

APPENDIX H

Environmental Awareness Plan

ENVIRONMENTAL AWARENESS PLAN

The Proposed Construction of a Pipeline Senekal Bulk Water Supply Setsoto Local Municipality

Proponent: Setsoto Local Municipality
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1. Background

The proposed project entails the construction of a 500mm diameter pipeline. The pipeline will be constructed within 32m of a watercourse at certain section. In addition, the pipeline will also cross the watercourse. The construction of an 11 000kℓ reservoir will also be undertaken as part of the project. Note that, due to the volume of the proposed reservoir, activities associated with the construction of the reservoir is not listed as per GN 324, 325 or 327. The project will form part of the bulk water supply of Senekal, Setsoto Local Municipality.

Please refer to the map in Appendix A of the Basic Assessment Report for an indication on the locality of the proposed activities.

2. Objectives for Environmental Awareness

It is important that the employees understand how each action of the project may influence the environment. It is just as important that each person understand the management strategies as it ensures that the impact on the environment is kept to a minimum.

The Environmental Awareness Plan should be sufficient to make all those involved in the proposed project aware of the risks that may occur as well as the necessary mitigation required to minimise the risks involved.

2.1. Target Groups

The target groups can be summarised as the management, administrative and general employees, as well as contractors.

2.2. Roles and Responsibility

2.2.1. Top Management

- Provide resources to ensure that the environmental awareness plan is implemented.

2.2.2. Environmental Team

- Approve all environmental awareness activities.

- Accountable for ensuring adequate resources are allocated for the effective implementation of the environmental awareness plan.
- Responsible for providing strategic direction for effective implementation of the environmental awareness plan.
- Responsible for overall establishment and implementation of environmental awareness plan.
- Ensure that environmental activities and information is communicated to the employees and contractors.
- Implement and drive the environmental awareness plan.

2.2.3. Employees and Contractors

- Adhere to and co-operate with management strategies as set out in the environmental awareness plan.

3. Implementation

The induction workshop will be conducted in order to inform all personnel (as well as contractors) that will be working on site of the Environmental Awareness Plan. During the induction, the risks for all aspects will be explained and the appropriate management options will be discussed. Monitoring programmes will also be discussed in order to identify and monitor the proposed project's impact on the environment and to discuss various remediation actions, should any deterioration be observed.

All employees will attend an induction workshop prior to the construction phase in order to ensure that all risks and mitigation measures are discussed prior to the occurrence of potential impacts. The workshop should be repeated to all new employees / contractors on site.

3.1. Induction

The Environmental Awareness Program must be implemented to:

- Develop and implement environmental education activities for all employees
- Organise environmental awareness activities on site
- Participate in environmental education

The constitution of the Republic of South Africa (1996) gives everyone the right to:

- (a) An environment that is not harmful to their health or well-being
- (b) To have the environment protected for the benefits of present and future generations through reasonable legislation in order to:
 - (i) Prevent pollution and ecological degradation
 - (ii) Promote conservation
 - (iii) Promote justifiable economic and social development while protecting our environment.

Therefore, those who may cause pollution or other environmental degradations must take reasonable preventative measures to:

- (a) Investigate, assess and evaluate the impacts
- (b) Inform and educate employees about environmental risks associated with their work and the manner in which their tasks must be performed in order to avoid causing pollution or environmental degradation.

The induction workshop will focus on activities that carry an environmental risk, actions to be taken to reduce these risks and procedures to be followed in the event of an incident.

Environmental goals & objectives and the benefit of achieving such goals will be discussed as part of the induction workshop.

3.2. In-house training

In-house training events will be organised with relevant employees. The points to be discussed at these events will be determined by the relevant department. In addition, employees will participate in determining what environmental issues and / or concerns are relevant to their specific occupation.

The environmental incident report will also be discussed at these sessions.

3.3. Training during construction phase

3.3.1. HoD Meetings

The General Manager communicates information to senior management on environmental issues and the information is minuted.

3.3.2. SHEQ Meetings

Environmental issues are to be discussed at each of the SHEQ meetings. The responsible person for each of the environmental issues should also be appointed.

3.4. On the Job Training

Expected environmental issues and concerns specifically related to their occupation will be discussed with employees throughout the construction phase. Employees will be trained on how to respond to such environmental impacts.

3.5. General training & skills development

Training in basic environmental and pollution control skills will be given to employees working on site.

4. Evaluation of the Environmental Awareness Plan

The ECO will evaluate the Environmental Awareness Plan throughout the construction, operation and closure phase.

Environmental Awareness Plan	
Objective / Environmental parameter: General measures to consider	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Negative impact on environment, such as pollution, degradation, loss of vegetation, etc. • Surface and groundwater pollution. 	<ul style="list-style-type: none"> • Any construction is disruptive and the environment must be given consideration with every activity undertaken • All relevant standards relating to legislation should be adhered to (including waste emissions, waste disposal, noise regulations, etc.) • According to Section 28 of the NEMA Act 107, every person who cause, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring and if it can't be avoided or stopped, to minimize and rectify such pollution or degradation of the environment. • The pollution control provision in Section 19(1) of the National Water Act (Act 36 of 1998) should be adhered to at all times.

Environmental Awareness Plan	
Objective / Environmental parameter: Planning phase	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Loss of protected fauna and / or flora. • Loss of natural occurring vegetation • Contamination of soil / water resources • No drinking water available to employees • Occurrence of veld fires • Loss of artefacts / heritage material • Damage to nearby infrastructure • Startle domestic and wild animals • Damage to nearby infrastructure • Undertaking unauthorised activities 	<ul style="list-style-type: none"> • Permits will be obtained for the removal / transplantation of protected plant species (if any) that are located within the construction area where no alternatives are possible. • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction / operational phase. • The necessary Environmental Authorisation will be obtained before any activities listed in the relevant NEMA Regulations are undertaken. • In addition, the necessary DWS registrations will be obtained, before any construction activities near water courses are undertaken. • The necessary precautions with regard to road safety will be implemented for construction work to be undertaken within road crossings (if any). • Proper sanitation, potable water and waste facilities will be in place before construction activities are undertaken. • A blasting permit will be obtained before blasting activities is undertaken (if any).

Environmental Awareness Plan	
Objective / Environmental parameter: Construction phase - general	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Loss of natural occurring vegetation • Contamination of soil / water resources • No drinking water available to employees • Occurrence of veld fires • Loss of artefacts / heritage material • Damage to nearby infrastructure • Startle domestic and wild animals • Damage to nearby infrastructure 	<ul style="list-style-type: none"> • Care will be taken to prevent unnecessary damage to vegetation near to construction activities. • The necessary Water Use Authorisations will be available on site. • The necessary precautions with regard to road safety will be implemented for construction work within road crossings (if any). • Proper sanitation, water and waste facilities will be in place for construction workers throughout the construction phase. • Chemical toilets will be cleaned and serviced regularly and proof thereof will be available on site. • Potable water will be made available daily to workers on site. • Fire-fighting equipment will be available on site, where applicable. • If artefacts or graves are uncovered during construction activities, work in the immediate vicinity will be stopped until the project Archaeologist and SAHRA has been consulted. • Adjacent landowners will be notified of proposed blasting, 24 hours prior to blasting activities. • No animals will be captured / harmed on site. Should any animals be removed from site, a specialist will be appointed.

Environmental Awareness Plan	
Objective / Environmental parameter: Water resources	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Erosion • Undertaking of unauthorised activities • Contamination of stormwater • Contamination of soil • Contamination of surface and / or groundwater resources • Ponding of stormwater 	<ul style="list-style-type: none"> • No activities will be undertaken within 32 m of a watercourse / within the 1:100 year floodline, without the necessary authorisations (for example from DESTEA and DWS). • Caution will be taken to ensure that construction materials are not dumped or stored within storm water management systems. • Emergency plans will be in place in case of fuel spillages (to limit the occurrence of soil as well as groundwater pollution). • A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil spillages during the construction and operational phase. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Weather forecasts from the South African Weather Bureau of up to three days in advance will be monitored on a daily basis to avoid exposing soil or construction works or materials during a storm event and appropriate action will be taken in advance to protect construction works should a storm event be forecasted. • Construction activities in the storm water infrastructure will be limited through proper demarcation and appropriate environmental awareness training. • The Contractor is responsible to inform all staff of the need to be vigilant against any practice that will have a harmful effect on waterways. • All no-go areas will be demarcated under guidance of the Environmental Control Officer (ECO). • Infilling, excavation, drainage and hardening of surfaces will not occur unnecessarily in storm water infrastructure. • The design of drainage systems will ensure

Environmental Awareness Plan	
Objective / Environmental parameter: Water resources	
Risks	Mitigation measures
	<p>there is no contamination, eutrophication or increased erosion.</p> <ul style="list-style-type: none">• Drainage systems will be maintained regularly in order to minimize the runoff of harmful chemical substances into the waterway(s).• It will be ensured that the construction activities have minimal effects on the flow of water through the storm water infrastructure.

Environmental Awareness Plan	
Objective / Environmental parameter: Handling and Storage of Materials	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of stormwater, surface and or groundwater • Contamination of soil • Occurrence of veld fires 	<ul style="list-style-type: none"> • All chemicals used during the development, including fuel, will be stored in a proper storeroom or protected area to prevent pollution. • Vehicles will be serviced at designated areas. • Where applicable, the contractors will ensure that all relevant national, regional and local legislation regarding storage, transport, use and disposal of petroleum, chemical, harmful or hazardous substances and materials are adhered to, where necessary. • Cement and concrete mixing, if applicable, will only take place within the construction site. No concrete will be mixed directly on the ground. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment. • Spill response equipment must be available during the handling and loading of hazardous waste (if any). • Hazardous substances to be stored in bunded area. Bund walls will have a capacity of at least 110% of the total capacity of the stored volume. • No oil, diesel or other chemicals may be spilled or discharged anywhere and contact with bare soil should be avoided at all cost. • Drip trays will be used during the servicing of vehicles as well as the transfer of chemicals / substances from transportation vehicles. • All environmental problems occurring on the site such as chemical spillage, wasteful water disposal, etc. will be reported to the ECO. The ECO should implement best practices to rectify the impacts thereof on the environment.

Environmental Awareness Plan	
Objective / Environmental parameter: Handling and Storage of Materials	
Risks	Mitigation measures
	<ul style="list-style-type: none">• A monitoring system should be implemented to determine the occurrence (if any) of any fuel / oil during the construction and / or operational phase.• The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected.

Environmental Awareness Plan	
Objective / Environmental parameter: Waste Management (Note that waste refers to all construction debris and domestic waste generated due to construction activities)	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of stormwater, surface and or groundwater • Contamination of soil • Occurrence of veld fires • Air pollution 	<ul style="list-style-type: none"> • The contractor is responsible for the removal of construction waste. • Suitable containers will be placed on site to collect all solid waste. These will be emptied regularly. • No littering is permitted. During the construction period the site will be maintained in a neat and tidy condition. • All solid waste produced will be disposed of at an authorized landfill site. • • No dumping, burning or burying of waste will be undertaken on site. • All hazardous waste will be disposed of at an authorized hazardous landfill site. • Recyclable waste will be sold / re-used, where possible. • A waste management plan will be compiled and designed to ensure adequate waste management activities. • Areas used for waste storage and loading of materials should be lined and bund walls have to be erected to contain any spills that might occur.

Environmental Awareness Plan	
Objective / Environmental parameter: Soil, Erosion & Vegetation Management	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation 	<ul style="list-style-type: none"> • Construction activities will be limited to designated construction areas to prevent peripheral impacts on surrounding natural habitats. Construction vehicles will also keep to constructed roads where possible, so that natural vegetation is not destroyed unnecessarily. • Access roads or temporary crossings must be non-erosive, structurally stable and not induce flooding / safety hazard. • If any access road or temporary crossing is impaired, it will be repaired immediately to prevent any future / further damage. • All human movement and activities will be contained within designated construction areas in order to prevent peripheral impacts on surrounding natural habitat. • Erosion management is important. Rehabilitation of disturbed areas will be undertaken to help the recovery of the vegetation. • Stockpiled material will be stockpiled in an area where it will not be disturbed by vehicles. • Stockpiled material will be protected from washing away during rainstorms. For example, one layer of bricks or stones can be placed around the stockpiled topsoil. • Stockpiled material will be placed on the cleared areas once construction is completed. Re-spreading of topsoil is preferably to be done to a maximum of 10 cm, or as stipulated by the ecological specialist. • An alien control and monitoring programme will be developed starting during the construction phase and will be carried over into the operational phase. • Any proclaimed weed or alien species that germinates during the contract period will be cleared by hand / approved chemicals before flowering thereof.

Environmental Awareness Plan	
Objective / Environmental parameter: Soil, Erosion & Vegetation Management	
Risks	Mitigation measures
	<ul style="list-style-type: none"> • Imported fill material will be monitored during and after construction for the presence of any alien species. Any such species will be removed immediately. • No open fires allowed. Provision will be made that no accidental fires are started. • No firewood will be collected on site or in surrounding areas, without written approval from the landowner. • Fire fighting equipment will be available on site. • Species, especially grasses, trees and shrubs occurring in the region will be used to rehabilitate disturbed areas. • No animals may be harmed / captured / trapped and / or hunted. This must be strictly enforced. • Animals found at the construction site will be removed and relocated to a suitable area by a suitable person. • Compacted soils (such as dirt tracks not to be utilised during the operational phase) must be ripped to ensure the establishment of natural occurring vegetation.

Environmental Awareness Plan	
Objective / Environmental parameter: Noise & Dust Control	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Generation of nuisance noise • Generation of nuisance dust 	<ul style="list-style-type: none"> • Construction activities will be limited to normal daytime hours. • Noise levels will be kept as low as possible during the construction phase in order not to disturb adjacent landowners. • Proper mitigation measures will be implemented to limit noise (e.g. the installation of silencers, where required). • Proper mitigation measures will be implemented to limit the formation of dust (e.g. wetting of construction area, when required). • The speed of the construction vehicles will be limited to avoid dangerous conditions, the formation of dust and the excessive deterioration of roads being used.

Environmental Awareness Plan	
Objective / Environmental parameter: Safety & Security	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Health risks • Safety risks • Unsafe Road • Occurrence of veld fires 	<ul style="list-style-type: none"> • The contractors will comply with the Occupational Health and Safety Act, National Building Regulations and any other national, regional or local regulations with regard to safety on site. • Construction contracts will include safety and security measures for staff. • Precautions to ensure that construction staff and sites are visible and proper PPE will be provided to all employees. • Construction work within road reserves will accommodate road users as far as possible. This includes the following: <ul style="list-style-type: none"> - Roads will be crossed in half widths at a time to minimise the impact on vehicular traffic, where possible. - Construction along and across existing roads will be executed in such a manner that both pedestrian and vehicular traffic is accommodated at all times. - The contractor will be required to maintain adequate access to all public and private property at all times. - Contractor will supply, erect and maintain road signs for all work areas conforming to the prescribed layout and requirement of the South African Road Traffic Signs Manual and other relevant notices. - Fire extinguishers will be available on site and in the construction camp (if any).

Environmental Awareness Plan	
Objective / Environmental parameter: Heritage Management	
Risks	Mitigation measures
<ul style="list-style-type: none">• Loss of heritage / archaeological / palaeontological artifacts	<ul style="list-style-type: none">• In the case of the discovery of any heritage, archaeological or palaeontological significance, the work in the area will be stopped and reported to the archaeologist and SAHRA. Any construction activities in the nearby vicinity may only commence after approval is obtained from SAHRA as well as the ECO.

Environmental Awareness Plan	
Objective / Environmental parameter: Site Clean-up & Rehabilitation	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation 	<ul style="list-style-type: none"> • Temporary structures and office sites (if any) will be dismantled and removed after completion of the construction phase of the project. • All waste, equipment, materials, etc. used during construction will be cleared from the site. • The contractors will ensure that the site is cleared and rehabilitated to the satisfaction of the ECO. • An alien plant control and monitoring programme will be implemented. • Re-vegetation of disturbed areas will be undertaken with site indigenous species. • Hydro-seeding will be implemented if the establishment of natural occurring vegetation does not occur within reasonable time. • After completion of the construction phase, a waterway monitoring program will be initiated that ensure that all are adequately rehabilitated.

Environmental Awareness Plan	
Objective / Environmental parameter: Operational Phase	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation 	<ul style="list-style-type: none"> • Regular inspections of the pipeline will be done to identify leakages. These will be attended to immediately in order to limit the occurrence of water loss. • Soil erosion occurrences will be attended to immediately. • A monitoring system should be implemented to determine the occurrence of any fuel / oil spillages during the construction phase in order to ensure that no soil / groundwater pollution occur. • The necessary mitigation measures should be implemented immediately, should any leakages / spills be detected. • Measures will be implemented to minimise the loss of water at any section of the pipeline. • Regular monitoring will be undertaken to ensure that no soil / groundwater pollution occur due to the activities associated with the operational phase. • An action plan will be available and implemented immediately, in case pollution of soil / surface water / groundwater occurs to ensure that it is rectified as soon as possible.

Environmental Awareness Plan	
Objective / Environmental parameter: Decommissioning / Closure	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Contamination of surface and groundwater resources • Contamination of soil • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation 	<ul style="list-style-type: none"> • It is not anticipated that the proposed project will cease in the nearby future. However, if decommissioning is decided upon, a rehabilitation plan will be developed and submitted for approval. The end-use of the area will be kept in mind during the compilation of the rehabilitation plan.

Environmental Awareness Plan	
Objective / Environmental parameter: Compliance & Monitoring	
Risks	Mitigation measures
<ul style="list-style-type: none"> • Loss of topsoil • Loss of natural occurring vegetation • Erosion • Unsafe road • Occurrence of veld fires • Harm to animals • Slow regrowth of natural occurring vegetation • Establishment of alien vegetation • Undertaking of unauthorised activities • Non-compliance (EMPr / EA / DWS Authorisation) 	<ul style="list-style-type: none"> • The applicant will ensure that the contractors adhere to the recommendations of the EMPr and conditions of the Environmental Authorisation during construction. • An Environmental Control Officer (ECO) will be appointed to monitor the construction phase. Note that the ECO may be appointed separately or can be part of the contractor's team. • Regular monitoring and / or spot inspections at least every fortnight during the construction phase is recommended. • Inspections should be documented and any shortcomings addressed immediately. • An independent ECO will be appointed to monitor the construction phase. A report will be provided to the contractor upon completion thereof. The findings thereof should be made available to DESTEA, should it be requested. • Any emergency or unforeseen impact will be reported to the relevant environmental department within 24 hours after identification for telephonic approval and will be confirmed in writing. • Material Safety Data Sheets (MSDS) should be available on site. Where possible and available, MSDS should include information on ecological impacts and measures to minimize negative environmental impacts during accidental releases or escapes.