas. Safely dispose of captured pollutants immediately upon detection.	2	2	1	2	10	-	L
Fauna																Γ
Vehicle Movements	Disturbance or possible mortality incidents of terrestrial fauna	4	2	1	4	28	-	L	 Restrict all movement of vehicles and heavy machinery to permissible, designated areas. No off-road driving beyond designated areas may be allowed. Strict speed limits must be set and adhered to. 	2	2	1	2	10	-	L
Mining activities		4	2	1	4	28	-	L	•Driving between dusk and dawn should be permissible to emergency situations only.	2	2	1	2	10	-	L
Flora																
Mining activities	•Loss of minimal indigenous vegetation present on site	8	2	1	4	44	-	М	 Provision must be made for concurrent rehabilitation of the mining operations which will ensure that the permit area is mined in designated sections. The mined out sections will be rehabilitated and planted with an indigenous grass seed mix in the first growing season after it has been mined out. This will limit the operational area to the current operational area. A seedbed of alien plants will be present within the cleared soils. This seedbed and the plants that originate from it must be managed as follows: The Mining Permit footprint must be clearly surveyed and demarcated before any construction or operations are set to commence, to ensure that the area to be cleared is limited to only the areas that are necessary for the mining activities. The cleared areas must be regularly monitored for the establishment of alien plant species. These must be cleared 	6	2	1	2	18	-	L
Mining activities	•Spreading of alien invasive vegetation on cleared sites	6	3	2	3	33	-	М	when they appear. olf alien invasive plant species become a problem on the mining area aite, a formal Alien Invasive Management Plan must be set up and implemented. This plan must make provision for the identification and eradication of these species. •Even though the impacts of contamination of the area by domestic waste are considered to be low pre-mitigation, the following mitigation measures must be included to further reduce the significance of the impact: oA designated eating area must be established within the mining area. oCovered domestic waste bind must be present at the eating area to receive all the domestic waste generated by the labour. oThe capacity of these domestic bins must be monitored on a daily basis to ensure they are emptied timeously.	3	2	1	3	18	-	L
Mining activities Rivers and Wetlands	•Contamination of the area by domestic waste	4	2	1	3	21		L	oThe domestic waste from these waste bins must be removed off site and disposed of at a municipal landfill site on a weekly basis or more regularly if the bins fill up quicker. •Restrict all movement of vehicles and heavy machinery to permissible areas. No off-road driving beyond designated areas may be allowed.	2	1	1	2	8		L

				1			_				1		1		- 1		_
Mining activities	•Increase in runoff and erosion	2	2	1	3	15	-	I	L .	 Limit the footprint area of the prospecting activities to what is absolutely essential in order to minimise environmental damage. Implement effective waste management in order to prevent waste from entering the drainage lines and riparian environments surrounding the project area Plant soil stabilizing species such as grasses. Monitor the establishment of invasive species and remove as soon as detected, whenever possible before regenerative material can be formed, destroy all material to prevent re-establishment. 	2	2	1	1	5	-	L
Geology and Topography																-	
Mining activities	•Removal of target resource	6	2	2	4	40	-	٨	M	 Restrict disturbance to designated footprint. Strict adhereance to the EMPr. Ensure proper access control to the development area oFencing. oSecurity. oBarriers. Ensure warning signs are erected on the perimeter of these areas. Structural safety to be ensured according to engineering standards. Provision must be made during concurrent rehabilitation that the topography is free draining in the natural drainage direction of the surrounding area. 	4	2	1	4	28	-	L
Soil Vehicle Movements, maintenance and refuelling	Contamination of the area by petrochemical spillages	4	1	1	3	18		1	r d d d a d d t t	•Even though the impacts of contamination of the area by petrochemical spillages are considered to be low premitigation, the following mitigation measures must be included to further reduce the significance of the impact: oAll plant and equipment that make use of petrochemical substances must be checked for leakages on a daily basis. oAll plant and equipment that are found to be leaking must be removed from the property and only returned once the leakages have been addressed. olf any petrochemical substances are stored on the property, this storage must be done on an impermeable surface in a bunded area that makes provision for 110% of volume of the substances that are stored. oAll refuelling of plant and equipment must be conducted over a driptray. olf any plant or equipment is to be parked on site, these must be parked within the demarcated construction footprint that has been cleared. olf any spillages from plant or equipment occur, the spill must be immediately contained, the contaminated soils must be collected and bagged in impermeable bags and stored on site to be removed and disposed of by a registered service provider.	4	1	1	1	6		L
Land Use																	
Mining activities	Reduction of grazing and agricultural land	4	2	1	4	28	-	1	L	Restrict disturbance to designated footprint. Restrict vehicle movement to designated access roads. Strict adherence to the EMPr. All areas disturbed by prospecting activities must be subject to landscaping and rehabilitation.	2	2	1	2	10		L
Traffic																	
Mining activities	•Increase in traffic.	4	2	2	3	24	-	l		•The road is designed according to the specifications of a provincial road. The applicant will assist where feasibly possible to repair and maintain the road.	2	1	2	1	5	_	L
Cultural and Heritage																	
Vehicle Movements	Damage to and/or destruction of non-renewable archaeological resources. Damage to and/or destruction of burial grounds. Unmarked graves can be accidentally exposed.	6	2	1	3	27	-	I	L (Adhere to footprint areas. A Chance find procedure should be implemented for the duration of the project with inputs from stakeholders and the local community, should there be a heritage resource identified. For any chance finds of heritage resources, such as graves, all work must cease in the affected area and the Contractor must immediately inform the Project Manager/Developer. A heritage specialist must be called to site for inspection. 		2	1	2	10	-	L
Mining activities		6	2	1	3	27	-	I	L (The relevant heritage resource agency (SAHRA) must also be informed about the finding. •Should any recent remains be found on site that could potentially be human remains, the South African Police Service (SAPS) as well as SAHRA and AMAFA must be informed. No SAPS official may remove remains until the correct permit/s have been obtained.	2	2	1	2	10	<u> </u>	

Socio-Economic																
Vehicle Movements	Potential employment opportunities for local communities.	4	2	2	2	16	+	L	Positive impact, so no mitigation measures required.	4	2	2	2	16	+	L
Mining activities	Potential economic growth for the area if the resource is feasible.	4	2	2	2	16	+	L		4	2	2	2	16	+	L
Noise																
Vehicle Movements	•Increase in ambient noise levels.	6	2	2	3	30	-	М	 The Contractor must keep noise level within acceptable limits. Comply with the Noise Control Regulations in terms of Section 25 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA) (GN R154 of 10 January 1992) and all local noise bylaws. 	4	2	2	2	16	-	L
Mining activities		6	2	2	3	30	-	М	 Restrict the use of sound amplification equipment for communication and emergency only. Any complaints received by the Contractor regarding noise must be recorded and communicated to the Site Supervisor (SS) and Project Manager (PM). 	4	2	2	2	16	-	L
Visual																
Vehicle Movements	•Visual intrusion.	6	2	2	3	30	-	М	 Limit the prospecting footprint to the designated works area. Limit the duration of prospecting activities Reinstating and rehabilitating disturbed areas as soon as possible. 	4	2	2	2	16	-	L
Mining activities		6	2	2	3	30	,	М	 Limiting prospecting to working hours. Ensure that the site is in a visually acceptable state at all times. Ensure a complaints register is in place to record and address complaints. 	4	2	2	2	16	-	L
Air			2													
Vehicle Movements	 Generation of dust. Air pollution from equipment. 	6	2	2	3	30	-	М	 Implement dust suppression measures if dust becomes a problem. Ensure a complaints register is in place to record and address complaints. Fuel-saving through optimal vehicle and equipment use scheduling. Servicing and maintenance of vehicles, and machinery. Use of fuel-saving technology. 	4	2	1	2	14	-	L
Mining activities		6	2	2	3	30	,	М	 Use of low carbon and sulphur fuels. Restricting vehicle speeds on access routes and other unsurfaced areas of the work site. Restrict vehicle access to defined areas to avoid unnecessary off-road vehicle movements outside of the active work sites. 	4	2	1	2	14	-	L

		E		DNMEN EFORI				ICE		EN	VIRONM AFT	ENTAL ER MIT			CE
ACTIVITY	POTENTIAL IMPACT(S)	М	D	S	Р	TOTAL	STATUS	SP	RECOMMENDED MITIGATION MEASURES	М	D S	P	TOTAL	STATUS	SP
									Decommissioning						
Surface Water															
Rehabilitation	Compaction of soil during rehabilitation activities leading to increased runoff velocity and erosion. Pollution of surface water resources from hydrocarbons.	4	1	1	3	18		L	 •Measures should be put in place to prevent and contain spills and enable safe collection and disposal of waste. •Restrict vehicle movement to designated access roads. •Minimise areas where spills might occur. •Capture and contain runoff from these areas. •Safely dispose of captured pollutants immediately upon detection. •Reshape the site to influence surface runoff 	2	1 1	2	8	-	L
Fauna															
Rehabilitation	•Restoration of habitats will lead to fauna returning to the area.	4	2	1	4	28	+	L	None required - positive impact.	4	2 1	4	28	+	L
Flora															
Removal of alien vegetation	•Revegetate the site with appropriate species based on the general vegetation of the area	4	2	1	4	28	+	L	•None required - positive impact. The site will be better off than it currently is.	4	2 1	4	28	+	L
Rehabilitation	•Improvement in biodiversity of the areas.	4	2	1	4	28	+	L	<u> </u>	4	2 1	4	28	+	L
Rivers and Wetlands															
Removal of alien vegetation	• Restoration of site close to natural state	4	2	1	4	28	+	L	•None required - positive impact.	4	2 1	4	28	+	L
Rehabilitation	•Improvement in biodiversity of the areas.	4	2	1	4	28	+	L		4	2 1	4	28	+	L
Geology and Topography														-	
Rehabilitation	 Disturbed areas returning to as closely as possible to the natural state. 	4	2	1	4	28	+	L	•None required - positive impact.	4	2 1	4	28	+	L
Soil															
Rehabilitation	•Restoration of soil as closely as possible to the pre- disturbed state.	4	2	1	4	28	+	L	•All hydrocarbons spills on bare ground to be cleared as soon as possible. •All soils compacted as a result of mining activities should be ripped and profiled. •Alien and invasive vegetation control should take place throughout all prospecting and rehabilitation phases to prevent loss of floral habitat.	4	2 1	4	28	+	L
Land Use															
Rehabilitation	•Restoration of disturbed areas as closely as possible to the previous land use.	4	1	1	2	12	+	L	None required - positive impact.	4	1 1	2	12	+	L
Traffic															
Rehabilitation	Decrease in mining related traffic.	2	1	2	1	5	+	L	None required - positive impact.	2	1 2	1	5	+	L
Cultural and Heritage															
Rehabilitation	Damage to and/or destruction of non-renewable archaeological resources. Damage to and/or destruction of burial grounds. Unmarked graves can be accidentally exposed.	4	1	1	3	18	-	L	•Adhere to footprint areas. •A Chance find procedure should be implemented for the duration of the project with inputs from stakeholders and the local community, should there be a heritage resource identified. •For any chance finds of heritage resources, such as graves, all work must cease in the affected area and the Contractor must immediately inform the Project Manager/Developer. A heritage specialist must be called to site for inspection. The relevant heritage resource agency (SAHRA) must also be informed about the finding. •Should any recent remains be found on site that could potentially be human remains, the South African Police Service (SAPS) as well as SAHRA and AMAFA must be informed. No SAPS official may remove remains until the correct permit/s have been obtained.	2	1 1	1	4	-	L
Socio-Economic															

Rehabilitation	 Limited employment opportunities for local communities during the decommissioning phase. This impact is temporary, and will cease when rehabilitation is complete 	4	2	2	2	16	+	L	•Positive impact, so no mitigation measures required. 4 2 2 2 16 +
Noise									
Rehabilitation	Noise associated with rehabilitation activities. This impact is temporary, and will cease when rehabilitation is complete.	6	2	2	2	20	-	L	•The Contractor must keep noise level within acceptable limits. •Comply with the Noise Control Regulations in terms of Section 25 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) (ECA) (GN R154 of 10 January 1992) and all local noise bylaws. •Restrict the use of sound amplification equipment for communication and emergency only. •Any complaints received by the Contractor regarding noise must be recorded and communicated to the Site Supervisor (SS) and Project Manager (PM).
Visual									
Rehabilitation	 Improvement in visual aspect of the site due to rehabilitation activities. 	4	2	1	4	28	+	L	Positive impact, so no mitigation measures required. 4 2 1 4 28 +
Air									
Rehabilitation	Generation of dust. Air pollution from equipment. This impact is temporary, and will cease when rehabilitation is complete	6	2	2	2	20	-	L	 Implement dust suppression measures if dust becomes a problem. Ensure a complaints register is in place to record and address complaints. Fuel-saving through optimal vehicle and equipment use scheduling. Servicing and maintenance of vehicles, and machinery. Use of fuel-saving technology. Use of low carbon and sulphur fuels. Restricting vehicle speeds on access routes and other unsurfaced areas of the work site. Restrict vehicle access to defined areas to avoid unnecessary off-road vehicle movements outside of the active work sites.