

APPENDIX G

Environmental Management Programme (EMPr)

ENVIRONMENTAL MANAGEMENT PROGRAMME

The proposed expansion of an existing cemetery as well as The construction of a new cemetery Kakamas, Northern Cape Province

Proponent: Kai !Garib Local Municipality
MDA Ref No: 40809
Date: October 2019



Town & Regional Planners,
Environmental & Development
Consultants

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1. INTRODUCTION

1.1 Project and associated construction activities

The proposed project entails the:

- a) expansion of the existing cemetery at Kakamas
- b) construction of a new cemetery at Kakamas

Please refer to the map in Appendix A of the Basic Assessment Report for an indication on the locality of the proposed activities.

1.2 Objectives of the EMPr

The EMPr aims to fulfil the requirements in terms of the National Environmental Management Act (Act 107 of 1998), with the following objectives:

- To identify, predict and evaluate actual and potential impacts on the environment, socio-economic conditions and cultural heritage, the risks and consequences and alternatives and options for mitigation of activities, with a view to minimizing negative impacts, maximizing benefits and promoting compliance with the principles of environmental management;
- To identify and employ the modes of environmental management best suited to ensuring that the activity is pursued in accordance with best environmental management practices;
- To be able to respond to unforeseen events; and
- To provide feedback on compliance.

1.3 Implementation of the EMPr

The proponent, namely Kai !Garib Municipality is responsible for the implementation of the EMPr. All contractors should be supplied with a copy of the EMPr and should ensure that construction staff adheres to the mitigation measures.

2. PREPARATION OF THE EMPr

2.1 Person(s) who prepared the EMPr

- i) Mr Neil Devenish
- ii) Me Hanlie Stander

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2.2 Expertise of the person(s) who prepared the EMPr

i) Mr Neil Devenish

Key qualifications:

- Key competencies and experience include development control applications (applications and appeals pertaining to rezoning, consolidations, subdivisions etc.) township establishment applications, environmental management and control applications.

Education:

- B. A. (Sociology, Geography) University of the Free State, SA, 1994
- Master of Town and Regional Planning, University of the Free State, SA, 1996
- Managing the Environmental Impact Assessment Process, Environmental Management Unit, PU for CHE, 2000
- Environmental Management Consulting, South African Institute of Ecologists & Environmental Scientists, 2001
- Water Law of South Africa, The South African Institution of Civil Engineers (SAICE), 2006

ii) Me Hanlie Stander

Key qualifications:

- Key competencies and experience include environmental management and research in zoology and environmental management.

Education:

- B.Sc. (Zoology), University of the Free State, South Africa, 2005
- B.Sc. Honors (Zoology), University of the Free State, South Africa, 2006
- M.Sc. (Zoology), University of the Free State, South Africa, 2012

3. RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

ECO - Environmental Control Officer / IECO - Independent Environmental Control Officer / SO - Safety Officer

SUMMARY OF RECOMMENDED MANAGEMENT AND MITIGATION MEASURES

ECO - Environmental Control Officer / IECO - Independent Environmental Control Officer / SO - Safety Officer

Compliance and Monitoring			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
Record keeping of compliance and monitoring reports	Direct impacts: <ul style="list-style-type: none"> • Non-conformance 	High Negative	<ul style="list-style-type: none"> • The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction. • An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented and any shortcomings addressed immediately. • A report will be provided by the independent ECO to the contractor upon completion thereof. The findings thereof should be made available to the competent authority (for example NC DENC, DWS), should it be requested. • Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing. • Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological
	Indirect impacts: <ul style="list-style-type: none"> • Non-conformance 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Non-conformance 	High Negative	

Compliance and Monitoring			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>impacts and measures to minimize negative environmental impacts during accidental releases or escapes.</p> <ul style="list-style-type: none"> • Procedures in the MSDS should be implemented in case of an emergency • The following documents should be available on site, and made available to the competent authority on request (if applicable): <ul style="list-style-type: none"> - Complaints Register - Environmental Incident Register - Disposal Certificates of Waste and Waste Water Generated during the construction / operational phase - Environmental Monitoring (Audit) Reports - Written Corrective Action Instructions - Environmental Authorisation - DWS Permit / License - Blasting Permit - EMPr

Planning and Design phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
Planning and design	Direct impacts: <ul style="list-style-type: none"> • None 	Medium – High Negative	<ul style="list-style-type: none"> • No environmental mitigation measures are required during the planning phase on the proposed site, as no mitigation measures are to be implemented on site during the planning phase. • However, the applicant, engineers, environmental consultants and specialists should take the following steps during the planning phase: <ul style="list-style-type: none"> - Permits will be obtained for the removal / transplantation of protected species that are located within the construction area where no alternatives are possible (if any). - A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. - The necessary Environmental Authorisation will be obtained before any activities listed in the Regulations are undertaken. - In addition, the necessary DWS registrations will be obtained, before any construction activities near watercourses are undertaken. - The necessary precautions with regard to road safety will be implemented for construction work to be undertaken within road crossings (if any). - Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken.
	Indirect impacts: <ul style="list-style-type: none"> • None 	Medium – High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • None 	Medium – High Negative	

Planning and Design phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<ul style="list-style-type: none"> - A blasting permit will be obtained before blasting activities is undertaken (if any). - The design and layout of the proposed project will take the possibility of flooding, erosion and pollution into consideration. - The Contractor must acquire a permit, issued by the relevant heritage resources authority, in the instance that any destruction, damage, excavation, alteration, defacing or any other disruption are to take place to any archaeological material (including infrastructures older than 60 years).
<p>Note:</p> <ul style="list-style-type: none"> • Should the above not be taken into consideration during the Planning and Design Phase, the environmental impacts associated with the construction and operation phase will be of high significance as the environment will possibly be negatively affected. 			

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
General measures to consider	Direct impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Pollution • Noise • Nuisance dust 	Negative	<ul style="list-style-type: none"> • Any construction is disruptive and the environment must be given consideration with every activity undertaken • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times. • ECO should be provided with a layout of the site, indicating the position of the following prior to the site establishment, for acceptance: <ul style="list-style-type: none"> - Ablution Facilities - Storage Areas - Ready-mix Areas - Stockpile Areas - Waste Disposal Facilities
	Indirect impacts: <ul style="list-style-type: none"> • Possible outbreaks of fire • Pollution (groundwater, surface water, soil and air) • Erosion • Loss of biodiversity (vegetation & animal life) • Nuisance dust 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Possible outbreaks of fire • Pollution (groundwater, surface water, soil and air) • Erosion 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Loss of biodiversity (vegetation & animal life) 		<ul style="list-style-type: none"> - Hazardous Substances Storage Area - Etc. • Designate the boundaries of the active construction start-up site, by erecting fencing / danger tape (where applicable) • Fence off operational footprint area (if possible) to ensure all operational activities are contained within the designate area. • All construction and operational activities must be contained within the demarcated servitude determined in consultation with the ECO. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site.

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<ul style="list-style-type: none"> • Fire-fighting equipment will be available on site, where applicable. • If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities. • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site.
Site access	Direct impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination 	Medium Negative	<ul style="list-style-type: none"> • The current access road to the cemeteries should be improved, when required • Proper storm water measures are to be implemented to avoid run-off of water and washing of sand / soil onto the road • Erosion measures will be implemented • Removal of vegetation will be kept to the required area • No animals will be hunted / captured on site (only to be undertaken by a relevant specialist)
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Surface water contamination 	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Surface and groundwater contamination 		
Employee conduct on site	Direct impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects 	Medium Negative	<ul style="list-style-type: none"> • No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to an appropriate area, by a suitable, qualified person • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in surrounding areas, without written approval from the landowner. • No smoking or open fires will be allowed near storage facilities • No waste may be dumped on site • Employees should make use of the ablution facilities provided
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> on site • Various health and safety aspects • Fire outbreaks 		
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Erosion • Pollution • Storm water contamination • Occurrence of waste on site • Various health and safety aspects • Fire outbreaks 	High Negative	
Soil, erosion and vegetation management	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Destruction of vegetation • Loss of topsoil • Loss of vegetative species of conservational concern • Noise elevation due to 	Medium Negative	<ul style="list-style-type: none"> • Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily. • Access roads must be non-erosive, structurally stable and not induce flooding / safety hazard.

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	construction activities <ul style="list-style-type: none"> • Nuisance dust generation • Visual impact of rock and spoil material dumps 		<ul style="list-style-type: none"> • If any access road is impaired, it will be repaired immediately to prevent any future / further damage. • All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Erosion management is important. Rehabilitation measures must be monitored to ensure that no erosion occurs and the disturbed should be adequately re-vegetated. • Concurrent rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled soil will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled soil will be protected from washing away during rainstorms. For example: <ul style="list-style-type: none"> - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5. • Stockpiles should be located away from drainage lines, watercourses and areas of temporary flood
	Indirect impacts: <ul style="list-style-type: none"> • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site. 	Medium Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Erosion • Establishment of alien vegetation species 	Medium Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<ul style="list-style-type: none"> • All soil excavated is to be separated into top- and subsoil. Subsoil must be used for backfilling and topsoil for landscaping and rehabilitation of disturbed areas • Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil should be of a sufficient depth. • Fertilizers should be used where topsoil and subsoil was mixed or not up to original standard • Indigenous tree species in the vicinity of the operational site should be marked with danger tape. Disturbance to such species should be avoided, where possible. Permit should be obtained in case removal / transplantation of these species are to be undertaken • A permit for the removal of protected plant species will be obtained before the removal of these species (if any) are undertaken. • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>cleared by hand / approved chemicals before flowering thereof.</p> <ul style="list-style-type: none"> • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately. • Fire fighting equipment will be available on site. • Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas. • Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation. • Concurrent rehabilitation should be undertaken, where possible. • Vegetation clearance will be limited to the required area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • All archaeological findings (if any) should be

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>recorded and reported to SAHRA. No construction activities in the area may proceed without the authorisation from SAHRA.</p> <ul style="list-style-type: none"> • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Minimise contamination and sterilisation of soil	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Slow regrowth of natural occurring vegetation during the rehabilitation phase • Loss of vegetation • Contaminated soil 	Medium Negative	<ul style="list-style-type: none"> • Use of potentially polluting and hazardous substances should be strictly controlled • If soil is significantly contaminated by hazardous substances, then this soil is considered as hazardous and should be disposed of according to best practices • Repair / maintenance will be conducted on site, and impacts like oil spills should be appropriately mitigated. Spill response procedures must be clearly defined and well known by all staff. • All threatened or protected plant species as specified by the NEM: Biodiversity Act (2004) will be
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	Cumulative impacts: <ul style="list-style-type: none"> • Loss of vegetation • Loss of animal life • Establishment of alien vegetation • Erosion 	High Negative	identified on site. Permits are required for the removal / transplantation of these plants
Construction of graves	Direct impacts: <ul style="list-style-type: none"> • Visual impact of rock and spoil material dumps from graves excavation • Noise elevation due to construction activities • Nuisance dust generation 	Medium – High Negative	<ul style="list-style-type: none"> • Site will be kept neat and tidy. • Appropriate area will be identified as a stockpiling area. • Speed limit will be enforced on the construction vehicles and these vehicles will only make use of designated roads / pathways. • Dust control measures will be implemented if nuisance dust generation occurs during the construction period. • Stockpiled material will be stored in such a way to limit the loss thereof. For example: <ul style="list-style-type: none"> - Bricks may be placed around the stockpiles, to limit the loss thereof due to rainy events. - Stockpiles should not be higher than 1.5 m. - The gradient of stockpiles should not be greater than 1:1.5.
	Indirect impacts: <ul style="list-style-type: none"> • Erosion • Establishment of alien / invader vegetation species • Possible impact on heritage artefacts • Loss of fauna on site 	Medium – High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Erosion • Establishment of alien vegetation species 	Medium – High Negative	<ul style="list-style-type: none"> • Noise control measures will be implemented. • All employees will be provided with the correct PPE • Establishment of alien / invader vegetation will be monitored and these species will be removed by hand or by an approved chemical before gestation thereof. • All archaeological findings (if any) should be recorded and reported to SAHRA. No construction activities in the area may proceed without the necessary authorisation from SAHRA. • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis. • No animals may be captured / harmed / killed on site. • Any occurrences of harmed animals should be reported to the ECO and recorded as such.
Ablution Facilities	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Pollution of surface water runoff • Pollution of soil 	Negative	<ul style="list-style-type: none"> • No open areas or the surrounding vegetation may be used as 'toilet facilities' • Toilets should be available for all employees. Where waterborne sewerage is not available, the ECO must designate an area within the boundaries
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Pollution of surface 	Medium Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	water runoff <ul style="list-style-type: none"> • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth 		of the site for the erection of portable chemical toilets. <ul style="list-style-type: none"> • Toilet facilities shall occur at a minimum ration of 1 toilet per 15 employees. • Toilets shall be maintained in a hygienic state and serviced when required. • Temporary toilets should be serviced regularly and the contents be removed to a licensed disposal facility.
	Cumulative impacts: <ul style="list-style-type: none"> • Pollution of surface water runoff • Pollution of soil • Pollution of groundwater • Odour • Unnatural enrichment of soil • Promotion of unnatural vegetation growth 	High Negative	
Safeguard water resources	Direct impacts: <ul style="list-style-type: none"> • Contamination of surface water 	High Negative	<ul style="list-style-type: none"> • No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline /

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	resources		500m of a wetland, without the necessary authorisations (for example from NC DENC and DWS). <ul style="list-style-type: none"> • Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. • The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways. • Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction or operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages /
	Indirect impacts: <ul style="list-style-type: none"> • Erosion • Change in flow of water course • Pollution (surface water, groundwater and soil) 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Erosion • Change in flow of water course • Pollution (surface water, groundwater and soil) 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>spills be detected.</p> <ul style="list-style-type: none"> • Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • The design of drainage systems will ensure there is no contamination or eutrophication. • Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical substances into the waterway(s). • It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure. • No erosion or siltation may occur due to any construction or operational activities. • Wetland / Rivers: Construction and operational activities should take the wetland / river boundaries and associated buffer zones that should be avoided, into consideration

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<ul style="list-style-type: none"> • Occurrence of erosion will be monitored. Reparations will be undertaken as soon as possible.
Workings within / near to watercourses	Direct impacts: <ul style="list-style-type: none"> • Temporary blockage of water • Loss of vegetation • Loss of aquatic animal life • Erosion • Scouring 	Medium – High Negative	<ul style="list-style-type: none"> • Storm water measures will be implemented in order to manage storm water and this will also prevent erosion. • Construction activities in waterways should be undertaken in such a manner that no containment of water is required, where possible. 2/3 of the waterways may be diverted at a time, if needed. • The necessary authorisations should be obtained from DWS, should the containment of water be required. • Visual inspections for the occurrence of erosion should be undertaken on a weekly basis
	Indirect impacts: <ul style="list-style-type: none"> • Ponding of water during construction at waterways (due to blockage of waterways). • Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage explained above. • Impact on waterways 	Medium – High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<p>(including the natural habitat of the area), soil disturbances and including pollution.</p> <ul style="list-style-type: none"> • Possible change of flow of water in waterways. • Erosion • Scouring • Loss of biodiversity 		
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Erosion • Loss of vegetation • Scouring • Possible change of flow of water in waterways • Loss of biodiversity 	High Negative	
Handling of waste / Waste Management (Note that waste refers to all construction debris and domestic)	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Spillage of material to be utilised during the construction phase as well as untreated sewage to the surrounding 	Medium – High Negative	<ul style="list-style-type: none"> • The contractor is responsible for the removal of construction waste. • Suitable containers (weather and vermin proof) will be placed on site to collect all solid waste. These will be emptied regularly. • No littering is permitted. During the construction

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
waste generated due to construction activities.)	environment <ul style="list-style-type: none"> • Dumping of construction rubble and general waste on site 		and operational phase the site will be maintained in a neat and tidy condition. <ul style="list-style-type: none"> • All solid waste produced will be disposed of at an authorized landfill site. Recyclable waste may also be sold to recycling contractors. • No dumping, burning or burying of waste will be undertaken on site. • All hazardous waste will be disposed of at an authorized hazardous landfill site. • Recyclable hazardous waste will be re-used or sold to recycling contractors, where possible • A waste management plan will be compiled and designed to ensure adequate waste management activities. • Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur. • Waybills providing evidence of correct disposal procedure must be provided for the ECO's inspection. • Waste classification should be undertaken. • Visual inspections for the occurrence of pollution should be undertaken daily. • Spills should be cleaned up immediately according to best practices
	Indirect impacts: <ul style="list-style-type: none"> • Surface and groundwater pollution due to spillage of potential hazardous substances such as hydraulic material and untreated sewage. • Impact on waterways (including the natural habitat of the area), including pollution. • Pollution of soil 	Medium – High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Pollution of downstream watercourses • Pollution of soil • Pollution of 	Medium – High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	groundwater <ul style="list-style-type: none"> • Air pollution 		<ul style="list-style-type: none"> • DWS should be notified of any spillage / pollution of water sources (groundwater and / or surface water) within 24 hours of occurrence • Record should be kept on site to indicate date of visual inspection, any spillages observed, and manner in which spill was treated.
Health, safety and security	Direct impacts: <ul style="list-style-type: none"> • Road safety at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry 	Medium Negative	<ul style="list-style-type: none"> • Site should be fenced / marked with danger tape, where possible. • The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. • Construction contracts will include safety and security measures for staff. • Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees. • Suitable warning and information signage should be available at the storage facilities. In addition, telephone numbers of emergency services (including local firefighting services) must be posted conspicuously on site • Employees should be made aware of the health risks associated with any hazardous substances /
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) 	Medium Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Unauthorised entry <p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Loss of vegetation and animal life due to possible fire outbreaks • Road safety issues at road crossings • Injuries on site • Health issues on site (for example, due to pollution) • Unauthorised entry 	Low Negative	<p>dangerous goods used or stored on site. This includes soil that was contaminated with oil or diesel, etc.</p> <ul style="list-style-type: none"> • Employees should receive relevant safety training in handling of hazardous substances / dangerous goods associated with the proposed project. • Construction work within road reserves will accommodate road users as far as possible. This includes the following: <ul style="list-style-type: none"> - Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. - Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times. - The contractor will be required to maintain adequate access to all public and private property at all times. - Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices. • Fire extinguishers will be available on site and in the

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>construction camp (if any).</p> <ul style="list-style-type: none"> • The contractor will be required to maintain adequate access to all public and private property at all times. • Speed limits of 20km/h will be enforced. • All relevant IAPs will be notified prior to any blasting activities • All relevant IAPs will be notified 24 hours prior to any known potential risks associated with the site and the activities to be undertaken on site • The necessary precautions with regard to road safety will be implemented for construction work within road crossings. • All injuries should be recorded.
Heritage	Direct impacts: <ul style="list-style-type: none"> • Harm to unknown heritage resources 	Negative	<ul style="list-style-type: none"> • In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO. • Known heritage resources (if any) must be avoided as far as possible. • Employees should be encouraged and informed of the need to be on the look-out for potential
	Indirect impacts: <ul style="list-style-type: none"> • Loss of heritage resources 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Loss of heritage resources 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>fossils / buried archaeological material.</p> <ul style="list-style-type: none"> • In the case of the discovery of any stone tools or other archaeological or palaeontological material, the work in the immediate vicinity should temporarily cease and reported to the archaeologist and SAHRA. Should any human remains be exposed, the archaeologist as well as the local SAPS should be notified. • If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Natasha Higgitt/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of Section 51(1)E of the NHRA and item 5 of the Schedule. A professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<p>operation may be required subject to permits issued by SAHRA.</p> <ul style="list-style-type: none"> • Appropriate measures should be undertaken by the ECO until the archaeologist / SAPS visits the site. This should include the following: <ul style="list-style-type: none"> • Site should be fenced with 'danger tape' • Position of finding should be recorded • Depth of finding should be recorded • Digital image of the finding should be taken • No information on the findings may be made public without the consent of the archaeologist / SAPS. • Construction activities in the area may only continue after approval from the archaeologist and SAHRA. • If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Mimi Seetelo 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of Section 51(1)E of the NHRA and item 5 of the Schedule. • Section 51(1) of the NHRA should be adhered to
Noise and dust control	Direct impacts: <ul style="list-style-type: none"> • Elevation of noise 	Negative	<ul style="list-style-type: none"> • Construction activities will be limited to normal

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	levels • Generation of nuisance dust		daytime hours, where possible • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners
	Indirect impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	• Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.
	Cumulative impacts: • Air pollution • Increase in noise levels outside of the proposed construction site may have a negative impact on surrounding landowners / occupants	Negative	
Handling and	Direct impacts:	High Negative	• All chemicals used during the development,

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
Storage of materials	<ul style="list-style-type: none"> • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues 		<ul style="list-style-type: none"> including fuel, will be stored in a proper storeroom or protected area to prevent pollution. • Vehicles will be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment. • Spill response equipment must be available during the handling and loading of hazardous waste (if any) • Hazardous substances are to be stored in bunded areas. • Bund walls will have a capacity of at least 110% of
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues 	High Negative	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Injuries • Health issues 		<p>the total capacity of the stored volume.</p> <ul style="list-style-type: none"> • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Material stockpiles must be stable and well secured to avoid collapse and possible injury • Material and Safety Data Sheets (MSDSs) should be readily available on site for all hazardous materials. MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Storage areas should be kept clean and free from any accumulation of combustible matter (such as paper) and any possible source of ignition should be removed

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
Hazardous waste management	Direct impacts: <ul style="list-style-type: none"> • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues 	High Negative	<ul style="list-style-type: none"> • Hazardous wastes must be separated from general wastes, stored within secondary containment in appropriate containers • Proper storage facilities for the storage of hazardous / dangerous goods must be provided to prevent the migration of spillage into the soil and or groundwater • Certificates / waybills of hazardous waste disposals are to be available on request as well as auditing purposes. This includes the removal of soil contaminated with hydrocarbons. • Storage of hazardous substances and refuelling areas are to be bunded with an impermeable liner to protect groundwater quality and must comply with the relevant SANS codes • Areas used for the storage of hazardous materials are to be clearly indicated as such.
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	groundwater pollution • Injuries • Health issues		
Hazardous and Flammable materials: Delivery	Direct impacts: • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues	High Negative	<ul style="list-style-type: none"> • All deliveries (especially of hazardous nature) must be supervised • Subcontractors and delivery companies should be informed of the delivery procedures and made aware of restrictions as to where materials may be stored • Loads must be secured to prevent spillage during transportation thereof. • Hazardous substances are to be transported in sealed drums or bags
	Indirect impacts: • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues	High Negative	
	Cumulative impacts: • Loss of vegetation and animal life due to fire outbreaks	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues 		
Hazardous and Flammable materials: Cement and / or concrete mixing	Direct impacts: <ul style="list-style-type: none"> • Soil pollution • Air pollution • Fire outbreaks • Surface water pollution • Injuries • Health issues 	High Negative	<ul style="list-style-type: none"> • Limit cement and concrete mixing to single sites, where possible • No mixing allowed directly onto the ground • All visible remains of excess material will be treated as hazardous waste • Solid concrete waste may be treated as inert construction rubble. However, wet cement, liquid slurry and cement powder must be treated as hazardous waste
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues 	High Negative	
	Cumulative impacts:	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Air pollution • Surface and groundwater pollution • Injuries • Health issues 		
Hazardous and Flammable materials: Gas Storage	Direct impacts: <ul style="list-style-type: none"> • Air pollution • Fire outbreaks • Injuries • Health issues 	High Negative	<ul style="list-style-type: none"> • All combustible materials are to be store at least 3 m from any gas storage areas. In case of any flammable or any other gas storage areas, open flames, welding and cutting operations, smoking, etc. shall be prohibited in or near the storage area. • No gas will be delivered until the site is registered with local Fire Safety • Cylinders should always be stored in a well-ventilated area away from spark, flames or any source of heat or ignition. • Cylinders should always be handled, stored, used and transported in an upright position. It should not be dropped, dragged or rolled on their sides or allowed to skid. Cylinders that are too large to be carried shall be tilted and rolled on the rims of their foot rings or bases.
	Indirect impacts: <ul style="list-style-type: none"> • Air pollution • Fire outbreaks • Injuries • Health issues 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Air pollution • Fire outbreaks • Injuries • Health issues 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			<ul style="list-style-type: none"> Valves should be kept properly closed
Hazardous and Flammable materials: Chemicals, Grease and Oil Storage	Direct impacts: <ul style="list-style-type: none"> Soil pollution Fire outbreaks Surface water pollution Injuries Health issues 	High Negative	<ul style="list-style-type: none"> Storage areas must be bunded and hard surfaced in order to protect groundwater quality Compliance with SANS codes and hazardous substances bylaws should be adhered to All lids must be properly sealed / closed to prevent Volatile Organic Compounds (VOCs) and other potentially harmful gaseous compounds from escaping
	Indirect impacts: <ul style="list-style-type: none"> Loss of vegetation and animal life due to fire outbreaks Soil pollution Surface and groundwater pollution Injuries Health issues 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> Loss of vegetation and animal life due to fire outbreaks Soil pollution Surface and groundwater pollution Injuries 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<ul style="list-style-type: none"> • Health issues 		
Hazardous and Flammable materials: Hydrocarbon spillages	Direct impacts: <ul style="list-style-type: none"> • Fire outbreaks • Surface water pollution • Injuries • Health issues 	High Negative	<ul style="list-style-type: none"> • Spill kits are to be made permanently available at areas which have the potential to be subjected to spillage of hazardous substances and dangerous goods • Remediation of spillages must be conducted immediately and closed out within 24 hours • No waste water or waste will be disposed of into the surrounding environment at any time. Water collected in bunded areas must be collected in containers and disposed of as hazardous waste • Machinery will be kept maintained in line with manufactures specifications to minimise the risk of hydrocarbon spillages • An incident reporting system will be implemented in order to ensure incidents, where spillages has occurred, are closed out and appropriate measures are taken to prevent further incidents. • Incidents must be reported to DWS within 24 hours • Contaminated soil must be disposed of in a hazardous materials skip and removed to a licensed hazardous landfill facility by a licensed contractor • Contaminated water must be decanted into drums and stored until disposal by a registered
	Indirect impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues 	High Negative	
	Cumulative impacts: <ul style="list-style-type: none"> • Loss of vegetation and animal life due to fire outbreaks • Soil pollution • Surface and groundwater pollution • Injuries • Health issues 	High Negative	

Construction phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
			waste transported is undertaken

Operational phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
This phase consists of the use of the cemetery	Direct impacts: <ul style="list-style-type: none"> Deterioration of the infrastructure in the long term. Reach its capacity 	Medium – Low Negative	<ul style="list-style-type: none"> Maintenance and repair will be undertaken on the infrastructure when necessary. Soil erosion occurrences will be attended to immediately. Establishment of alien vegetation will be monitored and alien species will be removed by hand or by an approved chemical before gestation thereof. Proper monitoring of various aspects (such as monitoring of the potable water quality should the potable water not be obtained from the municipal supplies) should be undertaken on a regular basis. An emergency plan should be developed in case the potable water does not conform to the DWS standards.
	Indirect impacts: <ul style="list-style-type: none"> Establishment of alien / invader species due to previous disturbance will also be associated with this phase. Erosion Illegal digging of new graves outside cemetery boundaries Plundering of graves 	Medium – Low Negative	
	Cumulative impacts: <ul style="list-style-type: none"> Establishment of alien / invader species due to previous 	Medium – Low Negative	

Operational phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<p>disturbance will also be associated with this phase.</p> <ul style="list-style-type: none">• Erosion• Illegal digging of graves onto adjacent property• Plundering of graves		

Decommissioning phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
<p>It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.</p> <p>Activities associated with the decommissioning phase discussed in this document will be limited to the rehabilitation of areas disturbed during the construction phase.</p>	<p>Direct impacts:</p> <ul style="list-style-type: none"> • Rehabilitation of disturbed area • Re-vegetation • Limit occurrence of erosion • Proper stormwater control • No ponding on site • Limit visual impact 	Medium Positive	<ul style="list-style-type: none"> • Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project. • All waste, equipment, materials, etc. used during construction will be cleared from the site. The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO. • An alien plant control and monitoring programme will be implemented. • Re-vegetation of disturbed areas will be undertaken with site indigenous species. Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time. • Temporary concrete surfaces (if any) will be removed and compacted areas ripped. • The establishment of natural occurring vegetation will be encouraged at disturbed areas. Hydro-seeding will be undertaken if natural regrowth is insufficient. • Establishment of extensive alien species will be monitored.
	<p>Indirect impacts:</p> <ul style="list-style-type: none"> • Rehabilitation of disturbed area 	Medium Positive	
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> • Rehabilitation of disturbed area 	Medium Positive	

Decommissioning phase			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
All disturbed areas will be rehabilitated according to best practices.			

No-go Option			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
Keeping the status quo – limited burial spaces will be available to the community	Direct impacts: <ul style="list-style-type: none"> No direct environmental impacts. 	N/A	<ul style="list-style-type: none"> Patrolling should be implemented by the municipality to ensure that no illegal graves are constructed onto adjacent properties.
	Indirect impacts: <ul style="list-style-type: none"> Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space are available) The above is a costly alternative to the community members. It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this option cannot be seen as a reasonable 	High Negative	

No-go Option			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<p>alternative.</p> <ul style="list-style-type: none"> Community members will make use of adjacent property as an illegal cemetery. 		
	<p>Cumulative impacts:</p> <ul style="list-style-type: none"> Community members will have to bury their loved ones at a cemetery in neighbouring towns (if space are available) The above is a costly alternative to the community members. It should also be kept in mind that cemeteries of adjacent towns are also fairly full and therefore this 	High Negative	

No-go Option			
Activity	Impact summary	Significance without mitigation	Proposed mitigation
	<p>option cannot be seen as a reasonable alternative.</p> <ul style="list-style-type: none">• Community members will make use of adjacent property as an illegal cemetery.		