

## Environmental Management Programme (EMPr)



t - +27(0)51 444 4700 f - +27(0)86 697 6132 Suite 158 - Private Bag X01 - BRANDHOF 9324 21 Dromedaris Street - Dan Pienaar BLOEMFONTEIN 9301 Company Reg No - 2002/058636/23 VAT No - 4020225811

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME:

## PROPOSED ESTABLISHMENT OF TOWNSHIP DEVELOPMENT AT PLOT 67, 68, 69 ESTOIRE, BLOEMFONTEIN, FREE STATE PROVINCE.

May 2015

#### pearl Construction (Pty) Ltd

Contact Person Mr. C. Nel Address P.O. Box 42624 Heuwelsig Bloemfontein 9332 Tel: 051 436 5105 Info@ekogroup.co.za t + 27(0)51 444 4700 f + 27(0)86 697 6132 Suite 158 • Private Bag X01 • BRANDHOF 9324 21 Dromedaris Street • Dan Pienaar BLOEMFONTEIN 9301 Company Reg No • 2002/058636/23 VAT No • 4020225811

Prepared by:

#### **PROJECT TEAM**

Environmental Assessment Practitioner(s):	Darius van Rensburg Gys Hoon
Postal address:	Suite 158 Private Bag X01 Brandhof 9324
Contact person(s):	Darius van Rensburg
Tel:	051 444 4700
Fax:	086 697 6132
E-mail:	darius@ekogroup.co.za

#### BACKGROUND

EKO is a Bloemfontein based company but we have completed projects in almost all the provinces of South Africa. We have extended expertise in specific environmental fields but also in the coordination of larger environmental management projects that involve outside contracted expertise for specialist investigations.

We strive to provide our clients with a professional service and cost effective solutions to the environmental aspects of their operations. We also ensure that they conduct their activities, development, explore natural resources like minerals, surface and ground water in an environmentally sound manner and within the required legal framework.

#### FIELDS OF EXPERTISE

- Mining authorization application
- Environmental impact assessments
- Solid waste management
- Environmental auditing
- ISO14001 implementation and auditing
- Water use licence applications
- Integrated water and waste management

- Development and management of ground- and surface water monitoring programs
- Biomonitoring
- Geological and geohydrological investigations
- Heritage Impact Assessments
- Botanical Surveys
- Soil Surveys

## 1. Objectives of the Environmental Management Plan (EMPr)

The Environmental Management Plan is intended to provide environmental specifications for the development of the residential development and to put measures in place to mitigate and manage potential environmental impacts arising from the phases of the construction of the mentioned residential development on Plot 67, 68, 69 Estoire, Bloemfontein, Free State Province.

## 2. Responsibility of contractors during planning and construction phase

- Identification of all possible environmental impacts that might be associated with the proposed construction of the residential development.
- Development of the design plans in order to establish the proposed residential area on the most suitable location on site (with the least potential environmental impacts). The residential development should be constructed as per design plans.
- Protect the environment on the construction site.
- Minimise any potential impacts expected to be associate with the Construction Phase as far as possible (e.g. prevention of soil erosion as well as any potential groundwater impacts).
- Ensure controlled access to the site to prevent degradation.
- Limit any potential impacts towards I&AP's during the construction of the school as far as possible.
- Be held responsible for the implementation of the EMPr.
- Be held responsible to have the EMPr available on site at all times.
- Be held responsible for compliance with all relevant aspects of the EMPr.
- Ensure that all problems identified during environmental audits or inspections during construction, are addressed and rectified as soon as reasonably possible.
- Demolishing permits must be obtained for demolition of existing buildings and structures on the site.

# 3. Activities and responsibilities during the operational phase

Due to the nature of the residential development it is important that management of the area be maintained.

The applicant will be responsible to prevent negative environmental impacts and will be responsible for the following:

- Providing a budget or implement similar body corporate for maintenance of infrastructure and ensure that the residential development is maintained in good condition.
- Maintaining all approved infrastructure in good working order to effectively fulfil its intended purpose to prevent negative environmental impacts.
- Not construct any additional buildings, infrastructure, etc. without investigating the potential necessity to perform an Environmental Impact Assessment (EIA) in terms with the NEMA Regulations of 2010.
- To immediately remedy any factors that contribute to negative environmental impacts.

## 4. Layout plan

• A copy of the layout plan must be available at the site for scrutiny during construction when required.

## 5. Demarcating the development area

- The area under construction must be clearly demarcated by means of barricading.
- Identify and demarcate the extent of the construction site as indicated by the layout plan.
- All activities related to the construction of the residential area must be limited to the boundaries indicated as such on the site layout plan.
- Do not paint or mark any natural feature. Marking for surveying and other purposes must be done using pegs, beacons or rope and droppers.

# 6. Environmental Aspects to be considered during the construction phase of the project:

- The South African Heritage Resources Agency must be notified if any elements of cultural or historical importance are found.
- Ample chemical toilets must be placed on the site for use by the workforce. These toilets must be maintained and cleaned regularly and kept in a sanitary order.
- Potable drinking water must be available at the site office and other convenient locations on the site.
- All activities must be limited to the identified work areas and access roads.
- No hunting, capturing or harming of any faunal species on the site must be allowed.
- No open fires are allowed on site.
- The existing access roads shall be used.
- Unless otherwise specified normal work hours will apply (i.e. from 07h00 to 17h00, Mondays to Fridays).
- Noise levels will be kept to a minimum during the construction of the mentioned residential development.
- The habitation and operation of the residential area will not generate any additional noise in the area.
- No emissions of gasses to the atmosphere are currently occurring or will occur as a result of the operation of the proposed residential development.
- Chemical toilet facilities must be made available to employees during construction.
- Topsoil must be kept and stockpiled separate in an area not prone to erosion.
- Topsoil may not be utilized for construction activities and should be re-used during rehabilitation activities when construction has ceased to level the site and any disturbed areas where necessary.
- Handling of waste:
  - Non-biodegradable refuse such as glass bottles, plastic bags, metal scrap, etc., shall be disposed and stored in suitable containers at a collecting point and collected on a regular basis and disposed off at the Bloemfontein landfill site. Specific precautions shall be taken to prevent refuse from being dumped on or in the vicinity of the site.

- Suitable covered receptacles shall be available at all times and conveniently placed for the disposal of waste for general and hazardous waste separately.
- Spills of any product like paint, oil, diesel, petrol, cleaning agents etc. should be cleaned up immediately by removing the spillage together with the polluted soil and by disposing it at a recognised facility.
- All used oils, grease or hydraulic fluids, paints, thinners etc. that cannot be re-used shall be placed in a hazardous waste container for disposal at a suitable waste disposal facility.
- Best practices in terms of the management of any waste together with the recommended mitigation measures should be implemented as minimum.

#### • Protection of topsoil:

- Topsoil will be removed from all areas where physical disturbance of the surface will occur.
- Topsoil will be kept separate and not be utilized for construction activities.
- Topsoil will be re-used during rehabilitation activities.
- Storm water management measures (e.g. diversion berms, swales, channels and attenuation ponds adjacent the annual stream) will be implemented in areas where extensive erosion during the construction phase becomes problematic.
- Topsoil and subsoil should not be mixed during construction and should be kept separate from another.

#### • Protection of fauna and flora:

- No open fires are allowed on site.
- Clearance of vegetation will be limited to the shooting range footprint.
- No reparation and / or construction activities will be undertaken outside the demarcated construction area or as per the design layouts.
- Windrows and clumps of the exotic Bluegum (*Eucalyptus camaldulensis*) must be removed from the site as it is a Category 2 invader according to CARA.
- The development must incorporate indigenous trees in public open spaces within the development.
- No collecting or hunting of animals is allowed on site or the surrounding environment.

#### • Alien invasive management plan:

- The residential area and areas disturbed by the construction activities will be inspected regularly for the presence of invader weed species.
- Areas with extensive growth of alienated species will be cleared thereof.
- Alien species will be removed by hand prior to seeding, or by the aid of prescribed chemicals.
- Topsoil stockpile areas will be monitored for excessive growth of alienated species and well-managed not to promote erosion with the removal of any vegetation.

#### • Storm water management plan and erosion management plan:

- Stockpile areas (if applicable) will not be situated within natural drainage systems or areas prone to erosion.
- A free-draining surface will be ensured at areas to be disturbed as far possible to prevent ponding of surface water as well as to limit erosion.
- Areas prone to damming and problematic storm water flow areas will be addressed by the implementation of appropriate storm water control measures.
- Appropriate stormwater measures will be implemented to ensure that the residential development is able to handle stormwater.
- The surrounding stormwater infrastructure will also be investigated to determine if it is able to manage the projected stormwater runoff produced by the residential development.

#### • Toilet facilities, waste water and refuse disposal:

- Temporary toilet facilities will be made available on site during construction.
- The toilet facilities will be implemented in such a way that they do not cause water or other pollution.
- Toilet facilities will be cleaned on a regular basis (proof thereof will be made available on request).
- The disposal of untreated effluent in a watercourse or the surrounding environment will be prohibited.
- The sewage management of the residential development should preferably connect to the municipal sewage system.

#### • Handling of possible hazardous substances:

- Ensure compliance with all national, regional and local legislation with regard to the disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials.
- Collect any hazardous waste in clearly marked receptacles located on a drip tray on site pending disposal. All receptacles should be suitably covered.
- All spills should be cleaned up immediately by removing the spillage together with the polluted soil and be disposed of as hazardous waste.
- Retain waste oils and batteries for recycling by the supplier wherever possible.
- Regularly dispose of all hazardous not earmarked for reuse, recycling or resale (such as oil contaminated with chlorinated hydrocarbons, electrical cleaning solvent, certain chemicals and fluorescent tubes) at a registered hazardous waste disposal site.
- Contain chemical spills, and arrange for cleanup by the supplier, or by professional pollution control personnel.
- Report major spills to the provincial Department of Water Affairs, as well as to the relevant Local Authority.
- Carefully control all on-site operations that involve the use of cement and concrete.
- Limit cement and concrete mixing to single sites as far as possible.
- Use plastic trays or liners when mixing cement and concrete: Don not mix cement and concrete directly on the ground.
- Dispose of all visible remains of excess cement and concrete after the completion of tasks.
   Dispose of cement and concrete waste in the approved manner (solid waste concrete may be treated as inert construction rubble).
- Spill kits must be available on site and in all vehicles that transport hydrocarbons. Spill kits
  must be made up of material/product that is in line with environmental best practise
  (SUNSORB is a recommended product that is environmentally friendly).

### 7. Environmental awareness induction

- The contractor is responsible to ensure that all employees are adequately trained with regard to the implementation of the conditions stipulated EMPr as well as relevant environmental legal requirements.
- All employees will have an induction presentation on environmental awareness.

- The presentation should be conducted in the language of the employees, where possible.
- Proof of the environmental awareness induction should be made available on site.
- The environmental awareness induction should include the following:
  - The importance of conformance with the environmental policies, procedures plans and systems
  - Employees should understand the key environmental features and issues relating to these features of the work sites
  - Employees should understand the necessity of the protection of the environment
  - Ways to minimise the associated impacts on the environment should be explained
  - Requirements in the EMPr should also be explained, including the prevention and handling of fires
  - Emergency procedures, including an evacuation plan should be explained
  - Environmental impacts (actual or potential) as a result of the proposed activities should be explained and the mitigation measures to be implemented to minimise the impacts should be addressed
  - The roles and responsibilities of the employees regarding the conformance with the environmental policies and procedures should be explained
  - Water should be used sparingly and no littering will be allowed
  - The minimum waste should be generated and where possible, material should be re-used, recovered and / or recycled
  - The necessary procedures regarding the discovery of any graves / palaeontological / archaeological or any other historical important sites that may be unearthed during construction should be explained to the employees
  - Actions to be taken in the event of various types of emergencies
  - Incident reporting
  - Procedures to be undertaken in the event of spills of hazardous substances
  - Identification of erosion and implementation of necessary mitigation measures
  - Identification of alien vegetation and best practice for the removal thereof
  - Employees should be made aware of the proper dust management measures
  - Adequate fire safety equipment (in a working condition) shall be made available at all times
  - Employees shall be trained in the operation of fire extinguishers etc.
  - Only authorised personnel will be using any construction vehicles

- The necessary emergency contact details should be made available on site for the employees, such as:

- DWA
- Police
- SAHRA
- Doctor to be contacted
- Ambulance
- DEA
- Spill clean-up services
- Fire Department

## 8. Health and Safety of Employees

- Any contractor and employees of the contractor responsible for the construction activities will at all times be equipped with protective gear.
- All workers on-site will undergo safety induction prior to commencement of construction activities at the proposed residential development.
- All areas posing potential safety risks and areas where protective gear is necessary will be indicated with conspicuous signs throughout the site.

## 9. Connection to services during the operational phase

 The applicant should ensure that adequate provision of service is done for the residential development and that capacity exists. As this will also be required prior to construction it is highly unlikely that the development will lack adequate services.

### 10. Decommissioning and Rehabilitation

At present, it is not anticipated that the project will undergo decommissioning and/or closure. However, should the facility at some time become abandoned or demolished, the following minimum management measures will be implemented:

• The infrastructure will be removed during the Decommissioning Phase. Any scrap metal will be sold to a scrap metal business and any metal and scrap unable to be utilised will be removed and disposed of at a registered landfill site.

- Any concrete surfaces will be removed and compacted areas will be ripped and re-vegetated, depending on the end land use to be decided upon at the time.
- The minimum of vegetation present should be removed. Natural vegetation that is anticipated to have established during the operational phase must not be disturbed.

In addition to the above, the applicant should:

- Ensure that suitable arrangements are made to protect the environment against long term negative impacts.
- Clean up contaminants of the environment.
- Prevent erosion through regular monitoring and rehabilitation of degraded areas.
- Prevent spreading of exotic species from the site.
- Minimize negative visual impacts.

## 11. Inspections and monitoring

The main objective of the proposed monitoring is to indicate any potential environmental impact prior to occurring and thus also provide the applicant with the opportunity to implement the proper management measures if found necessary prior to impacting on the environment.

- It is recommended that regular monitoring of all the environmental management measures and components should be undertaken during the construction phase to verify compliance to the EMPr.
- Ongoing and regular reporting of the progress of implementation of this EMPr will be done.
- Visual inspections on physical pollution shall be carried out on a regular basis.

## 12. Compliance reporting / submission of information

- An environmental officer will be appointed in terms of the specific site. The officer will be responsible to monitor all the environmental management measures and ensure compliance with the EMPr during the Construction Phase.
- Health and Safety, as well as Occupational Hygiene audits will be carried out as required by legislation during the Construction Phase.
- It is recommended that a compliance assessment should be undertaken by an independent Environmental Control Officer once during the Construction Phase to verify compliance with the EMPr.

It is also recommended that an independent Environmental Control Officer should conduct a Compliance Assessment during the decommissioning phase (if applicable).

- 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 within 12 hours after identification to the Free State Department of Economic Development, Tourism and Environmental Affairs telephonically and confirmed in writing.

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
Health and safety: Potential dangerous working conditions, e.g. height of structure to be constructed, construction vehicles, etc.	Potential safety risks to employees	<ul> <li>Equip all employees and / or contractors working on the site with the necessary protective gear.</li> <li>Implementation of safety induction.</li> <li>Training on the relevant machinery.</li> <li>Fit all personnel within the shooting range with adequate PPE including hearing protection.</li> </ul>	<ul><li>Contractor</li><li>Applicant</li></ul>	<ul> <li>No occurrence of injuries to employees / contractors on duty</li> </ul>	<ul> <li>With appointment</li> <li>During construction phases</li> </ul>
Clearance of Site	<ul> <li>Loss of natural occurring vegetation</li> <li>Establishment of alien species in the surrounding area</li> <li>Erosion</li> <li>Soil loss</li> </ul>	<ul> <li>In cases where topsoil is to be removed from the construction area, the topsoil will be handled as discussed in Stockpile Management.</li> <li>Obtain permits to remove protected species on the site.</li> <li>Limit clearance of vegetation to the site footprint.</li> <li>Replant grass within the shooting range as well as on backstops.</li> <li>Establishment of alien vegetation should be monitored on a regular basis.</li> <li>Areas with extensive growth of alienated species should be removed by hand.</li> <li>No open fires will be allowed.</li> </ul>	• Contractor	<ul> <li>No erosion</li> <li>Minimum soil loss</li> </ul>	• During Construction Phase
Waste Management <ul> <li>General Waste</li> </ul>	<ul> <li>Waste Dumping on</li> </ul>	<ul><li> Identify and separate waste streams.</li><li> Provide suitable containers for collection of</li></ul>	<ul><li>Contractor</li><li>Applicant</li></ul>	<ul> <li>No dumping of waste</li> </ul>	Weekly or when necessary

### Table 1: A table indicating the Responsible Person, Performance Indicators as well as the Time Frame for Implementation of Mitigation Measures

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
Camp Site Waste     Hazardous waste	site <ul> <li>Soil and water Pollution</li> <li>Negative visual impact</li> <li>Hazardous environment for animals</li> </ul>	<ul> <li>waste (general, scrap metal, building rubble, etc.).</li> <li>Any removed asphalt will be re-used during production or disposed of at an authorized landfill site.</li> <li>Any hazardous waste will be managed according to best practice and dispose of at an authorized facility.</li> <li>All used oils, grease or hydraulic fluids, paints, thinners etc. that cannot be re-used shall be placed in a hazardous waste container for disposal at a suitable waste disposal facility.</li> <li>Scrap metal will be collected and sold to a local scrap metal recycler.</li> <li>Suitable receptacles will be placed at convenient areas where construction is actively ongoing for the collection of general waste.</li> <li>These receptacles will be emptied on a regular basis (or when necessary) and disposed of at an authorized landfill site in Bloemfontein.</li> <li>General Waste will be disposed of at an authorized waste site in Bloemfontein.</li> </ul>		<ul> <li>No waste pollution on site or surrounding environment</li> <li>A record of the recycling of scrap metal will be kept</li> <li>Records of the disposal of hazardous waste will be kept</li> </ul>	
Storm Water Management	<ul> <li>Potential Pollution to Storm Water</li> <li>Erosion</li> </ul>	<ul> <li>Appropriate storm water measures;</li> <li>Channels, Diversion Berms, and Culverts will be constructed to prevent any pollution or erosion and to divert any storm water around construction sites.</li> </ul>	Contractor	<ul> <li>No pollution of Storm Water</li> <li>No erosion</li> </ul>	During Construction Phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
Water quality	<ul> <li>Potential Pollution to Storm Water</li> </ul>	<ul> <li>Any spill of potential hazardous substances into any water resource will be reported to DWA.</li> <li>Any spillage will be cleaned immediately to prevent contamination of storm water and groundwater resources.</li> <li>No dumping of any waste material (including construction rubble) into any water resource.</li> </ul>	Contractor	<ul> <li>No pollution of Storm Water</li> <li>No erosion</li> </ul>	<ul> <li>During Construction and Operational Phase</li> </ul>
<ul><li>Environmental Awareness</li><li>Induction</li><li>Housekeeping</li></ul>	Environmental Aspects: • Pollution • Waste Dumping • Protection of animals	<ul> <li>The employees will be made aware of the surrounding environment.</li> <li>Basic induction on environmental aspects will be provided to employees to enable them to identify potential environmental risks during construction.</li> <li>If any endangered plant / animal species are observed during the construction phase, a specialist (botanical / zoologist) will be notified.</li> <li>Good housekeeping will be implemented at all construction / camp sites (including eating areas).</li> </ul>	<ul> <li>Contractor</li> <li>Employees</li> <li>On-site ECO</li> </ul>	No pollution	During Construction Phase
Protection of cultural environment	• The adjacent cultural environment could be harmed due to the construction	<ul> <li>If any signs of culturally or historically significant elements (including archaeological or paleontological elements) are discovered during the rehabilitation process of the said road:</li> <li>An archaeologist / paleontologist will be notified.</li> <li>SAHRA will be notified.</li> </ul>	Contractor	<ul> <li>No harm to any infrastructure of cultural importance</li> </ul>	<ul> <li>During Construction Phase</li> </ul>

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
		• The activities may continue if the contractor received written consent from SAHRA and / or the specialists (paleontologist / archaeologist).			
Noise generation	<ul> <li>Elevated noise levels could disturb adjacent land owners.</li> </ul>	<ul> <li>The construction process will be limited to normal working hours in order to limit the significance of the noise levels.</li> <li>Construction machinery will be kept in good working order and will be equipped with silencers where possible to limit noise generation.</li> </ul>	<ul><li>Contractor</li><li>Applicant</li></ul>	<ul> <li>No / Low noise levels</li> </ul>	During Construction Phase

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
Air Quality	<ul> <li>The liberation of dust during construction might have a negative effect on the visual impact in the surrounding environment.</li> <li>Emissions in the form of engine emissions might negatively affect the air quality on site as well as the surrounding environment.</li> </ul>	<ul> <li>The formation of dust will be controlled if it becomes problematic by the use of, inter alia, water spraying and / or other dust-allaying agents.</li> <li>The speed of trucks and other construction vehicles on the access road will be limited to 35 km/hour to minimize the formation of dust.</li> <li>Vehicles will be in a good working condition.</li> </ul>	Contractor	<ul> <li>Minimal dust generation</li> <li>Minimal emissions to be released into the atmosphere</li> </ul>	During Construction Phase
Vegetation	<ul> <li>Loss of natural occurring vegetation.</li> <li>Establishment of alien species in the surrounding area.</li> </ul>	<ul> <li>No open fires will be allowed.</li> <li>Clearance of vegetation will be limited to the areas under construction.</li> <li>Establishment of alien vegetation will be monitored on a regular basis.</li> <li>Areas with extensive growth of alienated species will be removed by hand.</li> </ul>	Contractor	<ul> <li>No establishment of alien plant species</li> </ul>	<ul> <li>During Construction Phase.</li> </ul>
Stockpile Management	Contamination	• Different materials will be stored separately in	Contractor	• Non-	During

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
	of different stockpiled material • Erosion • Loss of topsoil	<ul> <li>order to protect the material from being contaminated with other stockpiled material.</li> <li>No construction with topsoil is allowed.</li> <li>Topsoil will be removed from all areas where physical disturbance of the surface will occur.</li> <li>Topsoil will be kept separate and shall not be used for building or maintenance of access roads.</li> <li>Topsoil will be protected from material that might contaminate the topsoil (for example: hydraulic waste).</li> <li>Erosion of topsoil stockpiles will be limited.</li> <li>Topsoil may be used for leveling after the construction phase has been completed.</li> <li>Excess topsoil will be removed by the contractor after the construction phase has been completed.</li> </ul>		contaminated stockpile material • No erosion • Minimum loss of topsoil	construction process.
Handling of hazardous substances	Contamination of soil and water resources (surface and underground resources)	<ul> <li>Hydraulic substances (Petrol, Diesel, Oil, Grease) will each be kept separate, within an area enclosed with a bunded wall.</li> <li>Drip trays will be used during transfer of any hazardous substances from transportation vehicles.</li> </ul>	Contractor	<ul> <li>No pollution by hazardous substances</li> </ul>	During Construction Phase
Handling of ablution facilities	<ul> <li>Soil and water (surface and underground resources)</li> </ul>	<ul> <li>Temporary ablution facilities will be made available on site during the construction phase.</li> <li>These facilities will be implemented in such a</li> </ul>	Contractor	<ul> <li>Neat ablution facilities with no water and / or soil</li> </ul>	<ul> <li>During Construction Phase</li> </ul>

Activity	Potential Impact	Mitigation	Responsible Person	Performance Indicators	Time Frame
	contamination	<ul> <li>way that no water or other resources are polluted by these facilities.</li> <li>A contractor will clean the facilities on a regular basis. Proof of the cleaning schedule will be made available on request.</li> </ul>		<ul> <li>contamination due to the ablution facilities</li> <li>No disposal of untreated effluent to the surrounding environment.</li> </ul>	