
ENVIRONMENTAL MANAGEMENT PROGRAMME

PROPOSED CEMETERY EXPANSION ON ERF 169, AUGRABIES SETTLEMENT, NORTHERN CAPE PROVINCE

Applicant: Kai !Garib Municipality
MDA Ref No: 40613 Augrabies
NC DENC Ref No: NC/BA/SIY/KAI!/KAK 4/2011
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Town & Regional Planners,
Environmental & Development
Consultants

Physical Address: 9 Barnes Street,
Westdene, Bloemfontein, 9301
Postal Address: PO Box 20298,
Willows, 9320
Tel: 051 4471583, Fax: 051 4489839
E-mail: admin@mdagroup.co.za

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1. Executive Summary

1.1. Project information

This project entails the expansion of an existing graveyard within the township of Augrabies. The current cemetery is nearing its capacity and the rate of deaths in the township is increasing steadily. It is therefore necessary that the graveyard be extended.

The activities being applied for as part of this study includes:
'The expansion of cemeteries by an additional 2500m² or more'
(Activity 46 of Regulation 544, 18 June 2010).

The activities associated with the proposed project will include the following:

- Clearance of vegetation;
- Levelling of certain areas within application area;
- Establishment of storm water management measures;
- Pre-excavation and re-filling of graves;
- Construction of access roads;
- Etc.

1.2. Objectives of the EMPr

The EMPr aims to adhere to the requirements as specified in Section 33 of Regulation No R543 of 18 June 2010 in terms for the National Environmental Management Act (Act 107 of 1998) with the following objectives:

- To promote the integration of the principles of environmental management into the making of all decisions which may have a significant effect on the environment;
- To identify, predict and evaluate actual and potential impacts on the environmental and sosio-economic conditions and cultural heritage , the risks, consequences , alternatives and options for mitigation of activities, with a view to minimize negative impacts, maximizing benefits and promoting compliance with the principles of environmental management;
- To ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;

- To identify and employ the modes of environmental management best suited to ensure 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 project applicant is responsible for the implementation of the EMPr. All construction contractors and operation phase facility managers / supervisors should be supplied with a copy of the EMPr and should ensure that construction staff adheres to the mitigation measures.
- The Conditions of the Environmental Authorisation and recommendations of the EMPr should be included in tenders and construction contracts.
- The applicant should ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction.
- An Environmental Control Officer (ECO) can be appointed separately or can be part of the contractor's team to monitor the construction phase. The ECO should be present for the site preparation and initial clearing activities to ensure correct demarcation of the site, facilitate environmental training of construction staff and supervise any flora relocation and faunal rescue activities that may need to take place.
- The contractor will also liaise with the ECO and communicate any feedback from inspections to the employees.

2. Preparation of EMPr

2.1 Person(s) who prepared the EMPr

- i) Mr. Neil Devenish
- ii) Ms. Hanlie Groenewald

MDA
P.O. Box 20298
Willows
9320
Tel: 051 447 1583
Fax: 051 448 9839

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

ii) 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) Ms. Hanlie Groenewald

Key qualifications:

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

Education:

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

- B.Sc. Honnours (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 during the planning phase / site preparation

- A dedicated person will be appointed to ensure compliance with the approved EMPr, Environmental Authorisation (EA) and best practices on site.
- The contractor will ensure that the environment within the site area is protected.
- Controlled access will be implemented to ensure that no unlawful entry to site is obtained and will prevent degradation of the environment in the nearby vicinity.
- Proper sanitation, water and waste facilities should be in place for construction workers.
- Washing and chemical toilet facilities must be provided on site during the construction phase. Chemical toilets should be cleaned regularly.
- Clean water should be made available daily to workers on site.
- The construction site will be fenced off to ensure no activities take place in areas not indicated on the layout plan.
- If an artifact or grave is uncovered during construction activities (i.e. the accidental discovery of archaeological, palaeontological or any other categories of heritage resources), work in the immediate vicinity is to be stopped, until the project Archaeologist has been consulted and comments / feedback is received from SAHRA.

4. Recommended management and mitigation measures during the construction phase

4.1. General

- The EMPr and EA will be available on site during the construction phase.
- The applicant will ensure that the contractor complies with the conditions stipulated in the EMPr and EA, as well as best practices.
- The applicant will be held responsible for all environmental issues on site during construction.

- Any factors that contribute to negative environmental impacts will be corrected as soon as possible.
- Compliant -, environmental incident - and safety incident reports will be available on site, during the construction phase.
- Clean water will be made available daily to workers on site.
- Drainage of water on the site, as well as the water outlet drain to bordering areas, will be properly designed according to the nature of the site so that the existing flow pattern is not disturbed but copied.
- No additional activities will be undertaken without the investigation of the potential necessity to perform an EIA in terms with the NEMA Regulations of 2010.
- If an artifact or grave is uncovered during construction activities (i.e. the accidental discovery of archaeological, palaeontological or any other categories of heritage resources), work in the immediate vicinity is to be stopped, until the project Archaeologist has been consulted and comments / feedback is received from SAHRA.

4.2. Layout plan

- A copy of the layout plan will be available on site during the construction phase.

4.3. Demarcation of development area

- All activities related to the proposed construction of the said activity will be limited to the area as per layout plan.
- The construction site will be fenced off to ensure that no activities take place in areas not indicated on the layout plan.

4.4. Monitoring system to detect any leakage or spillages of hazardous material

- All chemicals used during the development, including fuel for the construction vehicles, will be stored in a proper store room or protected area to prevent pollution.
- Bund walls will have a capacity of at least 110% of the total capacity of the stored volume.

- Drip trays will be used during the transfer of any substances from transportation vehicles.
- No oil, diesel or other chemicals may be spilled or discharged anywhere.
- No construction material shall be stockpiled on the surrounding vegetation.
- The contractors must 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 should only take place within the construction site. No concrete may be mixed directly on the ground.
- All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. should be reported to the Applicant or Environmental Consultant.
- Suitable covered receptacles will be available at all times and conveniently placed for the disposal of hazardous waste (if any).
- Visual inspections will be undertaken regularly by the ECO to ensure that all leakages / spillages are cleaned up and the place of spillage / leakage will be rehabilitated as soon as possible.
- No major services may be undertaken on site. In the event of small repair and services on machines on site, drip trays will be used to prevent spillage.
- Spills of any product (such as paint, oil, cleaning agents, etc.) will be cleaned up immediately by removing the spillage together with the polluted soil and by disposing it at a recognized facility.
- All used oils, grease, hydraulic fluids, etc. that cannot be re-used shall be placed in a hazardous waste container to be disposed of at a recognized facility.

4.5. Waste management, including toilet facilities and waste water

- Waste streams will be identified and will be separated (e.g. general waste, hazardous waste, recyclable waste, etc.) and a sufficient number of suitable receptacles will be placed at the construction site.
- The contractor will be responsible for the removal of construction waste (if any).

- All general solid waste produced will be disposed of at an authorized landfill site.
- Recyclable waste will be sold or re-used, where possible.
- No burning or burying of waste may take place on site.
- Proper sanitation, water and waste facilities will be in place for construction workers.
- Chemical toilet facilities will be provided on site during the construction phase.
- Toilet facilities must be implemented in such a way that they do not cause water or other pollution. Disposal of untreated effluent in the environment will be prohibited.
- Chemical toilets will be cleaned regularly and proof thereof will be available on site / Sewage water will be managed by means of a septic tank, on site. Regular monitoring should be undertaken to ensure that no leakage is taking place.

4.6. Soil management

- Topsoil will be removed from all areas where physical disturbance of the surface will occur.
- No fires should be made directly on the soil. Provision should be made that no accidental fires are started.
- Topsoil will be kept separate and not be utilized for any construction activities.
- Removed topsoil is to be stockpiled in an area where it will not be disturbed by vehicles.
- One layer of bricks or stones is to be placed around the stockpiled topsoil to protect topsoil from washing away during rainstorms.
- Topsoil will be re-used during the rehabilitation of disturbed areas as soon as possible.
- Re-spreading is to be done preferably to a maximum of 100 mm.

4.7. Erosion and storm water management plan

- Erosion management is important.
- Soil erosion occurrences should be attended to immediately.
- Access roads will be maintained so that no erosion will occur.
- Erosion berms should be designed so that the intervals between them ensure maximum soil retention during heavy rains.

- Drainage of water on the site will be properly designed according to the nature of the site so that the existing flow pattern is not disturbed but rather copied.
- Areas prone to damming and problematic storm water flow areas will be addressed by the implementation of appropriate storm water control measures.
- Stockpile areas will be kept leveled to ensure free-drainage as this will prevent ponding of surface water and limit erosion.
- Stockpile areas will not be situated within natural drainage systems or areas prone to erosion.
- Where erosion is found to be problematic geotextiles such as gabions must be used to prevent this.

4.8. Protection of animal life

- No animals will be hunted or hurt during the construction phase.
- Animals that live within the construction site will be removed and translocated to a suitable area, where possible. In the event of dangerous animals (e.g. poisonous snakes) an experienced and qualified person must remove these animals and relocate to a suitable area.

4.9. Establishment of access roads on the site and maintenance of access roads

- In the case of dual or multiple uses of access road(s), arrangements for multiple responsibilities must be made with the person / authority responsible for maintaining the said road(s).
- If not, the maintenance of the access roads will be the responsibility of the applicant.

4.10. Dust control

- The formation of dust will be controlled if it becomes problematic by the use of water spraying and / or other dust-allying agents.
- The speed of vehicles making use of the access road and / or construction site will be limited to 35 km/h to avoid dangerous

conditions, the formation of dust and the excessive deterioration of the roads being used.

- Construction activities will be limited to daytime hours.

4.11. Noise control

- Noise will be associated with the proposed project during the construction phase.
- Construction activities will be limited to normal daytime hours.

4.12. Traffic management plan

- The speed of construction vehicles making use of the access road will be limited to 35 km/h to avoid dangerous conditions.
- Ample parking space to be provided – during the construction as well as operational phase.

4.13. Safety and security

- The site will be fenced for security as well as biosecurity purposes.
- Controlled access will be implemented to ensure that no unlawful entry to site is obtained and will prevent degradation of the environment in the nearby vicinity.
- The contractors must 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 must include safety and security measures for staff.
- Precautions to ensure that construction staff and sites are visible and do not pose danger to road users, should be implemented.

4.14. Open space management plan

- No waste will be dumped into the road reserve, the proposed site or adjacent property.
- Visual inspections for possible erosion will be undertaken on a regular basis.
- No construction activities will be undertaken outside the demarcated construction area or as per the design layout plan.

4.15. Plant rescue and protection plan

- Construction activities should be limited to the site and construction vehicles should keep to constructed roads so that natural vegetation is not destroyed unnecessarily.
- Any proclaimed weed / alien species that germinated during the contract period must be cleared by hand before flowering.
- If any fill material is imported, it is important that it should be monitored during and after construction for the presence of any alien species. Any such species should be removed immediately.
- No firewood shall be collected on site or in surrounding areas.
- No open fires will be allowed on site. If fires are lit, provision will be made that no accidental fires are started.
- The appointed ECO will survey the site prior to any construction activities for the presence of any protected bulb species.
- Although no species have been found that necessitates preserving, efforts should be taken to re-establish plantspecies when found on site.
- Protected bulb species will be transplanted to a suitable area where no disturbance will occur.
- A permit must be acquired for the removal or translocation of any protected species.
- Heavy vehicles will use the same roads / routes throughout construction phase, to prevent any unnecessary damage to surrounding soil and vegetation.
- Natural vegetation will not be disturbed unnecessarily.

4.16. Re-vegetation and habitat rehabilitation plan

- All activities will be undertaken within an area approved by the ECO, within the area indicated in the BAR and EA.
- Topsoil will be stockpiled separately with the natural seed bank intact.
- The topsoil will be protected against weed infestation and erosion.
- Topsoil will be used for the rehabilitation of the disturbed areas to be used for landscaping as soon as possible.
- After cessation of the activities, the disturbed areas will be rehabilitated to acceptable standards.
- Compacted areas to be rehabilitated will be ripped before covered with the stockpiled topsoil.

- Landscaping should be undertaken with indigenous plants, as far as possible.

4.17. Alien invasive management plan

- The development area will be inspected regularly for the presence of invader weed species.
- Areas with extensive growth of alien species will be cleared thereof by hand or by prescribed chemicals, prior to seeding thereof.
- Topsoil stockpile areas will be monitored for excessive growth of alien species.

4.18. Protection of environmental sensitive areas from construction impacts

- Environmental sensitive areas will be identified by the ECO.
- Proper mitigation measures to protect the identified areas from construction activities will be implemented and monitored by the ECO.

4.19. Site clean-up and rehabilitation of construction activities

- Temporary structures and office sites (if any) shall be dismantled and removed after completion of the construction phase of the project.
- All waste, equipment, materials, etc. used during construction must be cleared from the site. The contractors must ensure that the site is cleared and rehabilitated to the satisfaction of the Applicant.
- The planting of indigenous trees on the borders of the site will act as visual screens.

4.20. Environmental Awareness Plan

During site establishment and before construction activities commence, the ECO will inform all employees of the following:

- Point out the areas that are not to be impacted on and that require protection;
- Explain the possible impacts as listed in the Basic Assessment;

- Inform construction staff of the conditions of the Environmental Authorisation and recommendations of the EMPr;
- Explain risks and emergency procedures;
- Impose an understanding of pollution and degradation of the environment that may result from the construction work;
- Advise on the importance of containing the footprint of the construction site;
- Advise on the aims of rehabilitation after construction.
- The above should also be communicated to any new employees that join the team during the construction period.

5. Recommended management and mitigation measures during the operational phase

- The applicant will implement best practices and will keep the following in mind, as discussed under Section 4 of this document:
 - General Aspects
 - Monitoring system to detect any leakage or spillages of hazardous material
 - Waste management
 - Soil management
 - Erosion and storm water management
 - Protection of animal life
 - Maintenance of access roads
 - Dust control
 - Noise control
 - Safety and security
 - Open space management
 - Alien invasive management
- Fencing should also be maintained.
- Ensure that portions of the site is not used to dump waste and the site should be kept clear from litter in general.

6. Recommended management and mitigation measures during the decommissioning / closure phase

- 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 will amongst other, include the following:
 - The demolishing of infrastructure and the rehabilitation of the site.
 - The removal of construction rubble and other solid waste.

- No structures (mobile or otherwise) will be left behind, unless indicated in the rehabilitation plan.
- The area will be ripped and levelled by using topsoil.
- Seeding with natural occurring vegetation will take place if the tempo of natural re-vegetation is insufficient.
- Removal of buried bodies and re-burial thereof, after approval is obtained from the relevant authorities.
- The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.
- However, activities that will be associated with the decommissioning of the proposed project, will be limited to the rehabilitation of areas disturbed during the development phase. The applicant will:
 - Ensure that proper mitigation measures are implemented to protect the environment against long term negative environmental impacts.
 - The environment is cleaned up of any contaminants.
 - Ensure that erosion is prevented through regular monitoring and the implementation of rehabilitation measures at degraded areas.
 - Prevent alien plant species to spread in the area.
 - Minimise the negative visual impacts associated with the proposed project.

7. Compliance and Monitoring

- The applicant will ensure that the contractors adhere to the recommendations of the EMPr, EA and best practices during the construction phase.
- Regular monitoring and / or spot inspections at least every 14 days during the construction phase.
- Inspections should be documented and any shortcomings addressed immediately.
- Visual inspections on erosion and physical pollution shall be carried out on a regular basis.
- An independent ECO should inspect the site at least once before the cemetery is operational.
- A monitoring borehole should be drilled to determine the groundwater level, lithology and potential risk of contamination in the area.
- A regular groundwater monitoring programme must be in place where microbiological and chemical quality are monitored, preferably on a quarterly, but minimally on a biannual basis.

8. Reporting

- Any changes of the layout plan or technology will be submitted to the relevant environmental department for attention.
- Reports confirming compliance with various points identified in the EMPr will be kept and made available when 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.