



Tsantsabane Local Municipality

Draft Environmental Management Programme (EMPr)

Proposed integrated housing development on the Remainder of Erf 1, to the north east of Postmasburg (Greenfields Development)



Compiled by:

Marguerite Cronje

Environmental Assessment Practitioner

P.O. Box 29729

Danhof

9310

Tel: 082 7020547

Email: margueritecronje@gmail.com

July 2017

CONTENTS

CHAPTER 1: INTRODUCTION	2
1.1 Project Description	2
1.2 Applicant Details	4
1.3 Objectives of the EMPr	4
1.4 Implementation of the EMPr	5
1.5 Role of the ECO	5
1.6 Environmental Awareness Plan	6
CHAPTER 2: PREPARATION OF THE EMPr	7
2.1 Person(s) who prepared the EMPr	7
2.2 Expertise of the person(s) who prepared the EMPr	7
CHAPTER 3: IMPACT MANAGEMENT ACTIONS & MITIGATION MEASURES	8
3.1 Planning / Pre-construction Phase	8
3.2 Construction Phase	10
3.3 Post Construction Rehabilitation	14
3.4 Operational Phase	15
CHAPTER 4: MONITORING & COMPLIANCE	16
4.1 On-site Environmental Representative	16
4.2 Environmental Monitoring Reports / Audits	16
4.3 Non-conformance and Corrective Action	16
4.4 Internal Review	17

1. INTRODUCTION

1.1 Project description

The proposed development site is located to the north east of Postmasburg and south of the Postdene residential area. (refer to Figure 1 below). The site measures approximately 200ha and is located on the Remainder of Erf 1, Postmasburg.

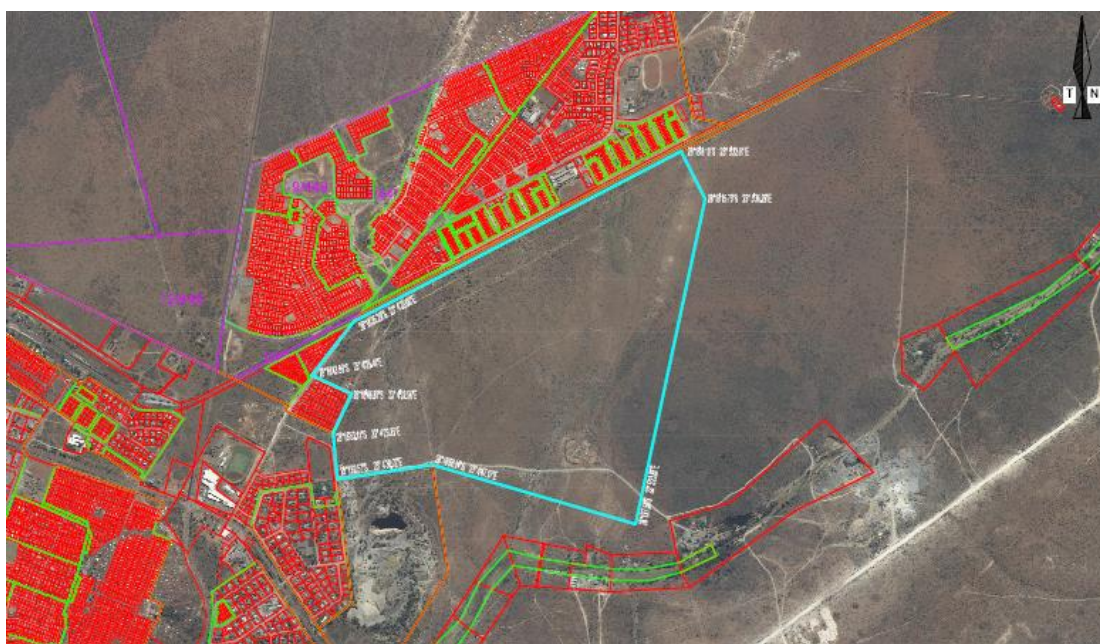


Figure 1: Locality of the development site.

The development consists of residential, business, education, church, clinic and sports field components, as well as associated civil and electrical service and road infrastructure. The details of land uses are indicated in Table 1 below.

Table 1: Land Use Table

LAND USE	NO. OF STANDS	AREA (HA)	% OF AREA
Residential (350m ² erven)	2158	86.5072	43.15
Business	2	2.0129	1.00
Bus stop / Taxi rank	2	1.1682	0.58
Secondary school	1	3.9512	1.97

Secondary / Primary school	1	5.5817	2.78
Primary school	1	3.3181	1.66
Daycare / Crèche	3	1.3062	0.65
Community facility	3	1.3184	0.66
Community facility / Clinic	1	1.2996	0.65
Church	4	1.9820	0.99
Municipal uses	2	1.9783	0.99
Public parks	28	9.6743	4.83
Rivers or river beds	6	29.7495	14.84
Sports fields	1	1.5884	0.79
Minor roads		5.4667	2.73
Public streets		43.8519	21.72
TOTAL	2213	200.4846	100

Refer to the site development plan.

The development will also include the following service infrastructure:

- Water provision
- Storm water drainage
- Electrical infrastructure
- Roads
- Sanitation

The construction of this development will be conducted in phases and will continue for a number of years. This EMPr is applicable to all construction activities to be carried out on site, whether formal monitoring takes place or not. Operational recommendations are also made for parts of the development once they have been completed.

1.2 Applicant details

Tsantsabane Local Municipality

P.O. Box 5
POSTMASBURG
8420

Contact person: Mr G.H. Mathobela

Tel: 053 3137300

Fax: 053 3133548

E-mail: mm@tsantsabane.gov.za

1.3 Objectives of the EMPr

The EMPr aims to fulfill the requirements as specified in Appendix 4 of Regulations No. R. 982 (4 December 2014) 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;
- To provide feedback on compliance.

1.4 Implementation of the EMPr

- i) The Applicant may appoint a Project Manager to be responsible for the implementing and supervision of the EMPr. The Applicant will however have overall responsibility for ensuring that the provisions of the EMP are implemented.
- ii) The Conditions of the Environmental Authorisation, Water Use License and recommendations of the EMPr should be included in tenders and construction / operational contracts, where necessary.
- iii) All contractors should be supplied with a copy of the EMPr and it should be ensured that construction and operational staff adhere to the mitigation measures.
- iv) An Environmental Control Officer (ECO) should be appointed by the Applicant / Project Manager prior to the commencement of construction activities.

1.5 Role of the ECO

The ECO will have the following responsibilities:

- Attendance of site meetings if deemed necessary by the ECO or Project Manager;
- Advising the Project Manager and contractors on environmental issues within the defined work areas;
- Assisting in finding environmentally acceptable solutions to development and construction problems;
- Inspecting the site at a frequency determined by the stage of the project to establish compliance with environmental provisions;
- Reviewing the site logbook with regard to records of site activities that may pertain to the environment;

- Recommending corrective action to the Project Manager where construction activities are not in compliance with the EMPr;
- Keeping diligent records of communication with the Project Manager; and
- Run induction courses on environmental awareness for contractors' staff and supervisors;
- Provide assistance on environmental issues;
- The ECO shall keep record of construction activities, problems identified and transgressions noted;
- Liaise with registered interested and affect parties during especially the construction phase of the project. After the construction phase their negotiations should revert to the developer and concessionaire if applicable.

1.6 Environmental Awareness Plan

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

- Point out the areas that are not to be impacted on and that require protection;
- Explain the possible impacts as identified in the EIA;
- Inform construction staff of the conditions of the Environmental Authorisation / Water Use Licence 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; and
- Advise on the aims of rehabilitation, post construction.

The above should also be communicated to any new employees that join the team during the construction period.

2. PREPARATION OF THE EMPR

2.1 Person(s) who prepared the EMPr

Marguerite Cronje

P.O. Box 29729

Danhof

9310

Tel: 082 7020547

E-mail: margueritecronje@gmail.com

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

Education:

- B.Sc. (Zoology), University of the Free State, South Africa, 2002
- B.Sc. Honnours (Zoology), University of the Free State, South Africa, 2003
- M.Sc. Diploma (Equine Science), University of Edinburgh, Scotland, UK, 2005
- Masters in Environmental Management, University of the Free State, South Africa, 2008

Experience:

- 10 years of environmental management experience through conducting Environmental Impact Assessments, compiling Environmental Management Plans and monitoring construction phases of various types of projects.

3. IMPACT MANAGEMENT ACTIONS & MITIGATION MEASURES

3.1 Planning / pre-construction phase

3.1.1 Water Use License Applications (WULA)

Necessary Water Use Licenses need to be obtained for construction work within 100m of drainage lines / floodline areas.

3.1.2 Site documentation

A copy of the EMPr and Environmental Authorisation should be available on site.

3.1.3 Demarcation of Sensitive Areas

Sensitive areas such as the hill and drainage lines on site need to be defined and delineated prior to construction activities. Buffer zones must also be indicated. If necessary, a specialist can assist in this regard.

3.1.4 Protected Plants

A walkthrough of the site should be done by a suitably qualified ecologist / botanist, to mark and map all protected plants on site. Transplanting of succulent and bulb species to areas excluded from the development should then be done.

Permits need to be obtained for the removal of protected tree species, namely the Camel Thorn (*Vachellia erioloba*) and Shepherds Tree (*Boscia albitrunca*) that can't be incorporated within the development.

3.1.5 Establishment of Access Roads

Some additional roads may be constructed as access roads to the area where no roads presently exist. These roads must be constructed where roads are intended as per the site development plan.

3.1.6 Location of Contractor's Camp

The Project Manager and ECO must recommend and approve the location of any contractor's camp, which is the demarcated area where the contractor will establish offices, workshops and storage facilities, prior to its establishment.

In choosing a site for the camp:

- Choose as level an area as possible;
- Keep away from watercourses; and
- If possible, the camp must be located within the construction site area.

Extension or movement of the construction camp must be agreed by the ECO.

If possible, the construction camp and site must only have one access route, which should be maintained in an adequate condition so as to minimise dust and erosion. Where possible, existing roads and tracks must be used, and upgraded to cope with the heavy construction plant.

3.1.7 Construction Employees

Construction workers should not be housed on site.

Designated eating areas are recommended and clean water should be made available daily to workers on site.

3.1.8 Sanitary Facilities

An adequate number of self-contained chemical toilets must be established on site, which must be easily accessible to construction workers. The Contractors must supply toilet paper at all toilets, and will be responsible for the maintenance and servicing.

Contractors must ensure that no spillage occurs when chemical toilets are cleaned, and that the contents are properly stored and removed off-site. A

contingency plan for spills from toilets must be supplied by the Contractors and approved by the Project Manager / Implementing Agent and ECO.

Toilets must be placed outside areas susceptible to standing or flowing water, and siting must be done in consultation with the Project Manager and ECO.

Performing ablutions outside toilet is strictly prohibited.

3.1.9 Safety and Security

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.

Fire extinguishers must be available, where required.

Entrance control during construction may be required. Unauthorised entry to construction areas should not be allowed.

3.2 Construction phase

Table 2 below indicates the impact management aspects and recommended actions to be taken during the construction phase.

Table 2: Construction Phase Mitigation

Item	Aspect	Mitigation Measure
1.	Excavations and trenches	<ul style="list-style-type: none"> • A professional Palaeontologist should monitor unweathered / fresh sedimentary bedrock where large scale excavations into unweathered / fresh sedimentary bedrock are to be conducted. • Provision against shoring should be made for excavations deeper than 1.5m. • Trenching will be kept to a minimum through the use

		<p>of a single trench for different services.</p> <ul style="list-style-type: none"> • The planning and selection of trench routes will be undertaken in liaison with the ECO and cognisance must be given to minimise the potential for soil erosion, disturbance of indigenous vegetation, the pit-trapping of mammals, reptiles, amphibians, insects, etc. • Trench routes with permitted working areas will be clearly defined and marked beforehand with clear indicators. • Trench lengths must be kept as short as practically possible. • Trenches must be refilled to flush with (or slightly higher to allow for settlement) the surrounding land surface to minimise erosion. Excess soil will be stockpiled in an appropriate manner. • After refilling, trenches and disturbed working areas must be planted with a suitable plant species and watered where practical.
2.	Topsoil stockpiles	<ul style="list-style-type: none"> • Topsoil (top 300mm of natural soil including vegetation and organic mater) must be removed during site clearance for re-use in the final landscaping of the site. • The Project Manager and ECO must identify a suitable site for stockpiling that is: <ul style="list-style-type: none"> ○ Removed from the working area; ○ In a sheltered position so that the soil will not be exposed to the effects of erosion; ○ Removed from drainage lines to minimise the risk of being washed away; ○ Removed from areas of indigenous vegetation; and ○ Removed from the base of a bank so that run-off from the top of the bank does not

		<p>cause ponding of water along the stockpile.</p> <ul style="list-style-type: none"> • Stockpiles must be neat, must not exceed 3m in height, and must be convex at the top to promote run-off. • Weeds appearing on stockpiled topsoil must be removed by hand before seeding. • For stockpiling of less than one month, temporary erosion measures must be implemented by means of a secured cover of hessian or other suitable alternative.
3.	Handling & storage of materials	<ul style="list-style-type: none"> • All chemicals used during the development, including fuel for the construction vehicles, should be stored in proper storerooms or protected areas to prevent pollution. • Vehicles should be serviced at designated areas. No oil, diesel or other chemicals may be spilled or discharged anywhere. • No construction material shall be stockpiled on the surrounding vegetation. • Where applicable, 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. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. should be reported to the Project Manager and ECO.
4.	Concrete mixing	<ul style="list-style-type: none"> • Mixing should be confined to an impervious and contained area. • Excess waste concrete should be disposed of at a licensed landfill site.

5.	Waste management (all construction debris and domestic waste produced during the construction phase)	<ul style="list-style-type: none"> • The contractor will be responsible for the removal of construction waste. • Suitable containers should be placed on site to collect all solid waste. These should be emptied regularly. • No littering is permitted. During the construction period the site shall be maintained in a neat and tidy condition. • All solid waste produced during the construction phase should be disposed of at the nearest licensed landfill site. • No dumping, burning or burying of waste may take place on site.
6.	Soil, erosion & vegetation	<ul style="list-style-type: none"> • Care must be taken not to negatively affect the sensitive rocky outcrops and wetland ecosystems. • Construction activities may not be allowed to impact areas identified for protection. • Measures to control erosion must always be applied. • Weed control measures must be applied to eradicate noxious weeds. • No fire wood may be collected in the veld.
7.	Drilling & blasting (if required)	<ul style="list-style-type: none"> • If blasting is required, it is the sole responsibility of the Contractors to obtain a blasting permit and abide by the conditions of the Explosives Act and the Inspector of Explosives. • Blasting will only be permitted at such times as agreed by the Project Manager and ECO, in consultation with the Contractor, and must preferably occur at the same time each day. • Charge sizes must be set so as to ensure that no damage is caused to surrounding areas. The Contractors must allow for good vibration monitoring equipment on site at all times during blasting operation and record keeping during

		<p>blasting operations is of vital importance.</p> <ul style="list-style-type: none"> • Before doing any blasting, the relevant occupants / owners of surrounding land must be notified, and any concerns addressed.
8.	Dust control	<ul style="list-style-type: none"> • Appropriate dust suppression measures must be used when dust generation is unavoidable, e.g. dampening with water, particularly during prolonged periods of dry weather.
9.	Noise control	<ul style="list-style-type: none"> • Construction activities should be limited to normal working hours.
10.	Discovery of artefacts	<ul style="list-style-type: none"> • If <i>in situ</i> fossil material is exposed, archaeological material is uncovered, or graves are found as a result of excavations, the ECO and the specialist should be notified asap.

3.3 Post construction rehabilitation

3.3.1 Site Clean-up

The Contractor(s) must ensure that all structures, equipment, materials and facilities used for construction activities are removed upon completion of the project. The Contractor must clear and clean the construction site to the satisfaction of the Project Manager and ECO.

All waste, equipment, materials, etc. used during construction must be cleared from the site.

3.3.2 Landscaping

Grass, tree and shrub species occurring in the region can be used to rehabilitate disturbed areas, if necessary.

All exotic, and especially invasive plant species must be eradicated.

Tree seedlings of the protected Camel Thorn (*Vachellia erioloba*) and Shepherds Tree (*Boscia albitrunca*) can be planted.

3.3.3 Erosion management

Rehabilitation of disturbed areas is important to help the recovery of the vegetation. Any barren soil patches should be paved or landscaped to avoid erosion during heavy thunder storms.

3.3.4 Open areas

The vegetation outside the development footprint should be rehabilitated as close as possible to natural veld, creating a safe sanctuary for animals.

3.4 Operational phase

The following recommendations should be implemented during the operational phase of the development to ensure sustainability and best environmental practice:

- Energy efficient technologies and water use efficiency should be applied as far as possible.
- An alien plant control and a monitoring programme must be developed and implemented.
- The Municipality will collect solid waste on a weekly basis.
- Where possible, recyclable materials (glass and paper) should be separated from the general solid waste and taken to a recycling depot.
- Measures to ensure that sensitive areas like the drainage lines and hill are protected and not impacted on by, for example, informal settlement and dumping of waste, should be implemented.

4. COMPLIANCE AND MONITORING

4.1 On-site Environmental Representative

Apart from the ECO, it is recommended that an Environmental Representative forms part of the Project Manager or contractor's team and is available on site on a daily basis to perform visual checks of the site activities and acts as a liaison between contractors and the ECO.

4.2 Environmental Monitoring Reports / Audits

The ECO will compile monthly environmental monitoring reports which must be kept on site and made available for inspection to any relevant competent authority.

4.3 Non-conformance and Corrective Action

Issues of non-conformance noted by the ECO will be communicated to the Project Manager, who will be responsible for ensuring that the relevant parties are informed of the non-conformance and that appropriate corrective actions are taken where necessary.

Environmental issues will be addressed at regular site meetings between the ECO, Project Manager and Contractor. The ECO will present verbal reports of any environmental concerns or issues that have arisen, and corrective actions that have been taken. Outstanding corrective actions will be discussed and agreed at these meetings. Issues relating to complaints or comments received from the public will also be discussed at these meetings.

Minutes of these meetings will be prepared / approved by the Project Manager and copied to all attendees before the next meeting. The frequency of the site meetings

will be agreed by the ECO, Project Manager, the Contractors and other relevant parties prior to the commencement of the project.

4.4 Internal Review

Internal review of the EMPr will take place on an on-going basis by the ECO. Based on observations during site inspections and issues raised at the site meetings, the ECO shall determine whether any procedures require modification in order to improve the efficiency of the EMPr. Any changes or adjustments to the EMPr shall be registered in the records of the ECO. Therefore, adjustment and update of the original EMP document is not required when these ad hoc changes are made. The ECO's records shall be available to the relevant authority, the Northern Cape Department of Environment and Nature Conservation, throughout the process and copies will be provided on request.

At the conclusion of the project, a final Environmental Monitoring Report for the construction phase will be compiled and submitted to the Project Manager. It will outline the implementation of the EMPr, especially the site clearing and rehabilitation undertaken by the contractors before site handover.