

**ENVIRONMENTAL MANAGEMENT  
PROGRAMME**

**FOR**

**S24G ZONE 7, BARKLY WEST TOWNSHIP  
ESTABLISHMENT**

**DENC REF NO: S24G/02/04/2020**

**PREPARED FOR  
DIKGATLONG LOCAL MUNICIPALITY**



**PREPARED BY**



**JULY 2020**

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## **ABBREVIATIONS**

DEO – Designated Environmental Officer  
DENC – Department of Environment and Nature Conservation  
DLM – Dikgatlong Local Municipality  
DWS – Department of Water and Sanitation  
EA – Environmental Authorisation  
EAP – Environmental Assessment Practitioner  
ECO – Environmental Control Officer  
EIA – Environmental Impact Assessment  
EMPr – Environmental Management Programme  
PSC – Project Steering Committee  
SAHRA – South African Heritage Resources Agency

## 1. INTRODUCTION

NSVT Consultants (“NSVT”), independent Environmental Assessment Practitioners (“EAP”), is part of the Macroplan Town & Regional Planners (“Macroplan”) project team, that was appointed for the formalization of the Zone 7 informal settlement located at Erf 711, Barkly West, on behalf of *Dikgatlong Local Municipality* (“DLM”). NSVT was responsible to lodge an application to rectify unlawful commencement of Listed Activities in terms of the Environmental Impact Assessment (“EIA”) Regulations, associated with the formalization of Zone 7 Informal Settlement in Barkly West and facilitation of the process thereof. The Environmental Management Programme (“EMPr”) as a requisite for the rectification process must be compiled. It describes mitigation measures and is partly prescriptive, identifying specific people to undertake specific tasks, in order to ensure that impacts on the environment are minimized during project implementation. The competent authority is the Department of Environment and Nature Conservation (“DENC”). The Layout Plan for the proposed development is attached hereto as **Appendix A**.

## 2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

The curriculum vitae of the EAP is attached hereto as **Appendix B**.

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<b>QUALIFICATIONS</b>	B. Sc. (Natural Science) B. Sc. Hons (Wildlife)	<b>EXPERIENCE</b>	17 years working in the environmental management field as an EAP. She has completed environmental impact assessment, basic assessment, drafting of EMPRs and environmental compliance monitoring for various development within the Free State., North West, Northern Cape and Eastern Cape Provinces.
<b>EXPERTISE/ TRAINING</b>	Resources & Sustainability, Physical & Biological Environment and Informatics  Project Management for Environmental Management  Social & Economic Sustainability  Use of Matrices in EIA  Public Participation Training		

	<p>Introduction to Social Impact Assessment</p> <p>Integrating HIV/Aids and Gender-related issues into EIA Process</p> <p>Integrated Water Resources Management, Water Use Authorisation and Water Use License Application</p> <p>One Environmental System Introduction to environmental Law</p>	<p><b>PROFESSIONAL AFFILIATE</b></p>	<p>SACNASP Professional Natural Scientist-4000161/09</p> <p>Member of International Association for Public Participation Southern Africa Affiliate-2010/ZA/FS/0001)</p> <p>Member of International Association for Impact Assessment SA-2191</p>
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### 3. PROJECT DESCRIPTION

#### 3.1. BACKGROUND INFORMATION

The Zone 7 Informal Settlement, which was established 12 years ago, has been identified for formalization is located on Erf 711, Barkly West within the jurisdiction of Dikgatlong Local Municipality. It is located to the west of Barkly West and is accessible via 4 streets from Mataleng. Although the proposed site is completely transformed, the area to the west and south is vacant and undeveloped and Mataleng is bordering the northern and eastern and side. The informal settlement is earmarked for formalization in the Spatial Development Framework of the Municipality.

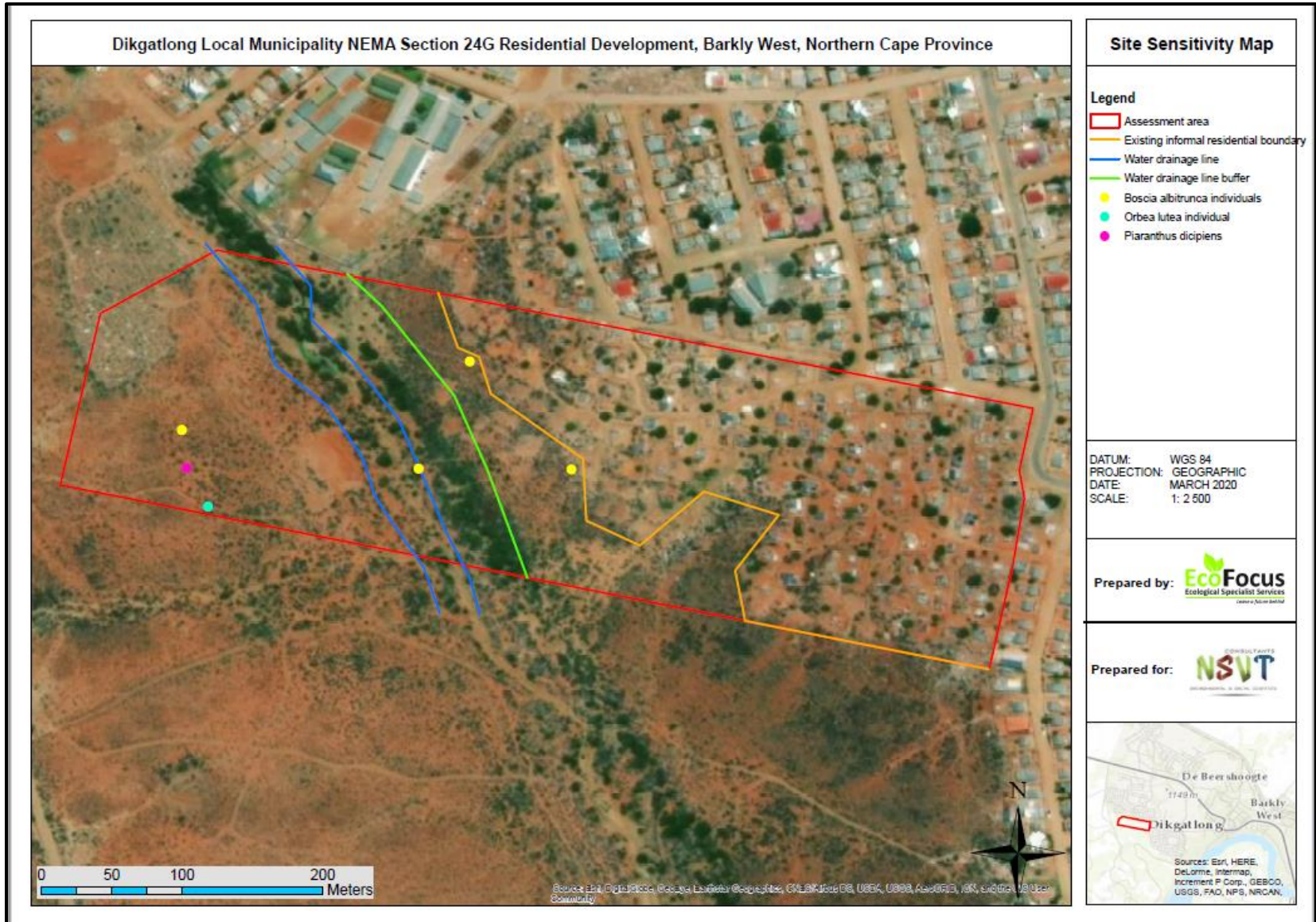
#### 3.2 SENSITIVITY OF THE PROPOSED SITE

The site is completely transformed by the establishment of the informal settlement, there no areas that are considered sensitive and needs to be excluded from the development footprint. In the western side of the development area, there is a drainage line, which has been protected by a protective buffer of 40m. Specialist studies which were conducted as part of the S24G Rectification process for the proposed formalization are:

- Ecological Impact Assessment and Wetland Delineation
- Archaeological Assessment; and Palaeontological Desktop Assessment.

From the findings of the studies, it was recommended that the formalization may go ahead as there are no sensitive, protected and/or threatened species or heritage artefacts that must be protected within the development footprint. However, to minimise any impact on the watercourse, a detailed stormwater management plan must be compiled and submitted to Department of Water and Sanitation for approval prior to commencement of construction activities. The sensitivity map for the assessment area indicating the development footprint of the informal settlement, protected species and the protective buffer that must be maintained to ensure that the functionality of the adjacent drainage line is not disturbed by the construction activities is shown in *Figure 1* below.

The Sensitivity Map is shown in *Figure 1* below:



**Figure 1: Sensitivity Map for the Proposed Site**

The location of the drainage line in relation to the development footprint in *Photo 1* below.



***Photo 1: Location of the drainage line from the informal settlement***



***Photo 2: Typical condition within the development footprint showing bare soil, housing structures, exotic trees and internal roads***

## 4 CHECKLIST FOR THE PROPOSED PROJECT

### 5. Give a detailed description of the development:

The municipality have unlawfully commenced with transformation of approximately 6 hectares of vacant and undeveloped land, which is zoned as an open space without obtaining an environmental authorisation. Therefore, to be able to provide the informal settlement with an improved basic service, it must be formalized. The formalization entails provision of bulk services, improved road network, construction of top structures, *i.e.* houses and sanitation facilities and connection to the electricity grid and this will be done per layout.

### 5. Give a brief description of the surrounding area:

The area to the north and east is a formalized settlement and the area to the west and south is undeveloped. There is a drainage line running south easterly is more than 50m and the cemetery is approximately 200m west of the informal settlement.

### 5. Is the project significantly different from the surrounding land use?

No, the development is compatible with Mataleng, the formalized settlement.

### 5. Are any of the following located on the site chosen for the development?

- i. River, stream, dam, wetland – No
- ii. Open space area – Yes, zoning of the development area is an open space
- iii. Residential (formal or informal settlement) – Yes, informal settlement
- iv. Area of cultural importance, e.g. graveyards, old houses, museum, etc. – No

### 5. Will the project be considered a noisy intrusion to the neighbors?

No, the increased noise levels will be during construction and thereafter, it will be general noise levels of a residential area.

### 6. Would it be necessary to construct roads to access the proposed site?

No, the existing roads will have to be upgraded or rehabilitated.



## 5 ENVIRONMENTAL MANAGEMENT PROGRAMME

### 5.1. INTRODUCTION

The EMPr has been divided into four different phases associated with the proposed development namely the pre-construction planning phase, the construction phase and operational phase. This EMPr will be implemented by DLM on approval by DENC. It must be form part of the contractual obligation between the contractor and DLM. Should there be any conflict between the EMPr and project specifications, then terms herein shall be secondary. This is to ensure that the works that would be undertaken will be executed in an environmentally sensitive manner, with minimal disturbances on the environment and neighbouring residents of Mataleng.

### 5.2 OBJECTIVES OF THE EMPR

The aim of the EMPr is to ensure that impact on the environment due to the proposed development is limited. To achieve this, the EMPr has the following objectives:

- ❑ To identify possible environmental impacts of the proposed activity on the environment and mitigation thereof.
- ❑ To provide information on construction activities associated with the identified environmental issues.
- ❑ To provide guidelines for the management of the identified environmental issues.
- ❑ To provide guidelines to the responsible persons from DLM to follow appropriate contingency plans in the case of various possible impacts.

### 5.3 RESPONSIBLE PERSON (S)

The implementation of this EMPr requires the involvement of various role players, each with specific responsibilities to ensure that the development is completed in an environmentally sensitive manner.

**The Developer:** Dikgatlong Local Municipality

Responsibility: To implement the final EMPr after approval by EMPr before the commencement of the construction phase and ensure the proposed development complies with the National Environmental Management Act (Act 107 of 1998) requirements and the conditions of the Environmental Authorisation.

**Consulting Engineers:** To be appointed

Responsibility: To undertake the detailed design for the proposed development and to ensure that necessary permits have been obtained prior to construction. To ensure the contractor sign the EMPr before the commencement of construction.

**The Environmental Control Officer (“ECO”):** To be appointed

Responsibility:

- ❑ To ensure that the contractor implements the EMPr for the duration of the project from pre-construction to post-construction (decommissioning).
- ❑ To review the method statements with the resident engineer.
- ❑ To maintain a direct open line between the project consultant, contractor Project Steering Committee (“PSC”) and the municipality.
- ❑ To audit the implementation of the EMPr and compliance to the environmental authorisation once a month until project completion.

**The Contractor:** To be appointed

Responsibility:

- ❑ To implement the EMPr and keep a copy on-site for the duration of the construction phase, as the obligations imposed by the document are legally binding.
- ❑ To comply with the Environmental Authorisation and undertake construction activities in an environmentally sensitive manner and rehabilitation of the proposed site post-development
- ❑ To undertake good housekeeping practices during the duration of the project.
- ❑ To ensure that adequate environmental awareness training takes place in the language of the Employees.

**Designated Environmental Officer (“DEO”):** To be appointed

Responsibility:

- ❑ To implement the EMPr on behalf of the contractor.
- ❑ To maintain records of environmental queries for the duration of the construction.
- ❑ To resolve environmental issues during the construction phase of the project.

**The Project Steering Committee (“PSC”):** A committee that comprises of representatives of the Engineers, Local Community and Contractor.

Responsibility:

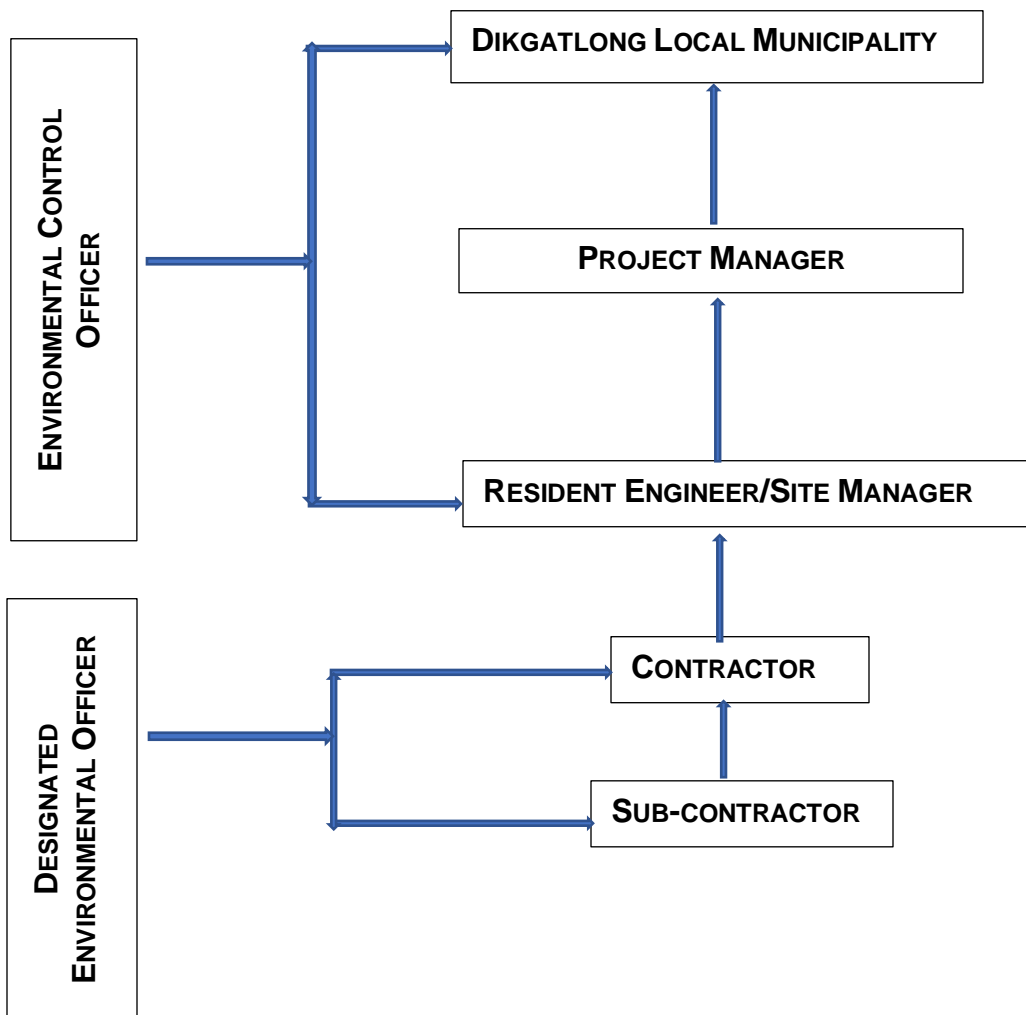
- ❑ To monitor the implementation of the EMPr.
- ❑ To assist in the sourcing of general workers from the local community and surrounding farms.
- ❑ To help ensure participation of local contractors during construction.
- ❑ To assist in resolving social or environmental issues that may arise during construction.

### 5.3.1. PROPOSED MECHANISMS FOR MONITORING COMPLIANCE WITH THE EMPR AND REPORTING THEREOF

The ECO must have adequate environmental knowledge to understand and implement this EMPr. They may not be someone appointed by the contractor, engineer or other party involved with the project. The ECO must be appointed and report to DLM only. If, in the opinion of the ECO, that there is a serious threat to or impact on the environment caused directly by the construction activities, the ECO may petition the Engineer to stop the works. Upon failure by the contractor or his workforce to show adequate consideration to the environmental aspects of this EMPr, the ECO may recommend to the engineer to have the contractor's representatives or any employee(s) removed from the site or the work suspended until the matter is remedied. If the transgression continues, the ECO in consultation with the Engineers may issue the contractor with a penalty.

### 5.3.2. ORGANIGRAM FOR REPORTING LINES

The organogram below depicts reporting lines for implementation of the EMPr.



## 5.4 METHOD STATEMENT

A method statement outlines construction activities to be undertaken with mitigation measures. The contractor must give a written statement to the ECO appointed by DLM at least two weeks before the activity so that any irregularities can be handled before construction commences and communicated to the workforce. The format of the method statement must clearly indicate the following:

1. Construction and Operational Procedures
2. Materials and Equipment used
3. How and where materials will be stored
4. When actions will be undertaken






Based on the EMPr specifications, the following method statements are required as a minimum:

- Site layout and establishment
- Handling of accidental spillages of hazardous substances
- Cement mixing
- Waste management procedures
- Wastewater management procedures
- Stormwater Management
- Erosion Remediation
- Traffic accommodation
- Fire control and emergency procedures

## 5.5 ENVIRONMENTAL AWARENESS TRAINING

DLM, workforce of the contractors and sub-contractors involved with the work in the construction phase are to be briefed on their obligation towards environmental protection and methodologies in terms of the EMPr prior to work commencing. The briefing must be done by the DEO prior to construction in the form of an on-site talk (toolbox talks) and demonstration. There should be records for the said presentation, which should be done in a language that will be easily understood by all. This should be done prior to commencement of construction activities and for new sub-contractors and general workers if construction has commenced.

The environmental training should, as a minimum include the following:

-  The importance of conformance with all the environmental policies and legislation.
-  The roles and responsibilities in achieving conformance with the EMPr.
-  The environmental Impact, actual or potential, of their work activities.
-  The mitigation measures required from specified operating procedures.
-  The potential consequences of departure from specified operating procedures.

The basic rules of conduct, which must be considered for the duration of the project, are contained in *Table 1* below.

**Table 1: Basic conduct rules during construction**

Do	Do Not
Use of toilet facilities provided and report dirty or full.	Make open fires for cooking, dedicated areas must be provided.
Clear your work areas of litter and building rubbish at the end of each day, use the waste bins provided and ensure that litter will not be blown away	Allow any cement bags or litter to be blown around
Report all petroleum leakages and/or spillages	Access the neighboring properties without the owners' consent
Confine work and storage of equipment and comply with all safety procedures	Collect fire wood from the neighbouring area
Provide easily accessible fire extinguisher and in good working condition	Dispose of cigarettes and burning matches randomly
Use areas designated for food preparation	Do not leave food lying around
Only emergency repairs of construction vehicles are allowed on the construction site	Enter any fenced off neighbouring areas without consent
Use all safety equipment and comply with all safety procedures	Dump any waste substance into the watercourse
Prevent excessive dust and noise	

## 5.6 RECORD KEEPING

There must be an up to date filing system at the site office for the duration of the project whereby method statements, environmental incidents report, training records, audit reports and public complaints register are kept. It is advised that photographs of the site must be taken pre-, during and post-construction as a visual reference and must be stored with other records related to the implementation of the EMPr. These records must be kept for a minimum of 2 years after completion of the project. It is therefore imperative that there be a file dedicated for Environmental Documentation.

## 5.7 PENALTIES

In cases of transgressions and non-compliance regarding the EMPr by the contractor, they must be liable to a penalty fine. Transgressions should be recorded in a dedicated register and be kept at the site office for the duration of the project.

The resident engineer will issue the penalties in terms of the severity of the environment; however, *Table 2* below may be used as a guideline.

**Table 2: Penalties for Transgressions**

TRANSGRESSION	PENALTY
Littering and defecation in the bush	R1000
Concrete mixing on the ground	R2000
Spillages	R1000-R10 000 depending on the magnitude)
Soil erosion	R2000
Veld fires	R5000

The penalty could be donated to an environmental charity in the area or any need for environmental protection.

## 5.8. COMPLIANCE WITH ENVIRONMENTAL LEGISLATION

The compliance to the applicable Environmental Legislation must be undertaken before commencement of construction activities as shown in *Table 3* below.

**Table 3: Applicable Environmental Legislation**

LEGISLATION	APPLICABLE			OBTAINED	
	YES	NO	N/A	YES	NO
Environmental Authorisation in terms of Section 24 of National Environmental Management Act (Act 107 of 1998)	X				
Water Use License in terms of Section 211 and (i) of the National Water Act (Act 36 of 1998)		X			
Permit in terms of National Environmental Management Act: Biodiversity Act (Act 10 of 2004)			X		
Northern Cape Nature Conservation Act (Act 9 of 2009)	X				X
Section 38 of National Heritage Resources Act (Act 25 of 1999)			X		
Section 37 of the Mineral Resources Development Act (Act 29 of 2002)			X		
Waste Management License in terms of National Environmental Management: Waste Management Act (Act 59 of 2008)			X		

## 5.9. IMPACTS AND MITIGATION MEASURES

The EMP<sub>r</sub> is outlined in *Table 4* below and adherence to this plan during construction will ensure that the environmental impacts associated with the proposed development, will be mitigated, thus promoting sustainable development. The commitment and co-operation of the identified responsible person(s) will ensure effective implementation of the EMP<sub>r</sub> for the duration of the implementation. The Contractor must familiarize himself with the requirements of the EMP<sub>r</sub>, keeping in mind that this EMP<sub>r</sub> specifies the minimum performance specifications and that other site-specific requirements and possible additional requirements from relevant stakeholders (government departments), as outlined in the Environmental Authorization, must be complied with.

**Table 4: Environmental Management Programme**

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
<b>1. PRE-CONSTRUCTION PHASE</b>					
Project Contract and Programme	Adherence to the EMPr	<ul style="list-style-type: none"> <li>◇ The environmental responsibilities must be formalized, and environmental awareness must be taught to the labourers in their preferred language as part of the toolbox talks.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Ensure that EMPR is adhered to	<u>Frequency</u> Prior to construction
Location of Camp and Depot	Environmental damage	<ul style="list-style-type: none"> <li>◇ The camp depot must be in an area where the Mataleng residents will not be inconvenienced and outside drainage line, 1:100-year floodline or 100m of watercourse.</li> <li>◇ The contractor must provide the RE with the layout plan of the camp depot for approval before commencement of the construction phase. The plan must include site offices, temporary fencing boundary, sanitation facilities, waste, stockpiling areas, etc. The parking of vehicles, storage of equipment and materials must strictly be confined to designated areas.</li> <li>◇ No storage or construction activities must be allowed within the 40m protective buffer zone.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Prevent environmental damage and disturbance of neighboring land users	<u>Frequency</u> Once off
<b>MANAGEMENT ACTION</b>		A camp depot must be approved by the Resident Engineer. Agreement should be in place between contractor and the landowner prior to commencement of construction phase. Photographs of the approved area prior to establishment and after must be kept for recordkeeping.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
Water Supply	Source of water during the construction phase.	<ul style="list-style-type: none"> <li>◇ Potable water must be available at the camp depot, office site and construction site.</li> <li>◇ No boreholes should be established without DWS approval.</li> <li>◇ No water must be abstracted from any watercourse without a Water Use License.</li> </ul>	<b>RE, CONTRACTOR &amp; MUNICIPALITY OR WATER SUPPLIER</b>	Prevent borehole establishment without DWS approval and unauthorized water abstraction from the neighbouring pans. To have clean water for the workforce.	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		A written agreement between the contractor and water supplier must be in place. Container marked potable water must be placed at the construction site.			
Access Control	Haphazard movement of people and theft of construction materials	<ul style="list-style-type: none"> <li>◇ A Fenced or suitably secure main site office and material storage area must be established.</li> <li>◇ Unauthorized entry must be prohibited.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Keep the site secure from trespassing.	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		Site access register and complaints book must be in place.			
Access route	Erosion and dilapidation of the access route	<ul style="list-style-type: none"> <li>◇ Upgrade the current access roads used during construction to an acceptable condition.</li> <li>◇ Proper maintenance must be done to ensure the quality of the access road is improved.</li> <li>◇ Implement erosion protection works at identified problem areas.</li> </ul>	<b>RE, CONTRACTOR, &amp; ECO</b>	Prevention of dilapidation of the existing access routes	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		ECO Audit checklist, Photographs depicting road condition pre- and post-construction			



ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
Power Supply	Safety Impacts	<ul style="list-style-type: none"> <li>◇ A Safety Officer must be appointed to undertake safety audits.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Implement safety measures	<u>Frequency</u> Duration of the Project Implementation
<b>MANAGEMENT ACTION</b>		Appointment Letter of a Safety Officer must be in place.			
Solid Waste	Littering/ Pollution of environment with waste materials	<ul style="list-style-type: none"> <li>◇ Refuse bins with lids must be provided for different waste streams.</li> <li>◇ System for regular waste removal must be set up.</li> <li>◇ A Serviced Provider with the necessary accreditation to transport and dispose waste must be appointed.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Implement proper handling of different streams of waste.	<u>Frequency</u> Once Off
<b>MANAGEMENT ACTION</b>		Method Statement for storing, handling, and disposal of waste and Record keeping of all records. Letter of Agreement for Handling of Hazardous Waste between Contractor and Service Provider.			
Sewage	Pollution of environment by waste materials	<ul style="list-style-type: none"> <li>◇ Provide adequate sanitation facilities</li> <li>◇ Letter of consent from a registered waste facility to allow the contractor to empty the toilets in their sewer system must be in the environmental document.</li> </ul>	<b>RE &amp; CONTRACTOR</b>	Prevent environmental pollution	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		Record keeping copies for emptying of chemical toilets. Written agreement between contractor and facility.			
Social & Socio-Economic Aspects	Dissatisfaction due to social issues and/concerns regarding the project implementation	<ul style="list-style-type: none"> <li>◇ A PSC, which comprises of the municipality, Engineers, contractor, Beneficiaries, and community representatives must be convened and details of the project discussed.</li> <li>◇ Community Liaison Officer appointed, and PSC established</li> </ul>	<b>RE, CONTRACTOR, WARD 3 COUNCILLOR, DLM</b>	Ensure satisfaction of workers and neighbouring land users	<u>Frequency</u> Monthly
<b>MANAGEMENT ACTION</b>		CLO appointed and PSC in place prior to commencement of construction activities.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Health & Safety	Danger to the workforce, beneficiaries, Residents, neighboring Mataleng especially children and other landusers in the vicinity	<ul style="list-style-type: none"> <li>◇ The Contactor must provide employees with suitable equipment to protect them from hazards being presented and that will allow them to work without risk to the health in a hazardous environment, e.g. hard hats, gloves, boots, etc.</li> <li>◇ An emergency preparedness plan should be compiled and approved by the resident engineer and ECO before construction commences. A list of all emergency telephone numbers, i.e. fire, ambulance, ECO, engineers, etc. should be available all the time at various construction sites.</li> <li>◇ A medical first aid kit should be available on site for duration of the project.</li> <li>◇ Construction methods must adhere to the Occupational Health and Safety Act (Act 85 of 1993).</li> </ul>	RE, CONTRACTOR, SAFETY OFFICER	To avoid endangering of the people who works on site or live in the vicinity of the construction site.	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		Signed records for issuing of PPE to the workforce. Risk register must be in place			
<b>2. CONSTRUCTION PHASE</b>					
Sewerage	Pollution of the receiving environment.	<ul style="list-style-type: none"> <li>◇ Adequate sanitation facilities <i>i.e.</i>, 15 employees per facility must be provided with 50m from construction site.</li> <li>◇ They must always be kept clean and hygienic.</li> <li>◇ Effluent must not be discharged into the natural environment and defecating in the bush is prohibited.</li> <li>◇ No chemical toilets must be placed within the protective buffer zone</li> </ul>	RE, CONTRACTOR, DEO, & ECO	Provide facilities for adequate and accessible sanitation facilities,  Prevent soil and water pollution.	<u>Frequency</u> Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Water Supply	Source of potable water during the construction phase.	◇ Potable water must be made available at the camp site and construction site in clearly marked containers.	RE, CONTRACTOR, DEO & ECO	To provide the workforce with clean water.	<u>Frequency</u> Daily
Health & Safety	Increase chances of HIV/Aids transmission	◇ HIV/Awareness Training must be provided for the workforce by an accredited service provider.	RE, CONTRACTOR, SAFETY OFFICER	To decrease the risk of HIV/Aids transmission	<u>Frequency</u> Once-off
Power Supply	Safety Impacts	◇ Limit the power supply cables & ensure the safety of the workers.	RE, CONTRACTOR, DEO & ECO	Avoid safety impacts	<u>Frequency</u> Daily
Energy Efficiency	Conserving of fossil fuels	◇ Manual labour must be used as much as is feasible in order to conserve fossil fuels.	RE, CONTRACTOR, DEO & ECO	Conserving fossil fuels by using manual labour.	<u>Frequency</u> Daily
Solid Waste	Littering/ Pollution	<ul style="list-style-type: none"> <li>◇ Toolbox talks must include a component of waste management.</li> <li>◇ All waste must be appropriately separated, contained and disposed of and be removed from the site to the registered landfill site in Barkly West and hazardous waste must be handled and disposed at a registered facility by accredited service provider.</li> <li>◇ Reduction, reuse and recycling of waste must be introduced.</li> <li>◇ Illegal dumping must be forbidden.</li> <li>◇ No dumping of builders' rubble or other materials within the surrounding areas including the drainage lines and plans.</li> <li>◇ Good housekeeping practices must be implemented.</li> </ul>	RE, CONTRACTOR, DEO & ECO	<p>Prevent littering and visual impact.</p> <p>Safeguard a healthy working environment.</p>	<u>Frequency</u> Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Traffic Impact	Safety/ Traffic Impacts	<ul style="list-style-type: none"> <li>◇ Vehicle speed on the site must be limited speed to 40km/h.</li> <li>◇ Only drivers with valid licenses must be allowed to drive on the site.</li> <li>◇ In the event of abnormal vehicles, a permit must be obtained from the local Department of Traffic.</li> </ul>	<b>RE, CONTRACTOR, DEO, ECO &amp; SAFETY OFFICER</b>	Minimize the disruption to road users	<u>Frequency</u> Duration of the project
Flora	Loss of vegetation	<ul style="list-style-type: none"> <li>◇ The area is completely transformed by the informal settlement.</li> <li>◇ All declared alien plant species must be effectively cleared.</li> <li>◇ Construction activities must be confined to the development footprint.</li> <li>◇ No clearance of vegetation must be undertaken within the 40m protective buffer.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Prevent impacts on flora and destruction of Red Data Listed Species  Prevent destruction of areas not included in the development footprint.	<u>Frequency</u> Once off
Fauna	Disturbance to fauna in the area	<ul style="list-style-type: none"> <li>◇ No hunting, snaring, shooting, nest raiding or egg collection by the construction staff must be allowed.</li> <li>◇ Toolbox talks must include handling of animals.</li> <li>◇ Trees with active bird nests or other significant biodiversity features, may not be damaged or disturbed without a valid Fauna Permit from the provincial conservation authority under the Northern Cape Nature Conservation Act (NCNCA), Act 9 of 2009 (if affected).</li> </ul>	<b>RE, DEO &amp; ECO</b>	To avoid disturbance and prevent killings of fauna in the area	<u>Frequency</u> Duration of the contract

ASPECT	POSSIBLE IMPACT	◇ MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Topsoil	Loss of Topsoil	<ul style="list-style-type: none"> <li>◇ Exposure of bare ground will be minimized.</li> <li>◇ Topsoil stripping must be limited to the development footprint.</li> <li>◇ It must be stored separately from the subsoil, i.e. no mixing of soils.</li> <li>◇ In situ material must be removed to an average depth of 1000mm.</li> <li>◇ Cleared and grubbed topsoil must be stockpiled as a top layer of at least 150mm thickness for the backfilling of monopole holes and rehabilitation purposes.</li> <li>◇ Soil conservation measures such as berms, gabions and mats must be used on-site to help reduce erosion.</li> <li>◇ No stockpiling of topsoil in the 40m protective buffer zone.</li> <li>◇ No topsoil stripping must be done on open space ervens.</li> <li>◇ Topsoil stockpiles must be kept free of weeds and litter free.</li> <li>◇ Topsoil stockpiles must not inconvenience the neighbouring residents from accessing their properties without informing them prior if necessary.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Conserve and protect topsoil from erosion and deterioration and to retain it for later use during rehabilitation	<u>Frequency</u> Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Topography	Disturbing the natural topography	<ul style="list-style-type: none"> <li>◇ Minimize the amount of excavation and earthworks needed by fitting the building or landscape design to the site topography rather than flatten the site to fit the building or landscape.</li> <li>◇ Restrict construction vehicle traffic to designated accesses to reduce damage to soils and vegetation.</li> </ul>	<b>RE, CONTRACTOR DEO &amp; ECO</b>	Minimize the disturbance of topography	<u>Frequency</u> Duration of the project
Cement mixing	Pollution of soils, surface and groundwater	<ul style="list-style-type: none"> <li>◇ Mixing of cement must be done on mortar boards or similar structures to contain surface run-off.</li> <li>◇ Cleaning of cement mixing equipment must be done on proper cleaning trays.</li> <li>◇ No cement or cement containers must be left lying around.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Avoid polluting the topsoil soil and water bodies around the designated servitude.	<u>Frequency</u> Duration of project
Storm water	Contamination of storm water	<ul style="list-style-type: none"> <li>◇ Stormwater Management Plan approved by DWS must be implemented.</li> <li>◇ Storm water must be diverted away from the construction works. It must not be contaminated by any substance produced, stored, dumped or spilled on site.</li> <li>◇ Storm water control works must be constructed, operated and maintained in a sustainable manner throughout the project.</li> <li>◇ No contaminated water must be allowed to flow freely into the drainage channel.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Avoid contamination of stormwater	<u>Frequency</u> Duration of project

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
Air Quality	Nuisance and reduction in visibility	<ul style="list-style-type: none"> <li>◇ Occasional wetting of the access routes and construction site must be done by means of a water tanker to keep the dust levels low and vehicles must be driven at 40km/h maximum speed.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	To minimize the generation of dust from excavation work and associated visual impacts	<u>Frequency</u> Twice a day
Water Quality	Impact of watercourses due to accidental spillages and poorly serviced equipment during construction	<ul style="list-style-type: none"> <li>◇ No fuel to be stored within the protective buffer zone.</li> <li>◇ Equipment to be properly maintained and serviced.</li> <li>◇ Fuel storage and pump areas to be bunded to avoid accidental leakage;</li> <li>◇ Accidental spills must be reported and cleaned immediately.</li> <li>◇ Contaminated soils must be removed and collected in a clearly marked container before being disposed of at a registered disposal site.</li> <li>◇ Any diesel spillages must be reported to the Department of Water and Sanitation</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	<p>To protect watercourses.</p> <p>To prevent contamination of the watercourses nearby.</p>	<u>Frequency</u> Duration of the project
Noise	Nuisance	<ul style="list-style-type: none"> <li>◇ Construction must be limited to normal contractors' working days and working hours.</li> <li>◇ Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work hours and after hours.</li> <li>◇ Limit working hours of noisy equipment to daylight hours,</li> <li>◇ Fit silencers to the noisier construction equipment.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	To avoid excessive noise generation from site operations	<u>Frequency</u> Duration of Construction

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
Soil erosion	Erosion	<ul style="list-style-type: none"> <li>◇ Exposure of bare ground must be minimized, and topsoil stripping limited to the development footprint, excluding open spaces and they must be cordoned off.</li> <li>◇ Vehicular activities to be confined to the development footprint and access roads.</li> <li>◇ No construction activities within 32m of the drainage line.</li> <li>◇ Erosion Management Plan must be compiled by a suitable qualified specialist and must be implemented for the duration of the project.</li> <li>◇ Ensure correct drainage of areas.</li> <li>◇ All the areas disturbed during construction works needs to be landscaped to a standard similar or better than before on completion of the works before replacement of topsoil.</li> </ul>	<b>RE. CONTRACTOR, DEO AND ECO</b>	Prevent Soil Erosion	<u>Frequency</u> Weekly
Alien Invasive Species	Prevent the spreading of alien invasive species	<ul style="list-style-type: none"> <li>◇ Implement an adequate Alien Invasive Species Establishment Management and Prevention Plan compiled by a suitably qualified and experienced ecologist must be implemented.</li> <li>◇ A designated person must be appointed to keep the construction site weed-free.</li> <li>◇ All Category 1b and 2 alien invasive species individuals currently within the project area, must be actively eradicated and adequately disposed of in accordance with the National Environmental Management: Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014.</li> <li>◇ Construction vehicles must be cleaned before entering the construction site.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; DEO</b>	Prevent unnecessary dissemination of alien invasive species	<u>Frequency</u> Duration of the Project



Fire Hazard	Risk of veld fires	<ul style="list-style-type: none"> <li>◇ No open fires are permitted on the construction site, except under strictly controlled conditions subject to the National Veld and Forest Act, (Act No. 101 of 1998).</li> <li>◇ The workforce must be informed and advised on the associated risks, dangers and damage of property caused by accidental fires and how to prevent them.</li> <li>◇ Fire extinguishers must be made available at the construction site, and the labourers must be informed of their location and trained to use them.</li> <li>◇ Restrict smoking activities to demarcated smoking activities.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Prevent veld fires.	<u>Frequency</u> Daily
Vehicle Servicing Areas	Pollution	<ul style="list-style-type: none"> <li>◇ Vehicle servicing must be done at the identified camp depot on impermeable surfaces to minimize the likelihood of petrochemical spills on the soil. In the case of accidents, polluted soil must be appropriately treated or taken away to an appropriate disposal site.</li> <li>◇ Used spares must be collected and disposed of in the correct manner. Oils must be drained into a suitable container, transferred to a larger storage container, and then supplied to oil recycling companies.</li> <li>◇ Oil must under no circumstances be disposed off into the drainage line or the ground.</li> <li>◇ No vehicle servicing within 100m of watercourse.</li> </ul>	<b>RE, CONTRACTOR, DEO &amp; ECO</b>	Prevent pollution Soil	<u>Frequency</u> Daily

<p>Areas of Paleontological, Cultural and/or Historical Importance</p>	<p>Disturbance of important scientific artefacts</p>	<ul style="list-style-type: none"> <li>◇ Chance Finds Procedures must be developed for the proposed development, and it must be included in the Environmental Awareness.</li> <li>◇ Should fossil remains be discovered, these must not be disturbed further and South African Heritage Resources Agency (“SAHRA”) must be consulted for guidance on how to deal with the remains.</li> <li>◇ If the newly discovered heritage resources are considered significant, a Phase 2 assessment may be required. A permit from the responsible authority will be needed.</li> <li>◇ Must any human skeletal remains be found during excavations; work must stop in the area. SAHRA’s “What to do when graves are uncovered”, Section 3 must be followed. The findings must be reported immediately to SAHRA.</li> </ul>	<p><b>RE, CONTRACTOR, DEO &amp; ECO</b></p>	<p>Prevent disturbance of scientific heritage and/or cultural artefacts.</p>	<p><u>Frequency</u> Duration of the Contract</p>
<p><b>MANAGEMENT ACTION</b></p>		<p>Photographic History Inspection Reports of the DEO Environmental Compliance Monitoring Reports of the ECO</p>			

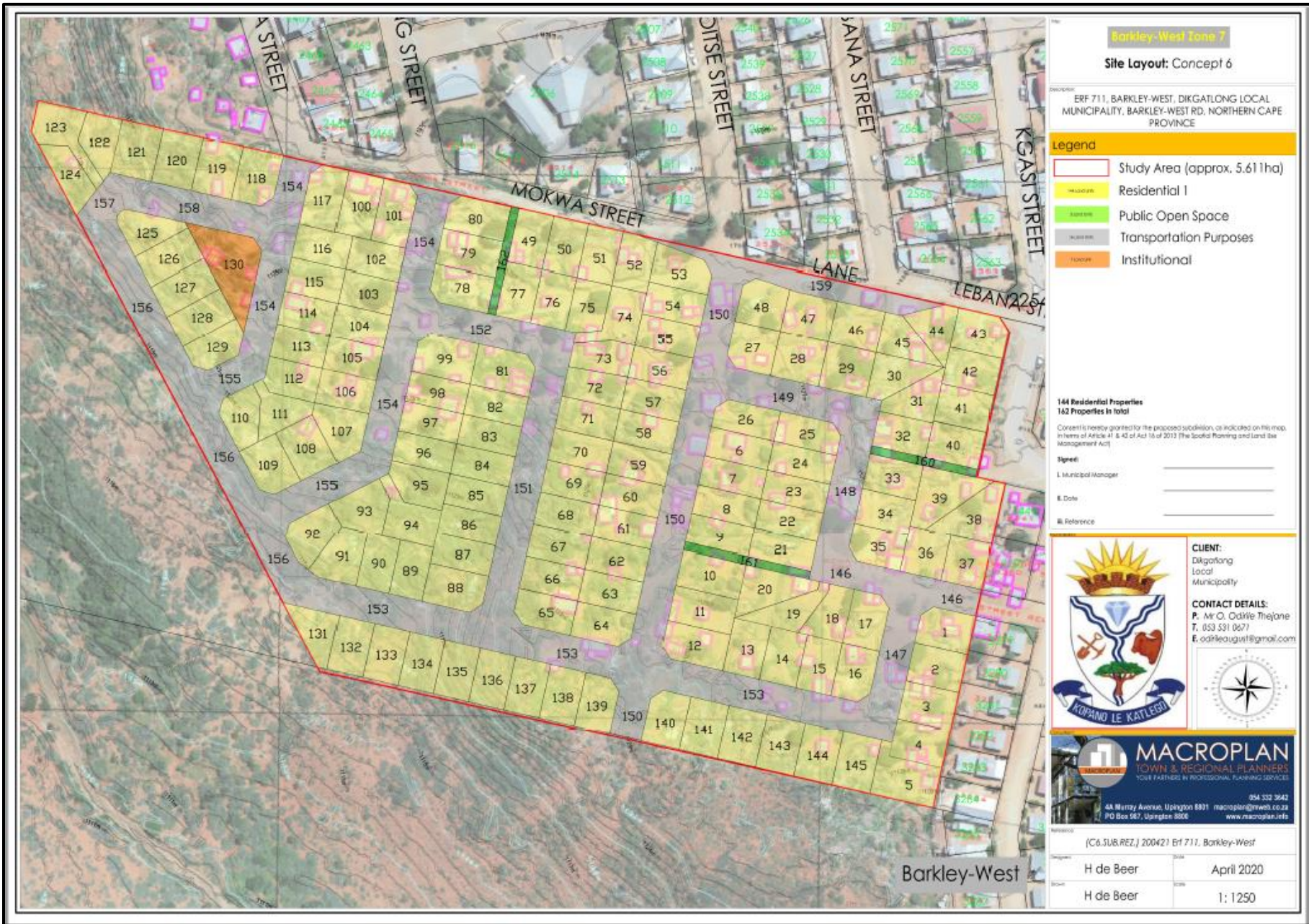
ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	MONITORING ACTIONS AND FREQUENCY
<b>3. POST CONSTRUCTION PHASE</b>					
Aesthetic view of the area	Aesthetic pollution	<ul style="list-style-type: none"> <li>◇ The contractor must rehabilitate the site when construction is completed, thus a detailed rehabilitation plan must be provided by the contractor.</li> <li>◇ The site must be kept clear of litter and all waste must be removed and disposed of at the registered landfill site.</li> <li>◇ All stockpiles must be handled as directed by the engineers.</li> <li>◇ Soil heaps must be flattened to match the adjacent ground and to help prevent soil erosion and encourage natural revegetation.</li> <li>◇ All excavations must be backfilled, levelled and compacted.</li> <li>◇ All surfaces hardened due to construction must be ripped and material imported thereto removed.</li> <li>◇ The original site topography must be restored as much as possible.</li> <li>◇ A final audit must be completed before the contractor may leave the site to determine whether all requirements were met.</li> </ul>	<b>RE, CONTRACTOR, DEO, ECO AND DLM</b>	Prevent pollution  Restore pre-construction conditions to a greater extent.	<u>Frequency</u> Monthly

		<ul style="list-style-type: none"> <li>◇ A meeting must be held between the various stakeholders to ensure that the site has been restored to a satisfactory condition.</li> </ul>			
<b>4. OPERATION PHASE</b>					
Environmental Degradation	Impact on the environment	<ul style="list-style-type: none"> <li>◇ The municipality will provide basic services to the area, i.e. power supply, water provision, electricity, and refuse removal.</li> <li>◇ Prevent establishment of illegal dumping site.</li> <li>◇ Monitoring and routine maintenance of proper stormwater drainage system should be in place.</li> <li>◇ Routine maintenance of access and internal roads should be in place.</li> <li>◇ Implement alien control measures.</li> <li>◇ Implement erosion management measures.</li> </ul>	<b>DIKGATLONG LOCAL MUNICIPALITY</b>	Maintenance of Bulk Infrastructure  Prevent environmental degradation	<u>Frequency</u> Infinite

## **6 AUDIT AND MONITORING**

Compliance monitoring provides useful information for gauging environmental performance throughout the duration of the project. The information obtained can be used to gauge how effective the mitigation plans in the EMPr are and determine whether the corrective actions undertaken are adequate and whether some modifications are required. The resident engineer (project manager) must monitor the overall aspects of the project, e.g. labor issues and complaints raised by the local community, so they can be addressed in conjunction with the PSC. A DEO must be on site for the duration of the project to ensure that the conditions of the EA and EMPr are adhered to. The ECO must monitor construction activities at least once a month and the monthly reports must be compiled and presented to the PSC for discussion if needs be. On completion of the construction phase, post-rehabilitation, an environmental audit must be conducted by an experienced and qualified auditor.

**APPENDIX A**  
**LAYOUT OF THE PROPOSED DEVELOPMENT**



**APPENDIX B**  
**CURRICULUM VITAE OF EAP**



**NAME: Lorato Tigedi Pr. Sci. Nat. (400161/09)**

**Name of Firm: NSVT Consultants**

**Present Position: Director/ Environmental Assessment Practitioner  
1041/2**

**Phone: 051 430**

**Years with the Firm: 8 Years  
8259**

**Cell: 082 784**

**Mailing Address: 1 Fourth Street, Office 1A, Arboretum, 9301  
lorato@nsvt.co.za**

**E-mail:**

**Date of Birth.: 1980-09-25**

**Nationality: South African**

**Education:**

<b>Name of Institution</b>	<b>Degree Obtained</b>	<b>Dates Attended</b>
<b>University of the Free State</b>	<b>BSc. Natural Science (Zoology)</b>	<b>1999-2002</b>
	<b>BSc. Hons. Wildlife</b>	<b>2003-2004</b>
	<b>Masters in Environmental Management (Mini-thesis Outstanding)</b>	

**Professional Membership:**

<b>MEMBERSHIP</b>	<b>MEMBERSHIP No.</b>
<b>South Africa Council for Natural Scientific Professions (SACNASP)</b>	<b>Environmental Scientist (400161/09)</b>
<b>International Association for Impact Assessment South Africa Affiliate (IAIAsa)</b>	<b>Member (2191)</b>
<b>International Association for Public Participation Southern Africa Affiliate</b>	<b>Member (2010/ZA/FS0001)</b>

**Key Experience:** Lorato Tigedi joined Geo Pollution Technologies (Free State) in 2003 and partnered with a Geohydrologist to set up Bokamoso Consultants as an environmental consultant, trading as NSVT Consultants. From 2004-2005 after completion of BSc Hons (Wildlife) she continued to study Master's in Environmental Management in 2006 but only completed the modules work and still have Mini-Dissertation. In 2011, she set up NSVT Consultants CC as a sole member. She has approximately 16 years in environmental consulting and have completed basic assessment, environmental impact assessment, waste management license and water use license applications for Free State, Northern Cape, North West and Eastern Cape Provinces. She therefore has extensive knowledge regarding the competencies required to ensure implementation and alignment of environmental policy instruments such as EIA. For Continuous Professional Development, she has completed short courses in Planning for Effective Public Participation, Social Impact Assessment and Conflict Management, Introduction to Environmental Law, Introduction and Implementation of OHSAS 17001 and EMS 14001-2016 amongst other courses. Therefore, she possesses the technical expertise and scientific knowledge for conducting thorough environmental assessments. She has considerable public participation experience through her work in EIA and understand that an effective public participation process provides an opportunity for identifying problems during the EIA process and identifying

opportunities that could be used in the decision-making process. Through her involvement in various projects, she has acquired analytical, problem-solving and excellent research skills

**Current Employment:**

**Duration:** March 2011 to date      **Organization:** NSVT Consultants-Environmental and Social Scientists

**Project:** Environmental Compliance Monitoring for the Upgrading of 31km of widening and rehabilitation of N9 Sec 7 between Wolwefontein and Colesberg as well as the construction of a new access interchange at Colesberg which required the utilization of 10 borrow pits.

**Client:** South African National Resources Agency SOC Limited Eastern Region

**Project:** Environmental authorisation applications for a new landfill sites in Mantsopa Local Municipality.

**Client:** Bigen Africa

**Project:** Environmental Authorisation application and Environmental Compliance Monitoring for a new interchange, overhead and pedestrian bridge.

**Client:** UWP Consulting Engineers

**Project:** Waste management license applications for development of new treatment plant.

**Client:** ISA & Partners

**Project:** Application for rectification for upgrading the treatment works without obtaining an Environmental Authorisation in Vredefort

**Client:** Sobek Engineering

**Project:** Environmental Authorisation application for development of new residential areas including associated infrastructure in Phumelela Local Municipality, Dihlabeng Local Municipality, Tswelopele Local Municipality.

**Client:** Phethogo Consulting Engineers

**Project:** Environmental Authorisation application for development of new residential area including associated infrastructure in Metsimaholo Local Municipality and Maluti-a-Phofung Local Municipality.

**Client:** YB Mashalaba & Associates

**Project:** Basic Assessment, Water use License and Environmental Compliance Monitoring, for the Ficksburg Pipeline from Meulspruit Dam to the water treatment plant.

**Client:** Flagg Consulting Engineers

**Project:** Environmental Impact Assessment for the proposed residential area in Mafube Local Municipality

**Client:** Pula Strategic Resource Management

**Project:** Environmental Compliance Monitoring for the Construction of a feeder pipeline to connect reservoir 8 with the existing water supply network, Section F, Botshabelo, Mangaung Metropolitan Municipality, Free State Province

**Client:** Flagg Consulting Engineers

**Project:** Basic Assessment for a new 132kV powerline from Rouxville substation to Melkspruit substation in Aliwal North

**Client:** Eskom Free State Operating Unit

**Position:** Director and Environmental Specialists/Scientist

**Responsibilities:** Business Operations, Marketing, Project Management, Community Facilitation, Internal EIA Evaluation and associated administration work including Determine whether the Basic Assessment or Environmental Impact

Assessment is required, Initial assessment of site to identify potential environmental constraints, Initial screening (considering sensitivity/environmental flaws) of borrow pits and selection of suitable ones, Team co-ordination, Collate project information, i.e. civil reports and review, Consult with the Competent Authority to ensure the project is compliant with applicable national requirements and social legal requirements and policies, Consult with relevant Stakeholders per requirements of the National Environment Act of 1998, Undertake Site Investigation, Review of the Draft Environmental Management Plan and amendments following the confirmations of the route selection and alignment, Compilation of Progress Reports (Weekly or Monthly as required), Undertake public participation process, Compilation of construction EMP since no Basic Assessment/Environmental Impact Assessment was required, Compilation of EMPR as part of mining permit application for borrow pits, Approval of EMPRs and obtaining mining permit applications, Internal Review of Environmental Reports, Mentoring of Environmental Management Undergraduate Students

**Previous Employment:**

**Duration:** March 2004 to February 2011      **Organization:** Bokamoso Consultants-  
Environmental Scientists and Geohydrologist

**Project:** Environmental Impact Assessment for the upgrading of the wastewater treatment works in Dewetsdorp

**Client:** Ninham Shand Consulting Engineers

**Project:** Application for exemption from conducting EIA process for the upgrading of the treatment works in Marquard

**Application for exemption from conducting EIA process for the upgrading of the treatment works in Senekal**

**Client:** ISA & Partners Consulting Engineers

**Project:** Environmental Impact Assessment for a new access road in Mount Arthur

**Client:** Thuso Development Consultants

**Project:** Environmental Impact Assessment for the upgrading of D313 road from Morokweng to Vorstershoop

**Client:** Babereki Consulting Engineers

**Project:** Environmental Impact Assessment for the upgrading of the wastewater treatment plant in Jan Kempdorp

**Client:** Phokwane Local Municipality

**Project:** Environmental Impact Assessment for the upgrading of wastewater treatment works in Jagersfontein

**Client:** Phethogo Consulting Engineers

**Project:** Community facilitation and public participation process for the resettlement planning and environmental authorisation application for Khuis Community

**Client:** regional Land Claims Commission Northern Cape

**Position:** Environmental Consultant

**Responsibilities:** Site visits, undertake public participation process and compile public participation report and/or comments and responses report, compilation of basic assessment and scoping report, compilation of environmental management plan, liaison with stakeholders and competent authorities, Water use License Applications, Waste Management License Applications, Environmental Compliance Monitoring,

**Duration: March 2003 to February 2004**

**Organization: Geo Pollution Technologies  
(Bloemfontein)**

**Project: Application for rezoning and closure of the landfill site in Thaba Nchu and Botshabelo  
Client: Mangaung Local Municipality**

**Project: Environmental Impact Assessment for the wastewater treatment works in Ladybrand  
Client: Kwezi V3 Consulting Engineers**

**Project: Environmental Impact Assessment for the new reservoir in Ladybrand  
Client: Trubuild Consulting Engineers**

**Position: Junior Environmental Consultant**

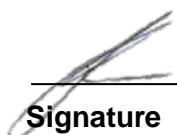
**Responsibilities: Site visits, undertake public participation process and compile public participation report and/or comments and responses report, compilation of basic assessment and scoping report, compilation of environmental management plan, liaison with stakeholders and competent authorities.**

**Reference:**

<b>CONTACT NAME</b>	<b>ORGANISATION</b>	<b>TELEPHONE NUMBERS</b>
Mamofolo Matebele	Babereki Consulting Engineers	051 522 4865
Solomon Munthali	TS Consulting Engineers	071 875 8952
Piet De Bie	Phethogo Consulting	051 448 6006

**Consent:**

I confirm that the above CV is an accurate description of my qualifications and experience in environmental management, waste management license applications, which included basic assessment and environmental impact assessment processes, water use license and mining permit and rights applications, and environmental compliance monitoring, and public participation, stakeholder engagements and social facilitation.

  
\_\_\_\_\_  
**Signature**

2020-05-22  
\_\_\_\_\_  
**Date**

**APPENDIX C**  
**CHANCE FINDS PROTOCOL**

A following procedure will only be followed if fossils are uncovered during excavation.

## 1.1 Legislation

Cultural Heritage in South Africa (includes all heritage resources) is protected by the **National Heritage Resources Act (Act 25 of 1999) (NHRA)**. According to Section 3 of the Act, all Heritage resources include “**all objects recovered from the soil or waters of South Africa, including archaeological and palaeontological objects and material, meteorites and rare geological specimens**”.

Palaeontological heritage is unique and non-renewable and is protected by the NHRA and are the property of the State. It is thus the responsibility of the State to manage and conserve fossils on behalf of the citizens of South Africa. Palaeontological resources may not be excavated, broken, moved, or destroyed by any development without prior assessment and without a permit from the relevant heritage resources authority as per section 35 of the NHRA.

## 1.2 Background

A fossil is the naturally preserved remains (or traces) of plants or animals embedded in rock. These plants and animals lived in the geologic past millions of years ago. Fossils are extremely rare and irreplaceable. By studying fossils, it is possible to determine the environmental conditions that existed in a specific geographical area millions of years ago.

## 1.3 Introduction

This informational document is intended for workmen and foremen on construction sites. It describes the actions to be taken when mining or construction activities accidentally uncovers fossil material.

It is the responsibility of the Environmental Site Officer (ESO) or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the ESO, a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.

## 1.4 Chance Find Procedure

- If a chance find is made the person responsible for the find must immediately **stop working** and all work that could impact that finding must cease in the immediate vicinity of the find.
- The person who made the find must immediately **report** the find to his/her direct supervisor which in turn must report the find to his/her manager and the ESO or site manager. The ESO or site manager must report the find to the relevant Heritage Agency (South African Heritage Research Agency, SAHRA). (Contact details: SAHRA, 111 Harrington Street, Cape Town. PO Box 4637, Cape Town 8000, South Africa. Tel: 021 462 4502. Fax: +27 (0)21 462 4509. Web: [www.sahra.org.za](http://www.sahra.org.za)). The information to the Heritage Agency must include photographs of the find, from various angles, as well as the GPS co-ordinates.
- A preliminary report must be submitted to the Heritage Agency within **24 hours** of the find and must include the following: 1) date of the find; 2) a description of the discovery and a 3) description of the fossil and its context (depth and position of the fossil), GPS co-ordinates.

- Photographs (the more the better) of the discovery must be of high quality, in focus, accompanied by a scale. It is also important to have photographs of the vertical section (side) where the fossil was found.

Upon receipt of the preliminary report, the Heritage Agency will inform the ESO (or site manager) whether a rescue excavation or rescue collection by a palaeontologist is necessary.

- The site must be secured to protect it from any further damage. **No attempt** should be made to remove material from their environment. The exposed finds must be stabilized and covered by a plastic sheet or sand bags. The Heritage agency will also be able to advise on the most suitable method of protection of the find.
- In the event that the fossil cannot be stabilized the fossil may be collected with extreme care by the ESO (site manager). Fossils finds must be stored in tissue paper and in an appropriate box while due care must be taken to remove all fossil material from the rescue site.

Once Heritage Agency has issued the written authorization, the developer may continue with the development on the affected area.