



Environmental Impact Significance Determination

CONSTRUCTION PHASE

Activity, Phase and Impact				Impact Rating (before mitigation)								Impact Rating (after mitigation)								
Impacted Environment	Phase impact occurs (C, O, D, PC)	Activity No.	Activity	Summary of Impact	Reference in EIA	Nature of Impact (positive / Negative)	Extent (5)	Duration (5)	Severity (5)	Probability (5)	Consequence (15)	Significance (75)	Mitigation Measures	Nature of Impact (positive / Negative)	Extent	Duration	Severity	Probability	Consequence	Significance (75)
Biophysical Impacts																				
Geology	C,O	6	Establishment of initial boxcut and access ramps	Rock and overburden will be removed, permanently altering the geology	7.3	N	1	5	3	5	9	45	No mitigation will be possible	N	1	5	3	5	9	45
Topography	C,O,D, PC	4 & 6	Site clearing and topsoil removal and Establishment of initial boxcut and access ramps	The natural lie of the land will be altered. This alteration of the land will have further impacts on surface water flow dynamics as the natural drainage pattern is disrupted.	7.2/ 11.3.1	N	1	3	4	5	8	40	Divert surface water flow around the obstruction. Draw up post mining rehabilitation plan prior to construction in order to comply with the established goals and objectives. Confine construction to designated areas.	N	1	3	3	5	7	35
Soil	C	2	Transport of construction material	Compaction of soil	7.4/ 11.3.2	N	3	1	4	5	8	40	All vehicles must be restricted to roads	N	3	1	3	5	7	35
	C,O	4&5	Site clearing and topsoil removal and construction of infrastructure.	Compaction of soil, erosion of exposed areas and decrease in available land for agricultural practices.		N	2	4	5	5	11	55	Compile accurate soil map showing classification, thickness, fertility status. Remove and stockpile 0.3 m-0.35 m topsoil in berms or heaps less than 2 - 3 m high. Do not use as storm water control feature. Vegetate with diverse grass mix to control erosion. Wetland soils should only be stockpiled at heights of 1 - 2 m. Subsoil stockpiles can be bigger but must be protected against erosion similar to topsoil stockpiles. Ensure that a storm water management plan is implemented. Focus developments and avoid un-necessary subdivision of land and activities that could be sited on already disturbed land. Vehicles to keep to within designated areas	N	1	4	4	5	9	45
	C	7	Temporary waste and sewage handling and treatment	Potential for hydrocarbons and waste to contaminate soil, which can then impact on surface water and vegetation growth		N	2	1	3	3	6	18	Store waste in bunded areas, regular removal of waste off site and reporting of any spillages. Adhere to emergency response plan in the case of a spill and rehabilitated contaminated soil	N	2	1	2	2	7	14
	C	6	Establishment of initial boxcut and access ramps	Compaction of areas surrounding box cut. Loss of arable soil.		N	1	4	4	5	9	45	All vehicles must be restricted to roads. Area of disturbance must be restricted to that of the mine plan. Storm water diversion and erosion control contour berms separate clean and contaminated water systems around the pit and infrastructure areas. Design erosion control and diversion berms, terraces or drains with the runoff for a particular soil type and slope gradient	N	1	4	4	5	9	45
	C,O	3 & 9	Storage of fuel, lubricant and explosives	Possible contamination of surface water due to incorrect handling and spillages		N	2	4	4	3	10	30	Berms and trenches should be constructed to divert clean water away from the workings and collect and contain potentially contaminated water. Pollution control facilities should be constructed to contain all polluted rainfall for the 1:50 year flood conditions. Materials capable of resulting in poor quality leachates should be not be used for the construction of roads or other infrastructure.	N	2	4	3	3	12	36

Surface water	C,O	4	Site clearing and topsoil removal	Site clearing will change the surface flow dynamics of the site. Surface flow off exposed soils will contribute to siltation of streams.	7.5/ 11.3.3	N	2	3	3	4	8	32	Soil stockpiles must be vegetated as soon as possible. Construction of stockpiles close to streams should take place in the dry season. Monitoring of surface water must be undertaken.	N	2	3	2	3	7	21
	C	5 & 6	Construction of surface infrastructure and establishment of initial box cut and access ramps	Reduction in base flow and in catchment area size and a change in flow dynamics		N	3	4	4	4	11	44	Clean and dirty water separation must be undertaken and clean water areas must be maximised. Reuse of input/dirty water needs to be maximised	N	3	4	3	4	10	40
	C,O	7	Temporary waste and sewage handling and treatment	Possible contamination of surface water due to incorrect handling and spillages		N	2	2	4	4	8	32	Maintenance of facilities must occur. Appropriate sewage & waste management facilities should be planned and constructed. Monitoring to take place to check for problem areas. Spillages to be reported and action plans implemented. Waste to be stored in bunded areas.	N	2	1	3	3	6	18
Groundwater	C,O & D	3	Storage of fuel, lubricant and explosives	Contamination of surface water due to infrastructure failure (emergency), leakage or spillages during normal operation and a	7.6/11.3.4	N	2	2	3	3	7	21	All hydrocarbons, lubricants and explosives should be adequately stored and bunded off to prevent any contamination to the groundwater during an accidental spill.	N	1	2	2	3	5	15
	C	6	Establishment of initial boxcut and access ramps	Negative effect on the surrounding aquifers cause lowering of water levels in boreholes		N	1	1	5	5	7	35	No mitigation will be possible	N	1	1	3	3	8	24
Air Quality	C,O	4,5 & 6	Site clearing and topsoil removal ,construction of infrastructure, establishment of box cut	Increased vehicle movement on site and the clearing of topsoil to expose subsoil's will increase the dust fallout on site and the PM10 levels	7.7/ 11.3.5	N	2	3	3	5	8	40	Removal of vegetation must be restricted to the area of disturbance. Topsoil stockpiles need to be vegetated. Dust fallout monitoring need to be implemented. Roads and construction site to be dampened using recycled water or dust binding agent.	N	1	3	2	4	6	24
Noise	C,O	2	Transport of construction material	The construction machinery will be a source of continuous noise through out the construction phase. Trucks bringing in equipment from elsewhere will affect receptors along the route.	7.8/ 11.3.6	N	3	2	2	4	7	28	Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers. Noisy machinery to be used during daylight hours preferably. Grievance mechanism to record complaints should be kept on site and investigated.	N	3	2	1	4	6	24
	C,O	4,5 & 6	Site clearing and topsoil removal, construction of infrastructure and establishment of initial boxcut and access ramps	The construction machinery will be a source of continuous noise through out the construction phase. The blasting activities (related to Activity 6) during the construction phase are also expected to impact on the ambient noise levels of the area. Receptors in the area are limited.		N	2	2	3	4	7	28	A noise barrier in the form of a berm should be constructed on the western as well as south eastern side of the proposed area of disturbance (as per current mine plan) so that it is situated between the main noise source and sensitive noise receptor . Mining-related machine and vehicles must be serviced on a regular basis to ensure noise suppression mechanisms are effective e.g. installing exhaust mufflers	N	2	2	1	4	5	20
Air Blasting and Ground vibration	C, O	6	Establishment of initial boxcut and access ramps	Minimal blasting may be required for the development of the boxcut. Blasting activities could impact on local land users, fauna and sensitive receptors such as chicken farms and structures	7.9/ 11.3.7	N	2	3	4	4	9	36	Strict controls will need to be imposed on surface initiation of any explosive as this will immediately induce undesirable effects into the surroundings. Reduced charges and control on stemming will be assisting in reducing the possibilities of complaints from home owners. The greater the distance between receptors and the blast the less is the influence.	N	2	3	3	3	8	24
	C	2	Transport of construction material	All heavy duty vehicles that transport materials and the general operating of vehicles, will increase dust and erosion occurrences, possible scare away fauna and compact the soil, thus impacting on subterranean fauna, eg moles &		N	3	1	3	5	7	35	All vehicles must be restricted to designated roads and covered is transporting goods or equipment that could become airborne.	N	3	1	2	4	6	24

Flora & fauna	C,O	3 & 7	Storage of fuel, lubricant and explosives and temporary waste and sewage handling	Incorrect, storage of these materials may result in the potential pollution of surface water and top soil resources due to spillages and leaks which may impact negatively on plants and subsequently animals.	7.10/ 11.3.8	N	1	1	2	3	4	12	Store waste in banded areas, regular removal of waste off site and reporting of any spillages. Adhere to emergency response plan in the case of a spill and rehabilitated contaminated soil and re-vegetate. Monitor for any problem areas.	N	1	1	2	2	4	8
	C,O	4, 5 & 6	Site clearing and topsoil removal, construction of infrastructure and establishment of initial boxcut and access ramps	Existing vegetation will be removed to facilitate the construction of mining related infrastructure. The construction of discard dumps, pollution control dams, offices, sewage treatment facility and other infrastructure will increase the favourable habitat for alien invasive plant species, increase water runoff and decrease water infiltration.		N	1	3	3	5	7	35	Removal of vegetation during stripping and construction will be minimised to reduce the erosion potential. Topsoil will only be removed off areas proposed for immediate mining or construction as in accordance to the conceptual mine plan	N	1	3	2	5	6	30
Wetlands	C	2	Transport of construction material	Increasing the potential for erosion and sedimentation during rainfall periods from use of informal dirt roads. Increase the potential of spillages and leaks from operating vehicles into the wetland systems which would impact on water quality.	7.12/ 11.3.10	N	3	1	2	4	6	24	Use of existing roads. Maintenance of vehicles. Maintenance of roads and proper drainage off roads.	N	3	1	1	4	5	20
	C,O,D	3 & 7	Storage of fuel, lubricant and explosives and temporary waste and sewage handling	Incorrect, inadequate or negligent storage of these materials may result in the potential pollution of surface water resources due to pollutant and toxicant spillages and leaks which may impact negatively the water quality and ecological functioning of the systems		N	1	3	3	4	7	28	The storage of materials and substances will be housed in suitable facilities. Management of these facilities.	N	1	3	2	3	6	18
	C,O	4 & 6	Site clearing and topsoil removal and establishment of initial boxcut and access ramps	Increase the potential load of sedimentation of the water resources . Erosion of exposed surfaces. The removal of the topsoil and vegetation reduces the potential for recharge of shallow aquifers that feed hillslope wetlands, which in turn reduces the flow in water resources. Possible dewatering of aquifers and loss of perched aquifer and interflow between certain wetland areas.		N	2	4	5	5	11	55	Keep footprint area as minimal as possible. Vegetate all stockpiles and berms. Minimise vegetation removal. Limited mitigation available for affecting aquifers.	N	2	4	5	4	11	44
	C	5	Construction of surface infrastructure	The reduction in the seepage potential of the catchment will result in a decrease in surface water quantity reporting to the downstream system. The reduction in water quantity will in turn result in a loss of wetland areas due to these areas being "starved" of water, as well as wetland areas being reduced and ecological functioning inhibited.		N	2	1	1	4	4	16	Introduction of a Storm water Management Plan	N	2	1	1	2	4	8
Social Impacts																				
Socio-economic	C,O	1	Recruitment, procurement and employment	Employment opportunities to the local area will be minimal., however there will be indirect employment and economic opportunities and it will provide further opportunities for small business in the area to contract services to the mine	7.15/ 11.3.13	P	3	3	2	4	8	32	The mine must attempt to contract small business from the local area.	P	3	3	3	4	9	36

Local economic development (LED)	C,O	1	Recruitment, procurement and employment	The LED initiative to establish a small maize milling and distribution B.E.E business, purchasing from local small scale or subsistence farmers and selling processed maize products directly to communities or through a network of local agents. This initiative will employ approximately eight people with further opportunities for the employment of agents in outlying areas.		P	2	4	3	4	9	36	Positive impact will be implemented through LED initiative as part of Social and Labour Plan and local development and need to be managed.	P	2	4	4	4	10	40
Visual	C,O,D	2	Transport of construction material	Increased transportation will directly affect the visual environment to people on site and receptors along the transport routes	7.13/ 11.3.11	N	3	2	2	4	7	28	Dirt roads need to be wet by a water dowsers so as to reduce dust plumes. Avoid transporting goods at night.	N	3	2	1	4	6	24
	C,O,D	4 & 6	Site clearing and topsoil removal and establishment of initial boxcut and access ramps	The project site will become noticeable as it will be in stark contrast to surrounding areas		N	2	3	3	5	8	40	Mitigation is limited. Erect berms in order to shield visual affects. Rehabilitate area as soon as possible. Use muted colours for buildings. Over time, people will adjust to the visual intrusion, thus reducing the severity.	N	2	3	2	5	7	35
	C,O,D	5	Construction of surface infrastructure	Agricultural land-use is transformed to that of mining. Once the infrastructure is established and lighting installed there will be light pollution in the evenings		N	3	3	3	5	9	45	To reduce the visual impact of permanent structures, colours for roofing, walls etc should be of a matt finish to reduce reflection. The colour chosen should be one that softens the visual impact, colours that are suited to the natural tones in the area, such as pastel browns and greens. Avoid up lighting of structures but rather direct the light downwards and focussed on the object to be illuminated.	N	2	3	2	5	7	35
Traffic	C,O	2	Transport of construction material	Increase of vehicular activity on site and the traffic to the site	7.13/ 11.3.11	N	3	2	3	5	8	40	Speed limits must be adhered to and must be placed on site. It must be assessed if safety intersections are required. Grievance mechanism initiated to record complaints.	N	3	2	2	4	7	28
Cultural and Heritage Impacts																				
Site 3 & 4: Cemetery	C,O,D	2,4,5 & 6	All activities associated with construction phase	No foreseen impact as cemeteries are located just outside the mining area	7.11/ 11.3.9	N	1	3	1	1	5	5	Currenly no mitigation is required. In the event o possibl eimpacts from mining encroaching onto the neighbouring farm, the sites should be fenced.	P	1	3	1	1	5	5
Site 2: Historical Structure	C,O,D	2,4,5 & 6	All activities associated with construction phase	Due to the location of infrastructure required may result in the need to demolish the structure for the purpose of development		N	1	3	1	1	5	5	Prior to site construction, a historical archaetecht must evaluate the structure to determine if a permit is required for demolition.	N	1	3	1	1	5	5
Site 1: Cemetery	C,O,D	2	Transport of construction material	No foreseen impact as cemeteries are located just outside the area of disturbance.		N	1	3	1	1	5	5	20meter buffer must be placed around the cemetery and the area must be fenced off. Access must be granted to relatives	P	1	3	1	1	5	5
Findings of un-documented archaeological sites, artefacts	C,O	4, 6	Site clearing and establishment of initial box cut	Archaeological artefacts or sites may be located subsurface and can be destroyed during mining activities		N	1	3	2	2	6	12	In the event of the finding of archaeological artefacts subsurface or that have not been documented an archaeologist will need to be contacted immediately to identify, assess and document the discovery.	P	1	3	2	2	6	12

Significance		
High	57 - 75	
Medium-High	38 - 56	
Medium-Low	19 - 37	
Low	0 - 18	

C - Construction Phase
O - Operational Phase
D - Decommissioning Phase
PC - Post Closure Phase