

**DRAFT ENVIRONMENTAL MANAGEMENT  
PROGRAMME**

**FOR**

**ESKOM FSOU 132KV POWER-LINE CONSTRUCTION  
(EASTERN CAPE-FREE-STATE)**

**PREPARED FOR  
DEPARTMENT OF ENVIRONMENTAL AFFAIRS**

**ON BEHALF OF  
ESKOM FSOU**

**PREPARED BY**

**NSVT CONSULTANTS**

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## 1. INTRODUCTION

ESKOM FSOU has appointed NSVT Consultants as independent environmental assessment practitioners to undertake an Environmental Impact Assessment as well as the Water Use License application process and subsequently to complete the draft Environmental Management Plan (EMPR) of the construction of a power-line with the capacity of 132kV from the Melkspruit substation in the Eastern Cape to the Rouxville substation in the Free-State for the Department of Environmental Affairs (DEA).

## 2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

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

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<b>QUALIFICATIONS</b>	B. Sc (Natural Science) B. Sc Hons (Wildlife)	<b>EXPERIENCE</b>	14 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, 2006 Project Management for Environmental Management, 2006 Social & Economic Sustainability, 2006 Use of Matrices in EIA, 2008 Public Participation Training, 2010 Introduction to Social Impact Assessment, 2011 Integrating HIV/Aids and Gender-related issues into EIA Process, 2013 Integrated Water Resources Management, Water Use Authorisation and Water Use License Application, 2013  One Environmental System-2015		

### **3. PROJECT DESCRIPTION**

#### **3.1. BACKGROUND INFORMATION**

The proposed route for the construction of the new 132kV power-line is situated primarily along the N6 between two towns, namely; Rouxville in the Free-State and Aliwal North in the Eastern Cape. The substations in question are located on the outskirts of both towns and are approximately 34km apart, the Melkspruit property houses the Aliwal North substation and the Rouxville substation is located on the Dorpsgronden Van Rouxville farm number 108, of which both properties are of Municipal land. The proposed Eskom power-line will distribute a baseline capacity of 66kV but with the future capacity to deliver 132kV to the future population growth of communities in Rouxville and Aliwal North.

Specialist studies were to be conducted prior to any construction of the proposed power-line in order to determine the most environmentally suitable servitude to place the construction of the power-line. The following specialist studies were conducted:

- Aquatic Assessment
- Ecological Assessment
- Wetland Delineation
- Avifauna Assessment
- Archaeological Assessment
- Paleontological Assessment
- Visual Impact Assessment

#### **3.2 SENSITIVITY OF THE PROPOSED SITE**

The proposed site on which the activity will be undertaken is predominantly used for rearing cattle and the development of agricultural fields, from the findings of the Wetland, Avifauna, Ecological and Aquatic specialist the following was discovered;

- No fatally flawed or high impact features were identified during the survey. The impacts associated with the proposed development activities can be successfully mitigated;
- Sensitive habitat features were identified during the survey. The ecological sensitivity map needs to be taken into consideration during the planning phase of the tower positions;
- All wetlands and watercourses have been delineated and designated appropriate conservation buffer zones. All established aquatic habitat must be spanned across so as not to impact on these areas. Establishment of tower positions within wetland habitat must be avoided as far as possible. If this is found to be not technically feasible, then mitigation measures must be implemented to rehabilitate the affected areas;
- Avifaunal migratory routes and zones have been identified along the alignment. The fitment of bird flappers must be undertaken within these areas to mitigate against fatalities due to collisions with the overhead line;

- There is no strong preference for either of the offered alignment alternatives, although Alt-A was noted to have a marginally lower impact significance score;

- No indiscriminate habitat destruction should be allowed to take place within areas outside of the construction footprint areas. Any destruction of habitat that has occurred that is not part of the ultimate footprint of the infrastructure must be rehabilitated;

It should be noted that, in order to conserve the ecological features within the region, a holistic conservation approach should be adopted. This includes keeping general habitat destruction to an absolute minimum. Conserving the habitat units will ultimately conserve the species communities that depend on it for survival. This can only be achieved by the efforts of the contractor during the various processes of the construction phase.

Sensitivity maps were compiled based on the information above and it is shown in *Figure 1 and Figure 2* below:

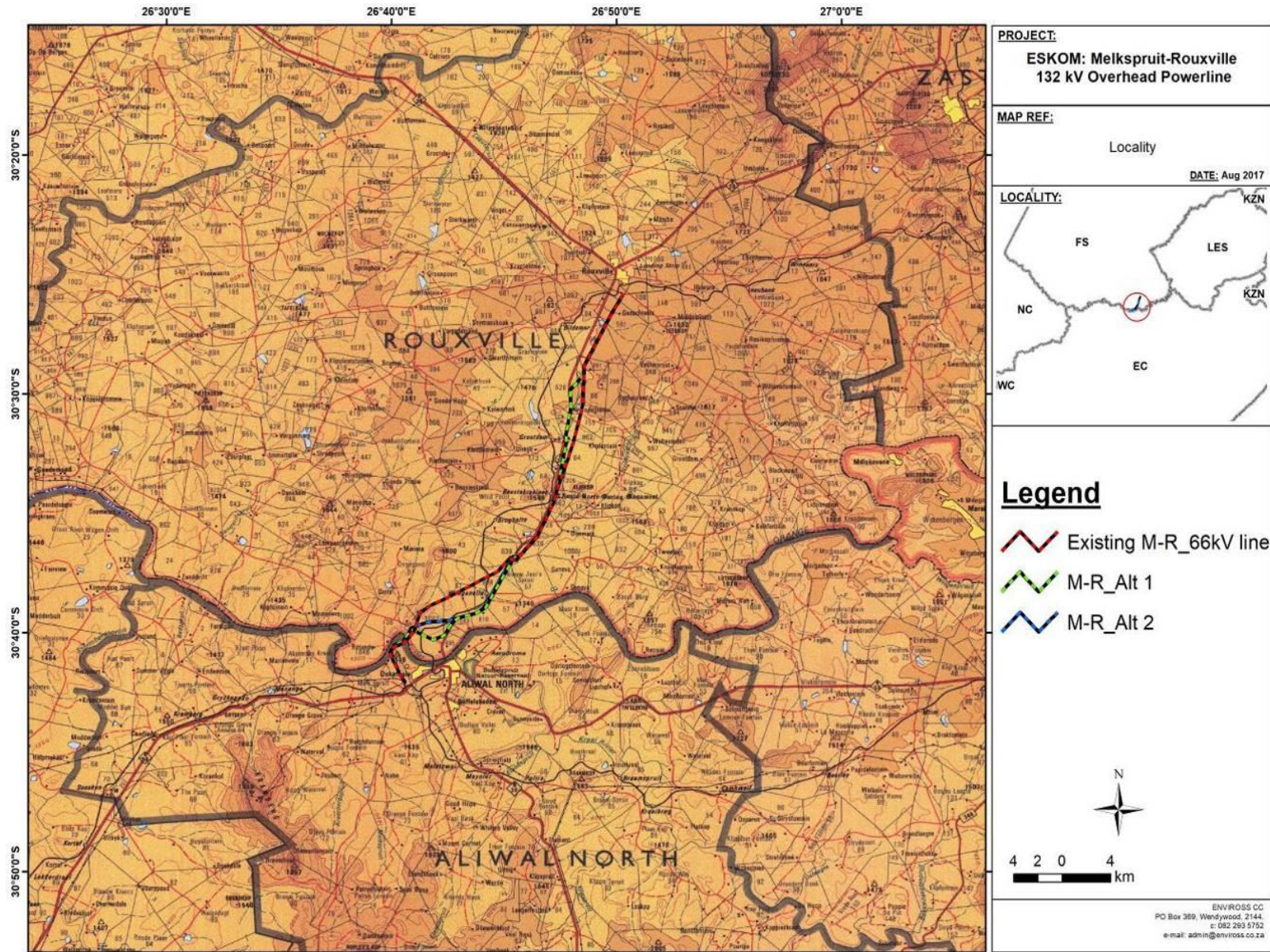


FIGURE 1 SENSITIVITY MAP

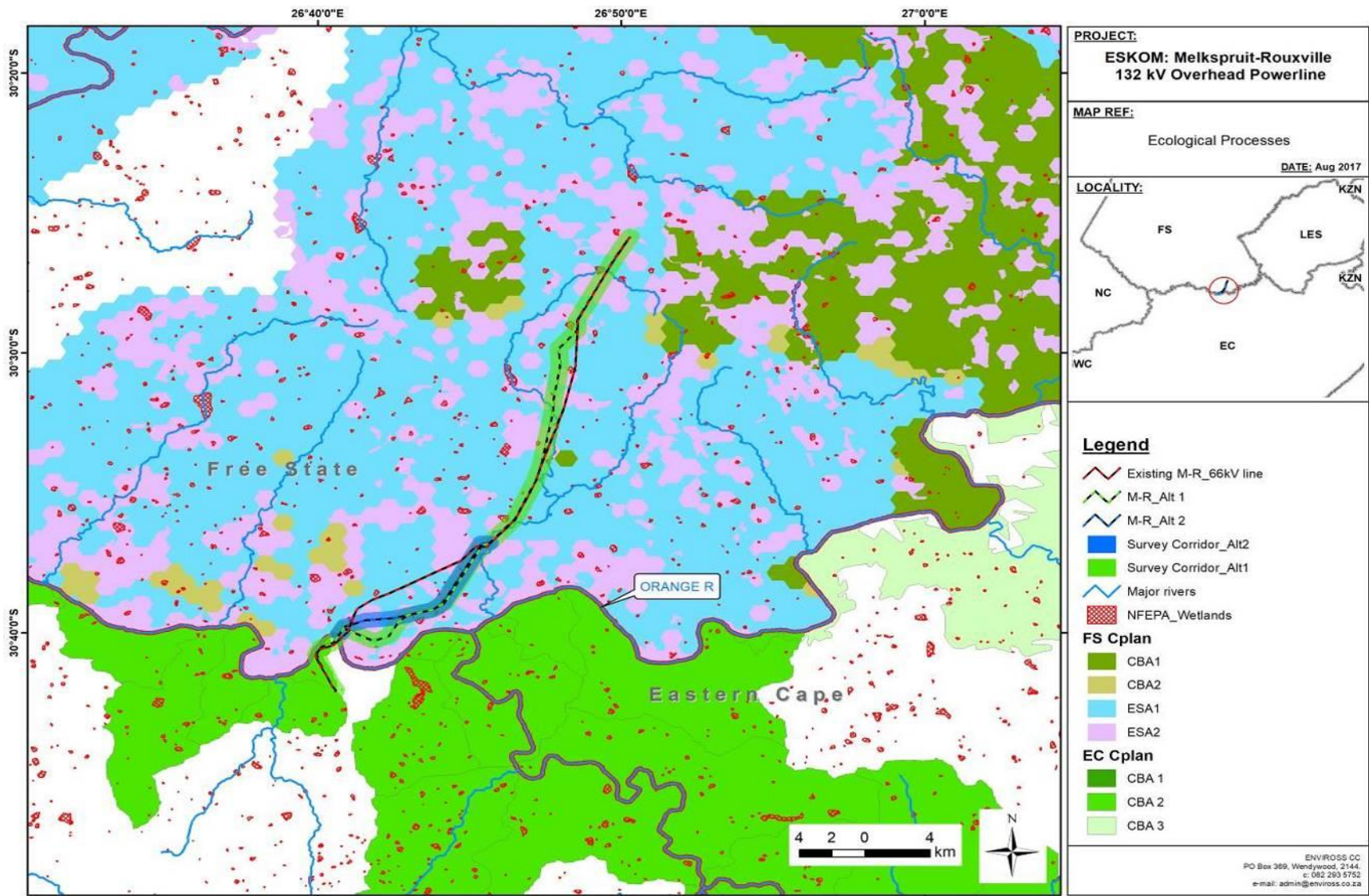


FIGURE 2: ECOLOGICAL PROCESSES OF REGION PERTAINING TO THE PROPOSED DEVELOPMENT.

With regards to the Flood line specialist report, the following has been identified; the 1: 100 flood peak for the crossing of the power-lines is 10,446 m<sup>3</sup>/s as indicated on the plans herewith. This will suffice for all the alternatives of the powerline crossings and one can work on the height of the 1309.50 contour line as indicated on the attached plans. The attached plans below depict the 1:100 flood peak for the crossing of the power-lines over the Orange River.



**FIGURE 3: 1:100 FLOOD LINE PEAK AROUND THE ORANGE RIVER NEAR ALIWAL NORTH.**



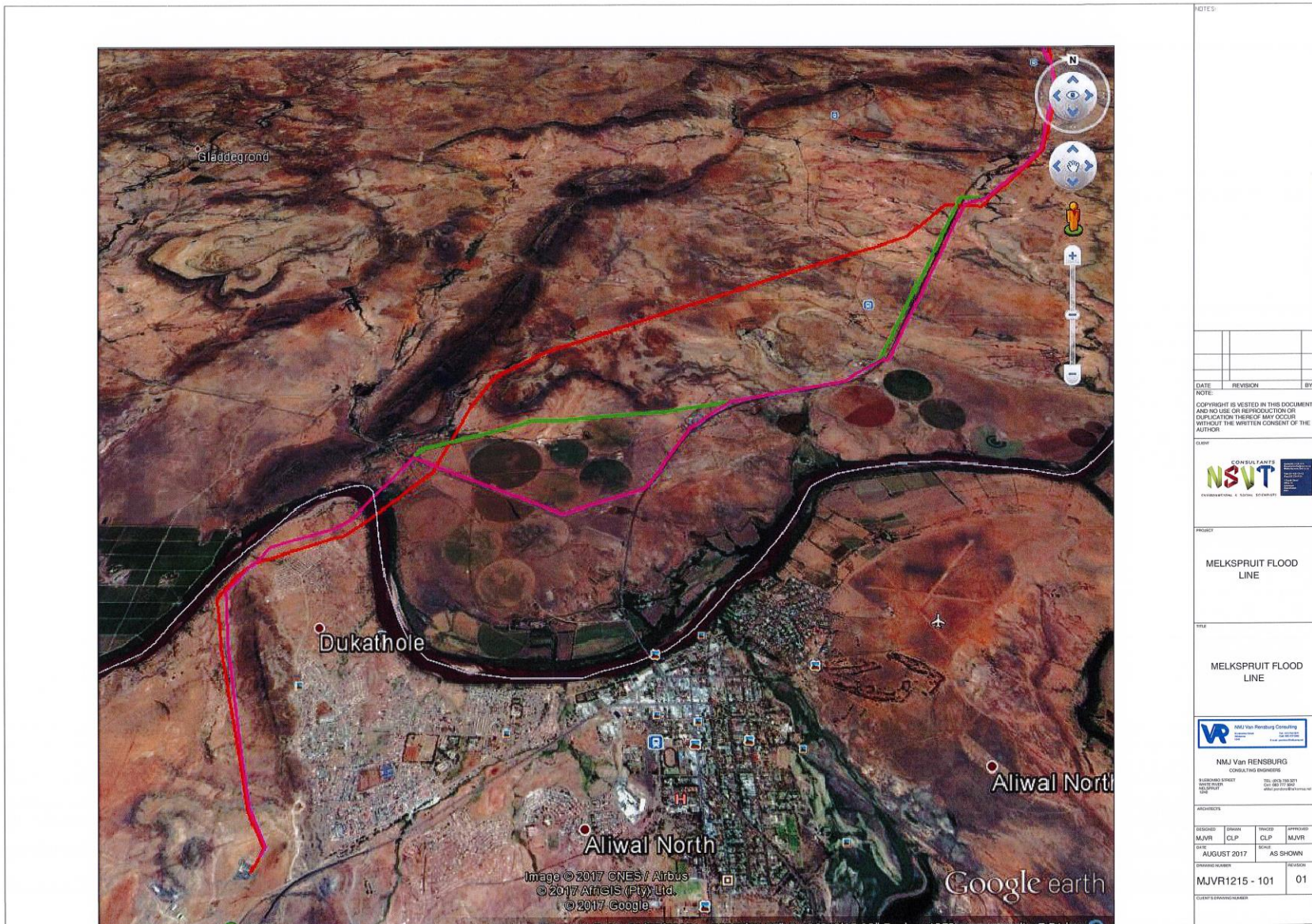
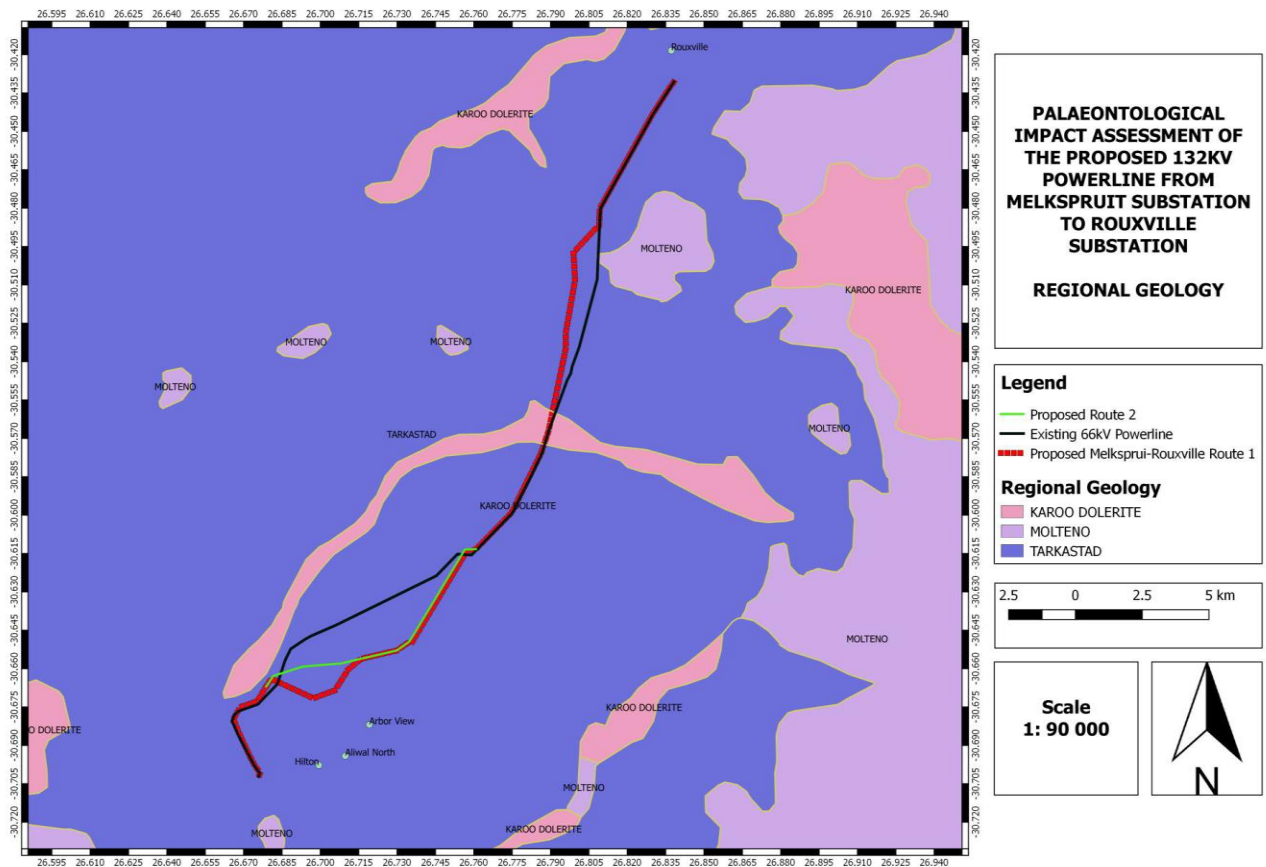


FIGURE 3.1: 1:100 FLOOD LINE PEAK AROUND THE ORANGE RIVER NEAR ALIWAL NORTH.

The Paleontology specialist recommendations are such that; the proposed development site had a few isolated loose, poorly preserved fossil fragments, which informed the reasoning for a medium palaeontological sensitivity that is allocated to the development footprint. Regardless of the sparse and sporadic occurrence of fossils in this biozone a single fossil can have a huge scientific importance as many fossil taxa are known from a single fossil. After the consideration of the power line alternatives it is considered that all the proposed power line routes are acceptable and appropriate from a palaeontological perspective and can all be considered as feasible options.

It is thus recommended that no further palaeontological heritage studies, ground truthing and/or specialist mitigation are required for the commencement of this development, pending the discovery or exposure of any fossil remains during the construction phase.



**FIGURE 4: MAP OF THE REGIONAL GEOLOGY BETWEEN THE MELKSPRUIT SUBSTATION AND THE ROUXVILLE SUBSTATION.**

The heritage specialist discovered the following with regards to the 132kV power-line in the vicinity of the proposed servitude investigated:

**Route 1:**

The foot survey indicated that the proposed development will largely impact areas that have been degraded by previous or current farming activities. It revealed no aboveground evidence of intact Stone Age localities or artifacts, prehistoric structures or remains, or rock art within or in the immediate vicinity of the linear footprint. There is also no evidence of graves, graveyards or historically significant structures older than 60 years within or in the immediate vicinity of the linear footprint

**Route 2:**

The foot survey indicated that the proposed development will largely impact areas that have been degraded by previous or current farming activities. It revealed no aboveground evidence of intact Stone Age localities or artifacts, prehistoric structures or remains, or rock art within or in the immediate vicinity of the linear footprint. There is also no evidence of graves, graveyards or historically significant structures older than 60 years within or in the immediate vicinity of the linear footprint.

Therefore as far as the archaeological heritage is concerned, the proposed development may proceed, provided that all construction activities are restricted to within the boundaries of the development footprint.

## 4 CHECKLIST FOR THE PROPOSED PROJECT

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

The development of the proposed power-line is due to the lack of accessibility of the existing 66kV power-line by the Eskom maintenance team and due to its aging infrastructure, the new power-line will be constructed by using steel monopoles in order for them to withstand the weather conditions of the area, in contrast, the existing wooden poles have rot from within and may damage the lines ability to transfer power between the Rouxville and the Melkspruit substations. The new steel monopoles to be erected will be embedded to a depth of three metres for each pole along the proposed route for the 132kV power-line construction in order to withstand the strong gusts of wind in the vast agricultural landscape. The proposed alternatives shall be closer to the N6 in order to provide easy access to Eskom FSOU maintenance teams to assess the new power-line and resolve any technical fault that may occur once the construction is completed. The development of the power-line will be primarily on private land that is predominantly of agricultural use to the landowners; however, the proposed line shall deviate from agricultural fields in order to prevent hindering the agricultural economy of the region during construction and post-construction of the proposed power-line.

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

The surrounding area is encompassed of multiple man-made wetlands as well as river streams and dongas, the agricultural land portions along the proposed power-line routes are private property mainly used for agriculture to develop feeds for livestock, vast agricultural fields have been developed by farmers because of the arable land in the vicinity of the power-line and their close proximity to the Orange River to access water and nourish the lands' agricultural potential.

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

No, it is located in some areas of existing power-line development.

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

- i. River, stream, dam, wetland – Yes, there are man-made water bodies, seasonal streams and the Orange River
- ii. Open space area – No
- iii. Residential (formal or informal settlement) – Homesteads along the routes exist, primarily situated in the region for farming purposes
- iv. Area of cultural importance, e.g. graveyards, old houses, museum, etc. – The routes proposed do not have any historical importance to them although some we observed in the vicinity of route alternative 1.

### 5. Are there any protected areas close to the proposed site?

Yes, along the N6, the Orangia farm is mainly used as a Game Reserve.

**6. Will the project be considered a noisy intrusion to the neighbours?**

No, the increased noise levels will be during construction and thereafter, it will be general noise levels from the N6 as drivers pass by.

**7. Would it be necessary to construct roads to access the proposed site?**

No, there are existing access roads to the private properties along the routes to construct the proposed power-line.

## 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 draft EMPR will be considered a Final EMPR if approved by the Department of Environmental Affairs (DEA). It should be read in conjunction with the contract documentation to ensure that Eskom FSOU works in an environmentally sensitive manner, thus ensuring the impacts on the environment and neighbouring agricultural properties are kept to a minimum. Should there be any conflict between the EMPR and project specifications, then terms herein shall be secondary.

### 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 Eskom FSOU management of the identified environmental issues.
- ❑ To provide guidelines to the responsible persons from Eskom FSOU 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:** Eskom Free-State Operation Unit

Responsibility: To implement the final EMPR after approval by DEA before the commencement of the construction phase and ensure the proposed development complies with the NEMA requirements and the Environmental Authorisation.

**The Eskom Technical Team:** Engineers

Responsibility: To undertake the detailed design for the proposed development and to ensure that necessary permits have been obtained prior to construction.

### **The Environmental Control Officer:**

#### Responsibility:

- ❑ To ensure that the Eskom FSOU 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 Eskom team, Land owners as well as the Local Municipalities in Rouxville and Aliwal North respectively.
- ❑ To audit the implementation of the EMPr and compliance to the environmental authorisation once a month until project completion.

### **The Contractor:**

#### Responsibility:

- ❑ To implement the EMPr and keep a copy on-site for the duration of the construction phase because obligations imposed by the document are legally binding to environmental legislation.
- ❑ To comply with the Environmental Authorisation and undertake its construction activities in an environmentally sensitive manner and rehabilitation of the proposed route.
- ❑ 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:**

#### Responsibility:

- ❑ To implement the environmental management plan.
- ❑ 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 (Environmental Forum):** A committee that comprises of representatives of the Eskom FSOU, Engineers, Councillors, Ward Committees, Local Community, and Landowners.

#### Responsibility:

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

## 5.4 METHOD STATEMENT

A method statement outlines construction activities to be undertaken with mitigation measures. Eskom FSOU should give a written statement to the resident engineers at least two weeks before the activity so that any irregularities can be handled before construction commences and also communicated to the Employees. The format of the method statement should 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 clearing
- Site layout and establishment
- Storage of hazardous substances and accidental spillages of hazardous substances
- Cement mixing
- Waste management procedures
- Wastewater management procedures
- Traffic accommodation
- Erosion remediation
- Fire control and emergency procedures

## 5.5 ENVIRONMENTAL AWARENESS TRAINING

The Eskom FSOU Employees and locally sourced labourers' involved with the work on 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 should be done by the designated Environmental Officer prior to construction in the form of an on-site talk (toolbox talks).

The basic rules of conduct, which should be considered for the duration of the project, are tabulated below.



**Table 1: Basic Conduct Rules during Construction**

Do	Do Not
Use of toilet facilities provided.	Make open fires for cooking, dedicated areas should be provided.
Clear your work areas of litter and building rubbish at the end of each day	Allow any cement bags or litter to be blown around
Report all leakages and/or spillages	Access the neighbouring properties without the owners' consent
Confine work and storage of equipment and comply with all safety procedures	Collect fire wood in neighbouring farms
Provide fire extinguisher in good working condition and easily accessible	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
Use all safety equipment and comply with all safety procedures	Dump any waste substance into the donga
Prevent excessive dust and noise	Dump any hazardous material into the Orange River

## 5.6 RECORD KEEPING

There should 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 should be taken pre-, during and post-construction as a visual reference. These records should be kept for a minimum of 2 years after completion of the project.

## 5.7 PENALTIES

In cases of transgressions and non-compliance to the EMPr by Eskom FSOU or contractor, they should be liable to a penalty fine. The penalty can be paid into an NGO dealing with protection of birds, since the development has an effect on birdlife during operation. 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 to the contractor in terms of the severity of the environment; however, *Table 2* below may be used as a guideline.

**Table 2: Penalties for Transgressions**

<b>TRANSGRESSION</b>	<b>PENALTY</b>
Littering and bush-toileting	R1000
Concrete mixing on the ground	R2000
Spillages	R1000-R10 000 depending on the magnitude)
Soil erosion	R2000
Veld fires	R5000

The Draft Environmental Management Programme is outlined in *Table 3* below. Adherence to this plan during construction will ensure that the environmental impacts associated with the proposed development will be mitigated to a greater extent thus promoting sustainable development. The commitment and co-operation of the identified responsible person (s) will ensure effective implementation of the EMPr pre-construction and post-construction; therefore it is imperative that there is file dedicated for Environmental Documentation.

**Table 3: Draft 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>◇ EMPR should be considered a legally binding document for Eskom and contractor.</li> <li>◇ The environmental responsibilities should be formalized and environmental awareness should be introduced to the labourers in their language as toolbox talks.</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Ensure that EMPR is adhered to	<u>Frequency</u> Once off
Location of Camp and Depot	Environmental damage	<ul style="list-style-type: none"> <li>◇ The camp depot should be located in an area where the Rouxville and Aliwal North residents are situated and N6 road users are not disturbed or inconvenienced.</li> <li>◇ The contractor should provide the Eskom technical team with the layout plan of the camp depot for approval before commencement of the construction phase. The plan should include site offices, temporary fencing boundary, sanitation facilities, waste and petroleum products storage facilities, stockpiling areas, etc. The parking of vehicles, storage of equipment and materials must strictly be confined to designated areas.</li> <li>◇ If located on the “virgin” ground, area to be rehabilitated once the project is completed.</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Prevent environmental damage and disturbance of neighbouring land users	<u>Frequency</u> Once off

<b>MANAGEMENT ACTION</b>		A camp depot must be approved by the ECO			
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. It should be obtained from Mohokare and Walter Sisulu Local Municipalities.</li> <li>◇ No boreholes can be established without DWS approval.</li> </ul>	<b>RESIDENT ENGINEERS, CONTRACTOR, MUNICIPALITY &amp; ECO</b>	Prevent borehole establishment without DWS approval and unauthorized water abstraction from the Orange River and water bodies along the servitude.	<u>Frequency</u> Monthly
<b>MANAGEMENT ACTION</b>		A written agreement between the Municipality and Eskom FSOU			
Access Control	Hazards to animals, and stealing of construction materials	<ul style="list-style-type: none"> <li>◇ Fence or suitably secure main site office and material storage area should be established.</li> <li>◇ Unauthorized entry should be prohibited.</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Keep the site secure from trespassing or theft and keep the surrounding livestock out.	<u>Frequency</u> Once off
<b>MANAGEMENT ACTION</b>		Site access register and complaints book should be in place.			
Access route	Erosion and dilapidation of the access route	<ul style="list-style-type: none"> <li>◇ Upgrade the current access routes used during construction to an acceptable condition.</li> <li>◇ Proper maintenance should be done to ensure the quality of the access road.</li> </ul>	<b>CONTRACTOR, ENVIRONMENTAL COMPLIANCE OFFICER &amp; ENGINEERS</b>	Prevention of dilapidation of existing access routes	<u>Frequency</u> Weekly
<b>MANAGEMENT ACTION</b>		Audit checklist, photographs			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Power Supply	Safety Impacts	<ul style="list-style-type: none"> <li>◇ Limit the power supply cables &amp; ensure the safety of the workers and neighbouring residents.</li> <li>◇ All health and safety laws and regulations should be adhered to.</li> <li>◇ A safety officer should be appointed to undertake safety audits.</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Implement safety measures	<u>Frequency</u> Monthly
<b>MANAGEMENT ACTION</b>		Safety Audits Report and Record keeping of all permits obtained for Eskom FSOU			
Solid Waste	Littering/ Pollution of environment with waste materials	<ul style="list-style-type: none"> <li>◇ Refuse receptacles with lids should be placed at the camp depot and on the construction sites.</li> <li>◇ They should be easily accessible.</li> <li>◇ System for regular waste removal must be set up.</li> <li>◇ Refuse bins should be clearly marked to avoid mixing of hazardous and general waste.</li> <li>◇ Letter or agreement between the contractor and the service provider dealing with hazardous waste should be on site.</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Prevent environmental pollution with waste materials and visual impact.	<u>Frequency</u> Duration of the Project
<b>MANAGEMENT ACTION</b>		Method Statement for storing, handling, and disposal of waste and Record keeping of all records			
Sewage	Pollution of environment with waste materials	<ul style="list-style-type: none"> <li>◇ Adequate sanitation facilities e.g. chemical toilets must be provided at the camp depot and construction site.</li> <li>◇ Bush toileting is prohibited</li> <li>◇ Letter of consent from a registered waste facility to allow the contractor to empty the toilet facility at their</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	Prevent environmental pollution	<u>Frequency</u> Duration of the project

		sewer system should be in the environmental document.			
<b>MANAGEMENT ACTION</b>		Record keeping copies of all permits			
Social & Socio-Economic Aspects	Dissatisfaction	<ul style="list-style-type: none"> <li>◇ A project steering committee (PSC), which comprises of the municipality, Engineers, contractor, Farmers/Beneficiaries and community representatives must be convened and details of the project discussed.</li> <li>◇ The PSC must meet regularly to address any concerns/ issues from the neighbouring land users and employing local labourers.</li> </ul>	<b>RESIDENT ENGINEERS, CONTRACTOR &amp; BENEFICIARIES (LANDOWNERS)</b>	Ensure satisfaction of workers and neighbouring land users	<u>Frequency</u> Monthly
<b>MANAGEMENT ACTION</b>		Contravening of PSC meetings and Records of the Minutes			
Health & Safety	Danger to the neighbouring Dukathole community, especially children	<ul style="list-style-type: none"> <li>◇ The site should be clearly demarcated for safety reasons and non-employees, neighbouring community and passerby shouldn't be allowed on the construction site as a precautionary measure.</li> <li>◇ The Contactor should 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>◇ Safety signs complying with SABS and SANS standards should be placed on-site in a manner clearly visible to the public.</li> <li>◇ Construction methods should adhere</li> </ul>	<b>RESIDENT ENGINEERS &amp; CONTRACTOR</b>	To avoid endangering of the neighbouring Dukathole community members as well as the labourers	<u>Frequency</u> Once off

		to the Occupational Health and Safety Act (Act 85 of 1993). ◇ A safety officer should arrange a safety awareness meeting with the Dukathole and Rouxville community.			
<b>MANAGEMENT ACTION</b>		Risk register should be in place			
<b>2. CONSTRUCTION PHASE</b>					
Flora	Loss of vegetation	◇ An Ecologist should be appointed to undertake a search and rescue prior to vegetation clearance. ◇ ECO should flag sensitive areas prior to vegetation clearance. ◇ Topsoil must be reserved and used as a top layer on disturbed areas to enable plant succession. ◇ Mechanical tools should be used for vegetation clearance. ◇ Vegetation clearance should be confined to the development footprint and set out to avoid substantial vegetation disturbance. ◇ Rehabilitate denuded areas with appropriate species as per specifications. ◇ All excavations to be filled and rehabilitated before construction moves off sites. ◇ All declared aliens must be effectively cleared.	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent impacts on flora and destruction of red Data Species	<u>Frequency</u> weekly
<b>MANAGEMENT ACTION</b>		ECO audit checklist, Photographs taken before the clearance of the site for erecting steel Monopoles			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION FREQUENCY
Fauna	Disturbance to fauna in the area	<ul style="list-style-type: none"> <li>◇ Ecological corridors should not be destroyed.</li> <li>◇ No hunting, snaring, shooting, nest raiding or egg collection by the construction staff should be allowed.</li> <li>◇ Toolbox talks should include handling of animals.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER.</b>	Prevent killings of animals and destruction of areas not included in the development footprint.	<u>Frequency</u> Duration of the contract
Topsoil	Loss of Topsoil	<ul style="list-style-type: none"> <li>◇ Exposure of bare ground will be minimized. Topsoil stripping should be limited and it should be stored separately from the subsoil.</li> <li>◇ In situ material should 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 on the backfilled monopole holes for rehabilitation purposes.</li> <li>◇ Soil conservation measures such as berms, gabions and mats should be used on-site to help reduce erosion.</li> <li>◇ Topsoil stockpile should be weed free</li> <li>◇ Litter should be removed from the stockpiled topsoil.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Conserve and protect topsoil from erosion and deterioration	<u>Frequency</u> Weekly
<b>MANAGEMENT ACTION</b>		ECO audit checklist, photographs			



ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Topography	Disturbing the natural topography	<ul style="list-style-type: none"> <li>◇ The natural ground levels within the servitude are to be retained.</li> <li>◇ The soil dumps and other working areas should be rounded-off to ensure the disturbed area(s) blend in with the natural environment and the possibility of erosion is minimized.</li> <li>◇ All the excavations for the steel monopoles should be backfilled to avoid being used as illegal dumping sites.</li> <li>◇ Rehabilitation by covering the disturbed areas should hasten the succession process and minimize potential erosion.</li> </ul>	<b>ENGINEER, CONTRACTOR AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Minimize the disturbance of topography	<u>Frequency</u> Duration of the project
<b>MANAGEMENT ACTION</b>		ECO audit checklist			
Land Use	Impact on current land use	◇ The current land use will not be changed drastically due to the proposed servitude of the linear activity. However, the development will be compatible with the surrounding land use on completion of the construction phase and grazing for livestock as well as crop fields will be available within the surrounding area.	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Avoid impacts on current agricultural land use	<u>Frequency</u> Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
<b>MANAGEMENT OUTCOME</b>		ECO Audit Report, Safety Audit report and Complaints Register			
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 pipe to keep the dust down and vehicles should drive at 40km/h speed.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	To avoid dust from excavated materials and unnecessary visual impact caused by site operations	<u>Frequency</u> Twice a week
Noise	Nuisance	<ul style="list-style-type: none"> <li>◇ Construction should be limited to normal working days and office hours from 08h00 to 16h30.</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 equipment where possible.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	To avoid excessive noise generation from site operations	<u>Frequency</u> Duration of Construction
Solid Waste	Littering/ Pollution	<ul style="list-style-type: none"> <li>◇ All waste should be appropriately separated, contained and disposed of and be removed from the site to registered wastes sites in Rouxville or Aliwal North during the construction period.</li> <li>◇ Reduction, reuse and recycling of waste should be introduced.</li> <li>◇ Illegal dumping should be forbidden.</li> <li>◇ Toolbox talks should include a</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Provide facilities for appropriate collection and disposal of sewage	<u>Frequency</u> Weekly

		<p>component of waste management.</p> <ul style="list-style-type: none"> <li>◇ No dumping of builders rubble or other materials within the newly proposed servitude area</li> <li>◇ Good housekeeping practices.</li> </ul>			
Sewerage	Pollution of the receiving environment.	<ul style="list-style-type: none"> <li>◇ Adequate sanitation facilities i.e. 15 employees per facility should be provided.</li> <li>◇ The toilets should be located at least 100m from the construction site.</li> <li>◇ They should be kept clean and hygienic regularly to ensure that they are usable.</li> <li>◇ Effluent must not be discharged into the natural environment and bush-toileting is prohibited.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Provide facilities for sanitation	<u>Frequency</u> Weekly
Cement mixing	Pollution of soils, surface and groundwater	<ul style="list-style-type: none"> <li>◇ Mixing of cement should be done at specifically selected areas for the steel monopoles on mortar boards or similar structures to contain surface run-off.</li> <li>◇ Cleaning of cement mixing equipment should be done on proper cleaning trays.</li> <li>◇ No cement or cement containers should be left lying around.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Avoid polluting the topsoil soil and water bodies around the designated servitude.	<u>Frequency</u> Monthly
Water Supply	Source of potable water during the construction phase.	<ul style="list-style-type: none"> <li>◇ Potable water must be available at the camp site and construction site in clearly marked containers.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Water supply must be available from the local Municipalities	<u>Frequency</u> Weekly

<b>ASPECT</b>	<b>POSSIBLE IMPACT</b>	<b>MITIGATION PLAN</b>	<b>RESPONSIBLE PERSON (S)</b>	<b>OBJECTIVES</b>	<b>FREQUENCY</b>
Power Supply	Safety Impacts	<ul style="list-style-type: none"> <li>◇ Limit the power supply cables &amp; ensure the safety of the workers and neighbouring residents.</li> <li>◇ All health and safety laws and regulations should be adhered to.</li> <li>◇ No stockpiling of construction material within the Eskom servitude.</li> <li>◇ Ground clearance has to be maintained as it is within the servitude.</li> <li>◇ No construction or excavation shall be executed within 10 meters of any steel monopole Eskom powerline structure or within 3 meters of any wooden pole or stay wire.</li> <li>◇ Should there be a need to operate mechanical equipment, including mechanical excavators in the vicinity of Eskom's apparatus or services, permission should be sought from.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Avoid health and safety impacts	<u>Frequency</u> Weekly
Energy Efficiency	Saving of fossil fuels	<ul style="list-style-type: none"> <li>◇ Manual labour should be used as much as possible rather than machinery to conserve fossil fuels.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Saving of fossil fuels by using labour intensively.	<u>Frequency</u> Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Stormwater	Contamination of stormwater	<ul style="list-style-type: none"> <li>◇ Stormwater must be diverted from the construction works.</li> <li>◇ Construct and operate the necessary collection facilities and stormwater management systems such as diversion berms, ditches, drains, oil separation sumps, and gross waterways etc. to prevent contamination of any water.</li> <li>◇ Stormwater leaving the construction site must in no way be contaminated by any substance produced, stored, dumped or silt on site.</li> <li>◇ Washing areas should be designated and contaminated water channelled through an existing system.</li> <li>◇ No contaminated water should be allowed to run freely into the drainage channels.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Avoid contamination of stormwater	<u>Frequency</u> Duration of project
Soil erosion	Erosion	<ul style="list-style-type: none"> <li>◇ Exposure of bare ground should be minimized and topsoil stripping limited to the development footprint excluding open spaces and this should be cordoned off.</li> <li>◇ Ensure correct drainage of areas.</li> <li>◇ No stockpiling should be allowed within the protective buffer zone of drainage lines</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent soil Erosion	<u>Frequency</u> Weekly

		<p>and seasonal streams.</p> <ul style="list-style-type: none"> <li>◇ All the areas disturbed during construction work needs to be landscaped to a standard similar or better than before on completion of the works before replacement of topsoil.</li> <li>◇ Make use of geotextiles within disturbed areas of steeper topography to avoid erosion through surface water runoff.</li> <li>◇ Avoid steep-cut banks of watercourses or drainage lines</li> <li>◇ Correct site reinstatement and landscaping following any disturbances will abate channel and gully formation.</li> </ul>			
Traffic Impact	Safety/ Traffic Impacts	<ul style="list-style-type: none"> <li>◇ The vehicle construction should limit speed to 40km/h and also be considerate of the surrounding land users.</li> <li>◇ Only drivers with valid driver's licenses should be allowed to drive the construction vehicles.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Minimize the disruption to road users	<u>frequency</u> Weekly
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 contractor/Eskom and labourers should be informed and advised on the associated risks, dangers and damage of property caused by accidental</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent veld fires.	<u>Frequency</u> Weekly

		<p>fires and how to prevent them.</p> <ul style="list-style-type: none"> <li>◇ Fire extinguishers should be made available at the construction site, and the labourers should be informed of their location and shown how to use them.</li> <li>◇ Restrict smoking activities to demarcated smoking activities.</li> </ul>			
Vehicle Servicing Areas	Pollution	<ul style="list-style-type: none"> <li>◇ Vehicle servicing should 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 should be appropriately treated or taken away to an appropriate 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 may under no circumstances be disposed off into the sewer lines, stormwater system, stream, or the ground.</li> <li>◇ All construction equipment and vehicles will be cleaned before</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent soil Erosion	<u>Frequency</u> Weekly

		entering the site to reduce chances of spreading weeds and non-native species.			
Areas of Palaeontological, Cultural and/or Historical Importance	Disturbance of important scientific artefacts	<ul style="list-style-type: none"> <li>◇ Should fossil material be discovered later, it must be appropriately protected and the discovery reported to a palaeontologist for the removal thereof as per SAHRA legislation.</li> <li>◇ Should any human skeletal remains be found during excavations, work must stop in the area. The findings should be reported immediately to SAHRA.</li> <li>◇ Heritage protocol for incidental finds outlined in the AIA report should be followed.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent disturbance of scientific artefacts.	<u>Frequency</u> Duration of the Contract



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 site must be clear of litter and all waste and labourers' rubble must be removed and disposed to the Mohokare or Walter Sisulu local Municipality landfill site.</li> <li>◇ All stockpiles must be removed to soil or handled as directed by the engineers.</li> <li>◇ Soil heaps should be flattened to the similar adjacent ground, to prevent soil erosion, thus encouraging natural revegetation.</li> <li>◇ All excavations should be backfilled, levelled and compacted.</li> <li>◇ All surfaces hardened due to construction must be ripped and material imported thereon be removed.</li> <li>◇ The original site topography should be restored where as much as possible.</li> <li>◇ All disturbed areas should be revegetated with indigenous grass to ensure progressive plant succession. Topsoil should be applied at cleared</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent pollution	<u>Frequency</u> Monthly

		<p>areas and where material was stockpiled for this purpose.</p> <ul style="list-style-type: none"><li>◇ A final audit must be completed before the contractor may leave the site to ensure that all requirements were adhered to.</li><li>◇ A meeting must be held between the stakeholders to ensure that the site has been restored to a satisfactory condition.</li><li>◇ The contractor should rehabilitate the site when construction is completed, thus a detailed rehabilitation plan should be provided by the contractor.</li></ul>			
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ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON	OBJECTIVES	FREQUENCY
<b>4. OPERATION PHASE</b>					
Power Supply	Illegal connection to the Eskom powerline	<ul style="list-style-type: none"> <li>◇ Eskom is to include the new development into their grid when the construction is complete, subsequent to such an event the decommissioning phase will commence for the existing power-line.</li> </ul>	<b>MUNICIPALITIES &amp; ESKOM</b>	Power supply security	<u>Frequency</u> weekly
Waste management	Littering	<ul style="list-style-type: none"> <li>◇ All excavations should be backfilled</li> <li>◇ Illegal dumping should be prohibited.</li> <li>◇ Transfer station should be established for storing of general waste.</li> </ul>	<b>MUNICIPALITY</b>	Prevent littering	<u>Frequency</u> Weekly
Water Supply	Water scarcity as a result of the development	<ul style="list-style-type: none"> <li>◇ Potable water will be sourced from the Mohokare and Walter Sisulu Municipalities for the labourers and brought to site via construction trucks.</li> </ul>	<b>MUNICIPALITY</b>	Water supply security for the residents	<u>Frequency</u> During Operation
Stormwater	Management of storm water systems	<ul style="list-style-type: none"> <li>◇ Management of all storm water systems to keep them in working condition,</li> <li>◇ Storm water handling to be done according to prevent soil erosion.</li> </ul>	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent soil erosion	<u>Frequency</u> Complete prior to rainy season

Sewerage	Contamination of groundwater resources	◇ The development will be serviced with ventilated pit latrines.	<b>MUNICIPALITY</b>	Prevent pollution	<u>Frequency</u> During Operation
Fauna	Destruction of the biodiversity	◇ Biodiversity monitoring	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	Prevent the total destruction of biodiversity.	<u>Frequency</u> Annually
Surface Water	Contamination of Orange River due to human activities	◇ Bi-annual water quality monitoring	<b>CONTRACTOR, ENGINEER AND ENVIRONMENTAL COMPLIANCE OFFICER</b>	To prevent deterioration of the water quality	<u>Frequency:</u> Bi-annually

## **6 AUDIT AND MONITORING**

Compliance monitoring provides useful information for determining environmental performance for the duration of the project. Information gained can also be used to determine how effective mitigation plans might be in achieving objectives of the EMPr, the corrective actions undertaken are adequate and whether any modifications are required. The resident engineer (project manager) should monitor overall aspects of the project, e.g. labour issues and complaints raised by the local farming community, so they can be addressed thoroughly involving the Project Steering Committee (PSC). A designated Environmental officer should be on site for the duration of the project to ensure that the conditions of the Environmental Authorization and EMPr are adhered to. The ECO should monitor construction activities at least once a month and the monthly reports should be compiled and presented to the PSC for discussion if needs be. It is highlighted that regular meetings between the resident engineer, site manager and ECO should be held to ensure that anticipated environmental impacts are within predicted levels, e.g. noise generation and the implementation of the EMPr is effective.

**APPENDIX A**  
**CV OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER**

## CURRICULUM VITAE (CV) FOR LORATO TIGEDI



1. **Name of Firm:** NSVT Consultants
2. **Present Position:** Director-NSVT Consultants
3. **Date of Birth:** 1980-09-25
4. **Nationality:** South African
5. **Contact Details:** Tel: +27 (0) 51 430 1041/2  
Fax: +27 (0) 86 239 9133  
Cell: +27 (0) 82 784 8259  
Email: [lorato@nsvt.co.za](mailto:lorato@nsvt.co.za)
6. **Professional Standing: Professional Natural Scientist (400161/09)**
7. **Associate: Gudani Consulting**

### EDUCATIONAL QUALIFICATIONS:

- University of the Free State (Bloemfontein):
  - Bachelor of Science (Zoology and Grassland Science): 2002
  - Bachelor of Science (Hons): Wildlife: 2004
  - Masters in Environmental Management-Current

### PROFESSIONAL ACCREDITATION AND ASSOCIATIONS

- South African Council of Natural Scientific Professions (SACNASP)- 400161/09
- International Association of Public Participation South African Affiliate (IAP2)- 2010/ZA/FS0001
- International Association of Impact Assessment South Africa Affiliate (IAIAsa)- 2191

### CONFERENCES ATTENDED:

- International Association of Impact Assessment South Africa Affiliate
  - 2015
  - 2013
  - 2011
  - 2010
  - 2008
  - 2005

### CONTINUED PROFESSIONAL DEVELOPMENT:

- Resources & Sustainability, Physical & Biological Environment and Informatics-2006
- Project Management for Environmental Management (EMS)-2006
- Social & Economic Sustainability-2006
- Offered by DR. P.J. Aucamp "The use of Matrices in the EIA Process"-2008
- Planning for Effective Public Participation-2010
- Effective Communications-2010
- Techniques for Effective Public Participation-2010
- Introduction to Social Impact Assessment-2011
- IWRM, the NWA and the Water Use Authorisations focusing on Water Use License Applications, Procedures, IWMPs and Monitoring-2013
- One Environmental System-2015
- Introduction and Implementation of OHSAS 17001 and EMS 14001-2016

#### RELEVANT EXPERIENCE:

Lorato Tigedi joined Geo Pollution Technologies (Free State) in 2003-04, and partnered with Cedric Nelson to set up Bokamoso Consultants as an environmental consultant, which later changed to NSVT Consultants. From 2004 after completion of BSc Hons (Wildlife), she is currently busy with her Masters' Degree in Environmental Management and the degree is to be completed in 2018. In 2011, she set up NSVT Consultants CC as a sole member. She has approximately 14 years in environmental consulting and have completed basic assessment, environmental impact assessment and waste management 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.

Her keen interest is public participation and conflict management, hence she has completed short courses in Planning for Effective Public Participation, Social Impact Assessment and Conflict Management. 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.

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#### LANGUAGES:

LANGUAGE:	SPEAKING	READING	WRITING
Setswana	Excellent	Excellent	Excellent
Sesotho	Good	Good	Good
English	Good	Excellent	Excellent
Afrikaans	Fair	Excellent	Fair

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#### KEY PROJECTS:

A list of *some* of the projects that Lorato has undertaken is tabulated below.

NAME	DESCRIPTION	CLIENT	YEAR COMPLETED
Thaba Nchu Solid Waste Site	Application for rezoning and closure of the landfill site including public participation.	Mangaung Local Municipality	2003
Botshabelo Solid Waste Site	Application for rezoning of the landfill site including public participation.		2003
Ladybrand wastewater treatment works	Environmental Authorisation application, including public participation.	Kwezi V3 Consulting Engineers	2004
Ladybrand Reservoir	Environmental authorisation application for a new reservoir and pipeline.	Trubuild Consulting Engineers	2004
Dewetsdorp Wastewater Treatment Works	Environmental Authorisation for upgrading of the wastewater treatment works.	Ninham Shand Consulting Engineers	2006
Lower Majeakgoro Access Road	Application for Exemption from conducting Basic Assessment and Public Participation	Vela vKE	2006
Marquard wastewater treatment works	Application for exemption from conducting EIA process for upgrading of the treatment works.	ISA & Partners Consulting Engineers	2006
Senekal wastewater treatment works	Application for exemption from conducting EIA process for upgrading of the treatment works.	ISA & Partners Consulting Engineers	2006
Mount Arthur Access Road	Environmental authorisation application for construction of an access road.	Thuso Development Consultants	2007



NAME	DESCRIPTION	CLIENT	YEAR COMPLETED
D313 Road	Upgrading of D313 road from Morokweng to Vorstershoop.	Babereki Consulting Engineers	2008
Jan Kempdorp wastewater treatment works	Environmental authorisation application for upgrading of the treatment plant.	Phokwane Local Municipality	2008
Jagersfontein wastewater treatment works	Environmental authorisation for the upgrading of the treatment works.	Phethogo Consulting Engineers	2009
Zamdela Residential Development	Environmental Authorisation application for development of new residential area including associated infrastructure.	YB Mashalaba & Associates Phethogo Consulting Engineers	2009
Wepener Residential Development			2010
Khuis Resettlement Planning	Community facilitation and public participation process for the resettlement planning and environmental authorisation application.	Regional Land Claims Commission Northern Cape	2010
Mantsopa Solid Waste Sites	Environmental authorisation applications for new landfill sites.	Bigen Africa	2011
N8 Interchange, Thaba Nchu	Environmental Authorisation application for a new interchange, overhead and pedestrian bridge.	UWP Consulting Engineers	2011
Marquard wastewater treatment works	Waste management license applications for development of new treatment plant.	ISA & Partners Consulting Engineers	2011
Vredefort wastewater treatment works	Application for rectification for upgrading the treatment works without obtaining an Environmental Authorisation.	SOBEK Engineering	2011
Mauersnek Residential Development	Environmental Authorisation application for development of new residential area including associated infrastructure.	Phethogo Consulting Engineers	2012
Mooiplaats Residential Development	Environmental Authorisation application for development of new residential area including associated infrastructure.	YB Mashalaba & Associates	2012
Makholoeng Photovoltaic Solar Power Plant	Environmental authorisation application for development of a solar power plant.	Ekhaya Solar Earth	2013
Kopanong Waste License Applications	Waste management license application for 5 landfill sites.	Department of Environmental Affairs	2013
Soverby Low water bridge and associated infrastructures, Northern Cape	Water use license application Mining permit applications for 3 borrow pits. Environmental Authorisation application for the low water bridge	BVI Consulting Engineers	2014

NAME	DESCRIPTION	CLIENT	YEAR COMPLETED
Botshabelo Pipeline	EA Application for the proposed pipeline in Section F Botshabelo.	Flagg Consulting Engineers	2014
Rouxville Bulk Water Supply Project	EA Application for the proposed pipeline with stream crossings in Rouxville.	ISA & Partners	2014
Mafube LM Residential Development	Application for Environmental Authorisation for the proposed residential development in Tweeling, Cornelia and Frankfort	Pula Strategic Resource Management	2014
Phumelela LM Residential Developments	Application for Environmental Authorisation for the proposed residential development in Vrede and Warden	Phethogo Consulting Engineers	2014
Matjhabeng LM Residential Development	Application for Environmental Authorisation for the proposed residential development in Homestead, Thabong in Welkom		2014
Upgrading of road D313 from Morokweng to Tseoge, North West	Mining permit applications for 5 borrow pits to be used to source material for the upgrading.	T-square Engineering	2014
Botshabelo Pipeline	Environmental Authorisation for the proposed pipeline from new reservoir to the Botshabelo water purification plant	Phethogo Consulting Engineers	2014
Klippoortjie Mine	Public Participation Process for the proposed coal mine in Klippoortjie.	Gudani Consulting	2013
Weltevreden Residential Development, Qwa Qwa	Environmental authorisation for development of a residential area.	YB Mashalaba & Associates Consultants	2014
Lotusville Residential Development, Harrismith			Current (90% completed)
Thaba Nchu Interchange Closure Application	Closure application for borrow pit used in the construction of bridges in Thaba Nchu.	UWP Consulting Engineers	2014
Phumelela Residential Development (Vrede and Warden)	Environmental authorisation for the proposed residential developments.	Phethogo Consulting Engineers	2014
Bultfontein Residential Development	Environmental Authorisation Application for the proposed residential development in Paul Roux, Free State.	Phethogo Consulting Engineers	2014
Paul Roux Residential Development	Environmental Authorisation Application for the proposed residential development in Paul Roux, Free State.		2015
Viva Filling Station	Environmental Compliance Monitoring for the construction of a filling station in Mahikeng.	Cronje Broers Boerdery Trust	2015
N8 Realignment from N8.R26 Intersection to Maseru Bridges	Public participation process for the proposed N8 realignment.	SMEC Consulting Engineers	2015

NAME	DESCRIPTION	CLIENT	YEAR COMPLETED
Rapid Bucket Eradication	Social Facilitation for the implementation of the rapid bucket eradication programme in the Free State Province	Babereki Consulting Engineers	2016
Ficksburg Pipeline	Environmental Authorisation and Water Use License Application for the proposed Ficksburg Pipeline from Meulspruit Dam to Ficksburg WWTW	Flagg Consulting Engineers	2016
Orange Grove 3500	Environmental Authorisation Application for the proposed residential development on Farm 862in East London, Eastern Cape State.	Rencor	2016
Bloemwater Pipeline	Integrated public participation and social facilitation for new pipeline from Rustfontein dam to Lesaka reservoir.	Babereki HHO JV	2017
Ficksburg Pipeline ECO	Environmental Compliance Monitoring for the Construction of a Raw Water Pipeline from Meulspruit Dam to Ficksburg WTW.	Flagg Consulting Engineers	2017
Colesberg Interchange Borrow Pit Closure application	Closure application for borrow pit used in the construction of interchange in Colesberg.	UWP Consulting Engineers	Current (95% complete)
Koffiefontein Solid Waste Site	Waste Management License Application for the existing Koffiefontein SWS	Bovicon Consulting Engineers	Current (90% completed)
Phase 2 Bucket Eradication Programme in the Free State Province	Social Facilitation for the implementation of bucket eradication in the Free State	Babereki Consulting Engineers	Current

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**REFERENCES**

<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
P. De Bie	Phethogo Consulting	051 448 6006

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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.

Name: Lorato Tigedi *Pr. Sci. Nat.* Signature : \_\_\_\_\_ Date: 2017-10-01

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*Lorato Tigedi Pr. Sci. Nat.CV*