

Appendix 13: Impact Assessment Tables

Activity		Aspect	Source / Cause	Impact		Consequence				Probability	External Factors			Significance (WITHOUT controls)	Ranking	Controls / Management Measures Implemented				Significance (WITH controls)	Significance (WITH controls)
Phase	Description of the physical activities that will cause the impacts		Description as to how the activity may cause the impact	A description of the impact that may result from the activity		Nature	Extent	Duration	Frequency		Legal	I&AP	Cumulative		Significance (WITHOUT controls)	Effective Engineering	Effective Procedural	Effective Training	Effective Monitoring / Maintenance		
Planning	Stripping and stockpiling	Topsoil and overburden	Handling and storage of removed soils	Beneficial use of removed topsoil and overburden	Pos	High	On-site	Long	Monthly	Definite	No	No	No	510	Medium-High						
	Expansion of the pit	Mineral resource	Utilisation of the authorised mineral resource	Beneficial utilisation of the mineral resource	Pos	High	On-site	Long	Monthly	Definite	No	No	No	510	Medium-High						
	Changes to the operation	Environmental Social Economic	Mining, processing and supporting services	Legal and responsble undertaking of activities	Pos	High	Neighbouring	Long	Annually or less	Definite	Yes	No	No	660	High						
Mining	Stripping of vegetation & topsoil	Biodiversity (Terrestrial and Aquatic)	Clearing / removal of vegetation	Loss of vegetation / habitats within the Mining Area. Decline of sensitive species populations Encroachment on sensitive habitats Establishment of alien vegetation	Neg	High	On-site	Long	Monthly	Definite	No	Yes	Yes	660	High	No	Yes	No	Yes	462	Medium-High
		Agriculture (grazing)	Clearing / removal of vegetation Compaction of soils.	Loss of grazing land due to expansion of disturbance from mining.	Neg	High	On-site	Long	Annually or less	Definite	No	Yes	No	520	Medium-High	No	Yes	No	No	390	Medium
	Removal of overburden																				
	Stockpiling topsoil and overburden	Topsoil	Handling and storage of removed soils	Loss of soil structure, diminishing the potential for future use of the soil as a suitable growth medium. Erosion of topsoil stockpiles	Neg	Med-High	On-site	Long	6 Monthly	Definite	No	No	No	360	Medium	No	Yes	Yes	Yes	216	Medium
	Drilling and blasting																				
	Secondary breaking	Visual	Removal of vegetation Change in relief / topography due to excavation and stockpiling	Altered visual appearance may be unappealing / unattractive	Neg	Low-Med	Local	Permanent	Daily	Low	No	No	No	195	Low-Medium	Yes	Yes	No	Yes	58,5	Low
	Loading and hauling	Air quality	Dust emisisions from activities associated with mining of the pit	Nuisance to surrounding receptors from dust fallout Health implications from inhaled dust particles Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Medium	Local	Very short	Daily	Low	No	Yes	Yes	288	Medium	No	Yes	Yes	Yes	172,8	Low-Medium
			Exhaust emissions from machinery used to mine the pit	Carbon emissions to the atmosphere	Neg	Low-Med	Neighbouring	Very short	Daily	Improbable	No	Yes	Yes	186	Low-Medium	No	Yes	Yes	No	120,9	Low-Medium

Processing and Supporting Services		Noise	Noise emisisions from activities associated with mining of the pit.	Nuisance from sound levels for surrounding receptors	Neg	Medium	Neighbouring	Very short	Daily	Medium	No	Yes	Yes	396	Medium	No	Yes	Yes	Yes	237,6	Medium
		Surfacewater	Alteration of surface water flow by changing the topography	Reduced volume of run-off entering natural drainage	Neg	Low-Med	Local	Long	Monthly	Definite	No	No	No	400	Medium	Yes	No	No	Yes	220	Medium
			Runoff from exposed surfaces Hydrocarbon contamination	Pollution of off-site water bodies (if dirty storm water flows into a water courses)	Neg	Medium	Regional	Short	Monthly	Low	No	Yes	Yes	270	Medium	Yes	No	No	Yes	148,5	Low-Medium
		Groundwater	Deepening the pit. Dewatering of pit water.	Reduced water availability for surrounding users due to lowered water table (drawdown cone).	Neg	Med-High	Neighbouring	Long	Daily	Medium	No	No	No	360	Medium	No	No	No	Yes	342	Medium
			Blasting in the pit	Pollution of groundwater from increased levels of nitrates Pollution of off-site surface water bodies (if water is discharged)	Neg	Med-High	Regional	Medium	6 Monthly	Medium	No	No	No	270	Medium	No	No	No	Yes	256,5	Medium
		Heritage	Proximity of mining activities to known heritage sites (graves and monument).	Physical disturbance of heritage sites. Restricted access to the heritage sites.	Neg	High	On-site	Long	Daily	Definite	No	Yes	No	760	High	No	Yes	No	Yes	532	Medium-High
		Vibration / flyrock / airblast	Blasting within the pit	Infrastrucutural damage due to ground and air vibrations from blasting. Fly rock being a safety risk to adjacent land occupiers and infrastructure	Neg	High	Neighbouring	Very short	Monthly	High	No	Yes	No	428	Medium-High	No	Yes	Yes	Yes	256,8	Medium
	Materials handling	Visual	Infrastructure associated with the mine will protrude above the surface.	Mine infrastructure and activities being unappealing / unattractive if visible to offsite receptors	Neg	Low-Med	Local	Long	Daily	Low	No	No	No	165	Low-Medium	Yes	Yes	No	Yes	49,5	Low
	Crushing and screening	Air quality	Dust emisisions from activities associated with processing and supporting services.	Nuisance to surrounding receptors from dust fallout Health implications from inhaled dust particles Reduced photosynthetic abilities of vegetation due to dust covering leaf surfaces	Neg	Medium	Local	Very short	Daily	Low	No	Yes	Yes	288	Medium	Yes	Yes	Yes	Yes	57,6	Low
	Stockpiling of product																				
	Dispatch of product																				
	Waste Management	Noise	Exhaust emissions from machinery used for processing and supporting services	Carbon emissions to the atmosphere	Neg	Low-Med	Neighbouring	Very short	Daily	Improbable	No	No	Yes	86	Low-Medium	No	Yes	Yes	No	55,9	Low
	Hydrocarbon Management																				
Workshop																					
Maintenance		Noise emisisions from activities associated with processing and supporting services	Nuisance from sound levels for surrounding receptors	Neg	Med-High	Neighbouring	Very short	Weekly	Medium	No	Yes	Yes	366	Medium	Yes	Yes	No	Yes	109,8	Low-Medium	
Stores																					

Concurrent	Administration	Surfacewater	Elevated sediment load in surface run-off from exposed surfaces and stockpiles. Contamination of surface run-off due to spills from machinery leaks and poor hydrocarbons / waste management	Pollution of off-site surface water bodies due to discharge of contaminated water from the site that causes reduced quality	Neg	Medium	Regional	Short	Monthly	Medium	No	No	No	240	Medium	Yes	No	No	Yes	132	Low-Medium
		Groundwater	Seepage of contaminants into bare ground due to spills from machinery leaks and poor hydrocarbons / waste management	Pollution of groundwater causing reduced quality	Neg	Med-High	Regional	Medium	6 Monthly	Medium	No	No	No	270	Medium	No	No	No	Yes	256,5	Medium
		Traffic	Haul trucks using the access road through the community to access the mine	Safety of community members and livestock Degradation of the road condition	Neg	Low	Local	Very short	Daily	Definite	No	Yes	Yes	520	Medium-High	No	Yes	Yes	No	338	Medium
		Potable water	Use of potable water from the municipal source for domestic use on the site.	Unnecessary consumption of potable water	Neg	Medium	On-site	Short	Monthly	Low	No	No	No	78	Low-Medium	No	No	Yes	Yes	66,3	Low-Medium
		Power	Use of electricity to run the processing plant and administration offices	Carbon emissions from the source of power generation.	Neg	Medium	Local	Long	Daily	Low	No	No	Yes	230	Medium	Yes	No	Yes	Yes	103,5	Low-Medium
		Waste	Hazardous, general and sanitary waste generated from consumptive activities at the operation.	Pollution of soils and the potential pollution of storm water flowing over polluted soils	Neg	Medium	Regional	Short	Weekly	Medium	No	No	Yes	320	Medium	No	Yes	Yes	Yes	192	Low-Medium
		Emergency incidents	Spillage of hydrocarbons / waste Uncontrolled fire Flooding	Pollution to the environment Safety of humans and animals (livestock) Damage to infrastructure	Neg	High	Neighbouring	Medium	Annually or less	High	Yes	No	No	528	Medium-High	No	Yes	Yes	Yes	316,8	Medium
		Administration	Complaints from Interested and affected parties (I&AP)	Poor community relations	Neg	Medium	Local	Medium	6 Monthly	Medium	No	Yes	No	310	Medium	No	Yes	No	No	232,5	Medium
			Insufficient environmental awareness by personnel entering and working on the site.	Environmental incidents taking place.	Neg	Medium	On-site	Medium	Daily	Medium	No	No	No	276	Medium	No	Yes	Yes	No	179,4	Low-Medium
			Incomplete environmental management documentation required in terms of the prevailing environmental legislation	Legal non compliances	Neg	High	On-site	Short	Weekly	Low	Yes	No	No	338	Medium	No	Yes	No	No	253,5	Medium
Concurrent		Topsoil	Management of stockpiles	Soil characteristics are not significantly altered.	Pos	Medium	Neighbouring	Long	Monthly	Medium	No	No	No	240	Medium						

		Alien vegetation	Control or removal of alien vegetation within the Mining Area	Less competition for indigenous species	Pos	Medium	On-site	Long	Annually or less	Medium	No	No	No	162	Low-Medium						
Decommissioning and closure	Planning	Life on Mine	Finite resource within the currently authorised mining area	Closure preparedness that minimises the significance of negative impacts to be experienced when the operation ceases.	Pos	High	Local	Long	6 Monthly	High	Yes	No	No	640	Medium-High						
	Operations ceasing	Socio-economic	Finite resource within the currently authorised mining area	Associated operational benefits will cease including employment, social projects and product availability.	Neg	High	Local	Long	Annually or less	Definite	No	No	No	510	Medium-High	No	Yes	Yes	Yes	306	Medium
Socio-economic	Communication	Interested and Affected Parties	Community engagement	Maintained community relations	Pos	Med-High	Local	Long	Daily	Definite	No	No	No	650	Medium-High						
	Community upliftment	Community projects	Social and Labour Plan	Improved services, facilities and opportunities	Pos	Med-High	Local	Long	Annually or less	Definite	No	No	No	410	Medium-High						
	Job creation	Permanent Staff	Labour skills are required in order for the mine to operate	Income for local households which provides opportunity for better living and whose spending stimulates the local economy.	Pos	Med-High	Local	Long	Daily	Definite	No	No	No	650	Medium-High						
	Production	Services	Specialist services / contractors are required to support the mines operations	Support for local economy by using local providers	Pos	Med-High	Local	Long	Daily	Definite	No	No	No	650	Medium-High						
		Local development	Raw material products	Locally available supply of raw materials for construction development.	Pos	Med-High	Regional	Long	Daily	Definite	No	No	No	700	High						