Colour	Significance Points	Explanation
	≤ 30	LOW environmental significance
	31 - 60	MODERATE environmental significance
	> 60	HIGH environmental significance

ACTIVITY	POTENTIAL IMPACT	ASPECTS AFFECTED	DESCRIPTION OF ENVIRONMENTAL RISK (Direct and indirect impact)	PHASE	Duration Extent	Magnitude	gap	SIGNIFICANC E (Pre- Mitigation)	MITIGATION CONSIDERATION S Mitigation Type	Duration	Machitele	Probability	SIGNIFICANCE (Post-Mitigation		TO BE ACHIEVED Target	TIME PERIOD FOR IMPLEMENTATION	COMPLIANCE WITH STANDARDS
Infrastructure development																	
<u>development</u>		Air Quality		Construction & Operational	1 2	6	5	45		1 1	1 4	3	18		 Dust falout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. Zoro number of complaints from site staff, surrounding landowners and communities. (3) Andherence with 		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act
	Dust generation	Human Health	Direct Impact: Road construction involves the removal of rock and earth by grading or digging during construction. Vegetation is removed, grading and paving takes place using a range of road construction equipment. This often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5 from the dirt roads.	Construction & Operational	2 1	6	5	45	Control	1 1	1 4	3	18	Control dust failout throughout the life cycle of the mining activity.	legal required dust fallout levels. (4) Adherence with 600 mg/m² /day averaged over 30 days in residential areas and 1200 mg/m² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential	Entire Life cycle of project	(NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Construction & Operational	1 1	6	5	40		1 1	1 4	3	18		months per dust fallout monitoring site. (6) If exceeding dust falout standard, within 3 months after submission of a dust falout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		National Reporting Regulations (GNR 283) as Group C emiltars. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
		Surface Water quality		Construction & Operational	1 1	6	4	32		1 1	1 6	3	24				(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the construction phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment are not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	1 2	6	3	27	Control	1 2	2 6	2	18	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. Immediate removal and remediation of all spills.	Entire Life cycle of project	addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of
		Soil quality		Construction & Operational	2 1	6	4	36		1 1	1 6	3	24				plant/whicks/squipment for leaks or breakages. (5) Development and implementation of a Hazardous substances management plan.
	Degradation of soil resources	Soil quality	Direct Impact: As part of the construction activity related to roads, valuable topsoil's will be removed. Improper management of topsoil or fertile soil may cause the loss of flora micro-eccesystems and cause the degradation of soil quality.	Construction & Operational	1 1	6	5	40	Remedy	1 1	1 6	3	24	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of weidel/bant/eurijment maintenance plan with specific
		Flora micro-ecosystems	ecgreenen of eering.	Construction & Operational	1 1	6	3	24		1 1	1 6	3	24		(0)		reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Erosion	Loss of fertile soil	Indirect Impact: Improper management of storm water may lead to erosion along the access routes. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding	Construction & Operational	2 1	6	5	45	Control	1 1	1 6	3	24	To prevent any erosion and to provide adequate erosion	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the	Entire Life cycle of nroiect	(1) Development and implementation of a storm water management plan. (2) Development of a scill conservation management plan
	LIGHT	Micro-ecosystems	environment.	Construction & Operational	1 2	8	3	33	Control	1 1	1 6	3	24	control measures where required.	 (3) Erosion control measures implemented in high risk areas. 	Entro Eno oyuu or project	C) Development of a soft of the network moning units pair. (i) Development and implementation of mine rehabilitation plan.
	Vegetation and habitat loss	Macro and Micro organisms	Direct Impact: Clearing the area to construct the access roads leads to the loss of vegetation and habitats of macro and micro organisms. Loss of vegetation, increase in runoff and erosion, possible distribution and increased establishment of alien invasive species, possible disturbance and reduction of habitat, injury or death to terrestrial fauna, possible change of natural runoff and drainage patterne causing accelerated		4 2	4	5	50	Remedy	4 1	1 2	4	28	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related	(1) Limiting site clearance to areas as per the approved site layout plan. (2) AI sensitive or	Entire Life cycle of project	(1) Develop a plant specie search and rescue management plan. (2) Develop and implement a phased rehabilitation management plan. (3)
		Fauna and Flora	erosion, possible loss of protected species, possible permanent loss of <i>ne</i> -vegetation potential of soil surface, increase in dust levels, interference with fauna behavioural activities, possible exposure of fauna and flora to contaminants – especially hydrocarbons and increased dust levels	Construction & Operational	3 2	8	5	65		2 1	1 6	4	36	areas.	protected flora identified to be rescued and relocated. (3)		Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
1. Access and hauling along roads i.e. during	Sedimentation and siltation of	Wetland and Aquatic Ecology	Direct Impact: Constructing access roads through drainage lines may cause sedimentation and siltation of watercourses if not managed property.	Construction & Operational	2 1	6	5	45	Control	2 1	1 6	3	27	Avoid or minimise the degradation of water quality of	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. Water quality of streams and rivers are maintained within 	Entire Life cycle of project	(1) Develop a storm water management plan. (2) Develop an implement a water management plan
the construction of roads	watercourses	Surface Water	Indirect Impact: Storm water runoff of dirt roads may cause sedimentation and siltation of nearby watercourses.	Construction & Operational	2 2	8	5	60		2 1	1 6	4	36	watercourses due to sedimentation and siltation.	the pre-determined seasonality baseline levels. (3) No incidents related to the polution of rivers and streams. (4) No visible signs of erosion damages.	.	and specifically include water monitoring and pollution prevention strategies.

	Noise generation	Surrounding noise quality	Direct Impact: Increased noise levels at potentially sensitive receptors exceeding criteria of the Noise Control Regulations legislation (NCR) and SANS guidelines; Changing ambient sound levels could change the acceptable land use capability. Changing ambient sound levels could increase annoyance and potential complaints, and Disturbing character of sound.	Construction & Operational	1	1 4	6 4	32	Control	1	1	4 3			Control potential noise polution stemming from the construction of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAlen, 24nr. It should be noted that the area would have to be demarcated as a 'controled zone' in terms of the NCR; (4)Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; (5) Ensuring compliance with the National Noise Control Regulations and SANS10103-2006 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Alteration of drainage patterns	Wetland and Aquatic Ecology Surface Water quality	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: The construction of access roads through drainage lines may lead to the sitiation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational Construction & Operational	2		6 5	50	Remedy	1	1	4 3		i		(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	Entire Life cycle of project	(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
D	estruction of upstream tributaries and reduction in water in the catchment	Wetland and Aquatic Ecology Downstream water users Surface Water quality	Indirect Impact: Alteration of the upstream drainage lines may lead to the degradation of downstream or surrounding Wietlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: The destruction of tributaries any lead to a limited volume of water available to the downstream users. The reduction in water in the catchment may cause the degradation of surface water quality.	Construction & Operational Construction & Operational Construction &	3	2 6		33 44 40	Remedy	1	1	6 3 6 3 6 3	2		Remedy the possible affects of destruction of upstream tributaries and reduction in the water catchment. Adherence with water quality requirements set by the Water Use Licence Conditions.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	Entire Life cycle of project	(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
۷	/ater usage for dust suppression	Wastage of water resource	Direct Impact: Improper management of the water used during dust suppression may lead to the wastage of the available water resource.	Operational Construction & Operational	1		4 5	35	Control	1	1			18	Storm water run-off from dirty areas is as far as possible recycled for reuse.	(1) Abstraction from natural watercourses is kept to a minimum and does not exceed the DWAS Water Use Licence provisions by more than 5% on an annual basis.		 Development and implementation of a Dust management plan including the monitoring and prevention programme. (2) Develop and implement a water usage record keeping procedure.
1	nflux of alien invasive vegetation	Fauna and Flora micro and macro ecosystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alien invasive vegetation causing Irreversible damage to the native fauna and flora species and loss of habitats.	Construction	3	2 6	6 5	55	Control	2	1	4 4	2	28 t	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of allen vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
	CO ₂ emissions	Air Quality	Direct Impact: Contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	1	3 6	6 5	50	Control	1	1	2 3	1	12 f	generators for power on site, is kept to a minimum.	 Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. Record keeping of service records of al vehicles, plant, and equipment. Ne widence of plant, equipment or vehicles in bad condition. 	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
	Fugitive dust generation	Air Quality	Direct Impact. Vegetation is removed, grading and paving to prepare the lay down areas takes place using a range of construction equipment. This often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5. The generation of dust during these activities will affect the visual environment negatively.	Construction	1	2	6 5	45	Control	1	1	6 4	3		Control dust fallout throughout the life cycle of the mining activity.	(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zeron number of complaints from site staff, surrounding landowners and communities. (3) Adherence with	Entire Life cycle of project	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 893 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric
		Visual Environment		Construction	3	2 6	6 5	55		1	1	64	3	32		legal required dust fallout levels.		Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)

	Alteration of the visual environment and topography	Topography and Visual Environment	Direct Impact: Vegetation stripping during site clearing and topsoil removal activities will alter the visual environment and topography.	Construction	3	2 6	5	55	j	Remedy	1	2 6	4	36		Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. (2) No signs of alen or invasive species on site (3) Control of visual affects. (4)	Rehabilitation and Decommissioning	(1) Mine plan in accordance with the MPRDA Regulation 55 section (1) to (8). (2) Adherence to the finalised approved lay out plan. (3) Development and implementation of the phased mine rehabilitation management plan.
	Degradation of soil resources	Soil quality Flora micro-ecosystems	Direct Impact: If not managed properly, fertile soil will be lost during site clearance and topsoil striping. Loss of fertile soil will cause the degradation of habitat for flora micro- and macro organisms.	Construction & Operational Construction & Operational	-	1 6		45		Remedy		1 6		24 24		Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whick/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Vegetation and habitat loss	Macro and Micro organisms Fauna and Flora	Direct Impact: Clearing of site and stripping of topsoil leads to the loss of vegetation and habitats of macro and micro organisms. Loss of vegetation, increase in runoff and erosion, possible distribution and increased establishment of alien invasive species, possible disturbance and reduction of habitat, injury or death to terrestrial fauna, possible change of natural runoff and drainage patterns causing accelerated erosion, possible loss of protected species, possible permanent loss of re-vegetation potential of soil surface, increase in dust levels, interference with fauna behavioural activities, possible exposure of fauna and fora to contaminants – especially hydrocarbons and increased dust levels	Construction & Operational Construction & Operational		1 10				Remedy		1 6		36	1	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	 Limiting site clearance to areas as per the approved site layout plan. Al sensitive or protected flora identified to be rescued and relocated. (3) 	Entire Life cycle of project	 Develop a plant specie search and rescue management plan. Develop and implement a phased rehabilitation management plan. Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
	Destruction of Wetlands	Wetlands and Aquatic Ecology	Direct Impact: Site clearing and topsoil stripping in Wetlands will cause the loss of micro and macro aquatic species.	Construction & Operational	3	2 8	5	65		Avoid	2	1 6	4	36		Avoid the destruction of wetlands.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. QiWater quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. No incident related to the polution of rivers and streams. No visible signs of erosion damages. 	Entire Life cycle of project	(1) Develop and implement a water management plan and specifically include the conservation measures to be implemented in wetland areas. (2) Ensure compliance with the issued WUL requirements.
		Surface Water quality		Construction & Operational	3	1 6	5	50			1	1 6	4	32					(1) Development of water management plan addressing monitoring and management requirements.
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the construction phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	2	1 6	4	36		Control	1	1 6	3	24		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	(4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Wetlands and Aquatic Ecology		Construction & Operational	2	1 6	5	45	5		1	1 6	4	32					(5) Development and implementation of a Hazardous substances management plan.
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Constructing access roads and lay down areas through or in close proximity to drainage ines may cause sedimentation and silitation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and investigation and setting the setting areas and un-vegetated areas may cause sedimentation and	Construction & Operational	3	1 6	5	50		Control	1	1 6	4	32		Avoid or minimise the degradation of water quality of watercourses due to sedimentation and siltation.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. 	Entire Life cycle of project	and specifically include water monitoring and pollution
		Surface Water quality	siliation of nearby watercourses.	Construction & Operational	3	2 6	5	55	;		1	1 6	4	32			(3) No incidents related to the polution of rivers and streams. (4) No visible signs of erosion damages.		prevention strategies.
	Water level reduction and	Groundwater quality	Direct Impact: The reduction in water levels as well as contamination of the water resource that may be caused by alternating the topography during site clearing and topsoil stripping poses a risk to affecting the	Construction & Operational		2 6				Control		1 6		24		Control the potential water level reduction and contamination		Entire Life cycle of project	(1) Develop and implement a water management plan and specifically include measures to be implemented to reduce the impact on surface and groundwater reduction. (2) Ensure compliance with the issued WUL
2. Site clearing and	contamination	Surface Water quality	surface and sub-surface water quality as well as the downstream users.	Operational Construction & Operational		1 6		45			1	1 6	3	24		related to authorised activities.	(3) No incidents related to the pollution of rivers and streams. (4) No visible signs of ensoin damages. (5) No signs of blockages to the natural flow of the associated river catchment.		requirements. (3) Develop and implement a storm water management plan and specifically address the diversion of "clean" water into the natural drainage lines.
topsoil stripping for lay down area of approximately ? ha and all related mining infrastructure	Noise generation	Surrounding noise quality	Direct Impact: The use of construction equipment during site clearing and topsoil stripping may cause noise during the construction phase. If equipment are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	3	1 6	5	50		Control	1	1 4	3	18		Control potential noise pollution stemming from the construction of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-lime). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB Juleq.24hr. It should be noted that the area would have to be demarcated as a 'controlled zone' in terms of the NCR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.

1	<u>г</u> т							_	_	-,						1	1	
	Destruction of graves	Loss of heritage resources	Direct Impact: Proposed activities in close proximity to identified graves poses the risk of destructing graves of great cultural and heritage importance. Indirect Impact: Loss of heritage and history for the future generation of the affected community.	Construction & Operational	5	2	6 5	65	Avoid	5	2	6	3	39	Identification of all possible sites of archaeological value and graves have been identified prior to the commencement of authorised work.	(1) Al sites clearly demarcated as no-go areas. (2) Evidence of records should further discoveries be identified during construction. (3) Full compliance to all mitigation measures.	Entire Life cycle of project	(1) Ensure compliance with the National Heritage Resources Act (NHRA), No. 25 of 1999. (2) Ensure compliance with the Human Tissue Act, 1983 (Act no. 65 of 1983.
	Degradation of cultural significance heritage sites	Loss of heritage resources	Direct Impact: Proposed mining activities in close proximity to cultural significant heritage sites poses the risk of degrading or loss of these sites. Indirect Impact: Loss of heritage and history for the future generation of the affected community.	Construction & Operational	5	2	6 5	65	Avoid	5	2	6	3	39	Identification of all possible sites of archaeological value and graves have been identified prior to the commencement of authorised work.	(1) Al sites clearly demarcated as no-go areas. (2) Evidence of records should further discoveries be identified during construction. (3) Full compliance to all mitigation measures.	Entire Life cycle of project	(1) Ensure compliance with the National Heritage Resources Act (NHRA), No. 25 of 1999. (2) Ensure compliance with the Human Tissue Act, 1983 (Act no. 65 of 1983.
	Erosion	Loss of fertile soil Micro-ecosystems	Direct Impact: Un-vegetated areas exposed to weathering for an extended period of time will lead to erosion. Erosion prone areas has a high risk of loosing fertile soil caused by flash floods. The loss of fertile soil will result in the loss of important micro ecosystems.	Construction & Operational Construction & Operational	4	2	8 5		Control	1		6	3 3	24 24	To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	Entire Life cycle of project	 Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
	CO ₂ emissions	Air Quality	Direct Impact: Contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	3	2	6 4	44	Control	1	1	2	3	12				(1) Develop and maintain a Carbon footprint reporting policy.
	Alteration of drainage patterns	Wetland and Aquatic Ecology Surface Water quality	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: Sice clearing and togooli stripping through drainage times may lead to the siltation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction &			8 5		Remedy	4	2		3	36	Remedy the possible affects of alteration to natural drainage lines. Adherence with water quality requirements as set by the Water Use Licence Conditions.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	Entire Life cycle of project	(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically including a strategy for the management of atterations to drainage patterns.
	Influx of alien invasive vegetation	Fauna and Flora micro and macro eccsystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alen invasive vegetation causing Inteversible damage to the native fauna and flora species and loss of habitats.	Operational Construction & Operational			6 5		Control	2		4		28	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
3. Weigh bridge	Hydrocarbon Contamination	Surface Water quality	Direct Impact: Throughout the operational phase hauling vehicles poses a risk of hydrocarbon spils if not maintained. Depending on the size of the spil the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Operational	4	1	6 5	55	Control	1	1	4	2	12	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of al spills.	Entire Life cycle of project	(4) Development and implementation of vehicle/plant/equipment maintenance plan with specific
		Groundwater quality		Operational	3	1	4 3	24		1	1	4	2	12				reference to daily inspections of plant/vehicles/equipment for leaks or breakages. (5) Development and implementation of a Hazardous substances management plan.
	Medical Waste generation	Human Health	Direct Impact: Improper management of medical waste generated during the construction and operational phase poses a high risk to human health.	Construction & Operational	3	2	6 4	44	Control	4	1	4	3	27	Properly manage all medical waste resulting from first aid incidents.	(1) No incidents related to miss management of medical waste.	Entire Life cycle of project	(1) Development of a Health and Safety management plan specifically addressing the management of medical waste. (2) Development of a management plan for the operation of the on-site Clinic. (3) Development and implementation of a detailed Waste management plan.
4. Onsite Clinic	Electricity usage	CO_2 emissions	Direct Impact: Contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Operational	4	2	4 5	50	Control	4	1	2	3	21	Control and monitor the carbon footprint of the Spitsvale project.	(1) Annual reduction of the Carbon footprint.	Entire Life cycle of project	(1) Develop and implement a electricity usage monitoring programme. (2) Develop and implement a carbon footprint reporting policy.

	Domestic water usage	Wastage of water resource	Direct Impact: The lack of water management and maintenance of taps, toilets, basins etc. poses a risk to wastage of water.	Operational	4	1 2	5	35	Ave	roid	4	1 2	3	21	Avoid wastage of water resources. Maintain all infrastructure associated to the management of domestic water.	 Abstraction from natural watercourses is kept to a minimum and does not exceed the DWAS Water Use Licence provisions by more than 5% on an annual basis. No visible signs of leaks or damage to water storage infrastructures. 		(1) Develop and implement a water usage record keeping procedure. (2) Develop and implement a infrastructure maintenance programme to include frequent inspections of water pipes and taps.
	Fugitive dust generation	Air Quality	Direct Impact: During the construction of infrastructures areas are to be cleared of vegetation. This often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5.	Construction	1	1 6	5	40	Control		1	1 6	3	24	Control dust failout throughout the life cycle of the mining activity.	(1) Dust fallout levels at active operational sites do not exceed the pre-determined baselne levels by more than 10%. (2) Zero number of complaints from site staff, surrounding landowners and communities. (3) Adherence with legal required dust fallout levels.	Entire Life cycle of project	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 983 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NEES) in terms of the National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Topography and visual alteration	Topography and Visual Environment	Direct Impact: Construction of mining facilities will alter the topography and visual environment.	Construction	4	1 6	5	55	Rem	nedy	2	1 4	3	21	Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. (2) No signs of alen or invasive species on site (3) Control of visual affects. (4)	Rehabilitation and Decommissioning	(1) Mine plan in accordance with the MPRDA Regulation 56 section (1) to (8). (2) Adherence to the finaled approved lay out plan. (3) Development and implementation of the phased mine rehabilitation management plan.
	Influx of alien invasive vegetation	Fauna and Flora micro and macro ecosystems	Direct Impact: If areas remain un-vegetated, this poses the risk of alien and invasive species instating and spreading to the surrounded areas.	Construction & Operational	4	2 6	5	60	Con	ntrol	2	1 4	3	21	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
5. Mining offices (construction and operation) i.e. operation) of training centres, offices and kitchen facilities	Noise generation	Surrounding noise quality	Direct Impact: The use of construction equipment may cause noise during the construction phase. If equipment is not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	1	1 4	. 5	30	Con	ntrol	1 .	1 4	3	18	Control potential noise pollution stemming from the construction of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (injth-time). • Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24hr. It should be noted that the area would have to be demarcated as a "controlled cone" in terms of the NCR; • Ensure that the charge in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • Ensure that the notage with the National Noise Control Regulations and SANS10103.2008 guidelines. The referencing of the International Finance Corporation (Word Bank) guidelines for an acceptable sound level in a residential area was also considered.	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
		Visual Environment		Construction & Operational	3	2 6	5	55			4	1 4	4	36				
	General waste generation & Littering	Soils quality due to leachates	Direct Impact: Littering throughout the construction and operational phase poses the risk of the visual environment to be affected negatively. The storing of waste onsite for an extended time may cause the formation of leachate that will affect the soil and water quality of the surrounding environment in a negative way. Indirect Impact: Exposure of leachate to the natural environment poses a health risk to the surrounding fauna and flora habitats as well as human health.	Construction & Operational	3	1 6	5	50	Con	ntrol	4	1 2	4	28	Promoting the reduction, re-use, or recycle of waste where prevention is not possible. Disposal of waste to local waste disposal sites is limited.	(1) No littering (2) No unpleasant clours (3) Marked and sealable bins observed Evidence of waste disposal certificates (4)	Entire Life cycle of project	(1) Compliance with the National Environmental Management: Waste Act, act no 59 of 2008 and associated regulations.
		Surface Water quality due to leachates	5	Construction & Operational	4	1 6	3	33			4	2	2	14				
	Electricity usage	CO ₂ emissions	Direct Impact: Contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Operational	3	1 4	5	40	Con	ntrol	4	2	3	21	Control and monitor the carbon footprint of the Spitsvale project.	(1) Annual reduction of the Carbon footprint.	Entire Life cycle of project	(1) Develop and implement a electricity usage monitoring programme. (2) Develop and implement a carbon footprint reporting policy.

	Domestic water usage	Wastage of water resource	Direct Impact: The lack of water management and maintenance of taps, toilets, basins etc. poses a risk to wastage of water.	Operational	4	1	4 5	45	Avoid	4	1	2 3	21		Avoid wastage of water resources. Maintain all infrastructure associated to the management of domestic water.	(1) Abstraction from natural watercourses is kept to a minimum and does not exceed the DWAS Water Use Licence provisions by more than 5% on an annual basis. (2) No visible signs of leaks or damage to water storage infrastructures.	Entire Life cycle of project	(1) Develop and implement a water usage record keeping procedure. (2) Develop and implement a infrastructure maintenance programme to include frequent inspections of water pipes and taps.
	Erosion	Loss of fertile soil	Direct Impact: Improper management of storm water runoff poses a high risk to erosion. Un-vegetated or degraded areas exposed to weathering for an extended period of time are a contributing factor. Erosion prone areas has a high risk of loosing fertile soil caused by flash floods. The loss of fertile soil will result in	Construction & Operational	4	2	6 5	60	Contro	4	2	4 3	30		To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%.	Entire Life cycle of project	(1) Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine
		Micro-ecosystems	the loss of important micro ecosystems.	Construction & Operational	4	2	6 5	60		4	2	4 3	30	0		(3) Erosion control measures implemented in high risk areas.		rehabilitation plan.
	Vegetation and habitat loss	Macro and Micro organisms	Direct Impact: Clearing of site and stripping of topsoil during the construction of storm water runoff management features poses a risk to the loss of vegetation and habitats of macro and micro organisms. Loss of vegetation, increase in runoff and erosion, possible distribution and increased establishment of alein invasive species, possible disturbance and reduction of habitat, injury or death to terrestrial fauna, possible change of natural runoff and drainage patterns causing accelerated erosion, possible loss of protected species, possible germanent loss of re-vegetation potential of soil surface, increase in dust levels, interference with fauna behavioural activities, possible exposure of fauna and flora to contaminants – especiably horicarbons and increased dust levels	COnstruction &	4		6 5	60	Remedy	2	1	4 3			Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) AI sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	management plan. (4) Apply for
			Indirect Impact: If areas summarized according the storm water features are not rehabilitated properly or features installed are not constructed according to the storm water management model, these areas are prone to erosion.	Operational									-					permits to remove protected species (provincial and national).
6. Storm water runoff management features	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Improper or ineffective storm water runoff management features poses a risk of contributing to the sedimentation and sitilation of watercourses.	Construction & Operational	4	2	8 5	70	Contro	4	2	6 3	36		Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sittation.	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the polution of rivers and streams.	Entire Life cycle of project	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
		Surface Water quality		Construction & Operational	4	2	8 5	70		4	1	6 3	33	3		(4) No visible signs of erosion damages.		
		Surface Water quality	_	Construction & Operational	4	2	8 5	70		2	1	6 2	18	8				 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "driv", and clean "areas"
	Hydrocarbon Contamination	Groundwater quality	DirectImpact: Storm water from drity areas such as the mining area, lay down areas, workshops, stores, wash bays etc. poses a risk to hydrocarbon containing effluent to contaminate water resources. Depending on the level of contamination the risk may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4	2	8 4	56	Contro	2	1	4 2	14		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	(3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of whick/plantlequipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. (5) Development and implementation of a Hazardous
		Wetlands and Aquatic Ecology		Construction & Operational	4	2	8 5	70		2	1	6 2	18	8				substances management plan.
	Alteration of drainage patterns	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its tum may affect the aquatic micro and macro ecology. Direct Impact: Site cleaning and togoold stripping through drainage lines may lead to the sitilation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.		4	2	8 5	70	Remedy	4	1	6 3	33		Remedy the possible affects of alteration to natural drainage lines. Adherence with water quality requirements as set by the Water Use Licence Conditions.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage	Entire Life cycle of project	(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
		Surface Water quality		Construction & Operational	4	2	6 5	60		4	1	6 3	33	3		systems.		
7. Water storage facilities	Improper water storage management	Wastage of water resource	Direct Impact: Improper management of water storage facilities i.e. Not inspecting or regularly maintaining the storage tanks pose a risk of leaks and contamination.	Operational	4	1	6 4	44	Avoid	4	1	2 3	21		Avoid the wastage of water resources. Full compliance to the water abstraction limits provided by DWAS. Ensure maintenance of infrastructure related to water usage and storage.	and does not exceed the DWAS water Use Licence provisions	Entire Life cycle of project	(1) Develop and implement a water management plan specifically addressing the storage of water as well as the frequent inspections of storage facilities.
		Water contamination		Operational	4	1	8 4	52		1	1	6 2	16	6				
		Wetlands and Aquatic Ecology		Operational	5	2	8 4	60		1	1	6 2	16	6				(1) Develop and implement an Integrated Waste
	Contamination of water resources	Surface Water quality	Direct Impact: In the event that PCD's are not constructed in a way to avoid seepage to the surrounding environment or if not maintained, it poses a risk of contaminating water resources within close proximity to the facility.	Operational	5	2	8 5	75	Avoid	1	1	6 2	16			(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) No evidence of polutants released into streams and rivers. (3) No formation of erosion gullies or rills. (4) No leaks or spils caused by inadequate waste water management facilities.	Entire Life cycle of project	Water Management Plan (IWWMP). (2) Develop and implement a water monitoring schedula according to the water management plan

i.	. –																	
		Groundwater quality		Operational	5	2	8 5	;	75		1	1	6 2	16				
8. Pollution Control Dams (PCD's) i.e. Construction and operation	Fugitive dust generation	Air Quality	Direct Impact: During the construction of infrastructures areas are to be cleared of vegetation. This often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5.	Construction	1	1	4 5		30	Control	1	1	2 3		Control dust fallout throughout the life cycle of the mining activity.	 Dust fallout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding landowners and communities. (3) Adherence with legal required dust fallout levels. 	Entire Life cycle of project	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring complance with the National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 893 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emilters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Hydrocarbon Contamination i.e. Usage of diesel operating pumps	Surface Water quality	Direct Impact: The lack of inspections or regular maintenance of facilities such as water pumps poses a risk to contaminating the surface and sub-surface water resource.	Construction & Operational	4		6 5		55	Control	4	1	2 3		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	 No evidence of hydrocarbon and hazardous spills. No release of contaminated water into the natural environment. Immediate removal and remediation of all spills. 	Entire Life cycle of project	(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan addressing the separation of 'dirly' and clean 'areas' (3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of whick/plan/tequipment maintenance plan with specific reference to daily inspections of plant/whicks/equipment for leaks or breakages. (5) Development and implementation of 4 Hazardous
		Groundwater quality		Construction & Operational	4	1	6 3		33		4	1	6 1	11				substances management plan.
	Smell nuisance	Human health and safety environment	Direct Impact: Lack of maintenance and treatment may result in a smelling environment. May lead to a potential nuisance to local communities and land users in close proximity to the authorised site.	Construction & Operational	4	1	6 5	;	55	Avoid	1	2	6 3		Avoid the generation of unpleasant odours on site at all times.	(1) Al toilets are serviced. (2) PCD's containing putrescrible waste to be monitored and kept free of odour. (3) All putrescrible waste removed and disposed off in a suitable manner.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management plan specifically addressing the management of sewage or chemical toilets. Develop and implement a Infrastructure inspection programme to ensure no leaks or spillages of sewerage or waste. Develop and implement a Waste Management plan.
		Surface Water quality		Construction & Operational	4	2	8 5	,	70		4	1	6 3	33				 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of 'diry' and clean "areas"
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the construction & operation phase equipment and plant are used. This poses a risk of hydrocarbon spills if equipment/plant is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality. The improper management of oil separators/sumps may also lead to the contamination of the surrounding environment.	Construction & Operational	4	2	8 5	,	70	Control	4	1	6 2		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	(3) Development of emergency response plan with specific reference to spill prevention and remediation
		Soil quality		Construction & Operational	4	2	8 5		70		4	1	63	33				substances management plan.
		Soil quality		Construction & Operational	4	1	6 5		55		4	1	6 3	33				(1) Development of a soil conservation management
	Degradation of soil resources	Fauna & Flora micro-ecosystems	Direct Impact: The continuous spills of hydrocarbons and hazardous substances pose a environmental risk to the surrounding soil quality. The degradation of the soil quality will cause the loss of habitat or healthy environment for micro ecosystems.	Construction & Operational	4	1	8 5	;	65	Remedy	4	1	6 3		Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	Jean: Development of a storm water management plan. (3) Development and implementation of vehickplant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Wetlands and Aquatic Ecology		Construction & Operational	4	2	8 5	5	70		4	1	63	33				
	Contamination of water resources	Surface Water quality	Direct Impact: Improper management of effluent from store, workshops, and wash bays poses a high risk to contaminating water resources. Indirect Impact: Over an extended period of time the exposure to contamination will cause the degradation of fauna and flora habitats as well as affect the surface and sub-surface water quality.	Construction & Operational	4	2	8 5		70	Avoid	4	1	6 3	33	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented Suitable water management facilities and treatment works are developed and maintained.	. (2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2	8 5		70		4	1	6 2	22				

9.Stores, workshops &wash bays	CO ₂ emissions & Release of noxious gasses	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint. The storage of diesel poses a risk of releasing noxious gasses.	Construction & Operational	4	1 4	5	45	Control	4	1	4 3	3	27	generators for power on site, is kept to a minimum.	 Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. Record keeping of service records of all vehicles, plant, and equipment. No evidence of plant, equipment or vehicles in bad condition. 	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
		Human health and safety environment		Construction & Operational	1	2 10	4	52		1	1	10 2	2	24				
	Chemical Fires		Direct Impact: The improper storage of hazardous substances poses a risk of chemical fires. In the event of a chemical fire the impact to the surrounding environment is significant. Fires may lead to the loss of ecceystems, damage to properties and fatalities.	Construction & Operational	2	1 10	5	65	Avoid	1	1	8 3	3		Avoid and prevent chemical fires. Hazardous spills are prevented and no incidents to human health occurs.	(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) Immediate removal and remediation of all splits. (3) At staff trained. (4) At hazardous substances are documented. (5) No incidents recorded involving chemical fires.	Entire Life cycle of project	(1) Develop and implement a fire prevention plan that includes measures of prevention and response to chemical fires. (2) Develop a emergency preparedness procedure and include the process to be followed in case of a chemical fire. (3) Develop a Hazardous substances management plan. (4) Develop a frequent inspection programme to include inspections of hazardous substances storage facilities.
		Damage to property		Construction & Operational	2	2 10	4	56		1	2	8 3	3	33				
	Noise generation	Surrounding noise quality	Direct Impact: The use of equipment may cause noise during the operation of workshops. If equipment is not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	1	1 4	5	30	Control	1	1	4 3	3		Control potential noise pollution stemming from the construction of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (inght-time). • Define the noise set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24tr. It should be noted that the area would have to be demarcated as a "controlled zone" in terms of the NCR; • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • Ensure that the National Noise Control Regulations and SANS10103:2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS 10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Degradation of soil resources	Soil quality	Direct Impact: Continuous leaking or lack of maintenance poses a risk to contaminating the surrounding soils and degrading the soil quality. This will affect the micro-ecceystems in a negative manner.	Construction & Operational	4	1 6	5	55	Remedy	4	1	6 3	3	33	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whicklefkant/eurjment maintenance plan with specific
		Flora micro-ecosystems		Construction & Operational	4	1 6	5	55		4	1	6 3	3	33		(v)		reference to day inspections of the second s
		Wetlands and Aquatic Ecology		Construction & Operational	4	2 8	5	70		4	1	6 3	3	33				
10. Ablutions & change house with sewage treatment plant	Contamination of water resources		Direct Impact: Improper management of effluent from ablution facilities, change houses, and sewage treatment plant poses a high risk to contaminating water resources. Indirect Impact, Over an extended period of time the exposure to contamination will cause the degradation of fauna and flora habitats as well as affect the surface and sub-surface water quality.	Construction & Operational	4	2 8	5	70	Avoid	4	1	6 3	3	33	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of nollutants released into streams and rivers	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (WWMP). (2) Develop and implement a water monitoring schedule according to the water management plan. (2) Ensure compliance with the WUL conditions. (3) Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2 8	4	56		4	1	6 2	2	22				

	Smell nuisance	Human health and safety environment	Direct Impact: Lack of maintenance and treatment may result in a smelling environment.	Construction & Operational	4	2 6	5 5	60		Avoid	1	1	4	4	24	Avoid the generation of unpleasant odours on site at all times.	(1) All toilets are serviced. (2) PCD's containing putrescrible waste to be monitored and kept free of odour. (3) All putrescrible waste removed and disposed off in a suitable manner.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management plan specifically addressing the management of sewage or chemical tolists. Develop and implement a Infrastructure inspection programme to ensure no leaks or spillages of sewerage or waste. Develop and implement a Waste Management plan.
	Hydrocarbon Contamination	Surface Water quality	Direct Impact: The construction of improper generator facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbors leading possibly contaminating surface	Construction & Operational Construction &			3 5			Control	4	1		3	33	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	 No evidence of hydrocarbon and hazardous spills. No release of contaminated water into the natural environment. (3) 	Entire Life cycle of project	 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirty" and clean "areas" Development of emergency response plan with specific reference to spill prevention and remediation. Development and implementation of
		Groundwater quality Soil quality	and sub-surface water sources as well as the soils surrounding the facility.	Construction & Operational Construction & Operational	4		5 5				4	1		2 3	22		Immediate removal and remediation of all spills.		vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/quipment for beaks or breakages. (5) Development and implementation of a Hazardous substances management plan.
	Degradation of soil resources	Soil quality Flora micro-ecosystems	Direct Impact: Continuous exposure to hydrocarbon leaks poses a risk to the degradation of the surrounding soil resources.	Construction & Operational Construction & Operational	4		5 5 3 5			Remedy	4	1		3	33	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to day inspections of plant/vehicles/equipment for leaks or breakages.
		Wetlands and Aquatic Ecology		Construction & Operational	4	2 8	3 5	70			4	1	6	3	33				
	Contamination of water resources	Surface Water quality	Direct Impact: The construction of improper generator facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbons leading possibly contaminating surface and sub-surface water sources as well as the soils surrounding the facility.	Construction & Operational	4	2 8	3 5	70		Avoid	4	1	6	3	33		(2) Manual data and a share and international state of the state of th	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2 8	3 4	56			4	1	6	2	22				
11. Fuel operating power generators	2 CO emissions & Release of noxious gasses	Air Quality	Direct Impact: The use of diesel operated power generators will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint. The storage of diesel poses a risk of releasing noxious gasses.	Construction & Operational	4	1	4 5	45	,	Control	4	1	4	3	27	The levels of greenhouse gas and CO2 emissions emanating from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of all vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
		Human health and safety environment		Construction & Operational	1	2 1	0 5	65			1	1	10	2	24				(1) Develop and implement a fire prevention plan that includes measures of prevention and response to
	Chemical Fires	Loss of ecceystems	Direct Impact: The improper storage of hazardous substances poses a risk of chemical fires. In the event of a chemical fire the impact to the surrounding environment is significant. Fires may lead to the loss of ecosystems, damage to properties and fatalities.	Construction & Operational	1	2 1	0 5	65		Avoid	1	1	8	2		Avoid and prevent chemical fires. Hazardous spills are prevented and no incidents to human health occurs.	(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) Immediate removal and remediation of all spills. (3) All staff trained. (4) All hazardous substances are documented. (5) No incidents recorded involving chemical fires.	Entire Life cycle of project	chemical fires. (2) Develop a emergency preparedness procedure and include the process to be followed in case of a chemical fire. (3) Develop a Hazardous substances management plan. (4) Develop a frequent inspection programme to include inspections of hazardous substances storage facilities.
		Damage to property		Construction & Operational	2	2 1	0 5	70			1	1	10	2	24				

	Noise generation	Surrounding noise quality	Direct Impact: The use of generators to produce electricity may result in noise generation if equipment is not maintained.	Construction & Operational	1	1 4	5	30	Control	1 1	4	3	18	Control potential noise pollution stemming from the construction of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24tr. It should be noted that the area would have to be demarcated as a "controlled zone" in terms of the NCR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
12. Lighting	Electricity usage	2 CO emissions	Direct Impact: Contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	1 4	5	45	Control	4 1	2	3	21	Control and monitor the carbon footprint of the Spitsvale project.	(1) Annual reduction of the Carbon footprint.	Entire Life cycle of project	(1) Develop and implement a electricity usage monitoring programme. (2) Develop and implement a carbon footprint reporting policy.
	Light pollution		Direct Impact: The use of bright and excessive lighting during the proposed night shift period poses a risk of disrupting nocturnal fauna species.	Construction & Operational	4	1 4	3	27	Control	4 1	2	1	7	Limit the possible contribution to light pollution as far as reasonably possible.	(1) No signs of usage of light during nigh times, if not essential for the safety of operation or humans.	Entire Life cycle of project	(1) Bi-Annual (every second year) investigation of the impact of Light pollution to nocturnal species.
	Emission of noxious fumes	Air Quality	Direct Impact: Evaporation of diesel fuel and heavy fuel from temporary tanks and possible spills during loading of fuel from tanks on site that are used for re-fuelling of heavy machinery and trucks poses a risk of releasing of noxious gasses. Indirect Impact: Over exposure of employees to the noxious gasses may lead to the development of respiratory problems and irritation to eyes.	Construction & Operational	4	1 8	5	65	Avoid	4 1	6	3	33	Avoid the release of emissions of noxious fumes from fuel storage facilities.	(1) No leaks from bulk fuel storage facilities. (2) No incidents relating to damage to lungs and eyes of employees or sub-contractors.		(1) Develop and implement a Hazardous substance management plan addressing adherence to applicable SANS standards for the storage of fuel. (2) Develop and implement a infrastructure inspection schedule and programme and include the inspections of fuel storage facilities. (3) Develop and implement a Health and Safety Management plan . (4) Develop an Emergency preparedness plan addressing
		Human Health			1	1 8	5	50		1 1	6	3	24				
	Hydrocarbon Contamination	Surface Water quality	Direct Impact: The construction of improper storage facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbons leading possibly contaminating surface and sub- surface water sources as well as the soils surrounding the facility.	Construction & Operational Construction & Operational	4	2 8	5	70 70	Control	4 1			33 22	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	vehicle/plant/equipment maintenance plan with specific reference to daily inspections of
		Soil quality		Construction & Operational	4	2 6	5	60		4 1	6	3	33				plant/whicks/equipment for leaks or breakages. (5) Development and implementation of a Hazardous substances management plan.
		Soil quality	Direct Impact: Continuous exposure to hydrocarbon leaks poses a risk to the degradation of the	Construction & Operational	4	1 6	5	55		4 1	6	3	33	Adequate protection of soil resources and remediation if	(1) No evidence of erosion. (2)		(1) Development of a soil conservation management plan. (2) Development of a storm water management plan.
	Degradation of soil resources	Flora micro-ecosystems	surrounding soil resources.	Construction & Operational	4	1 8	5	65	Remedy	4 1	6	2	22	degradation cannot be avoided.	No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(3) Development and implementation of vehicle/plant/equipment, maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
13. Fuel storage		Wetlands and Aquatic Ecology		Construction & Operational	4	2 8	5	70		4 1	6	3	33				
	Contamination of water resources	Surface Water quality	Direct Impact: The construction of improper storage facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbons leading possibly contaminating surface and sub- surface water sources as well as the soils surrounding the facility.	Construction & Operational	4	2 8	5	70	Avoid	4 1	6	3	33	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is preventer Suitable water management facilities and treatment works are developed and maintained.	. (2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Pian (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.

		Groundwater quality		Construction & Operational	4 2	8 4	56		4	1	6 2	22			
		Human health and safety environment		Construction & Operational	1 2	10 5	65		1	1	10 2	24			(1) Develop and implement a fire prevention plan that
	Chemical Fires	Loss of ecosystems	Direct Impact: The improper storage of hazardous substances poses a risk of chemical fires. In the event of a chemical fire the impact to the surrounding environment is significant. Fires may lead to the loss of ecosystems, damage to properties and fatalities.	Construction & Operational	1 2	10 5	65	Avoid	1	1	8 2	20	Avoid and prevent chemical fires. Hazardous spills are prevented and no incidents to human health occurs.	(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) Inmediater removal and remediation of all spils. (2) Inmediater removal and remediation of all spils. (2) Inmediater removal and remediation of all spils. (3) All staff trained. Entire Life cycle of project (4) All hazardous substances are documented. (5) No incidents recorded involving chemical fires. (5)	includes measures of prevention and response to chemical fires. (2) Develop a emergency preparedness procedure and include the process to be followed in case of a chemical fire. (3) Develop a Hazardous substances management plan. (4) Develop a frequent inspection programme to include inspections of hazardous substances storage facilities.
		Damage to property		Construction & Operational	2 2	10 5	70		1	1	10 2	24			Iduaues.
	Loss of farm labour	Sacio-economic	Direct Impact: Increased demand of labour force poses a risk of the local farmers losing farm labour due to competing financial income.	Construction & Operational	4 2	4 5	50	Control	4	2	2 4	32	Promoting open public communication in terms of required labour.	(1) No complaints from local landowners regarding loss of farm labour. (2) Peaceful negotiations regarding employment opportunities.	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Population Influx – Pressure on Resources	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx in the local district municipality. The increasing population will put pressure on the local municipality to provide services such as sewage, drinking water, waste management, electricity etc.	Construction & Operational	4 2	4 5	50	Control	4	2	2 4	32	Promoting the management of population influx associated to the mining operations in a sustainable manner.	(1) Provision of existing housing infrastructures. Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Population Influx – Social Pathologies	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx. The increased population influx may lead to conflicting social pathologies in the surrounding local community.	Construction & Operational	4 2	4 5	50	Control	4	2	2 4	32	Control convicting social pathologies.	(1) Continuous awareness training on HIV/AIDS/STD in collaboration with local health service providers.	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
14. Employment of	Population Influx – Community Conflict	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx. The increased population influx may lead to community conflicts in the surrounding local community.	Construction & Operational	4 3	6 5	65	Control	4	2	2 4	32	Promoting peaceful negotiations with the surrounding communities and local business owners.	(1) Peaceful negotiations regarding employment, skills development, and financial provisions for social development projects.	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
workers and procurement of construction materials.	Health and Safety of employees	Human health and safety environment	Direct Impact: Increased demand for labour and employees from different cultures may pose the risk to the lack of knowledge and skills on health and safety in the work place. Different human behaviours deals with different situations and if there is not a simplified system of managing health and safety risk, situations resulting loss or injury of human life may be a end result.	Construction & Operational	4 1	6 5	55	Control	4	1	6 3	33	Ensuring the health and safety of all personnel on site.	 Low incidents of injured on duty (IOD's) on site. (2) Low incidents of reported pedestrian accidents. (3) Records kept of health and safety training conducted for all staff on site. (4) Visible evidence and use of PPE. (5) Visible health and safety signs of high risk areas. 	(1) Develop and implement a Health and Safety Management plan.
	Job Creation and Skills Training	Socio-economic	Direct Impact: As positive, local employed labour force will form part of a skills and training development programme. The proposed mining operation will create a job opportunity for at least a total of 60 people.	Construction & Operational	4 2	0 4	24	Control	4	2	0 4	24	Promote job creation and skills development of local employment.	(1) Peaceful negotiations regarding employment, skills development, and financial provisions for social development projects.	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Job Creation (Multiplier affect) and Population Influx	Socio-economic	Indirect Impact: Social projects forming part of the proposed mining project will create additional job opportunities for the local communities.	Construction & Operational	4 3	0 5	35	Control	4	2	0 4	24	Promote job creation and skills development of local employment.	(1) Peaceful negotiations regarding employment, skills development, and financial provisions for social development projects.	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
		Surface Water quality	_	Construction & Operational	1 1	8 5	50		1	1	4 3	18			(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan distancies the second and divid if and store "secon"
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the construction phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment are not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	1 1	8 5	50	Control	1	1	4 2	12	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spils. (2) No release of contaminated water into the natural environment. Immediate removal and remediation of all spills. Entire Life cycle of project (3)	addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment for lasks or breakages.
		Soil quality		Construction & Operational	1 1	8 5	50		1	1	4 3	18			pain enincearequiption to be do to or orangeoc: (5) Development and implementation of a Hazardous substances management plan.

		Air Quality		Construction & Operational	1	1 6	5	40		1	1	6 3	24		 Dust fallout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. Zero number of complaints from site staff, surrounding 	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act
	Dust generation	Human Health	Direct Impact: Continuous use of haul road often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5 from the dirt roads. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	1	1 8	5	50	Control	1	1	6 3	24	Control dust falout throughout the life cycle of the mining activity.	landowners and communities. (3) Adherence with legal required dust falbut levels. (4) Adherence with 600 mg/m ² /day averaged over 30 days in residential areas and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust falbut monitoring site. (6) If exceeding dust falbut standard, within 3 months after	(NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
15. Transport of construction material, mobile plant and equipment to the site		Topography and Visual Environment		Construction & Operational	3	1 6	5	50		1	1	6 3	24		submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.	(6) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Erosion	Loss of fertile soil	Indirect Impact: Improper management of storm water may lead to erosion along the access routes. This may lead to the loss of fertile soit and in its turn affect the micro-ecosystems of the surrounding	Construction & Operational	2	1 6	5	45	Control	1	1	6 3	24	To prevent any erosion and to provide adequate erosion	(1) No visible signs of erosion formations such as dongas or nils. (2) Sedimentation loads of streams and rivers not to exceed the Entire Life cycle of project	 Development and implementation of a storm water management plan. (2)
	Elusion	Micro-ecosystems	may eau to the loss of refine soll and in its full railed, the micro-edosystems of the surrounding environment.	Construction & Operational	2	1 8	5	55	Control	1	1	6 3	24	control measures where required.	Securiteritation radus or subtentis and their for to exceed the Entitle Life Cycle of project baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	Development of a solicitorian additional adjentent plan. (3) Development and implementation of mine rehabilitation plan.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	1	1 4	5	30	Control	1	1	2 5	20	The levels of greenhouse gas and CO2 emissions emanatir from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	use of use of equipment. (2) Record keeping of service records of all vehicles, plant, and Entire Life cycle of predupment. (3) No evidence of plant, equipment or vehicles in bad condition. (1) Ensure water quality results do not exceed the pre- (1) Ensure water quality results do not exceed the pre-	(1) Develop and maintain a Carbon footprint reporting policy.
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Constructing access roads through drainage lines may cause sedimentation and siltation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads may cause sedimentation and siltation of nearby watercourses.	Construction & Operational	2	2 8	5	60	Control	1	1	6 3	24	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and silitation.	Im. equipment. (3) No evidence of plant, equipment or vehicles in bad condition. (1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2) Water quality of streams and rivers are maintained within Easting 1.6, cools of excision	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
		Surface Water		Construction & Operational	2	2 8	5	60		1	1	6 3	24		ty of (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams.	
		Surface Water quality	_	Construction & Operational	1	2 6	5	45		4	1	4 3	27			 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: The lack of inspections or regular maintenance of facilities such as water pumps poses a risk to contaminating the surface and sub-surface water resource.	Construction & Operational	1	2 6	5	45	Control	4	1	4 2	18	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spils. (2) No release of contaminated water into the natural environment. (3) Inmediate removal and remediation of all spils. Entire Life cycle of project (1) Ensure water quality results do not exceed the pre-determined baseline results with more than 10%. (2)Water quality of streams and nivers are maintained within the pre-determined baseline levels. Entire Life cycle of project (3) No incidents related to the polution of rivers and streams. (3) No incidents related to the polution of rivers and streams. Entire Life cycle of project	(4) Development and imperimentation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
16. Use of existing drilled / new boreholes		Soil quality		Construction & Operational	1	2 6	5	45		4	1	4 2	18			(5) Development and implementation of a Hazardous substances management plan.
		Groundwater quality		Construction & Operational	4	2 6	5	60		4	1	4 3	27			(1) Develop and implement a water management plan and specifically include measures to be implemented to reduce the impact on surface and groundwater
	Water level reduction and contamination	Downstream water users	Direct Impact: Improper management of boreholes i.e. Pumping rates exceeding yield thresholds poses a insk to boreholes being pumped dry. may result in both sub-surface and surface water quality to be affected. Over exposing for an extended time may lead to water shortages and poses a negative effect to the downstream users.	Construction & Operational	4	2 6	5	60	Control	4	2	2 3	24	Control the potential water level reduction and contamination related to authorised activities.		(2) Ensure compliance with the issued WUL requirements. (3) Develop and implement a storm water management plan and specifically address the diversion of "clean" water into the natural drainage lines.
		Surface Water quality		Construction & Operational	4	2 6	5	60		4	1	4 3	27			

Mining Operations				-													
	Loss of farm labour	Socio-economic	Direct Impact: Increased demand of labour force poses a risk of the local farmers losing farm labour due to competing financial income.	Construction & Operational	4 3	4	5	55	Control	4	2 0	4	24	Promoting open public communication in terms of required labour.	(1) No complaints from local landowners regarding bss of farm labour. (2) Peaceful negotiations regarding employment opportunities.	Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Population Influx – Pressure on Resources	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx in the local district municipality. The increasing population will put pressure on the local municipality to provide services such as sewage, drinking water, waste management, electricity etc.	Construction & Operational	4 2	4	5	50	Control	4	2 0	5	30	Promoting the management of population influx associated to the mining operations in a sustainable manner.	(1) Provision of existing housing infrastructures.	Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Population Influx – Social Pathologies	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx. The increased population influx may lead to conflicting social pathologies in the surrounding local community.	Construction & Operational	4 2	4	4	40	Control	4	2 0	4	24	Control convicting social pathologies.	(1) Continuous awareness training on HIV/AIDS/STD in collaboration with local health service providers.	Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
17. Employment of workers	Population Influx – Community Conflict	Socio-economic	Direct Impact: Increased demand for labour force poses a risk of a population influx. The increased population influx may lead to community conflicts in the surrounding local community.	Construction & Operational	4 3	6	5	65	Control	4	2 0	4	24	Promoting peaceful negotiations with the surrounding communities and local business owners.	 Peaceful negotiations regarding employment, skills development, and financial provisions for social development projects. 	Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
	Health and Safety of employees	Human health and safety environment	Direct Impact: Increased demand for labour and employees from different cultures may pose the risk to the lack of knowledge and skills on health and safety in the work place. Different human behaviours deals with different situations and if there is not a simplified system of managing health and safety risk, situations resulting loss or injury of human life may be a end result.	Construction & Operational	4 1	6	5	55	Control	4	1 6	3	33	Ensuring the health and safety of all personnel on site.	(1) Low incidents of injured on duty (IOD's) on site. (2) Low incidents of reported pedestrian accidents. (3) Records kept of health and safety training conducted for all staff on site. evidence and use of PPE. health and safety signs of high risk areas.		(1) Develop and implement a Health and Safety Management plan.
	Job Creation and Skills Training	Sacio-economic	Direct Impact: As positive, local employed labour force will form part of a skills and training development programme. The proposed mining operation will create a job opportunity for at least a total of 60 people.	Construction & Operational	4 1	0	5	25	Control	4	1 0	5	25	Promote job creation and skills development of local employment.	(1) Peaceful negotiations regarding employment, skills development, and financial provisions for social development projects.	Entire Life cycle of project	(1) Develop and implement a Social Labour plan as defined by the MRPDA. (2) Develop and implement a grievance lodging procedure.
		Air Quality	Direct Impact: Clearing of vegetation for topsoil and subsoil stripping exposes the mining operation area to dust generation. High levels of dust fallout will affect the overal air quality. The generation of dust during	Construction	4 2	6	5	60		2	1 6	3	27		 Dust fallout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. Zero number of complaints from site staff, surrounding landowners and communities. Adherence with legal required dust fallout levels. Adherence with 600 mg/m³/day averaged over 30 days in 		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. activities remain under the thresholds stipulated in
	Dust generation	Visual Environment	these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Construction	4 2	4	5	50	Control	2	1 4	3	21	Control dust failout throughout the life cycle of the mining activity.	It is in a set of the set of t	Entire Life cycle of project	GNR 893 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NAESI) in terms of the National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Alteration of the visual environment and topography	Topography and Visual Environment	Direct Impact: Topsoil and subsoil stripping will alter the topography and visual environment throughout the mining operation.	Construction	4 2	4	5	50	Remedy	4	1 4	4	36	Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. (2) No signs of alien or invasive species on site (3) Control of visual affects. (4)	Rehabilitation and Decommissioning	(1) Mine plan in accordance with the MPRDA Regulation 55 section (1) to (8). (2) Adherence to the finalised approved lay out plan. (3) Development and implementation of the phased mine rehabilitation management plan.
	Degradation of soil resources	Soil quality	Direct Impact: If not managed properly, fertile soil will be lost during site clearance, topsoil striping and stockpiling. Loss of fertile soil will cause the degradation of habitat for flora micro- and macro organisms.	Construction & Operational Construction &	3 1		5	50	Remedy	3	1 4	3	24	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of
	Vegetation and habitat loss	Flora micro-ecosystems Macro and Micro organisms Fauna and Flora	Direct Impact: Clearing of site and stripping of topsoil leads to the loss of vegetation and habitats of macro and micro organisms. The loss of vegetation also affects the habitat of surrounding Fauna and Flora.	Construction & Operational Construction & Operational	3 1 5 2 5 2	10	5 5 5	50 85 85	Remedy	3 4 4	1 6 1 6 1 6	5	30 55 55	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) All sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	Interest to Vary hispections of plant/vehicles/equipment for leaks or breakages. (1) Develop a plant specie search and rescue management plan. (2) Develop and implement a phased rehabilitation management plan. (3) Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
	Destruction of Wetlands	Wetlands and Aquatic Ecology	Direct Impact: Site clearing and topsoil stripping in Wetlands will cause the loss of micro and macro aquatic species.	Construction & Operational	5 2	8	5	75	Avoid	3	1 6	4	40	Avoid the destruction of wetlands.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. 	Entire Life cycle of project	(1) Develop and implement a water management plan and specifically include the conservation measures to be implemented in wetland areas. (2) Ensure compliance with the issued WUL requirements.
		Surface Water quality		Construction & Operational	4 2	8	5	70		4	2 6	3	36				(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan addressino the secaration of "dirty" and clean "areas"

	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the operational phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant on gainficant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4	2	8 5	70	D	Control	4	2	6	2	24	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	(4) Development and implementation of vehicke/plant/sequipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. (5) Development and implementation of a Hazardous
		Wetlands and Aquatic Ecology		Construction & Operational	4	2	8 5	70	D		4	2	6	3	36			substances management plan.
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Stripping topsoil and subsoil or stockpiling material through or in close proximity to drainage lines may cause sedimentation and sittation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and	Construction & Operational	4	2	6 5	60	D	Control	4	2	4	3	30	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sitiation.	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)/Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels.	and specifically include water monitoring and pollution
		Surface Water quality	sillation of nearby watercourses.	Construction & Operational	4	2	8 5	70	D		4	2	6	3	36		 (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. 	prevention strategies.
		Groundwater quality		Construction & Operational	4	2	6 5	60	D		4	1	4	3	27		(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%.	(1) Develop and implement a water management plan and specifically include measures to be implemented to reduce the impact on surface and groundwater
	Water level reduction and contamination	Downstream water users	Direct Impact: The reduction in water levels as well as contamination of the water resource that may be caused by alternating the topography during site clearing and topsoil stripping poses a risk to affecting the surface and sub-surface water quality as well as the downstream users.	Construction & Operational	4	2	6 5	60	D	Control	4	1	4	2	18	Control the potential water level reduction and contamination related to authorised activities.	(2)/Vater quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the polution of rivers and streams. (4) No visible signs of erosion damages. (5) No signs of blockages to the natural flow of the associated river catchment.	reduction. t (2) Ensure compliance with the issued WUL requirements. (3) Develop and implement a storm water management plan and specifically address the diversion of "clean"
		Surface Water quality		Construction & Operational	4	3	6 5	65	5		4	1	4	4	36			water into the natural drainage lines.
18.Topsoil and subsoil stripping & stockpiling for mining operation area	Noise generation	Surrounding noise quality	Direct Impact: The use of construction equipment during site clearing and topsoil stripping may cause noise during the construction phase. If equipment are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	4	1	6 5	55	5	Control	4	1	4	3	27	Control potential noise pollution stemming from the operational of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (ngiht-time). Define the noise areas with a set boundary does not exceed 61 dB LAleq.24hr. It should be noted that the area would have to be demarcated as a "controlled core" in terms of the NCR. Ensure that the change in ambient sound levels as thoses on a quarterly basis. Before and during all phases on a quarterly basis. T dBA: Ensure that the National Noise Control Regulations and SANS10103:2006 guidelines. The referencing of the Interactional Finance Corporation (Wordt Bank) guidelines for an acceptable sound level in a residential area was also considered. 	 Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifical include routine inspections and testing of sound frequencies.
	Destruction of graves	Loss of heritage resources	Direct Impact: Proposed activities in close proximity to identified graves poses the risk of destructing graves of great cultural and heritage importance. Indirect Impact: Loss of heritage and history for the future generation of the affected community.	Construction & Operational	5	2	6 5	65	5	Avoid	5	2	2	4	36	Identification of all possible sites of archaeological value and graves have been identified prior to the commencement of authorised work.	(1) Al sites clearly demarcated as no-go areas. (2) Evidence of records should further discoveries be identified during construction. (3) Full compliance to all mitigation measures.	(1) Ensure compliance with the National Heritage Resources Act (NHRA), No. 25 of 1999. (2) Ensure compliance with the Human Tissue Act, 1983 (Act no. 65 of 1983.
	Degradation of cultural significance heritage sites	Loss of heritage resources	Direct Impact: Proposed mining activities in close proximity to cultural significant heritage sites poses the risk of degrading or loss of these sites. Indirect Impact: Loss of heritage and history for the future generation of the affected community.	Construction & Operational	5	2	6 5	65	5	Avoid	5	2	2	4	36	Identification of all possible sites of archaeological value and graves have been identified prior to the commencement of authorised work.	(1) All sites clearly demarcated as no-go areas. (2) Evidence of records should further discoveries be identified during construction. (3) Full compliance to all mitigation measures.	(1) Ensure compliance with the National Heritage Resources Act (NHRA), No. 25 of 1999. (2) Ensure compliance with the Human Tissue Act, 1983 (Act no. 65 of 1983.

Erosion	Loss of fertile soil	Direct Impact: Un-vegetated areas exposed to weathering for an extended period of time will lead to erosion. Erosion prone areas has a high risk of loosing fertile soil caused by flash floods. The loss of fertile	Construction & Operational	4	1 6	5	55	Control	4	1 6	3	33	To prevent any erosion and to provide adequate erosion control measures where required.		(1) Development and implementation of a storm water management plan. (2) Development of a soli conservation management plan.
	Micro-ecosystems	soil will result in the loss of important micro ecosystems.	Construction & Operational	4	2 8	5	70		4	1 6	3	33	uoniuu measures muere required.	baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	(3) Development and implementation of mine rehabilitation plan.
CO_2 emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	1 4	5	45	Control	4	1 2	4	28	The levels of greenhouse gas and CO2 emissions emanating from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of al vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	(1) Develop and maintain a Carbon footprint reporting policy.
	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or	Construction & Operational	5	2 8	5	75		4	1 6	3	33		(1) No visible signs of erosion formations such as dongas or rills. (2)	(1) Develop and implement a storm water management
Alteration of drainage patterns	Surface Water quality	surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: Site clearing and topsoil stripping through drainage lines may lead to the sitiation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational	5	3 8	5	80	Remedy	4	2 6	4	48	Hemedy the possible affects of atteration to natural dranage ines. Adherence with water quality requirements as set by the Water Use Licence Conditions.	Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (2) Erosin control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the upstream drainage lines may lead to the degradation of downstream or	Construction & Operational	5	2 6	5	65		4	1 4	3	27		(1) No visible signs of erosion formations such as dongas or rills. (2)	(1) Develop and implement a storm water management
Destruction of upstream tributarie and reduction in water in the catchment	Downstream water users	surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Inpact: The destruction of tributaries may lead to a limited volume of water available to the downstream users. The reduction in water in the catchment may cause the degradation of surface water quality.	Construction & Operational	5	2 6	5	65	Remedy	4	1 4	2	18	Remedy the possible affects of destruction of upstream tributaries and reduction in the water catchment. Adherence with water quality requirements set by the Water Use Licenco Conditions.	(3) Erosion control measures implemented in high risk areas.	plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
	Surface Water quality		Construction & Operational	5	3 6	5	70		4	1 4	4	36		systems.	·····
Influx of alien invasive vegetation	Fauna and Flora micro and macro ecosystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of allen invasive vegetation causing Irreversible damage to the native fauna and flora species and loss of habitats.	Construction & Operational	4	2 6	5 5	60	Control	4	1 4	4	36	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site. Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
	Surface Water quality		Construction & Operational	4	2 8	5	70		4	1 4	3	27			 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirty" and claen "areas"
Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the operational phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4	2 8	5	70	Control	4	2 6	3	36	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. Immediate removal and remediation of all spills.	(3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicle/squipment for teaks or breakages.
	Soil quality		Construction & Operational	4	1 8	5	65		4	1 4	3	27			(5) Development and implementation of a Hazardous substances management plan.
	Air Quality		Construction & Operational	4	2 6	5	60		4	2 4	4	40		the pre-determined baseline levels by more than 10%.	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the
Dust generation	Human Health	Direct Impact: Exposed un-vegetated mining areas may lead to high levels of dust fallout and will affect the overall air quality. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	4	1 6	5	55	Control	4	1 4	4	36	Control dust failout throughout the life cycle of the mining activity.	(2) Zero number of complaints from site staff, surrounding landowners and communities. (3) Adherence with legal required dust fallout levels (4) Adherence with 600 mg/m ² /day averaged over 30 days in residential areas. (5) No more than two within a year, no two sequential months per dust fallout monitoring site.	National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 833 (in terms of section 21 of NEIMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the
	Topography and Visual Environment		Construction & Operational	4	2 6	5	60		4	2 4	4	40		per user random monitoring sete: (6) If exceeding dust failout standard, within 3 months after submission of a dust failout monitoring report, develop and submit a dust management plan to the air quality officer for approval.	National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)

1			1								1	1 1				Γ	Γ	
		Soil quality		Construction & Operational	5	1 6	5	60		4	1	4	3	27		(1) No evidence of erosion. (2)		(1) Development of a soil conservation management plan. (2) Development of a storm water management plan.
	Degradation of soil resources	Flora micro-ecosystems	Direct Impact: If not managed properly, fertile soil will be bast during site clearance, topsoil striping and stockpiling. Loss of fertile soil will cause the degradation of habitat for flora micro- and macro organisms.	Construction & Operational	5	1 8	5	70	Remedy	4	1	6	5	55	Adequate protection of soil resources and remediation if degradation cannot be avoided.	No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(3) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Erosion	Loss of fertile soil	Direct Impact: Un-vegetated areas exposed to weathering for an extended period of time will lead to erosion. Erosion prone areas has a high risk of loosing fertile soli caused by flash floods. The loss of fertile	Construction & Operational	4	2 8	5	70	Control	4	1	6	3	33	To prevent any erosion and to provide adequate erosion	(1) No visible signs of erosion formations such as dongas or rifls. (2) Sedimentation loads of streams and rivers not to exceed the	Entire Life curls of project	(1) Development and implementation of a storm water management plan. (2) Development of a coll exception management plan
	LIUSION	Micro-ecosystems	soil will result in the loss of important micro ecosystems.	Construction & Operational	4	1 8	5	65	Control	4	1	6	4	44	control measures where required.	Securiteritation (acus or subernis and mess not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.		Derephinen of a solic order reach management pain. (3) Development and implementation of mine rehabilitation plan.
	Vegetation and habitat loss	Macro and Micro organisms Fauna and Flora	Direct Impact: Clearing of site and stripping of topsoil leads to the loss of vegetation and habitats of macro and micro organisms. The loss of vegetation also affects the habitat of surrounding Fauna and Flora.	Construction & Operational Construction & Operational	5	2 10		85	Remedy	4	1	6	5	55	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) All sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	(1) Develop a plant specie search and rescue management plan. (2) Develop and implement a phased rehabilitation management plan. (3) Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and
				Сроницита														pamins to reinve protected species (provinciarano national).
19.Opencast mining excavations	Noise generation	Surrounding noise quality	Direct Impact. The use of construction equipment during site clearing and topsoil stripping may cause noise during the construction phase. If equipment are not maintained and serviced regularly high levels of noise may result throughout the operational phase.	Construction & Operational	4	2 6	5	60	Control	4	1	4	3	27	Control potential noise pollution stemming from the operational of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary or surving that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24/rr. It should be noted that the area would have to be demarcated as a "controlled zone" in terms of the NCR. Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensure that the change with the National Noise Control Regulations and SANS10103/2008 guidelines. The referencing of the International Finance Corporation (Wordt Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	2 4	5	50	Control	4	1	2	4	28	The levels of greenhouse gas and CO2 emissions emanatin from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) All vehicles, plant, and equipment to be serviced as per g manufacturer's maintenance schedules. (2) Record keeping of service records of all vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
		Wetlands and Aquatic Ecology		Construction & Operational	4	2 8	5	70		4	1	6	3	33				
	Contamination of water resources	Surface Water quality	Direct Impact: Throughout the operational phase of the mining operations, potential pollutants are used such as high levels of nitrates. Improper management of potential pollutants may lead to the degradation of water quality (both surface and sub-surface). Polluted water resources may affect the aquatic environment in a detrimental manner.	Construction & Operational	4	2 8	5	70	Avoid	4	1	6	3	33	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is preventer Suitable water management facilities and treatment works are developed and maintained.		Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (WWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2 8	5	70		4	1	6	3	33				
	Sedimentation and siltation of	Wetland and Aquatic Ecology	Direct Impact: Stockpiling excavated material through or in close proximity to drainage lines may cause sedimentation and sittation of watercourses if not managed properly.	Construction & Operational	4	2 8	5	70		4	1	6	3	33	Avoid or minimise the degradation of water quality of	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within		(1) Develop a storm water management plan. (2) Develop an implement a water management plan

watercourses	Surface Water quality	Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and siltation of nearby watercourses.	Construction & Operational	4 3	8	5	75	Control	4	2	6	4	48	watercourses due to sedimentation and siltation.	the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages.	Entire Life cycle of project	and specifically include water monitoring and poly prevention strategies.
Alteration of drainage patterns	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: Site clearing and topsoil stripping through drainage lines may lead to the sitilation of streams	Construction & Operational	5 2	8	5	75	Remedy	4	1	6	3	33	lines. Adherence with water quality requirements as set by	(1) No visible signs of erosion formations such as dongas or nils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%.	Entire Life cycle of project	(1) Develop and implement a storm water manag plan. (2) Dev and implement a water management plan specific
	Surface Water quality	as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational	5 3	8	5	80		4	2	6	5	60	the Water Use Licence Conditions.	 (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems. 		including a strategy for the management of altera to drainage patterns.
	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the upstream drainage lines may lead to the degradation of downstream or	Construction & Operational	4 2	6	5	60		4	1	4	3	27	Remedy the possible affects of destruction of upstream	(1) No visible signs of erosion formations such as dongas or rills. (2)		(1) Develop and implement a storm water manage
Destruction of upstream tributaries and reduction in water in the catchment	Downstream water users	surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: The destruction of tributaries may lead to a limited volume of water available to the downstream users. The reduction in water in the catchment may cause the degradation of surface water	Construction & Operational	4 3	6	5	65	Remedy	4	1	4	2	18	tributaries and reduction in the water catchment. Adherence with water quality requirements set by the Water Use Licence	Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	Entire Life cycle of project	plan. (2) De and implement a water management plan speci including a strategy for the management of alter
	Surface Water quality	quality.	Construction & Operational	4 3	6	5	65		4	1	6	4	44	Conditions.	(4) No signs of degradation of diversion channels or drainage systems.		to drainage patterns.
Alteration of the visual environment and topography	Topography and Visual Environment	Direct Impact: Open cast mining will alter the topography and visual environment throughout the mining operation in a significant way.	Construction	4 2	10	5	80	Remedy	4	1	6	5	55	Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. (2) No signs of alien or invasive species on site (3) Control of visual affects. (4)	Rehabilitation and Decommissioning	(1) Mine plan in accordance with the MPRDA Regulation 56 section (1) to (8). (2 Adherence to the finalised approved lay out plan (3) Development and implementation of the pha mine rehabilitation management plan.
Influx of alien invasive vegetation	Fauna and Flora micro and macro ecosystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alien invasive vegetation causing Irreversible damage to the native fauna and flora species and loss of habitats.	Construction & Operational	4 2	6	5	60	Control	4	1	4	4	36	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alien eradication control management plan.
	Air Quality		Construction & Operational	3 2	6	5	55		3	1	4	4	32		(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of completing from site staff, surrounding		(1) Development and implementation of a Dust management plan as part of a Air quality mane plan to including the monitoring and prevention programme. (2) Ensuring compliance with the
Dust generation	Human Health	Direct Impact: Dust being generated form drilling and blasting activities poses the risk of affecting the ambient air quality. This also affects the visual environment. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	3 2	6	5	55	Control	4	1	4	4	36	Control dust failout throughout the life cycle of the mining activity.	Iandowners and communities. (3) Adherence with legal required dust failout levels. (4) Adherence with 600 mg/m²/day averaged over 30 days in residential areas and 1200 mg/m²/day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust failout monitoring site.	Entire Life cycle of project	(4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms
	Topography and Visual Environment		Construction & Operational	3 2	4	5	45		3	1	4	4	32		(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		National Reporting Regulations (GNR 283) as te emitters. (5) Ensuring compliance with the National Amb Quality Standards (GNR 1210 of 24 December (6) Ensuring compliance with the National Dust regulations (GNR 897 of November 2013)
Degradation of soil resources	Soil quality	Direct Impact: Improper management of blasting activities poses the risk of contaminating soil resources with pollutants such as a high content of Nitrates. The presence of pollutant in the soils results in the degradation of the quality. Indirect Impact: The degradation of	Construction & Operational	4 1	8	5	65	Remedy	4	1	4	3	27	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	 Development of a soil conservation manage plan. Development of a storm water management pl (3) Development and implementation of
	Flora micro-ecosystems	soil quality poses the risk of degrading the conditions for flora and fauna micro ecosystems.	Construction & Operational	5 1	8	5	70		4	1	6	5	55	augustation ournot be aroudbu.	(3)		vehicle/plant/equipment maintenance plan with reference to daily inspections of plant/vehicles/equipment for leaks or breakage

	Contamination of water resources	Wetlands and Aquatic Ecology Surface Water quality Groundwater quality	Direct Impact: Improper management of blasting activities poses the risk of contaminating water resources with pollutants such as high content of Nitrates. The presence of pollutants in the water resources poses a risk of degrading the conditions for the aquatic ecology to thrive.	Construction & Operational Construction & Operational Construction & Operational	4 2 8 4 3 8 4 2 8	5	75	Avoid	4	1 4		27 33 33	Avoid the release of pollulants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
20.Drilling & Blasting	Hydrocarbon Contamination	Surface Water quality Groundwater quality Soil quality	Direct Impact: The use of drill Riggs poses a high risk of hydrocarbon spills. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational Construction & Operational Construction & Operational	4 2 8 4 2 8 4 2 8 4 1 8	5	70	Control	4	1 6 1 6 1 4	3	44 33 27	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spils. (2) No release of contaminated water into the natural environment. (3) immediate removal and remediation of all spills.	Entire Life cycle of project	 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation. Development and implementation of whick/plantlequipment maintenance plan with specific reference to daily inspections of plant/whick/squipment for leaks or breakages. Development and implementation of a Hazardous substances management plan.
	Noise generation	Surrounding noise quality	Direct Impact: The use of drill Riggs and blasting activities itself will result in the generation of noise. If equipment is not maintained and serviced regularly high levels of noise may result throughout the operational phase.	Construction & Operational	4 2 6	5	60	Control	4	2 4	3	30	Control potential noise pollution stemming from the operational of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). • Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24tr. It should be noted that the area would have to be demarcated as a 'controlled zone' in terms of the NCR; • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • Ensuring compliance with the National Noise Control Regulations and SANS10102.008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered.	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Damage to surrounding landowner properties	Socio-economic Human health and safety environment	Direct Impact: Blasting outside the safe zones or in areas within close proximity to properties of landowners poses a risk of damaging properties. Fly rock poses a human health and safety risk.	Construction & Operational Construction & Operational	5 2 6	5		Avoid	4		3	36 36	Avoid damage to any surrounding landowner properties, infrastructures or mining equipment. Avoid any injuries caused by blasting activities.	(1) No signs of damage to surrounding landowner property, infrastructure, or mining equipment. (2) No injunes caused by blasting activities.	Entire Life cycle of project	(1) Health and safety act, act 29 of 1996. (2) Explosives Act, act 15 of 2003.

		Surface Water quality	Direct Impact: Throughout the operational phase equipment and plant are used to transport and stockpile	Construction & Operational	4	1 8	5	65		4	1	6	3	33		 No evidence of hydrocarbon and hazardous spils. No evidence of a hydrocarbon and hazardous spils. 		 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirty" and clean "areas" Development of emergency response plan with specific reference to spill prevention and remediation.
	Hydrocarbon Contamination	Groundwater quality Soil quality	RoM and product. This poses a risk of hydrocarbon spils if equipment are not maintained. Depending on the size of the spil the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4		5		Control	4	1		3	33	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	Spectro reterence to spin prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for beaks or breakages. (5) Development and implementation of a Hazardous substances management plan.
		Air Quality		Operational Construction & Operational	4	2 6				4	1		4	36		(1) Dust fallout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compleance with the National Environmental Management. Air Quality Act
	Dust generation	Human Health	Direct Impact: Continuous use of haul road often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5 from the dirt roads. Stockpiled RoM and product are continuously exposed to weathering leading the generation of fine dust particles. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	4	2 8	5	70	Control	4	1	6	4	44	Control dust failout throughout the life cycle of the mining activity.	Iandowners and communities. (3) Adherence with legal required dust fallout levels. (4) Adherence with 600 mg/m ² /day averaged over 30 days in residential areas and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust fallout monitoring site.	Entire Life cycle of project	(NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Construction & Operational	4	2 6	5	60		4	1	4	4	36		(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		(5) Ensuing compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuing compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Degradation of soil resources	Soil quality	Direct Impact: If not managed properly, fertile soil will be lost during site clearance, topsoil striping and stockpiling. Loss of fertile soil will cause the degradation of habitat for flora micro- and macro organisms.	Construction & Operational	5	1 6	5	60	Remedy	4	1	4	3	27	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of vehicle/plant/equipment maintenance plan with specific
		Flora micro-ecosystems		Construction & Operational	5	1 6	5	60		4	1	6	5	55				reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Erosion	Loss of fertile soil	Direct Impact: Un-vegetated areas exposed to weathering for an extended period of time will lead to recision. Erosion prone areas has a high risk of loosing fertile soil caused by flash floods. The loss of fertile	Construction & Operational	4	2 8	5	70	Control	4	1	6	3	33	To prevent any erosion and to provide adequate erosion	 No visible signs of erosion formations such as dongas or nile. Sedimentation loads of streams and rivers not to exceed the 	Entire Life cycle of project	(1) Development and implementation of a storm water management plan. (2) Development of a soil processivation management plan
		Micro-ecosystems	soil will result in the loss of important micro ecosystems.	Construction & Operational	4	1 8	5	65		4	1	6	4	44	control measures where required.	 baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. 		(3) Development and implementation of mine rehabilitation plan.
		Wetlands and Aquatic Ecology		Construction & Operational	4	2 8	5	70		4	1	6	3	33				
	Contamination of water resources	Surface Water quality	Direct Impact: Throughout the operational phase of the mining operations, potential polutants are used such as high levels of nitrates. Improper management of potential polutants may lead to the degradation of water quality (both surface and sub-surface). Polluted water resources may affect the aquatic environment in a detrimental manner. Indirect Impact: Sub-surface material and ore exposed to weathering may release pollutants to the water resources.	Construction & Operational	4	2 8	5	70	Avoid	4	1	6	3	33	Avoid the release of pollutants into the aquatic environment Waste water is appropriately managed. Erosion is prevente Suitable water management facilities and treatment works are developed and maintained.	d. (2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 (3) Develop an emergency preparedness plan addressing the prevention and management of
21. RoM & product stockpiling		Groundwater quality		Construction & Operational	4	2 8	5	70		4	1	6	3	33				incidents related to water contamination.
		Macro and Micro organisms		Construction & Operational	5	1 8	5	70		4	1	6	5	55				(1) Develop a plant specie search and rescue management plan.
	Vegetation and habitat loss	Fauna and Flora	Direct Impact: Clearing of site and stripping of topsoil leads to the loss of vegetation and habitats of macro and micro organisms. The loss of vegetation also affects the habitat of surrounding Fauna and Flora.	Construction & Operational	5	1 8	5	70	Remedy	4	1	6	5	55	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) AI sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	(2) Develop and implement a phased rehabilitation

,	Noise generation	Surrounding noise quality	Direct Impact: The use of construction equipment during the hauling and stockpiling of RoM and product may cause noise during the operational phase. If equipment are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	4 2	4	5	50	Control	4	1 2	2 3	3	21	Control potential noise pollution stemming from the operational of the project	Ittle WCK, • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA:	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4 2	4	5	50	Control	4	1 2	2 4	4	28	The levels of greenhouse gas and CO2 emissions emanating from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of all vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	(1) Develop and maintain a Carbon footprint reporting policy.
	entation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Stockpiling RoM and product material through or in close proximity to drainage lines may cause sedimentation and siltation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and	Construction & Operational	4 2	8	5	70	Control	4	1 6	5 3	3	33		(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels.	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution
	Watercourses	Surface Water quality	numera myseu, soom water running um ruads and unvegended areas may cause soumenhaddr and - sitation of nearby watercourses.	Construction & Operational	4 2	8	5	70		4	1 6	5 3	3	33	matericulises que la seunnenitation and situation.	(4) No visible signs of erosion damages.	and specificing and position prevention strategies.
Influx of a	alien invasive vegetation	Fauna and Flora micro and macro eccsystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alien invasive vegetation causing irreversible damage to the native fauna and flora species and loss of habitats.	Construction & Operational	4 2	6	5	60	Control	4	1 4	4 4	4	36	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site. Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
	of the visual environment and topography	Topography and Visual Environment	Direct Impact: Open cast mining will alter the topography and visual environment throughout the mining operation in a significant way.	Construction	4 2	10	5	80	Remedy	4	1 6	6 5	5	55	Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. Rehabilitation and (2) No signs of alen or invasive species on site Decommissioning (3) Control of visual affects. (4)	(1) Mine plan in accordance with the MPRDA Regulation 56 section (1) to (8). (2) Adherence to the finalised approved lay out plan. (3) Development and implementation of the phased mine rehabilitation management plan.
		Air Quality		Construction & Operational	4 2	6	5	60		4	1 4	4 4	4	36		the pre-determined baseline levels by more than 10%.	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the
	Dust generation	Human Health	Direct Impact: Continuous use of haul roads often leads to the generation of fugitive dust comprising TSP, PM10 and PM2.5 from the dirt roads. Stockpiled residue is continuously exposed to weathering leading the generation of fine dust particles. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unheatthy environment for employees and surrounding communities.	Construction & Operational	4 2	8	5	70	Control	4	1 4	4 4	4	36		(2) Zero number of companies itom site start, surrounding landowners and communities. (3) Adherence with legal required dust falbut levels. (4) Adherence with 600 mg/m ² /day averaged over 30 days in residential areas. and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust falout monitoring site.	National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Construction & Operational	4 2	6	5	60		4	1 4	4 4	4	36		(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.	relation reporting regulations (Girk 202) as of outp c emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)

I	I		1	1			1					1						1		1
	Degradation of soil resources	Soil quality	Direct Impact: If not managed properly, fertile soil will be lost during site clearance, topsoil striping and stockpiling. Loss of fertile soil will cause the degradation of habitat for flora micro- and macro organisms.	Construction & Operational	5	1	8	5	70	Remedy	4	1	4	3	27		Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) (3) Development and implementation of whick/plant/equipment maintenance plan with specific
		Flora micro-ecosystems		Construction & Operational	5	1	8	5	70		4	1	6	5	55					reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Wetland and Aquatic Ecology	Direct Impact: Stockpiling residue material through or in close proximity to drainage lines may cause	Construction & Operational	4	2	8	5	70		4	1	6	3	33			(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%.		(1) Develop a storm water management plan.
	Sedimentation and sittation of watercourses	Surface Water quality	sedimentation and sitilation of watercourses if not managed property. <u>Indirect Impact:</u> Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and sitilation of nearby watercourses.	Construction & Operational	4	2	8	5	70	Control	4	1	6	3	33	v	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and siltation.	(2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incident related to the pollution of rivers and streams. (4) No visible signs of erosion damages.	Entire Life cycle of project	(2) Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
		Wetlands and Aquatic Ecology		Construction & Operational	4	2	8	5	70		4	1	6	3	33					
22. Residue stockpiles	Contamination of water resources	Surface Water quality	Direct Impact: Throughout the operational phase of the mining operations, potential pollutants are used such as high levels of nitrates. Improper management of potential pollutants may lead to the degradation of water quality (both surface and sub-surface). Polluted water resources may affect the aquatic environment in a detrimental manner. Indirect impact: Sub-surface material and ore exposed to weathering may release pollutants to the water resources.	Construction & Operational	4	2	8	5	70	Avoid	4	1	6	3	33	V S		(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) No evidence of pollutants released into streams and rivers. (3) No formation of encoisn quiles or rills. (4) No leaks or spills caused by inadequate waste water management facilities.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Cey Develop and implement a water monitoring schedule according to the water management plan. Cy Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2	8	5	70		4	1	6	3	33					
		Macro and Micro organisms	Direct Impact: Clearing of site and stripping of topsoil leads to the loss of vegetation and habitats of	Construction & Operational	5	1	8	5	70		4	1	6	5	55		Avoid unnecessary loss of vegetation and habitats.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) AI sensitive or	Entire Life cycle of project	 Develop a plant specie search and rescue management plan. Develop and implement a phased rehabilitation management plan. (3)
	Vegetation and habitat loss	Fauna and Flora	macro and micro organisms. The loss of vegetation also affects the habitat of surrounding Fauna and Flora.	Construction & Operational	5	1	8	5	70	Remedy	4	1	6	5	55		Rehabilitation of all affected habitats and mining related areas.	protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
	Alteration of the visual environment and topography	Topography and Visual Environment	Direct Impact: Stockpiles of residue material over an extended time potentially alters the topography and visual environment.	Construction & Operational	5	2	4	5	55	Remedy	4	1	4	4	36	F	Remedy alteration of the visual environment and topography as close as possible to the predetermined state.	(1) No areas left un-vegetated. (2) No signs of alien or invasive species on site (3) Control of visual affects. (4)	Rehabilitation and Decommissioning	(1) Mine plan in accordance with the MPRDA Regulation 56 section (1) to (8). (2) Adherence to the finalsed approved lay out plan. (3) Development and implementation of the phased mine rehabilitation management plan.
	Alteration of drainage patterns	Wetland and Aquatic Ecology Surface Water quality	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: Sice cleaning and logooli stripping through drainage lines may lead to the sillation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational Construction & Operational	5			5		Remedy	4	1	6	3	33 44	i		 No visible signs of erosion formations such as dongas or rils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems. 		(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically including a strategy for the management of alterations to drainage patterns.
	Hazardous Leachate	Groundwater quality	Direct Impact: Potential pollutant in the residue material resulting from mining operation may lead to the formation of leachate. The leachate may contain toxins that are hazardous to the aquatic ecology and water resources.	Operational	5	2	8	5	75	Control	4	1	6	3	33		Ensure that hazardous leachates are not released into the natural environment.	(1) Exceedance in water quality are limited to 5% of the baseline thresholds. (2) No contamination of water resources.	Entire Life cycle of project	(1) Develop and implement a Waste Management plan. (2) Develop and implement an Integrated Waste Water Management plan.
		Aquatic ecology		Operational	5	2	8	5	75		4	1	4	3	27					

		Surface Water quality		Constructio Operation	¢ 1	1 8	3 5		65		4	1	2 3	21					 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "inty" and clean "areas"
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Hydrocarbon spils can occur where heavy machinery such as the screening plant and hauling vehicles are parked because they contain large volumes of lubricating oils, hydrauic oils, and diesel to run. This poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Constructio Operation	4 1	1 8	3 5		65	Control	4	1	2 3	21		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	 No evidence of hydrocarbon and hazardous spills. No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills. 	Entire Life cycle of project	 Uevelopment and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. Development and implementation of a Hazardous
		Soil quality		Constructio Operation	¥ 1	1 8	3 5	6	65		4	1	2 3	21					substances management plan.
		Air Quality		Constructio Operation	1 2	2 6	6 5		60		4	1	6 4	44			(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%.		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the
	Dust generation	Human Health	Direct Impact: Screening operations poses a high risk to the generation of fugitive dust comprising TSP, PM10 and PM2.5. The generation of dust during these activities affects the visual environment negatively.	Constructio Operation	4 2	2 8	3 5		70	Control	4	1	4 4	36		Control dust failout throughout the life cycle of the mining activity.	andowners and communities. (3) Adherence with legal required dust failout levels. (4) Adherence with 600 mg/m²/day averaged over 30 days in residential areas and 1200 mg/m²/day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust failout monitoring site.	Entire Life cycle of project	National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 893 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C
		Topography and Visual Environment		Constructio Operation	4 2	2 6	5 5		60		4	1	4 4	36			(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		emitters. (5) Ensuring compliance with the National Ambient Air (0) Anauring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
		Soil quality	Direct Impact: Improper management of stockpile area i.e. mixing of topsoil and fertile soils with subsoil or	Constructio Operation	5 1	1 8	3 5		70		4	1	4 3	27			(1) No evidence of erosion. (2)		(1) Development of a soil conservation management plan. (2) Development of a storm water management plan.
	Degradation of soil resources	Flora micro-ecosystems	Rolf product poses a risk of degrading of soil quality. Indirect Impact: The degradation of soil quality poses the risk of degrading the conditions for flora micro organism to thrive.	Constructio Operation	5 1	1 8	3 5		70	Remedy	4	1	6 3	33		Adequate protection of soil resources and remediation if degradation cannot be avoided.	No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(3) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Constructio Operation	4 2	2 4	4 5	ł	50	Control	4	1	2 4	28	1	The levels of greenhouse gas and CO2 emissions emanating from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) All vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of all vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
23. Screening Operations		Wetlands and Aquatic Ecology		Constructio Operation	4 2	2 8	3 5		70		4	1	6 3	33					
	Contamination of water resources	Surface Water quality	Direct Impact: Water seeping from stockpiles poses a risk of leading to elevated concentrations of heavy metals and other elements in the groundwater environment, and can potentially be acidic. When this water reaches surface water bodies or the groundwater it can negatively affect the water quality. Indirect Impact: Alteration to the conditions of the water resources may negatively affect the aquatic ecology.	Constructio Operation	4 3	3 8	3 5		75	Avoid	4	1	6 3	33	4	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Constructio Operation	4 3	3 8	3 5		75		4	1	6 2	22					
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Stockpiling screened material through or in close proximity to drainage lines may cause sedimentation and sitilation of watercourses if not managed properly.	Constructio Operation	4 2	2 8	3 5		70	Control	4	1	6 3	33			 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. 	Entire Life cycle of project	and specifically include water monitoring and policitori
		Surface Water quality	sillation of nearby watercourses.	Constructio Operation	4 2	2 8	3 5		70		4	1	6 3	33			 No incidents related to the pollution of rivers and streams. No visible signs of erosion damages. 		prevention strategies.

	Noise generation	Surrounding noise quality	Direct Impact: Operation of the screening plant poses a risk of increasing the ambient noise levels at surrounding sensitive receptors.	Construction & Operational	4	1	6	5	55	Control	4	1	4	3	27	Control potential noise pollution stemming from the operational of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LikeQ.24hr. It should be noted that the area would have to be demarcated as a 'controlled zone' in terms of the NCR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Hydrocarbon Contamination	Surface Water quality Groundwater quality Soil quality	Direct Impact: During backfilling activities equipment and plant are used. This poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub- surface) as well as the soil quality. Indirect Impact: The degradation of water quality and soil quality poses a risk of negatively affecting the conditions for micro and macro organisms to thrive.	Construction & Operational Construction & Operational Construction & Operational	4	2	6	5	70 60 65	Control	2 3 3	1	4	3 2 3	27 16 24	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. Immediate removal and remediation of all spills. (3)	 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirity" and clam. "areas" Development of emergency response plan with specific reference to spill prevention and remediation. Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. Development and implementation of a Hazardous substances management plan.
		Air Quality	Direct Impact: Continuous use of haul roads and backfilling of material often leads to the generation of	Construction & Operational	2	2	6	5	50		1	1	6	5	40		(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding landowners and communities. (3) Adherence with	(1) Development and implementation of a Dust management plan as part of a Air quaity management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management. Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20
	Dust generation	Human Health	Direct impact. Continuous use of nation uses and backming of meterial ottent leads to the generation of fightive dust comprising TSP, PM10 and PM22 from the drit roads. Un-vegetated areas are continuously exposed to weathering leading the generation of fine dust particles. Backfilling of material in windy conditions also contribute to dust generation. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	3	2	8	5	65	Control	1	1	4	4	24	Control dust failout throughout the life cycle of the mining activity.	legal required dust fallout levels. (4) Adherence with 600 mg/m ⁻¹ /day averaged over 30 days in residential areas. (5) No more than two within a year, no two sequential months per dust fallout monitoring site. (6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, evelop and	of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 983 (in terms of section 21 of NEIMOA. (4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emitters.
		Topography and Visual Environment		Construction & Operational	5	2	6	5	65		1	1	4	4	24		submits down of a duck relation from the first quality officer for approval.	(5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Degradation of soil resources	Soil quality	Direct Impact: Backfiling of soil layers will impact on the land capability by restoring the land capability to some extent because vegetation will be supported and therefore returned to the planned post mining land capability such as arable and or grazing. However if not done incorrectly, the conditions for fauna and fora to reinstate the area will be negatively affected.	Construction & Operational	5	1	8	5	70	Remedy	4	1	6	3	33	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. Entire Life cycle of project (3)	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of vehicle/plant/equipment maintenance plan with specific
		Flora micro-ecosystems		Construction & Operational	5	1	8	5	70		4	1	6	4	44			reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Erosion	Loss of fertile soil	Direct Impact: Un-vegetated areas exposed to weathering for an extended period of time will lead to erosion. Erosion prone areas has a high risk of loosing fertile soil caused by flash floods. The loss of fertile	Construction & Operational	5	1	8	5	70	Control	4	1	6	3	33	To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the Entire Life cycle of project	(1) Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan.
		Micro-ecosystems	soil will result in the loss of important micro ecosystems.	Construction & Operational	5	1	8	5	70		4	1	4	4	36		baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	(3) Development and implementation of mine rehabilitation plan.
24. Discard disposal (backfilling of mining		Wetlands and Aquatic Ecology		Construction & Operational	4	2	8	5	70		4	1	4	3	27			
area)	Contamination of water resources	Surface Water quality	Direct Impact: Throughout the operational phase of the mining operations, potential pollutants are used such as high levels of nitrates. Improper management of potential pollutants may lead to the degradation of water quality (both surface and sub-surface). Polluted water resources may affect the aquatic environment in a detrimental manner.	Construction & Operational	4	2	8	5	70	Avoid	4	1	6	3	33	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works	(2) No evidence of pollutants released into streams and rivers.	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions.

		Groundwater quality	Indirect Impact: Sub-surface material and ore exposed to weathering may release polutants to the water resources.	Construction & Operational	4 2	8 5	70			4	1 4	2	18	are developed and maintained.	leaks or spills caused by inadequate waste water management facilities.		(3) Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Backfiling material through or in close proximity to drainage lines may cause sedimentation and sittation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and sittation of nearby watercourses.	Construction & Operational	4 2	8 5	70		Control	4	1 6	3	33	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and siltation.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of ension damages. 	Entire Life cycle of project	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and polution prevention strategies.
		Surface Water quality		Construction & Operational	4 2	8 5	70			4	1 6	3	33				
	Noise generation	Surrounding noise quality	Direct Impact: The use of construction equipment during backfilling may cause noise during the construction phase. If equipment are not maintained and serviced regularly high levels of noise may result throughout the operational phase.	Construction & Operational	3 2	6 5	55	5 (Control	1 .	1 4	3	18	Control potential noise pollution stemming from the operational of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary densuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24hr. It should be noted that the area would have to be demarcated as a 'controlled zone' in terms o the NOR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. The referencing of the International Finance Corporation (Work Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Degradation of soil resources	Soil quality	Direct Impact. The storage of large amounts of waste over an extended time in a area not lined or bunded poses a risk of forming potentially hazardous leachates.	Construction & Operational	4 1	6 5	55		Remedy	4	1 2	3	21				(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of with acceleration processing approximate processing and the store of the store
		Flora micro-ecosystems	Indirect Impact: The hazardous leachate potentially poses a risk in contaminating the soil causing the degradation of conditions for flora micro organisms to thrive.	Construction & Operational	4 1	6 5	55	5		4	1 4	3	27				
		Wetlands and Aquatic Ecology		Construction & Operational	4 1	8 5	65	5	_	4	1 4	3	27				
	Contamination of water resources	Surface Water quality	Direct Impact: The storage of large amounts of waste over an extended time in a area not lined or bunded poses a risk of forming potentially hazardous leachates. Indirect Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating both surface and sub-surface water resources. This may lead to the degradation of conditions for the aquatic ecology to thrive.	Construction & Operational	4 1	8 5	65		Avoid	4	1 4	3	27	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented Suitable water management facilities and treatment works are developed and maintained.	 Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. No evidence of pollutants released into streams and rivers. No formation of erosing quilles or rills. No leaks or spills caused by inadequate waste water management facilities. 	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WuLL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
25. Waste generation, storage and disposal		Groundwater quality		Construction & Operational	4 1	8 5	65	5		4	1 4	2	18				

																1	
		Surface water contamination		Construction & Operational	4 2	2 8	5	70		4	1	4 3	27				
	illegal dumping	Human health and safety environmen	Direct Impact: Dumping of generated water in areas other than is approved by the authorisation or EMP poses a high risk of polluting numerous sources i.e. Water and soil. The dumping of general waste poses a choking risk to grazing animals. Hazardous Leachates from ilegal dumps also poses a risk to the health of surrounding communities. Indirect Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating both surface and sub-surface water as well as soil resources. This may lead to the degradation of	Construction & Operational	4 2	2 8	5	70	Avoid	4	1	4 3	27	Promoting the reduction, re-use, or recycle of waste where prevention is not possible. Disposal of waste to local waste disposal sites is limited.	(1) No littering (2) No unpleasant odours (3) Marked and sealable bins observed (4) Evidence of weate disposal certificates	Entire Life cycle of project	(1) Compliance with the National Environmental Management: Waste Act, act no 59 of 2008 and associated regulations.
		Soil Contamination	conditions for the aquatic ecology to thrive.	Construction & Operational	5 2	2 8	5	75		4	1	4 3	27				
	Hazardous Leachate	Groundwater quality	Direct Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating both surface and sub-surface water as well as soil resources. This may lead to the degradation of conditions for the aquetic ecology to thrive.	Operational	4 2	2 8	5	70	Control	4	1	4 3	27	Ensure that hazardous leachates are not released into the ratural environment.	(1) Exceedance in water quality are limited to 5% of the baseline thresholds. (2) No contamination of water resources.	Entire Life cycle of project	 Develop and implement a Waste Management plan. Develop and implement an Integrated Waste Water Management plan.
		Aquatic ecology	-	Operational	5 2	2 8	5	75		4	1	4 2	18				
	Degradation of soil resources	Soil quality	Direct Impact: Continuous leaking, spills or lack of maintenance poses a risk to contaminating the surrourding soils and degrading the soil quality. This will affect the micro-ecosystems in a negative manner.	Construction & Operational	1	1 6	5	40	Remedy	1	1	4 3	18	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)		(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whickle/plant/geument maintenance plan with specific
		Flora micro-ecosystems	marma.	Construction & Operational	1	1 6	5	40		1	1	4 3	18		(0)		reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Wetlands and Aquatic Ecology		Construction & Operational	1	1 6	5	40		1	1	4 2	12				
nical Toilets	Contamination of water resources	Surface Water quality	Direct Impact: Improper management of effluent from chemical toilets poses a high risk to contaminating water resources. Indirect Impact: Over an extended period of time the exposure to contamination will cause the degradation of fauna and flora habitats as well as affect the surface and sub-surface water quality.	Construction & Operational	1	1 6	5	40	Avoid	1	1	6 3	24	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	1	1 6	5	40		1	1	4 2	12				
	Smell nuisance	Human health and safety environmen	t Direct Impact: Lack of maintenance and treatment may result in a smelling environment.	Construction & Operational	1	1 6	5	40	Avoid	1	1	4 4	24	Avoid the generation of unpleasant odours on site at all times.	(1) All toilets are serviced. (2) PCD's containing putrescrible waste to be monitored and kept free of odour. (3) All putrescrible waste removed and disposed off in a suitable manner.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management plan specifically addressing the management of sewage or chemical toilets. Develop and implement a Infrastructure inspection programme to ensure no leaks or spillages of sewerage or waste. Develop and implement a Waste Management plan.
		Surface Water quality		Construction & Operational	3 2	2 6	5	55		4	1	4 3	27				 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "dirty" and clean "areas"
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Throughout the construction and operational phase construction equipment are used. This poses a risk of hydrocarbon spills if equipment are not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4	1 6	5	55	Control	4	1	4 3	27	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spils. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spils.	Entire Life cycle of project	(3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of pant/vehicles/equipment for leaks or breakages.
		Soil quality		Construction & Operational	3	2 8	5	65		2	1	6 3	27				(5) Development and implementation of a Hazardous substances management plan.

		Loss of fertile soil	Direct Impact: Improper installation of river crossing infrastructure poses the risk of contributing to the	Construction & Operational	4	1	8 5		65		4	1	4 4	36		(1) No visible signs of erosion formations such as dongas or	(1) Development and implementation of a storm water
	Erosion	Micro-ecosystems	conditions causing erosion i.e. Un-vegetated and exposed river/watercourse banks. Indirect Impact: Erosion poses a risk of contributing to sedimentation and sittation of rivers/watercourses. Pollutants may affect the conditions for the aquatic ecology to thrive.	Construction & Operational	4	1	8 5		65	Control	4	1	4 4		To prevent any erosion and to provide adequate erosion control measures where required.	 (2) (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. 	management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
		Groundwater quality	Direct Impact: Improper installation of river crossing infrastructures poses a risk in water level reduction	Construction & Operational	4	2	6 5	,	60		4	1	2 3	21		(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within	(1) Develop and implement a water management plan and specifically include measures to be implemented to reduce the impact on surface and groundwater
	Water level reduction and contamination	Downstream water users	<u>Unter impact</u> . Importent instantion of mere cossing initialization of the cossing initial doubles poses a risk in which even reduction and containition of downstream water users is it. through blocking of the natural flow of streams/hives. Indirect Impact: The reduction of water levels of rivers/watercourses poses a risk of affecting both surface and sub-surface water resources.	Construction & Operational	4	2	6 5		60	Control	4	1	2 2		Control the potential water level reduction and contamination related to authorised activities.	the and determined express (b) have fee to use	reduction. (2) Ensure compliance with the issued WUL requirements. (3) Develop and implement a storm water management plan and specifically address the diversion of "clean"
		Surface Water quality		Construction & Operational	4	2	6 5		60		4	1	2 3	21		Calcumment.	water into the natural drainage lines.
27. River crossings		Wetlands and Aquatic Ecology		Construction & Operational	4	2	6 5		60		4	1	4 3	27			
	Contamination of water resources	Surface Water quality	Direct Impact: Storm water run-off from river crossing structures containing pollutants poses a risk in contaminating the surrounding water resources. Indirect Impact: Pollutants poses a risk in altering the conditions of the aquatic ecology to thrive.	Construction & Operational	4	2	6 5		60	Avoid	4	1	4 3	27	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented Suitable water management facilities and treatment works are developed and maintained.	(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) No evidence of pollutants released into streams and rivers. (3) No formation of ension guiles or nils. (4) No leaks or spills caused by inadequate waste water management facilities.	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4	2	6 5		60		4	1	4 3	27			
	Sedimentation and siltation of	Wetland and Aquatic Ecology	Direct Impact: Excavating, stockpiling and transport of material through or in close proximity to drainage lines may cause sedimentation and sillation of watercourses if not managed properly.	Construction & Operational	4	2	8 5		70	Control	4	1	6 3	33	Avoid or minimise the degradation of water quality of	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the new determined exceeded to begin bubble	 Develop a storm water management plan. Develop an implement a water management plan
	watercourses	Surface Water quality	Indirect Impact: Storm water runoff of dirt roads and un-vegetated areas may cause sedimentation and siltation of nearby watercourses.	Construction & Operational	4	2	8 5		70		4	1	6 4	44	watercourses due to sedimentation and sittation.	the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages.	and specifically include water monitoring and pollution prevention strategies.
	Alteration of drainage patterns	Wetland and Aquatic Ecology	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology.	Construction & Operational	5	2	8 5		75	Remedy	4	1	6 3	33		(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. Entire Life cycle of project	(1) Develop and implement a storm water management plan. (2) Develop and implement a water management plan specifically
		Surface Water quality	Direct Impact: Site clearing and topsoil stripping through drainage lines may lead to the sitation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational	5	2	8 5		75		4	1	4 3		the Water Use Licence Conditions.	 (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems. 	including a strategy for the management of alterations to drainage patterns.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated plant used to transport water will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	1	6 5		55	Control	4	1	4 5	45	The levels of greenhouse gas and CO2 emissions emanaling from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of al vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	(1) Develop and maintain a Carbon footprint reporting policy.
		Groundwater quality	Direct Impact: Water wastage and over exploitation of water resources poses a risk in water level	Construction & Operational	4	2	6 5		60		4	1	2 3	21		(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within	(1) Develop and implement a water management plan and specifically include measures to be implemented to reduce the impact on surface and groundwater reduction.
	Water level reduction and contamination	Downstream water users	reduction. Indirect Impact: The reduction of water levels of rivers/watercourses/underground water tables poses a risk of affecting both surface and sub-surface water resources.	Construction & Operational	4	2	6 5		60	Control	4	1	2 2		Control the potential water level reduction and contamination related to authorised activities.	the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. (5) No signs of blockages to the natural flow of the associated river catchment.	(2) Ensure compliance with the issued WUL requirements. (3) Develop and implement a storm water management plan and specifically address the diversion of "clean" water into the natural drainage lines.
		Surface Water quality		Construction & Operational	4	2	6 5		60		4	1	2 3	21			
	Improper water storage management	Wastage of water resource	Direct Impact: Improper management of water storage facilities i.e. Not inspecting or regularly maintaining the storage tanks poses a risk of leaks and contamination.	Construction & Operational	4	2	6 5		60	Avoid	4	1	4 3	27	Avoid wastage of water resources. Maintain all infrastructure associated to the management of domestic water.	(1) Abstraction from natural watercourses is kept to a minimum and does not exceed the DIWAS Water Use Licence provisions by more than 5% on an annual basis. [2] No visible signs of leaks or damage to water storage	(1) Develop and implement a water management plan specifically addressing the storage of water as well as the frequent inspections of storage facilities.
28. Water supply (potable & process)		Water contamination		Construction & Operational	4	2	8 5		70		4	1	4 2	18		(2) no insue signs un eans un dannage no water sturage infrastructures.	

		Wetlands and Aquatic Ecology		Construction & Operational	4 2	8 5	70		4	1	2	2	14				
C	Contamination of water resources	Surface Water quality	Direct Impact: Leaks and breaks of water supply infrastructure poses a risk of contaminating water resources. Indirect Impact: Polutants poses a risk in altering the conditions of the aquatic ecology to thrive.	Construction & Operational	4 2	6 5	60	Avoid	4	1	2	2	14		 Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. Not widence of polutants released into streams and rivers. No formation of encoin oguies or rills. No fast caused by inadequate waste water management facilities. 	Entire Life cycle of project	(1) Develop and implement an Integrated Waste Water Management Plan (IWWMP). (2) Develop and implement a water monitoring schedule according to the water management plan. (2) Ensure compliance with the WUL conditions. (3) Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4 2	64	48		4	1	4	1	9				
		Surface Water quality		Construction & Operational	2 2	8 5	60		1	1	6	3	24				 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan addressing the separation of "uiry" and claen "reas"
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: The construction of improper storage facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbons leading possibly contaminating surface and sub- surface water sources as well as the solls surrounding the facility.	Construction & Operational	2 1	8 5	55	Control	1	1	6	3		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	(3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicle/squipment for leaks or breakages.
		Soil quality		Construction & Operational	5 1	8 5	70		1	1	6	3	24				(5) Development and implementation of a Hazardous substances management plan.
	Devendeling of and any series	Soil quality	Direct Impact: Continuous exposure to hydrocarbon leaks poses a risk to the degradation of the	Construction & Operational	2 1	8 5	55	Barradu	1	1	6	3	24	Adequate protection of soil resources and remediation if	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.		(1) Development of a soil conservation management plan. (2) Development of a storm water management plan.
	Degradation of soil resources	Flora micro-ecosystems	surrounding soil resources.	Construction & Operational	2 1	8 5	55	Remedy	1	1	6	3	24	degradation cannot be avoided.	(3)		(3) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Wetlands and Aquatic Ecology		Construction & Operational	2 1	8 5	55		1	1	6	2	16				
29. Storage of fuel and lubricants in temporary facilities	Contamination of water resources	Surface Water quality	Direct Impact: The use of improper storage facilities poses a risk of the surrounding environment to be exposes to continuous leaking of hydrocarbors leading possibly contaminating surface and sub-surface water sources as well as the soils surrounding the facility.	Construction & Operational	2 1	8 5	55	Avoid	1	1	6	3		Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Fourse compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	2 1	8 5	55		1	1	4	3	18				

		Human health and safety environmen	nt	Construction & Operational	1	1	10 5	5	60		1	1 1	0 2	24					(1) Develop and implement a fire prevention plan that
	Chemical Fires	Loss of ecosystems	Direct Impact: The improper storage of hazardous substances poses a risk of chemical fires. In the event of a chemical fire the impact to the surrounding environment is significant. Fires may lead to the loss of ecosystems, damage to properties and fatalities.	Construction & Operational	5	1	10 5	5	80	Avoid	1	1 6	5 2	16		Avoid and prevent chemical fires. Hazardous spills are prevented and no incidents to human health occurs.	(1) Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. (2) Immediate removal and remediation of all spils. (3) Al staff trained. (4) Al hazardous substances are documented. (5) No incidents recorded involving chemical fires.	Entire Life cycle of project	includes measures of prevention and response to chemical fires. (2) Develop a emergency preparedness procedure and include the process to be followed in case of a chemical fire. (3) Develop a Hazardous substances management plan. (4) Develop a frequent inspection programme to
		Damage to property		Construction & Operational	4	2	10 5	5	80		1	1 6	5 2	16					include inspections of hazardous substances storage facilities.
		Surface Water quality		Construction & Operational	4	1	8 5	5	65		1	1	4 4	24					 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: The use of vehicles on haul roads throughout the operational phase poses a risk of hydrocarbon spills if equipment is not maintained. Depending on the size of the spill the level of contamination may vary from insignificant to significant and may affect the surrounding water quality (both surface and sub-surface) as well as the soil quality.	Construction & Operational	4	1	8 5	5	65	Control	4	1 4	4 3	27		Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of whick/plant/equipment maintenance plan with specific reference to daily inspections of plant/whicks/squipment for leaks or breakages. (5) Development and implementation of a Hazardous
		Soil quality		Construction & Operational	5	1	8 5	5	70		4	1	4 3	27					substances management plan.
		Air Quality		Construction & Operational	4	2	6 5	5	60		4	1	4 4	36			(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%.		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention the management of the planet planet planet planet planet planet the planet plane
	Dust generation	Human Health	Direct Impact: Continuous use of haul road often leads to the generation of fugitive dust comprising TSP, PMI0 and PM2.5 from the dirt roads. The generation of dust during these activities will affect the visual environment negatively. Indirect Impact: Continuous exposure to high levels of dust fallout may kead to unhealthy environment for employees and surrounding communities.	Construction & Operational	4	2	6 5	5	60	Control	4	1	4 4	36		Control dust failout throughout the life cycle of the mining activity.	(2) Zero number of complaints from site staff, surrounding landowners and communities. (3) Adherence with legal required dust fallout levels. (4) Adherence with 600 mg/m ² /day averaged over 30 days in residential areas and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a vear, no two sequential months		(4) Register online to the National Atmospheric
		Topography and Visual Environment		Construction & Operational	4	2	6 5	5	60		4	1	4 5	45			(c) For dust fallout monitoring site. (c) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 121 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Degradation of soil resources	Soil quality	Direct Impact: As part of the maintenance related to roads, valuable topsoil's may be removed. Improper management of topsoil or fertile soil may cause the loss of flora micro-ecceystems and cause the	Construction & Operational	5	1	8 5	5	70	Remedy	4	1 6	5 3	33		Adequate protection of soil resources and remediation if	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of
-		Flora micro-ecosystems	degradation of soil quality.	Construction & Operational	5	1	8 5	5	70		4	1 6	5 2	22		degradation cannot be avoided.	(3)		vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
30. Vehicular activity on haul roads; and operation of mining equipment	Erosion	Loss of fertile soil	Indirect Impact: Improper management of storm water may lead to erosion along the access routes. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Construction & Operational	4	1	8 5	5	65	Control	4	1 6	3	33		To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%.		(3) Development and implementation of mine
_		Micro-ecosystems		Construction & Operational	4	1	8 5	5	65		4	1 6	5 3	33			(3) Erosion control measures implemented in high risk areas.		rehabilitation plan.
-	CO ₂ emissions	Air Quality	Direct Impact: Haul vehicles will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	2	4 5	5	50	Control	4	1 2	2 4	28	1	The levels of greenhouse gas and CO2 emissions emanaling from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	 All vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. Record keeping of service records of all vehicles, plant, and equipment. No evidence of plant, equipment or vehicles in bad condition. 	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Constructing access roads through drainage lines may cause sedimentation and siltation of watercourses if not managed properly. Indirect Impact: Storm water runoff of dirt roads may cause sedimentation and siltation of nearby watercourses.	Construction & Operational	4	2	8 5	5	70	Control	4	1 6	5 3	33		Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sitation.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. 	Entire Life cycle of project	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
		Surface Water quality		Construction & Operational	4	2	8 5	5	70		1	1	4 4	24			(4) No visible signs of erosion damages.		

	Noise generation	Surrounding noise quality	Direct Impact: If vehicles are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Construction & Operational	4	2	6 5	60	Control	4	1	4	3	21	Control potential noise pollution stemming from the operational of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). • Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24rt. It should be noted that the area would have to be demarcated as a 'controlled zone' in terms of the NCR; • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • • Ensure that the national Noise Control Regulations and SANS10102.008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered.	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2006 guidalines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
		Air Quality		Construction & Operational	4	3	4 5	55		4	1	4	3	27				(1) Development and implementation of a Dust management plan as part of a Air quality management
	Dust generation	Human Health	Direct Impact: The use of public roads without covering loads with tarpaulin may result in fly rock generating dust and causing damages to other road users. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unhealthy environment for employees and surrounding communities.	Construction & Operational	4	3	8 5	75	Control	4	1	4	3	27	Control dust failout throughout the life cycle of the mining activity.	(1) Dust fallout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero numer of complaints from site staff, surrounding landowners and communities. (3) Adherence with 600 mg/m²/day averaged over 30 days in residential areas and 1200 mg/m²/day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months		plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management: Air Quality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Construction & Operational	4	3	4 5	55		4	1	4	3	27		per dust fallout monitoring site. (6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		Emission's inventory cystem (vecks) in terms to the National Reporting Regulations (RMR 283) as 6roup C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
31. Bulk transporting of Ore to market on Public roads	CO ₂ emissions	Air Quality	Direct Impact: Haul vehicles will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Construction & Operational	4	3	4 5	55	Control	4	1	2	4	28	The levels of greenhouse gas and CO2 emissions emanating from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	 Al vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. Record keeping of service records of all vehicles, plant, and equipment. No evidence of plant, equipment or vehicles in bad condition. 	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.
	Pressure on public transport infrastructure	Socio-economic	Direct Impact: Influx of bulk transporting vehicles puts pressure on the public transport infrastructures. During the life cycle of the proposed activity an increase in vehicle movement in the area will be expected. This poses a potential increase in vehicle, pedestrian, and livestock accidents.	Construction & Operational	4	3	6 5	65	Control	4	2	4	5	50	Accidents are kept to a minimum. The surface quality of the road is not negatively impacted resulting from haulage of ROM product. The presence of heavy vehicles turning are dearly indicated thereby minimismg potential accidents. Sections of existing road surfaces which have been impacted on by the haulage of ROM product are remediated	 (4) Clearly visibility of warning signage. (5) Evicting read surfaces are utilized and maintained within 		(1) Develop and implement a traffic management plan. (2) Develop and implement a Public Complaints procedure.
		Loss of fertile soil	Direct Impact: Poor management of storm water throughout the construction, operational, and	Construction & Operational	4	1	8 5	65		4	1	4	3	27		(1) No visible signs of erosion formations such as dongas or rills. (2)		(1) Development and implementation of a storm water management plan. (2)
	Erosion	Micro-ecosystems	decommissioning phase poses a high risk for erosion. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Construction & Operational	4	1	8 5	65	Control	4	1	4	4	36	To prevent any erosion and to provide adequate erosion control measures where required.	Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.		Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
	Improper water storage management	Wastage of water resource Water contamination	Direct Impact: Improper management of water storage facilities i.e. Not inspecting or regularly maintaining the storage tanks poses a risk of leaks and contamination.	Construction & Operational Construction & Operational	+	-	6 5 8 5		Avoid	4	1	4	3	27 27	Avoid wastage of water resources. Maintain all infrastructure associated to the management of domestic water.	(1) Abstraction from natural watercourses is kept to a minimum and does not exceed the DWAS Water Use Licence provisions by more than 5% or an annual basis. (2) No visible signs of leaks or damage to water storage infrastructures.	Entire Life cycle of project	(1) Develop and implement a water management plan specifically addressing the storage of water as well as the frequent inspections of storage facilities.
	<u> </u>	Wetlands and Aquatic Ecology		Construction & Operational	4	2	8 5	70		4	1	6	3	33				

Cor	ntamination of water resources	Surface Water quality	Direct Impact: The poor management of onsite water i.e. Storm water, process water, effluent, potable water etc. may lead to the contamination of water resources.	Construction & Operational	4 3	8	5	75	Avoid	4	1	4 3	3	27	Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	 Water quality of streams and rivers are maintained within the predetermined seasonally baseline levels. No evidence of pollutants released into streams and rivers. No formation of erosion gulies or rills. No leaks or spills caused by inadequate waste water management facilities. 	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). (2) Develop and implement a water monitoring schedule according to the water management plan. (2) Ensure compliance with the WUL conditions. (3) Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
		Groundwater quality		Construction & Operational	4 2	8	5	70		4	1	6 3	3	33				
er Management	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Runoff from lay down areas, construction areas, mining areas, stockpile areas, roads etc. potentially contains sediment and silt that poses a risk of affecting surrounding water courses and drainage lines.	Construction & Operational	4 2	8	5	70	Control	4	1	6 3	3	33	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sittation.	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams.	Entire Life cycle of project	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
		Surface Water quality		Construction & Operational	4 2	8	5	70		4	1	4 3	3	27		 (a) No inclueins related to the pollution of reals and streams. (4) No visible signs of erosion damages. 		prevenuor suraregies.
		Wetland and Aquatic Ecology	Indirect Impact: Alteration of the drainage patterns may lead to the degradation of downstream or	Construction & Operational	5 2	8	5	75		4	1	6 3	3	33	Remedy the possible affects of alteration to natural drainage	(1) No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the		(1) Develop and implement a storm water manageme plan. (2) Develop
A	Iteration of drainage patterns	Surface Water quality	urrourding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: Site clearing and topsoil stripping through drainage lines may lead to the siltation of streams as well as lead to erosion along the river banks that will affect the surface water quality negatively.	Construction & Operational	5 2	8	5	75	Remedy	4	1	4 4	4	36	lines. Adherence with water quality requirements as set by the Water Use Licence Conditions.	baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	Entire Life cycle of project	and implement a water management plan specifically including a strategy for the management of alteration to drainage patterns.
		Groundwater quality		Construction & Operational	4 2	8	5	70		4	1	4 3	3	27		(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%.		(1) Develop and implement a water management pla and specifically include measures to be implemented reduce the impact on surface and groundwater
	Water level reduction and contamination	Downstream water users	Direct Impact: Improper management of water usage and installation of improper storm water features and infrastructure poses a risk of reducing the water levels for downstream users. Indirect Impact: The reduction of water levels of rivers/watercourses/underground water tables poses a risk of affecting both surface and sub-surface water resources.	Construction & Operational	4 2	8	5	70	Control	4	1	4 3	3	27	Control the potential water level reduction and contamination related to authorised activities.	(2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. (5) No signs of blockages to the natural flow of the associated river	Entire Life cycle of project	reduction. (2) Ensure compliance with the issued WUL requirements. Develop and implement a storm water management
		Surface Water quality		Construction & Operational	4 2	8	5	70		4	1	2 3	3	21		catchment.		plan and specifically address the diversion of "clean" water into the natural drainage lines.
		Wetland and Aquatic Ecology	Indirect Impact: Alteration of the upstream drainage lines may lead to the degradation of downstream or	Construction & Operational	4 2	8	5	70		4	1	4 3	3	27	Remedy the possible affects of destruction of upstream	(1) No visible signs of erosion formations such as dongas or rills. (2)		(1) Develop and implement a storm water managem
	struction of upstream tributaries and reduction in water in the catchment	Downstream water users	surrounding Wetlands which in its turn may affect the aquatic micro and macro ecology. Direct Impact: The destruction of tributaries may lead to a limited volume of water available to the downstream users. The reduction in water in the catchment may cause the degradation of surface water quality.	Construction & Operational	4 2	8	5	70	Remedy	4	1	4 3	3	27	tributaries and reduction in the water catchment Adherence	Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. (4) No signs of degradation of diversion channels or drainage systems.	Entire Life cycle of project	plan. (2) Develo, and implement a water management plan specifically including a strategy for the management of alteration to drainage patterns.
		Surface Water quality		Construction & Operational	4 2	8	5	70		4	1	4 3	3	27				
		Loss of fertile soil		Operational	5 1	8	5	70		4	1	4 3	3	27		(1) No visible signs of erosion formations such as dongas or		(1) Development and implementation of a storm wate
	Erosion	Micro-ecosystems	Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Operational	5 1	8	5	70	Control	4	1	4 4	4	36	To prevent any erosion and to provide adequate erosion control measures where required.	rils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	Entire Life cycle of project	management plan. (2) Development of a soil conservation management plan (3) Development and implementation of mine rehabilitation plan.
s	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: Runoff from exposed un-vegetated areas poses a risk in contaminating nearby streams, rivers, and drainage lines.	Operational	4 2	8	5	70	Control	4	1	6 3	3	33	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sitilation.	(1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels.	Entire Life cycle of project	and specifically include water monitoring and pollutio
		Surface Water quality		Operational	4 2	8	5	70		4	1	4 4	4	36		 (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. 		prevention strategies.

33. Rehabilitation of mining areas	Noise generation	Surrounding noise quality	Direct Impact: The use of unmaintained equipment and plant throughout the rehabilitation phase poses a risk of generating noise.	Operational	2	2	6 5	50	Co	ontrol	1 1	4	3	18	Control potential noise pollution stemming from the operational of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (right-time). • Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24nr. It should be noted that the area would have to be demarcated as a 'controled zone' in terms of the NCR. • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • Ensure that may a subtrain a subtrain a losise Control Regulations and SANS10103.2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered.	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically include routine inspections and testing of sound frequencies.
	Influx of alien invasive vegetation	Fauna and Flora micro and macro ecosystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alien invasive vegetation causing Irreversible damage to the native fauna and flora species and loss of habitats.	Operational	4	2	6 5	60	Co	ontrol	1 1	4	4	24	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alten eradication and control management plan.
	Degradation of soil resources	Soil quality Flora micro-ecosystems	 <u>Direct Impact</u>: Poor management of topsoil and subsoil poses a risk to degradation of soil resources. 	Operational Operational			10 5 10 5		Rei	emedy —	1 1			24 24	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of welicelplant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Vegetation and habitat loss	Macro and Micro organisms Fauna and Flora	Direct Impact: Improper rehabilitation measures implemented poses a risk of vegetation and habitat loss. The conditions for macro and micro organisms needs to be suitable for reinstatement of the ecosystem.	Operational Operational			10 5 10 5	80	Rei	errredy	1 1			30	Avoid unnecessary loss of vegetation and habitats. Rehabilitation of all affected habitats and mining related areas.	(1) Limiting site clearance to areas as per the approved site layout plan. (2) AI sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	(1) Develop a plant specie search and rescue management plan. (2) Develop and implement a phased rehabilitation management plan. (3) Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
Decommissioning																		
	Hydrocarbon Contamination	Surface Water quality	Direct Impact: The potential impact will arise during demolition of infrastructure, where mobilisation of contaminants such as fuels containing hydrocarbons, waste, explosives, PCD material to the surface water	Decommissioning	2	2	8 5	60	Co	ontrol	1 1	6	3	24	Adequate protection of soil and water resources. Active	 No evidence of hydrocarbon and hazardous spills. No release of contaminated water into the natural 		(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation.
	,	Groundwater quality	resources resulting in the contamination of those resources.	Decommissioning	2	2	8 5	60			1 1	6	1	8	remediation in case of spill is ensured.	environment. (3) Immediate removal and remediation of all spills.		(4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. (5) Development and implementation of a Hazardous
		Soil quality		Decommissioning	2	2	8 5	60			1 1	6	3	24				substances management plan.
		Air Quality		Decommissioning	1	2	6 5	45			1 1	4	4	24		(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring compliance with the National Environmental Management. Air Quality Act
	Dust generation	Human Health	Direct Impact: Dismantling and demolition of existing infrastructure, transporting and handling of topsoil on unpaved roads in order to bring the site to state suitable for alternative land uses poses potential impacts on the atmospheric environment. Demolition and removal of all infrastructures will cause fugitive dust emissions. Any implication this activity will have on ambient air quality will be short-term and localised. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unhealthy environment for employees and surrounding communities.	Decommissioning	1	2	6 5	45	C0	ontrol	1 1	4	4	24	Control dust failout throughout the life cycle of the mining activity.	Indowners and communities. (3) Adherence with legal required dust fallout levels. (4) Adherence with 600 mg/m² /day averaged over 30 days in residential areas and 1200 mg/m² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust fallout monitoring site. (6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and	Entire Life cycle of project	(NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Decommissioning	1	2	6 5	45			1 1	4	3	18		submit a dust management plan to the air quality officer for approval.		(a) Ensuing Comparison with the National Antibert An Quality Standard's (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Degradation of soil resources	Soil quality	Direct Impact: Poor management of topsoil and subsoil poses a risk to degradation of soil resources. Indirect Impact: Degradation of soil resources poses a risk in attering the conditions for micro organisms – to thrive in.	Decommissioning	5	1	6 5	60	Rei	emedy	1 1	4	3	18	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whichic/plantleupment maintenance plan with specific
		Flora micro-ecosystems		Decommissioning	5	1	6 5	60			1 1	4	3	18				Vencie/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.

35. Demolition / removal of portable and related infrastructure		Loss of fertile soil		Decommissioning	5 2	8	5	75		1	1	4	4	24				(i) Bardanad ad indanatifa fa dan ada
	Erosion		Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Decommissioning	5 1	8	5	70	Control	1	1	4	4	24	To prevent any erosion and to provide adequate erosion control measures where required.	 No visible signs of erosion formations such as dongas or rills. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas. 		 Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
	Noise generation	Surrounding noise quality	Direct Impact: The use of unmaintained equipment and plant throughout the decommissioning phase poses a risk of generating noise.	Decommissioning	1 2	6	5	45	Control	1	1	4	3	18	Control potential noise pollution stemming from the decommissioning phase of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24hr. It should be noted that the area would have to be demarcated as a 'controled zone' in terms of the NCR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensurg compliance with the National Noise Control Regulations and SANS10103/2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. (2) Develop and implement a vehicle/plant/lequipment management plan to specifically include routine inspections and testing of sound frequencies.
	General waste generation & Littering		Direct Impact: Throughout the decommissioning phase of the project large amounts of waste (general and hazardous waste) will be generated putting strain on local landfill sites. The storage of large amounts of waste over an extended time in a area not lined or bunded poses a risk of forming potentially hazardous leachates. Indirect Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating both surface and sub-surface water resources. This may lead to the degradation of conditions for the exercise of the surface water resources.	Decommissioning		8		65		1	1		3	24				
		Surface Water quality due to leachates	aquaic ecciligy to three.	Decommissioning	3 2	8	5	65		1	1	6	3	24				
		Surface Water quality		Decommissioning	2 1	8	5	55		1	1	6	3	24		(1) No evidence of hydrocarbon and hazardous spils.		(1) Development of water management plan addressing monitoring and management requirements. (2) Development of a storm water management plan addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Heavy vehicle activity used during the decommissioning phase is poses a risk of leaking or spling contaminants such as heles containing hydrocarbors, water, explosives, PCD material to the surface water resources resulting in the contamination of those resources.	Decommissioning	2 1	8	5	55	Control	1	1	6	1	8	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) We release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	specific reference to spill prevention and remediation. (4) Development and implementation of whiche jbant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages. (5) Development and implementation of a Hazardous
-		Soil quality		Decommissioning	2 1	8	5	55		1	1	6	3	24				substances management plan.
		Air Quality	_	Decommissioning	1 2	6	5	45		1	1	4	4	24		(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%.		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention
	Dust generation	Human Health	Direct Impact: Transportation of mobile plants / equipment and other materials from site can lead to the generation of fugitive dust comprising TSP, PM10 and PM2.5. This activity will be short-term, localised, and will have low impacts on the atmospheric environment once the demotiton ceases. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unhealthy environment for employees and surrounding communities.	Decommissioning	1 2	6	5	45	Control	1	1	4	4		Control dust fallout throughout the life cycle of the mining activity.	(2) Zero number of complaints from site staff, surrounding landowners and communities. (a) Adhreence with levels. (4) Adhreence with 600 mg/m ² /day averaged over 30 days in residential areas and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust fallow thomitorino site.	Entire Life cycle of project	(4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the
		Topography and Visual Environment		Decommissioning	1 2	6	5	45		1	1	4	4	24		(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		National Reporting Regulations (GNR 283) as Group C emitters. (5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
		Loss of fertile soil		Decommissioning	1 1	8	5	50		1	1	4	4	24		(1) No visible signs of erosion formations such as dongas or		(1) Development and implementation of a storm water
36. Vehicular activity: removal of mobile plant / equipment and vehicles	Erosion	Micro-ecosystems	Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Decommissioning	1 1	8	5	50	Control	1	1	4	4	24	To prevent any erosion and to provide adequate erosion control measures where required.	ntis. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.		management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
	CO ₂ emissions	Air Quality	Direct Impact: The use of diesel operated construction equipment will cause a contributing factor the BCR Minerals (Pty) Ltd carbon footprint.	Decommissioning	1 1	6	5	40	Control	1	1	2	3	12	The levels of greenhouse gas and CO2 emissions emanaling from the use of plant and vehicles as well as the use of generators for power on site, is kept to a minimum.	(1) All vehicles, plant, and equipment to be serviced as per manufacturer's maintenance schedules. (2) Record keeping of service records of all vehicles, plant, and equipment. (3) No evidence of plant, equipment or vehicles in bad condition.	Entire Life cycle of project	(1) Develop and maintain a Carbon footprint reporting policy.

	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology Surface Water quality	Direct Impact: Constructing and the use of access roads through drainage lines may cause sedimentation and sitation of watercourses if not managed properly. <u>Indirect</u> <u>Impact</u> : Storm water runoff of dirt roads may cause sedimentation and sitation of nearby watercourses.	Decommissioning	1		3 5	50	Control	1			2 3	12	Avoid or minimise the degradation of water quality of watercourses due to sedimentation and sitation.	 (1) Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of steams and nivers are maintained within the pre-determined seasonality baseline levels. (3) No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. 		 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
	Noise generation	Surrounding noise quality	Direct Impact: If vehicles are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Decommissioning	1	1 6	6 5	40	Control	1	1	4	3	18		 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noise yeares with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24hr. It should be noted that the area would have to be demarcated as a 'controled zone' in terms of the NCR'. Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	Before and during all phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the National Noise Control Regulations and SANS10103.2008 guidelines. (2) Develop and implement a vehicle/plant/equipment management plan to specifically induce routine inspections and testing of sound frequencies.
	Dust generation	Air Quality Human Health	Direct Impact: Re-vegetation of the remaining footprint of the mine must be done after the reclamation. The impacts on the atmospheric environment during rehabilitation will be limited to the vehicular activity, spreading of sol and profiling/contouring. The impact will be medium-term, very limited on spatial scale, with limited implication on ambient air quality.	Decommissioning	1	2 (6 5	45	Control	1			4	24	Control dust failout throughout the life cycle of the mining activity.	 Dust falout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. Zero number of complaints from site staff, surrounding landowners and communities. Adherence with 600 mg/m²/day averaged over 30 days in non-residential areas. Nor mesidential areas. Nor nore than two within a year, no two sequential months per dust falout monitoring site. Kexceeding dust falout standard, within 3 months after submission of a dust falout monitoring report, develop and 	Entire Life cycle of project	(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring complance with the National Environmental Management: Air Ouality Act (NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure activities remain under the thresholds stipulated in GNR 883 (in terms of section 21 of NEMAQA. (4) Register online to the National Atmospheric Emissions Inventory System (NAEIS) in terms of the National Reporting Regulations (GNR 283) as Group C emitters.
		Topography and Visual Environment		Decommissioning	2	2	1 5	40		1	1	4	4	24		submits and use transact monitoring report, develop and submit a dust management plan to the air quality officer for approval.		(5) Ensuring compliance with the National Ambient Air Quality Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Erosion .	Loss of fertile soil Micro-ecosystems	Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the loss of fertile soil and in its turn affect the micro-ecosystems of the surrounding environment.	Decommissioning	3	2 8	3 5	65	Control	1	1	4	4	24	To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.	Entire Life cycle of project	(1) Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine rehabilitation plan.
37. Rehabilitation of the lay down areas	Sedimentation and siltation of watercourses	Wetland and Aquatic Ecology	Direct Impact: If areas remain un-vegetated and exposed run-off from these areas may contain sediment and silt posing the risk of contaminating watercourses/rivers in close proximity.	Decommissioning	3	2 8		65	Control	1			2	12	Avoid or minimise the degradation of water qualty of watercourses due to sedimentation and sitation.	 Ensure water quality results do not exceed the pre- determined baseline results with more than 10%. (2)Water quality of streams and rivers are maintained within the pre-determined seasonality baseline levels. No incidents related to the pollution of rivers and streams. (4) No visible signs of erosion damages. 	Entire Life cycle of project	 Develop a storm water management plan. Develop an implement a water management plan and specifically include water monitoring and pollution prevention strategies.
	Influx of alien invasive vegetation	Surface Water quality Fauna and Flora micro and macro ecosystems	Direct Impact: Site clearing for roads, lay down areas, and mining area exposes the un-vegetated area to the influx of alien invasive vegetation causing Irreversible damage to the native fauna and flora species and loss of habitats.	Decommissioning	3	2 8	3 5	65	Control	1			3 3	18	Prevent the spreading of alien plants/seeds on site and to the surrounding areas. Eradication and removal of alien and invasive plants.	(1) No visible presence of alien vegetation on site.	Entire Life cycle of project	(1) Develop and implement an alien eradication and control management plan.
	Degradation of soil resources	Soil quality Flora micro-ecosystems	Direct Impact: Poor management of topsoil and subsoil poses a risk to degradation of soil resources. Indirect Impact: Degradation of soil resources poses a risk in altering the conditions for micro organisms to thrive in.	Decommissioning	5		3 5	70	Remedy	1	_		3	18	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whickle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.

		Macro and Micro organisms		Decommissioning	5 2	10	5	85		1	1	6 4	32	Avoid unnecessary loss of vegetation and habitats.	(1) Limiting site clearance to areas as per the approved site		 Develop a plant specie search and rescue management plan. Develop and implement a phased rehabilitation
	Vegetation and habitat loss	Fauna and Flora	Direct Impact: Improper rehabilitation measures implemented poses a risk of vegetation and habitat loss. The conditions for macro and micro organisms needs to be suitable for reinstatement of the eccsystem.	Decommissioning	4 1	10	5	75	Remedy	1	1	4 4	24	Rehabilitation of all affected habitats and mining related areas.	layout plan. (2) AI sensitive or protected flora identified to be rescued and relocated. (3)	Entire Life cycle of project	management plan. (3) Develop and implement a soil conservation management plan. (4) Apply for permits to remove protected species (provincial and national).
		Surface Water quality		Decommissioning	1 2	8	5	55		1	1	6 3	24				 Development of water management plan addressing monitoring and management requirements. Development of a storm water management plan
	Hydrocarbon Contamination	Groundwater quality	Direct Impact: Heavy vehicle activity used during the decommissioning phase is poses a risk of leaking or spilling contaminants such as fuels containing hydrocarbons, waste, explosives, PCD material to the surface water resources resulting in the contamination of those resources. If the contaminated water may lead to the degradation of water and soil resources.	Decommissioning	1 2	8	5	55	Control	1	1	6 1	8	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	addressing the separation of "dirty" and clean "areas" (3) Development of emergency response plan with specific reference to spill prevention and remediation. (4) Development and implementation of vehicle/plant/equipment maintenance plan with specific reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
		Soil quality		Decommissioning	2 2	8	5	60		1	1	6 3	24				plant venices equippinin to leads on biendages. (5) Development and implementation of a Hazardous substances management plan.
		Air Quality		Decommissioning	1 1	6	5	40		1	1	2 3	12		(1) Dust failout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding		(1) Development and implementation of a Dust management plan as part of a Air quality management plan to including the monitoring and prevention programme. (2) Ensuring complance with the National Environmental Management: Air Quality Act
	Dust generation	Human Health	Direct Impact: Dismantling and demolition of existing infrastructure, transporting and handling of topsoil on unpaved roads in order to bring the site to state suitable for alternative land uses poses potential impacts on the atmospheric environment. Demolition and removal of all infrastructures will cause fugitive dust emissions. Any implication this activity will have on ambient air quality will be short-ferm and localised. Indirect Impact: Continuous exposure to high levels of dust failout may lead to unhealthy environment for employees and surrounding communities.	Decommissioning	1 1	6	5	40	Control	1	1	2 4	16	Control dust falout throughout the life cycle of the mining activity.	in non-residential areas. (5) No more than two within a year, no two sequential months per dust falout monitoring site. (6) If exceeding dust falout standard, within 3 months after		(NEMAQA), No. 39 of 2004 as amended by Act no 20 of 2014. (3) Ensure
		Topography and Visual Environment		Decommissioning	1 1	6	5	40		1	1	2 4	16		submitsion of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		(5) Ensuring compliance with the National Ambient Air Qualty Standards (GNR 1210 of 24 December 2009) (6) Ensuring compliance with the National Dust Control regulations (GNR 897 of November 2013)
	Degradation of soil resources	Soil quality	Direct Impact: Poor management of topsoil and subsoil poses a risk to degradation of soil resources. Spills or leaks of effluent may contain possible pollutants that poses a risk of further degradation of soil resources. Degradation of soil resources poses a risk in altering the conditions for micro organisms to thrive in.	Decommissioning	5 1	8	5	70	Remedy	1	1	4 3	18	Adequate protection of soil resources and remediation if degradation cannot be avoided.	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils. (3)	Entire Life cycle of project	(1) Development of a soil conservation management plan. (2) Development of a storm water management plan. (3) Development and implementation of whickle/plant/equipment maintenance plan with specific
		Flora micro-ecosystems	pegradatori o son resources poses a risk in altering tre conclusions nor mixio organisms to anne in.	Decommissioning	5 1	8	5	70		1	1	6 3	24				reference to daily inspections of plant/vehicles/equipment for leaks or breakages.
	Erosion	Loss of fertile soil	Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the biss of fertile soil and in its turn affect the micro-eccesystems of the surrounding environment.	Decommissioning	3 2	8	5	65	Control	1	1	4 4	24	To prevent any erosion and to provide adequate erosion control measures where required.	(1) No visible signs of erosion formations such as dongas or rils. (2) Sedimentation loads of streams and rivers not to exceed the baseline levels by more than 10%.	Entire Life cycle of project	(1) Development and implementation of a storm water management plan. (2) Development of a soil conservation management plan. (3) Development and implementation of mine
		Micro-ecosystems		Decommissioning	3 1	8	5	60		1	1	4 3	18		 (3) Erosion control measures implemented in high risk areas. 		(c) europhink and imperioritation of mino
38. Demolition of PCD's		Wetlands and Aquatic Ecology		Decommissioning	2 2	8	5	60		1	1	6 3	24				
	Contamination of water resources	Surface Water quality	Direct Impact: Discharge, spills and leakage of effluent containing polutants poses a risk of contaminating water resources within close proximity. Indirect Impact: Polutants poses a risk in altering the conditions of the aquatic ecology to thrive.	Decommissioning	2 2	8	5	60	Avoid	1	1	6 3	24	Avoid the release of pollutants into the aquatic environme Waste water is appropriately managed. Erosion is preven Suitable water management facilities and treatment work are developed and maintained.	ed. (2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of
		Groundwater quality		Decommissioning	2 2	8	5	60		1	1	6 2	16				incidents related to water contamination.

Noise generation	Surrounding noise quality	Direct Impact: If vehicles used to demolish the PCD's are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Decommissioning	1	1 4	5	30	Control	1	1 4	4 3	18	Control potential noise pollution stemming from the decommissioning phase of the project	 Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (night-time). Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not exceed 61 dB LAleq.24rr. Hshould be noted that the area would have to be demarcated as a "controlled zone" in terms of the NCR; Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; Ensuring compliance with the National Noise Control Regulations and SANS10103:2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise n programme to ensure compliance wi Noise Control Regulations and SAN guidelines. implement a vehicle/plant/equipment to specifically include routine inspect sound frequencies.
	Topography and Visual Environment		Decommissioning	1	1 6	5	40		1	1 4	4 3	18				
General waste generation & Littering	Soils quality due to leachates	Direct Impact: Throughout the decommissioning phase of the project large amounts of waste (general and hazardous waste) will be generated putting strain on local landfill sites. The storage of large amounts of waste over an extended time in a area not lined or bunded poses a risk of forming potentially hazardous leachates. Indirect Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating both surface and sub-surface water resources. This may lead to the degradation of contaminating aquatic ecology to thrive. Pressure on the local or national landfils poses the risk of land degradation and	Decommissioning	3	1 8	5	60	Control	1	1 4	1 3	18	Promoting the reduction, re-use, or recycle of waste where prevention is not possible. Disposal of waste to local waste disposal sites is limited.	(1) No littering (2) No unpleasant odours (3) Marked and sealable bins observed (4) Evidence of waste disposal certificates	Entire Life cycle of project	(1) Compliance with the National Em Management: Waste Act, act no 59 associated regulations.
	Surface Water quality due to leachates	requires more space in terms of the IDP of the local municipality.	Decommissioning	3	1 8	5	60		1	1 4	1 3	18				
	Surface Water quality	Direct Impact: Heavy vehicle activity used during the decommissioning phase is poses a risk of leaking or	Decommissioning	2	1 8	5	55		1	1 6	5 3	24				(1) Development of water managem addressing monitoring and manager (2) Development of a storm water m
Hydrocarbon Contamination	Groundwater quality	spilling contaminants such as fuels containing hydrocarbons, waste, explosives, to the surface water resources resulting in the contamination of those resources. If the effluent are not treated or disposed off at a registered facility, the teakage or spillage of the contaminated water may lead to the degradation of water and soil resources. Workshop floors, waste storage facilities and fuel storage facilities are exposed to hydrocarbons throughout construction, operation, and decommissioning. Improper disposal method or remediation poses a risk of polluting the surrounding water and soil resources.	Decommissioning	2	1 8	5	55	Control	1	1 6	6 2	16	Adequate protection of soil and water resources. Active remediation in case of spill is ensured.	(1) No evidence of hydrocarbon and hazardous spills. (2) No release of contaminated water into the natural environment. (3) Immediate removal and remediation of all spills.	Entire Life cycle of project	addressing the separation of "dirty" a (3) Development of emergency resp specific reference to spil prevention (4) Development and implementation vehicle/plant/equipment maintenance reference to daily inspections of plant/vehicle/slquipment for leaks or
	Soil quality		Decommissioning	5	1 8	5	70		1	1 6	3	24				(5) Development and implementation substances management plan.
	Air Quality		Decommissioning	1	1 6	5	40		1	1 2	2 3	12		(1) Dust falout levels at active operational sites do not exceed the pre-determined baseline levels by more than 10%. (2) Zero number of complaints from site staff, surrounding		(1) Development and implementation management plan as part of a Air qu plan to including the monitoring and programme. (2) Ensuring complian National Environmental Management
Dust generation	Human Health	Direct Impact: Dismantling and demolition of existing infrastructure, transporting and handling of topsoil on unpaved roads in order to bring the site to state suitable for alternative land uses poses potential impacts on the atmospheric environment. Demolition and removal of all infrastructures will cause fugitive dust emissions. Any implication this activity will have on ambient air quality will be short-term and localised. Indirect Impact: Continuous exposure to high levels of dust fallout may lead to unhealthy environment for employees and surrounding communities.	Decommissioning	1	1 6	5	40	Control	1	1 4	4	24	Control dust failout throughout the life cycle of the mining activity.	landowners and communities. (3) Adherence with legal required dust failout levels. (4) Adherence with 600 mg/m ¹ /day averaged over 30 days in residential areas and 1200 mg/m ² /day averaged over 30 days in non-residential areas. (5) No more than two within a year, no two sequential months per dust failout monitoring site.	Entire Life cycle of project	(NEMAQA), No. 39 of 2004 as amer of 2014. activities remain under the threshold GNR 893 (in terms of section 21 of f (4) Register online to the National At Emissions Inventory System (NAEIS
	Topography and Visual Environment		Decommissioning	1	1 6	5	40		1	1 2	2 4	16		(6) If exceeding dust fallout standard, within 3 months after submission of a dust fallout monitoring report, develop and submit a dust management plan to the air quality officer for approval.		National Reporting Regulations (GNI emitters. (5) Ensuring compliance with the Na Quality Standards (GNR 1210 of 24 (6) Ensuring compliance with the Na regulations (GNR 897 of November)
Degradation of soil resources	Soil quality	Direct Impact: Poor management of topsoil and subsoil poses a risk to degradation of soil resources. Spills or baks of effluent may contain possible pollutants that poses a risk of further degradation of soil resources. Workshop floors, waste storage facilities and fuel storage facilities are exposed to hydrocarbons throughout construction, operation, and decommissioning. Improper disposal method or remediation poses	Decommissioning	5	1 8	5	70	Remedy	1	1 4	4 3	18	Adequate protection of soil resources and remediation if	(1) No evidence of erosion. (2) No mixing of topsoil or fertile soils with infertile soils.	Entire Life cycle of project	(1) Development of a soil conservativ plan. Development of a storm water mana (3) Development and implementatio
	Flora micro-ecosystems	a risk of poluting the surrounding water and soil resources. Indirect Impact: Degradation of soil resources poses a risk in altering the conditions for micro organisms to thrive in.	Decommissioning	5	2 8	5	75		1	1 4	4 3	18	degradation cannot be avoided.	(3)		vehicle/plant/equipment maintenanc reference to daily inspections of plant/vehicles/equipment for leaks o
Erosion	Loss of fertile soil	Direct Impact: Exposed un-vegetated rehabilitated areas poses a high risk of erosion. This may lead to the bas of fertile soil and in its turn affect the micro-ecceystems of the surrounding environment.	Decommissioning	3	2 8	5	65	Control	1	1 4	4	24	To prevent any erosion and to provide adequate erosion control measures where required.		Entire Life cycle of project	(1) Development and implementation management plan. Development of a soil conservation
	Micro-ecosystems		Decommissioning	3	1 8	5	60			1 4	4 3	18		baseline levels by more than 10%. (3) Erosion control measures implemented in high risk areas.		(3) Development and implementatio rehabilitation plan.

ion of waste ies fuel ies etc. Contamination of water resources	Wetlands and Aquatic Ecology	Direct Impact: Discharge, spills and leakage of effluent containing polutants poses a risk of contaminating water resources within close proximity. Indirect Impact: Polutants poses a risk in altering the conditions of the aquatic ecology to thrive.	Decommissioning	2	2	8	5	60			1	1 6	3	24		Avoid the release of pollutants into the aquatic environment. Waste water is appropriately managed. Erosion is prevented. Suitable water management facilities and treatment works are developed and maintained.	(2) No evidence of pollutants released into streams and rivers.	Entire Life cycle of project	 Develop and implement an Integrated Waste Water Management Plan (IWWMP). Develop and implement a water monitoring schedule according to the water management plan. Ensure compliance with the WUL conditions. Develop an emergency preparedness plan addressing the prevention and management of incidents related to water contamination.
	3 Surface Water quality		Decommissioning	2	2	8	5	60	,	Avoid	1	1 6	2	16	Wa Sui				
	Groundwater quality		Decommissioning	3	2	8	5	65			1	1 6	2	16					
Noise generation	Surrounding noise quality	Direct Impact: If vehicles used to demolish these areas are not maintained and serviced regularly high levels of noise may result throughout the construction and operational phase.	Decommissioning	1	1	6	5	40	с	Control	1	1 4	3	18	Co	ontrol potential noise pollution stemming from the erational of the project	• Ensure equivalent A-weighted noise levels below 55 dBA at potentially noise-sensitive receptors (daytime). • Ensure equivalent A-weighted noise levels below 45 dBA at potentially noise-sensitive receptors (right-time). • Define the noisy areas with a set boundary ensuring that equivalent A-weighted noise levels at this boundary does not acceed 61 dB LAleq.24rr. It should be noted that the area would have to be demarcated as a "controlled zone" in terms of the NCR: • Ensure that the change in ambient sound levels as experienced by Potentially Sensitive Receptors is less than 5 - 7 dBA; • Ensuring compliance with the National Noise Control Regulations and SANS/10103/2008 guidelines. The referencing of the International Finance Corporation (World Bank) guidelines for an acceptable sound level in a residential area was also considered. 	phases on a quarterly basis.	(1) Develop and implement a noise monitoring programme to ensure compliance with the Nati Noise Control Regulations and SANS10103:200 guidelines. (2) Develop implement a vehicke/plantlequipment managem to specifically include routine inspections and te sound frequencies.
General waste generation & Littering	Soils quality due to leachates	Direct Impact: Throughout the decommissioning phase of the project large amounts of waste (general and hazardous waste) will be generated putting strain on local landfill sites. The storage of large amounts of waste over an extended time in a area not lined or bunded poses a risk of forming potentially hazardous leachates. Indirect Impact: The hazardous leachate from the waste storage facilities poses a risk of contaminating	Decommissioning	5	1	8	5	70	с	Control	1	1 6	3	24					
Likoning	Surface Water quality due to leachater	both surface and sub-surface water resources. This may lead to the degradation of conditions for the	Decommissioning	3	2	8	5	65			1	1 6	3	24					