ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

PROPOSED BULK WATER PIPELINE, LADYBRAND

DESTEA REF. NO.: EMB/19/22/01

PREPARED FOR

PREPARED BY

CONSULTANTS

NSVT

ENVIRONMENTAL & SOCIAL SCIENTISTS

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LIST OF ABBREVIATIONS

ECO – Environmental Control Officer

CPSC – Community Project Steering Committee

DEO – Designated Environmental Officer

EA – Environmental Authorisation

EAP – Environmental Assessment Practitioner

ESA – Environmental Support Area

DESTEA – Department of Economic, Small Business Development, Tourism and Environmental Affairs

DWS – Department of Water and Sanitation

EMPr – Environmental Management Programme

MLM – Mantsopa Local Municipality

RE – Resident Engineer

1. INTRODUCTION

Flagg Consulting Engineers on behalf of Mantsopa Local Municipality ("MLM")has appointed *NSVT Consultants* as independent environmental assessment practitioners ("EAP") to undertake a Basic Assessment to obtain an Environmental Authorisation ("EA") from the Department of Economic Development, Small Business, Tourism an Environmental Affairs ("DESTEA")as well as an application to obtain a Water Use License from the Department of Water and Sanitation ("DWS") to ensure environmental compliance in terms of Environmental Management Amendment Act (Act 107 of 1998) and National Water Act (Act 36 of 1998), for the proposed bulk water pipeline across a watercourse from the hospital connection point to Manyatseng connection point. The Environmental Management Programme ("EMPr") is a requisite when undertaking a Basic Assessment process, and was accepted by DESTEA on the 27th of May 2022.

2. DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER

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

EAP	NSVT Consultants		
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QUALIFICATIONS	B. Sc (Natural Science) B. Sc Hons (Wildlife)	**EXPERIENCE**	19 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.
EXPERTISE/ TRAINING	Resources & Sustainability, Physical & Biological Environment and Informatics Project Management for Environmental Management Social & Economic Sustainability Use of Matrices in EIA Public Participation Training Introduction to Social Impact Assessment		

	Integrating HIV/Aids and Gender related issues into EIA Process Integrated Water Resources Management, Water Use Authorisation and Water Use License Application One Environmental Systems Introduction to Environmental Law	**PROFESSIONAL AFFILIATE**	Environmental Assessment Practitioners Association of South Africa-2020/2519 South African Council for Natural Scientific Professionals: Professional Natural Scientist-4000161/09 Member of International Association for Public Participation Southern Africa Affiliate-IAP2SA020 Member of international Association for Impact Assessment South Africa - 2191

3. PROJECT DESCRIPTION

3.1. BACKGROUND INFORMATION

Mantsopa Local Municipality is faced with challenges of providing potable water to the residents of Manyatseng, this is primarily due to the dysfunctional bulk water infrastructure. As a result, the municipality deemed it necessary to improve the bulk water reticulation network to Manyatseng, whereby they intend to construct a new pipeline to connect from the existing connection point near the Ladybrand Hospital to the connection point. The pipeline must cross a watercourse before connecting to the ending point. Therefore, the development of the pipeline will provide Manyatseng residents with potable drinking water and meet the future water demands due to population growth.

3.2 SENSITIVITY OF THE PROPOSED ROUTE

The development footprint on which the activity will be undertaken crosses a watercourse which is regarded as a sensitive feature, thus needs to be protected and lessen the impact on it as a result of the development. The pipeline also crosses an artificial wetland and stormwater control culverts. From the heritage assessment findings, the linear development is designated a site rating of Generally Protected C.

From the findings of the Ecological study, the following were observed:

1. The pipeline traverses a single significant fourth order seasonal watercourse at the final northern portion of the route, which forms an important part of the local and broader Quartenary surface water catchment and drainage towards the east.
2. The watercourse does not necessarily possess a distinct riparian zone due to the lack of continuous waterflow through the local area. Although the main active streamflow channel of the watercourse, however, constitutes aquatic vegetation and an associated aquatic habitat.
3. There is a localised contamination of the watercourse is however evident, in the form of continued raw sewage leaks and discharges from Manyatseng.
4. Towards the southern portion near the starting connection point, the pipeline traverse two artificially constructed stormwater flow channels.
5. The initial southern portion, there is a small artificial wetland as a result of a significant long-term underground water pipeline leakage. This is supported by Google Satellite Imagery. However, the wetland portion provides no important ecological services to the local and broader Quartenary surface water catchment and drainage towards the east.
6. There are no Red Data Listed or any other species of conservational significance along the route.
7. The area does not fall within an Important Bird Area.
8. The Present Ecological Sensitivity is classified as Class C as it is moderately modified. Moderate loss and transformation of natural habitat and biota has occurred.
9. The Ecological Importance and Sensitivity is classified as Class C (Moderate) as it is viewed as being ecologically important and sensitive on a local scale.
10. The single significant watercourse crossing associated with the proposed pipeline route, is therefore viewed as being of low to moderate conservational significance/value for habitat preservation and ecological functionality persistence is support of the surrounding ecosystem.

Sensitivity map of the proposed site is shown in *Figure 1* and Conservation status map is *Figure 2* below:

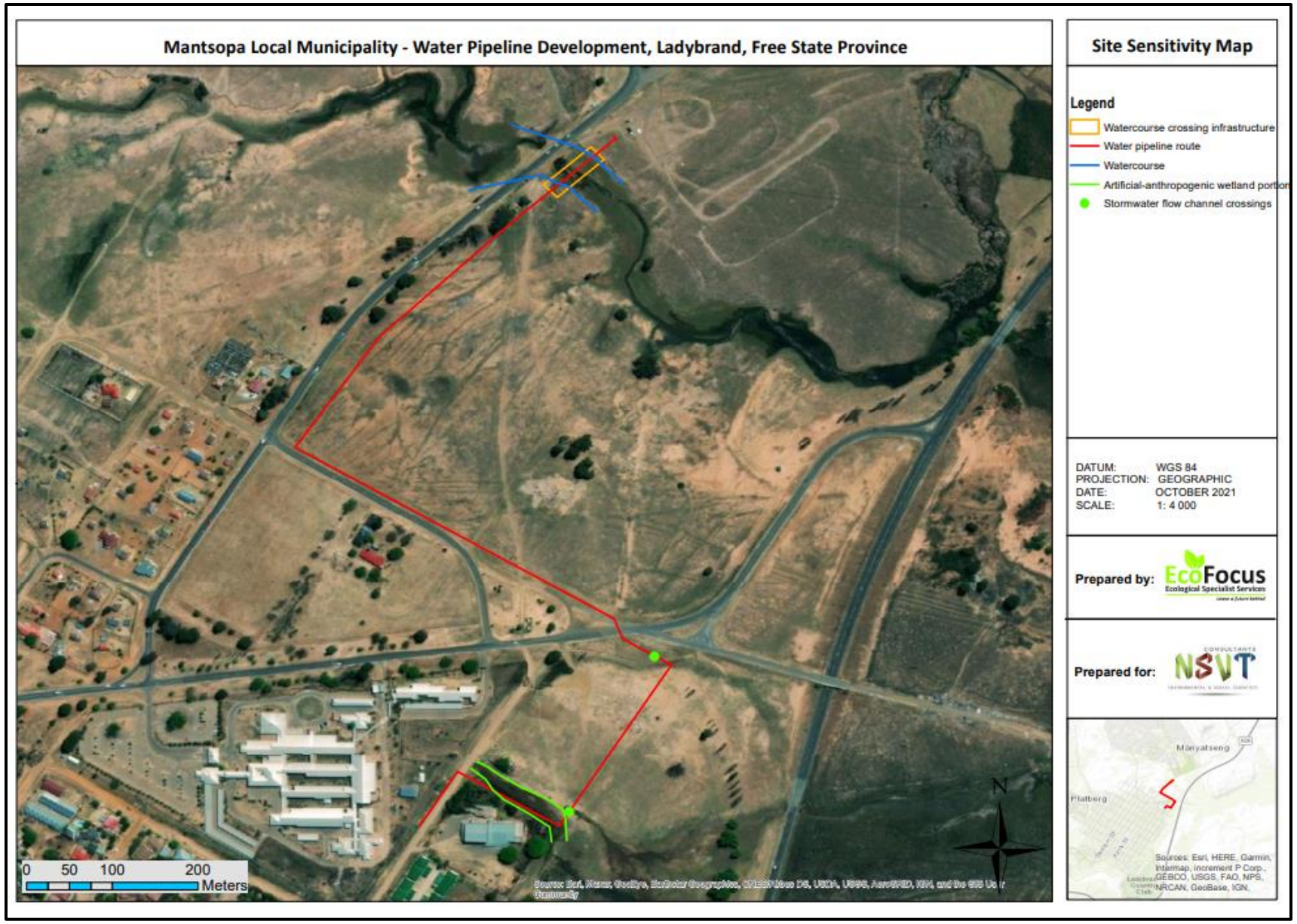


FIGURE 1: SENSITIVITY MAP FOR THE PROPOSED PIPELINE ROUTE

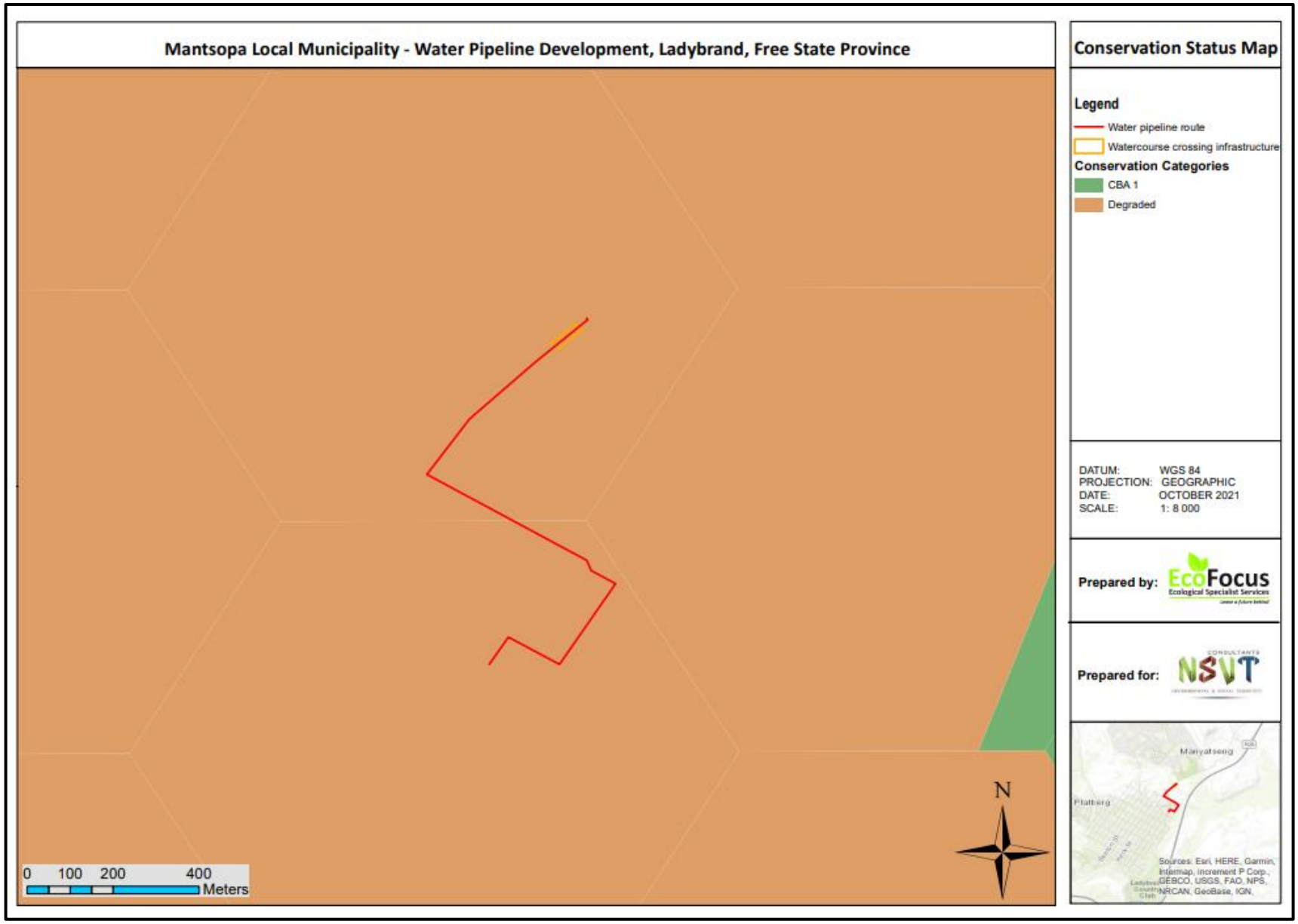


FIGURE 2: MAP DEPICTING CONVERSATION STATUS ASSOCIATED WITH PIPELINE ROUTE

4 CHECKLIST FOR THE PIPELINE PROJECT

1. Give a detailed description of the development:

The development of the pipeline construction consists of the following components:

- The pipeline length is approximately of 1.4km with a diameter of DN2500mm and the length of the bridge is 67m.

2. Give a brief description of the surrounding area:

The pipeline watercourse crossing is located on municipal land within the urban edge south of Manyatseng, adjacent to Church Street. In the vicinity there is an Eskom wooden overhead powerline.

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

No, the proposed crossing is adjacent to the existing pipeline and a road bridge.

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

i. River, stream, dam, wetland – Yes, watercourse

ii. Open space area – No

iii. Residential (formal or informal settlement) – It is located between Ladybrand and Manyatseng, although closer to the latter.

iv. Area of cultural importance, *e.g.*, graveyards, old houses, museum, etc. – No

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

No, there are no protected areas within/near the route for the proposed pipeline or watercourse crossing.

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

No

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

It would be determined by the contractor but there is readily available access

5 ENVIRONMENTAL MANAGEMENT PROGRAMME

5.1. INTRODUCTION

The EMPr has been divided into four different phases associated with the 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 DESTEA and it will be implemented by DLM. It should be read in conjunction with the contract documentation to ensure the contractor works in an environmentally sensitive manner, thus ensuring the impacts on the receiving environment. 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 construction of the new development is limited. To achieve this, the EMPr has the following objectives:

- To identify possible 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 person 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: Mantsopa Local Municipality

Responsibility: To implement the final EMPr after approval by DESTEA before completion of the construction phase and ensure the constructed development complies with the National Environmental Management Act (Act 107 of 1998) as amended requirements and the conditions of the EA.

The Project Consultants: Flagg Consulting Engineers

Responsibility: To undertake the detailed design for the pipeline development and to ensure that necessary permit has been obtained. To ensure the contractor sign the EMPr before commencement of construction. To monitor the contractor during the implementation and construction phase as well as close-out.

The Environmental Control Officer ("ECO"): To be appointed

Responsibility:

- To ensure that the contractor implements the EMPr for the duration of the project from construction to post-construction.
- To review the method statements with the resident engineer.
- To maintain direct open line between the project consultant, contractor, the project steering committee ("PSC") and MLM.
- 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 because obligations imposed by the document are legally binding to environmental legislation.
- To comply with the Environmental Authorisation and undertake his construction activities in an environmentally sensitive manner and rehabilitation of the site.
- To undertake good housekeeping practices during 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 by the Contractor

Responsibility:

- To implement the environmental management programme.
- To maintain records of environmental queries for duration of the construction.
- To resolve environmental issues during the construction phase of the project.

The Community Project Steering Committee (Environmental Forum): A committee that comprises of representatives of MLM, Project Engineers, Ward Councillor, Ward Committee Members, Local Community and Contractor.

Responsibility:

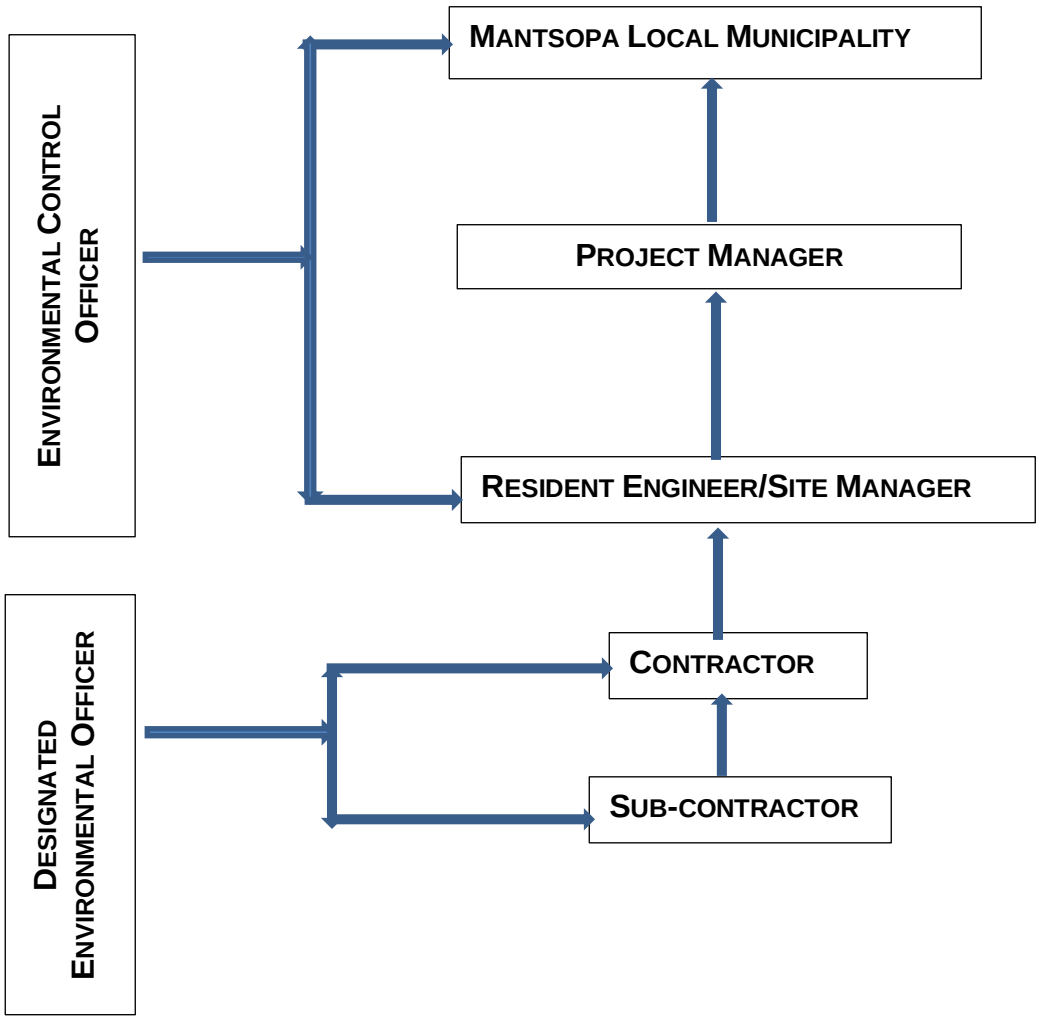
- To monitor the implementation of the EMPr.
- To assist in sourcing general workers from the local community.
- To ensure participation of local contractors during construction.
- To assist in resolving social or environmental issues that may arise during construction.

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 MLM 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 should give a written statement to the resident engineer 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
- Stormwater Management
- Traffic accommodation
- Erosion remediation
- Fire control and emergency procedures

5.5 ENVIRONMENTAL AWARENESS TRAINING

MLM, 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 should be considered for the duration of the project, are shown in *Table 1* below.

TABLE 1: BASIC CONDUCT RULES DURING CONSTRUCTION

Do	Do Not
Use of toilet facilities provided and report when dirty or full	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. Use the waste bins provided and ensure that litter would not be blown away	Allow any cement bags or litter to be blown around
Report all leakages and/or spillages	Dispose of cigarettes and burning matches randomly
Confine work and storage of equipment and comply with all safety procedures	Leave food lying around
Provide fire extinguisher in good working condition and easily accessible	Dump any waste substance into the watercourse
Use areas designated for food preparation	
Only emergency repairs of construction vehicles are allowed on the construction site	
Use all safety equipment and comply with all safety procedures	
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 to the EMPr by the contractor, s/he should 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 on the environment; however, *Table 2* below may be used as a guideline.

TABLE 2: PENALTIES FOR TRANSGRESSIONS

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

5.8. COMPLIANCE WITH ENVIRONMENTAL LEGISLATION

The proposed pipeline must be in compliance with the applicable Environmental Legislation in *Table 3* below and necessary authorisation, permits and licenses obtained before commencement of construction activities as shown.

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 21(c) and (i) of the National Water Act (Act 36 of 1998)	X				X
Permit in terms of National Environmental Management Act: Biodiversity Act (Act 10 of 2004)	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		
Bedding material must be obtained from a borrow pit with a Mining Permit or a commercial quarry.					
Waste Management License in terms of National Environmental Management: Waste Management Act (Act 59 of 2008)			X		

5.9. IMPACT AND MANAGEMENT MEASURES

The EMPr 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 EMPr for the duration of the implementation. The Contractor must familiarize himself with the requirements of the EMPr, keeping in mind that this EMPr specifies the minimum performance specifications and that other site-specific requirements and possible additional requirements from relevant stakeholders (government departments), as outlined in the conditions of the Environmental Authorization, must be complied with.

TABLE 4: DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	FREQUENCY
1. PRE-CONSTRUCTION PHASE					
Project Contract and Programme	Adherence to the EMPR	◊ The EMPr must be included in the tender documentation and a copy of should be available on-site for the duration of the project. ◊ The environmental responsibilities should be formalized, and environmental awareness should be introduced to the labourers in their language as toolbox talks.	**CONTRACTOR & ENGINEERS**	Ensure that EMPr is adhere to	Frequency Once off
Location of Camp and Depot	Environmental damage	◊ The camp depot should be located in an area where the surrounding land users are not disturbed or inconvenienced. ◊ The contractor should provide the project engineer with the layout plan of the camp depot for approval before commencement with the construction phase. The plan should include site offices, temporary fencing boundary, sanitation facilities, waste and	**CONTRACTOR & RESIDENT ENGINEERS**	Prevent environmental damage and disturbance of neighbouring land users	Frequency Once off

		petroleum products storage facilities, stockpiling areas, etc. ◊ The parking of vehicles, storage of equipment and materials must strictly be confined to designated areas. ◊ No storage of construction material must be allowed on watercourses. ◊ The construction area must be adequately cordoned off. ◊ If located on the "virgin" ground, the area has to be rehabilitated once the project is completed.			
MANAGEMENT ACTION		A camp depot must be approved by the Resident Engineer. An agreement should be in place between the contractor and landowner prior to commencement of construction phase. Photographs of the approved area before and after establishment must be kept for recordkeeping.			
Water Supply	Source of water during the construction phase.	◊ Potable water must be available at the camp depot, office site and construction site in a marked container. ◊ No boreholes can be established without DWS approval. ◊ No water must be abstracted from any watercourse without a Water Use License.	**CONTRACTOR, ENGINEERS & MUNICIPALITY**	Prevent borehole establishment without DWS approval.	Frequency Once off
MANAGEMENT ACTION		A written agreement between the contractor and property owners or Water Use License for abstraction must be in place. If water will be obtained from the municipality, then an agreement must be in place.			
Access Control for the camp depot	Hazards to livestock, and stealing of construction materials	◊ Fence or suitably secure main site office and material storage area. ◊ Unauthorized entry must be prohibited	**CONTRACTOR & ENGINEER**	Keep the site secure from trespassing or theft and keep animals out.	Frequency Duration of the project
MANAGEMENT ACTION		A fenced off camp depot with access control, e.g., site access register and complaints book should be in place.			

ASPECT	POSSIBLE IMPACT	◊ MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Access route	Erosion and dilapidation of the access routes	◊ Upgrade the access routes used during construction to an acceptable condition. ◊ Proper maintenance must be done to ensure the quality of the access road is improved. ◊ Implement erosion protection works at identified problem areas.	**CONTRACTOR, ECO & ENGINEERS**	Prevention of dilapidation of access route	Frequency Weekly
MANAGEMENT ACTION		Photographs depicting conditions of the road pre- and post-construction.			
Power Supply	Safety Impacts	◊ A safety officer must be appointed to undertake safety audits. ◊ Illegal electricity connections must be prohibited	**CONTRACTOR & ENGINEERS**	Implement safety measures	Frequency Monthly
MANAGEMENT ACTION		Appointment letter of the Safety Officer must be in place.			
Solid Waste	Littering/ Pollution of environment with waste materials	◊ Refuse receptacles marked for different waste streams must be provided. ◊ System for regular waste removal must be set up. ◊ Letter or agreement between contractor and pollution control officers or companies dealing with hazardous waste should be on site. The service provider must have the necessary accreditation to transport and dispose waste.	**CONTRACTOR& ENGINEERS**	Prevent environmental pollution with waste materials and visual impact.	Frequency Duration of the Project
MANAGEMENT ACTION		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 must be in place.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Sewage	Pollution of environment with waste materials	◊ Adequate sanitation facilities e.g., chemical toilets must be provided at the camp depot and construction site. ◊ Letter of consent from a registered waste facility to allow contractor to empty the toilet facility at their sewer system should be in the environmental document.	**CONTRACTOR & ENGINEERS**	Prevent environmental pollution	Frequency Duration of the project
MANAGEMENT ACTION		Written agreement between contractor and the chemical toilets service provider must be in place. Record keeping for emptying of the chemical toilets.			
Social & Socio-Economic Aspects	Dissatisfaction	◊ Community Liaison Officer must be appointed. ◊ A community project steering committee (CPSC), which comprises of the municipality, Engineers, contractors, farmers and community representatives must be established. ◊ The CPSC must meet regularly to address any concerns/ issues from the neighbouring land users and employing local labourers.	**CONTRACTOR, ENGINEERS, WARD 17 COUNCILLOR & DLM**	Ensure satisfaction of workers and neighboring land users	Frequency Monthly
MANAGEMENT ACTION		Appointment letter for the CLO must be in place. Contravening of PSC meetings preferably quarterly and Records of the Minutes			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Health & Safety	Danger to the neighbouring land users	◊ The contractor 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. ◊ An Emergency Preparedness Plan must be compiled and approved by the Resident Engineer, Safety Officer 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 the construction and camp site. ◊ A medical first aid kit should be available on site for duration of the project. ◊ Safety signs complying with SABS and SANS standards should be placed on-site in a manner clearly visible to the public. ◊ Construction methods should adhere to the Occupational Health and Safety Act (Act 85 of 1993). ◊ A safety officer should arrange a safety awareness meeting with the neighbouring community.	CONTRACTOR & ENGINEERS	To avoid endangering of the community members in proximity to the pipeline construction.	Frequency Duration of the Project
MANAGEMENT ACTION		Risk register should be in place. Safety File and Monthly Safety Audit Reports			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Heritage Artefacts	Destruction of heritage artefacts	◊ A Palaeontologist must be appointed prior to commencement of construction activities for monitoring purposes. ◊ If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. ◊ If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal, and ash concentrations), fossils, or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Sityhilelo Ngcatsha/Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. ◊ If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue	**Mantsopa Local Municipality/ Contractor**	To avoid damage to unearthed heritage artefacts	Frequency Duration of construction at the river crossing

		operation may be required subject to permits issued by SAHRA. ◊ If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqalabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA ◊ if one is guilty of an offense, infringement of the sections contained in the NHRA, then they are liable for a fine or imprisonment or both			
MANAGEMENT ACTION		An appointment letter of an Archaeologist to undertake excavation monitoring at the river crossing.			
Flora	Loss of provincially protected species	◊ A Provincial Flora Permit must be obtained prior to commencement of construction activities.	**Mantsopa Local Municipality /Contractor**	To obtain a flora permit for the potential removal of provincial protected species	<u>Frequency</u> Once-off
MANAGEMENT ACTION		An appointment letter for an Ecologist to undertake the flora permit for removal of *Helichrysum spp* and an appointment letter for the Palaeontologist prior to the construction phase for monitoring of the construction phase.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
2. CONSTRUCTION PHASE					
Characteristics of Watercourse	Destruction of watercourse	◊ Adequate stormwater and erosion management measures must be implemented for the entire during the construction. ◊ Any soil that is removed for trenching within the watercourse must be stored in their respective layers and returned to the excavation in reverse order. ◊ Soils must be stored outside of the watercourse in order not to smother established vegetation growth in the drainage line. ◊ The movement of heavy machinery within the watercourse must be prohibited or done with caution. ◊ Indiscriminate habitat destruction must be avoided and the construction footprint, including service and support areas should be kept to a minimum. ◊ Adequate site reinstatement must be implemented in order to abate the formation of erosion through modification of the surface water hydrology.	**CONTRACTOR, RE, DEO & ECO**	To avoid the complete destruction of the watercourse	Frequency Throughout construction.

Water quality of the watercourses	Contamination of the watercourse due to accidental spillages or leaking of poorly services vehicles	◊ The Project should be sited, designed, and managed so that the quality of surface and groundwater in the vicinity are not degraded by runoff, leaching or seepage from the site or waste utilization areas ◊ No fuel to be stored at or near to the watercourse. ◊ Equipment must be properly maintained and serviced. ◊ Accidental spills must be reported and cleaned immediately. ◊ Emergency Spill Kit must be available on the construction site. ◊ Adequate operational procedures for construction machinery and equipment must be developed in order to strictly govern movement of machinery only within the proposed development construction footprint area and to ensure environmentally responsible construction practices and activities. ◊ Implement an adequate Stormwater and Erosion Management Plan during the construction, to sufficiently manage stormwater runoff and clean/dirty water separation within the local and broader quaternary surface water catchment- and drainage area.	**CONTRACTOR, RE DEO & ECO**	To protect and prevent contamination of the watercourses	<u>Frequency</u> Throughout construction
MANAGEMENT ACTION		ECO Compliance Report Erosion Management Plan in place and implemented			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Flora	Loss of vegetation	◊ Existing road in proximity to the construction footprint area must be used during the construction phase. No new temporary roads or tracks may be constructed within the surrounding undeveloped areas outside the proposed linear development footprint. ◊ 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 where possible. ◊ Vegetation clearance should be confined to the development footprint and set out to avoid substantial vegetation disturbance. ◊ Adequate operational procedures for construction machinery and equipment must be developed to strictly govern movement of machinery only within the proposed development construction footprint area and to ensure environmentally responsible construction practices and activities. ◊ All excavations to be filled and rehabilitated before construction moves off sites.	**CONTRACTOR, RE, DEO, & ECO**	Prevent impacts on flora and destruction of red Data Species	Frequency Once off
MANAGEMENT ACTION		ECO compliance report, Photographs taken before the clearance of the vegetation is undertaken.			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION FREQUENCY
Fauna	Disturbance to fauna in the area	◊ No hunting, snaring, shooting, nest raiding or egg collection by the construction staff must be allowed. ◊ Toolbox talks must include handling of animals.	**CONTRACTOR, RE, DEO & ECO**	To avoid disturbance and prevent killings of fauna in the area	Frequency Duration of the contract
Topsoil	Loss of Topsoil	◊ Exposure of bare ground must be minimized. Topsoil stripping should be limited to the development footprint. ◊ It must be stored separately from subsoil, *i.e.*, no mixing of soils. ◊ In situ material should be removed to an average depth of 1000mm. ◊ Cleared and grubbed topsoil must be stockpiled as a top layer of at least 150mm thickness on the backfilled trenches for rehabilitation purposes. ◊ Soil conservation measures such as berms, gabions and mats should be used on-site to help reduce erosion. ◊ No stockpiling of topsoil in the watercourse. ◊ Double handling of topsoil must be avoided. ◊ Topsoil stockpile must be kept weed and litter free.	**CONTRACTOR, RE, DEO & ECO**	Conserve and protect topsoil from erosion and deterioration	Frequency Weekly
MANAGEMENT ACTION		ECO Compliance Report, photographs			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Topography	Disturbing the natural topography	◊ The natural ground levels within the servitude are to be retained. ◊ Trenches, 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. ◊ All the excavations should be backfilled to avoid. ◊ Rehabilitation by covering the disturbed areas should hasten the succession process and minimize potential erosion.	**CONTRACTOR, ENGINEER AND ECO**	Minimize the disturbance of topography	Frequency Duration of the project
MANAGEMENT ACTION		ECO Compliance Report			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Stormwater	Contamination of stormwater	◊ An approved Stormwater Management Plan must be in adhered to. ◊ Stormwater control works must be constructed, operated, and maintained in a sustainable manner throughout the project. ◊ Stormwater leaving the construction site must in no way be contaminated by any substance produced, stored, dumped, or spilled on site. ◊ No contaminated water should be allowed to run freely into the watercourse. ◊ The construction footprint through the watercourse and drainage lines must be rehabilitated as soon as practically possible after construction to ensure the continuation of flow and ecological integrity.	**CONTRACTOR, ENGINEER, & ECO**	Avoid contamination of storm water	Frequency Weekly
MANAGEMENT ACTION		Stormwater Management Plan must be in place and kept in the Environmental Documentation			

ASPECT	POSSIBLE IMPACT	◊ MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Soil erosion	Erosion	◊ Adequate stormwater and erosion management measures must be implemented for the area with problematic erosion and the proposed sewer tunnel bridge area during the construction and operational phases. This must be done in order to sufficiently manage stormwater runoff in order to prevent any significant erosion from occurring. ◊ Avoid steep-cut banks of watercourses or drainage lines. ◊ Effective sediment control practices must be in place. ◊ Active erosion gully filling must be implemented at the identified problematic area. ◊ A rock construction entrance, *i.e.,* a bed rocks must be in place to remove sediment from vehicle tires when entering the watercourse. ◊ Any access roads or temporary crossings must be non-erosive, structurally stable and shall not induce any flooding or safety hazard and be repaired immediately to prevent further damage	**CONTRACTOR, ENGINEER AND ECO**	Prevent soil Erosion	Frequency Weekly

Air Quality	Nuisance and reduction in visibility	◊ Occasional wetting of the 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.	**CONTRACTOR, RE, DEO & ECO**	To avoid dust from excavated materials and unnecessary visual impact caused by site operations	Frequency When necessary
Noise	Nuisance	◊ Construction should be limited to normal working days and office hours from 08h00 to 17h00. ◊ Ensure that employees and staff conduct themselves in an acceptable manner while on site, both during work and after hours. ◊ Limit working hours of noisy equipment to daylight hours, ◊ Fit silencers to equipment.	**CONTRACTOR, RE, DEO & ECO**	To avoid excessive noise generation from site operations	Frequency Duration of Contract
Solid Waste	Littering/ Pollution	◊ Toolbox talks should include a component of waste management. ◊ All waste should be appropriately separated, contained, and disposed of be removed from the site to the registered landfill site in Ladybrand. ◊ Reduction, reuse, and recycling of waste should be introduced. ◊ Illegal dumping should be forbidden. ◊ No dumping of builders' rubble earth or other materials within the servitude area and watercourses ◊ Good housekeeping practices must be in place.	**CONTRACTOR, RE, DEO & ECO**	Provide facilities for appropriate collection and disposal of different waste streams	Frequency Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Sewerage	Pollution of the receiving environment.	◊ Adequate sanitation facilities *i.e.*, 15 employees per facility should be provided and hand wash facilities. ◊ The toilets should be located at least 50m from the construction site. ◊ They should be kept clean and hygienic regularly to ensure that they are usable. ◊ Effluent must not be discharged into natural environment and bush-toileting is prohibited. ◊ No chemical toilets must be placed within the watercourses.	**CONTRACTOR, RE, DEO AND ECO**	Provide facilities for sanitation	Frequency Weekly
Cement mixing	Pollution of soils, surface, and groundwater	◊ Mixing of cement should be done at specifically selected areas on mortarboards or similar structures to contain surface run-off. ◊ Cleaning of cement mixing equipment should be done on proper cleaning trays. ◊ No cement or cement containers should be left lying around.	**CONTRACTOR, RE, DEO & ECO**	Avoid polluting soil and groundwater	Frequency Weekly
Water Supply	Source of potable water during the construction phase.	◊ Potable water must be available at the campsite and construction site in clearly marked containers.	**CONTRACTOR, RE, DEO & ECO**	To provide clean and safe potable water to the workforce	Frequency Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Alien invasive species	Prevent the spreading of alien invasive species especially to the surrounding cultivated areas	◊ Implement an adequate Alien Invasive Species Establishment Management and Prevention Plan compiled by a suitably qualified and experienced Ecologist. ◊ All the identified alien invasive species individuals must be actively eradicated from the assessment area and adequately disposed of in accordance with the National Environmental Management: Biodiversity Act (Act 10 of 2004); Alien and Invasive Species Regulations, 2014. ◊ A designated person must be appointed to keep the construction site weed-free, preferable using mechanical clearance. ◊ Construction vehicles must be cleaned before entering the construction site.	**CONTRACTOR, RE, DEO & ECO**	To prevent and control the establishment of weed and alien species	Frequency Weekly

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Power Supply	Safety Impacts	◊ Limit the power supply cables & ensure the safety of the workers and neighbouring residents. ◊ All health and safety laws and regulations should be adhered. ◊ No stockpiling of construction material within the powerline servitude.	**CONTRACTOR, RE, DEO & ECO**	Avoid health and safety impacts	Frequency Weekly
Energy Efficiency	Saving of fossil fuels	◊ Manual labour should be used as much as possible rather than machinery to conserve fossil fuels.	**CONTRACTOR, RE, DEO & ECO**	Saving of fossil fuels by means of using labour intensive work.	Frequency Weekly
Traffic Impact	Safety/ Traffic Impacts	◊ The vehicle construction should limit the speed to 40km/h and also be considerate of the surrounding land users. ◊ Only drivers with valid licenses should be allowed to drive construction vehicles. ◊ In the event of abnormal vehicles, a permit must be obtained from the local Department of Traffic.	**CONTRACTOR, RE, ECO AND TRAFFIC OFFICER**	Minimize the disruption of road users	frequency Weekly
MANAGEMENT ACTION		ECO Compliance Reports Photographic History			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
Fire Hazard	Risk of veld fires	◊ No open fires are permitted in the construction site, except under strictly controlled conditions subject to the National Veld and Forest Act, (Act No. 101 of 1998). ◊ The contractors and labourers should be informed and advised on the associated risks, dangers and damage of property caused by accidental fires and how to prevent them. ◊ 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. ◊ Restrict smoking activities to demarcated smoking activities.	**CONTRACTOR, RE, DEO & ECO**	Prevent veld fires.	Frequency Weekly
Vehicle Servicing Areas	Pollution	◊ 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.	**CONTRACTOR, RE, DEO & ECO**	Prevent soil contamination	Frequency Weekly

		◊ Used spares must be collected and disposed of in the correct manner. ◊ Used oils must be drained into a suitable container, transferred to a larger storage container, and then supplied to oil recycling companies. ◊ Oil may under no circumstances be disposed of into the sewer lines, stormwater system, stream, or the ground.			
Areas of Palaeontological, Cultural and/or Historical Importance	Disturbance of important historical, heritage scientific artefacts	◊ Monitoring of excavations by a Palaeontologist. ◊ If any evidence of archaeological sites or remains (e.g., remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit must be alerted as per section 35(3) of the NHRA. ◊ If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit, must be alerted immediately as per section 36(6) of the NHRA.	**CONTRACTOR, ENGINEER AND ECO**	Prevent disturbance of historical, heritage and scientific artefacts.	<u>Frequency</u> Duration of the Contract

		◊ If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. ◊ If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to permits issued by SAHRA			
MANAGEMENT ACTION		ECO Compliance Reports Palaeontological Monitoring Report Photographic History			

ASPECT	POSSIBLE IMPACT	MITIGATION PLAN	RESPONSIBLE PERSON (S)	OBJECTIVES	MONITORING ACTION AND FREQUENCY
3. POST CONSTRUCTION PHASE					
Aesthetic view of the area	Aesthetic pollution	◊ A Rehabilitation Management Plan must be compiled to the ECO for approval prior to commencement of rehabilitation. ◊ Areas surrounding the construction footprint must be adequately rehabilitated as soon as practically possible after construction. ◊ The site must be clear of litter and all waste and builders' rubble must be removed and disposed to the Ladybrand landfill site. ◊ All stockpiles must be removed to spoil or handled as directed by the engineers. ◊ Spoil heaps should be flattened to the similar adjacent ground, to prevent soil erosion, thus encouraging natural revegetation. ◊ All excavations should be backfilled, levelled properly and compacted. ◊ All surfaces hardened due to construction must be ripped and	**CONTRACTOR, ENGINEER AND ECO**	Prevent pollution	Frequency Once off

		material imported thereon be removed. ◊ The original site topography should be restored where as much as possible. ◊ All disturbed areas should be revegetated with indigenous grass to ensure progressive plant succession. Topsoil should be applied at cleared area and where material was stockpiled for this purposed. ◊ A final audit must be completed before the contractor may leave the site to ensure that all requirements were adhered to. ◊ A meeting must be held between the stakeholders to ensure that the site has been restored to a satisfactory condition.			
MANAGEMENT ACTION		Final Audit Report submitted to DESTEA			
4. OPERATION PHASE					
Soil erosion	Increased soil erosion due to the disturbed soils	◊ Monitoring of the watercourses for 12 months after the rehabilitation phase	**MANTSOPA LOCAL MUNICIPALITY**	Prevent land degradation	Frequency 12 months after rehabilitation, once a month
Soil and Water pollution	Contamination of soil and water due to leaks	◊ Regular maintenance of the pipeline should be in place	**MANTSOPA LOCAL MUNICIPALITY**	Prevent pollution	Frequency Regularly
MANAGEMENT ACTION		Final Environmental Compliance and Audit Report Emergency Response Procedure must be in place "As built drawings" and Maintenance and Operation Plan must be in place			

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., labour issues and complaints raised by the local community, so they can be addressed in conjunction with the CPSC. 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 CPSC 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

CV OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

NAME: Lorato Tigedi Reg. EAP (EAPASA) *Pr. Sci. Nat.*

Name of Firm: NSVT Consultants
Present Position: Director/ Environmental Assessment Practitioner
Phone: 061 500 8461
Years with the Firm: 11 Years **Cell: 082 784 8259**
Mailing Address: 1 Fourth Street, Office 1A, Arboretum, 9301 **E-mail: lorato@nsvt.co.za**
Date of Birth.: 1980-09-25

Nationality: South African
Education:

NAME OF INSTITUTION	DEGREE OBTAINED	DATES ATTENDED
University of the Free State	BSc. Natural Science (Zoology)	1999-2002
	BSc. Hons in Wildlife	2003-2004

Professional Membership:

PROFESSIONAL AFFILIATE	MEMBERSHIP NO.
Environmental Assessment Practitioners Association of South Africa-(EAPASA)	2020/2519
South Africa Council for Natural Scientific Professions (SACNASP)	400161/09
International Association for Impact Assessment South Africa Affiliate (IAIAsa)	2191
International Association for Public Participation Southern Africa Affiliate (IAP2SA)	IAP2SA020

Key Experience: Lorato 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. In 2011, she founded NSVT Consultants. She has approximately 19 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 the importance of community/stakeholder participation. Through her involvement in various projects, she has acquired analytical, problem-solving, and excellent research skills.

Employment:

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

Project: Environmental authorisation application for the construction of a potable water pipeline from Lindley Water Treatment Plant to Leratswana reservoir, Arlington, Nketoana Local Municipality
Client: RTT Consulting Engineers

Project: Application for rectification of undertaking construction of a pipeline from Luiperdsvallei to the water treatment plant in Bultfontein, Tswelopele
Client: Selatile Moloi Consulting Engineers

Project: Application for Environmental Authorisation for development of middle-cost housing in Jan kempdorp.
Client: Phokwane Local Municipality

Project: Application for Environmental Authorisation for the upgrading of a cemetery in Jan Kempdorp
Client: Phokwane Local Municipality

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

Project: Environmental Services for the proposed pipeline from Luiperdsvallei to the Bultfontein Water treatment plant.
Client: Selatile Moloi Consulting Engineers

Project: Basic Assessment for the proposed Jan Kempdorp infill residential development.
Client: Phokwane Local Municipality

Project: Environmental Services for the proposed potable water pipeline from Lindley Water Treatment to the reservoir in Leratswana within Nketoana Local Municipality.
Client: RTT Consulting Engineers

Project: Environmental Service for the Routine Maintenance of the National Route 8 Section 8 and National Route 10 Section 8 to 11.
Client: Damians Contractors

Project: Environmental Services for the Routine Maintenance of the National Route Section 5 to Section 8.
Client: Expidor Contractors

Project: Environmental Services for the proposed sewer pipeline from Fateng tse Ntsho to the Paul Roux wastewater treatment plan
Client: Selatile Moloi Consulting Engineers

Project: Environmental Service for the proposed raw water pipeline from Lucretia Dam to the Clocolan water treatment works
Client: Flagg Consulting Engineers

Project: Environmental Service for the proposed expansion of Slovopark Residential Development, Brandfort
Client: Vexocom (Pty) Ltd

Position: Director/Registered Environmental Assessment Practitioner

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 amendment s 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

<u>Previous Employment:</u>

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

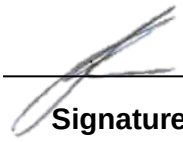
Position: Junior Environmental Consultant
Responsibilities: Site visits, undertake public participation process and compile public participation report and/or comments and responses report, compilation of basic assessment and scoping report, compilation of environmental management plan, liaison with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

Reference:

CONTACT NAME	ORGANISATION	TELEPHONE NUMBERS
Mamofolo Matebele	Babereki Consulting Engineers	051 522 4865
Solomon Munthali	TS Consulting Engineers	071 875 8952
Setenane Nkopane	Gudani Consulting	082 828 3412

Consent:

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



2022-06-02

Signature **Date**