

**APPLICATION FOR ENVIRONMENTAL
AUTHORISATION FOR PROPOSED
CONSTRUCTION OF ALFRED NZO
BULKWATER SUPPLY PIPELINE
PROJECT FOR WARD 29 IN MBIZANA
LOCAL MUNICIPALITY– REF.
NUMBER:**

EC10/AN/LN1/M17-01



ALFRED NZO DISTRICT MUNICIPALITY



ALFRED NZO
DISTRICT MUNICIPALITY

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

**SUBMITTED TO:
PROVINCE OF EASTERN CAPE
DEPARTMENT OF ECONOMIC
DEVELOPMENT, ENVIRONMENTAL
AFFAIRS AND TOURISM**



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JUNE 2017

ENVIRONMENTAL MANAGEMENT PROGRAMME REPORT

Submitted in requirements of the Environmental Impact Assessment Regulations, December 2014 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998)

TABLE OF CONTENTS

1. DETAILS AND EXPERTISE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)	6
2. INTRODUCTION	7
2.1 OBJECTIVES OF AN EMPr	7
2.2 STRUCTURE AND FUNCTION OF AN EMPr	8
2.3 LEGAL REQUIREMENTS	11
3. DESCRIPTION OF THE SCOPE OF THE PROPOSED CONSTRUCTION OF BULKWATER PIPELINE	15
3.1 DESCRIPTION OF PROPOSED PROJECT SCOPE	15
4. THE LOCATION DESCRIPTION AND LOCALITY MAP	16
5. LAYOUT PLAN OF THE BULKWATER PIPELINE	18
6. SCOPE OF THE EMPr	19
6.1 LAYOUT OF THE EMPr	19
6.1.1 PLANNING AND DESIGN PHASE	19
6.1.2 CONSTRUCTION PHASE	19
6.1.3 OPERATIONAL AND MAINTENANCE PHASE	20
7. ROLES AND RESPONSIBILITIES	21
7.1 PROJECT COORDINATOR	21
7.2 ENVIRONMENTAL CONTROL OFFICER (ECO)	21
7.3 CONTRACTOR	22
8. ENVIRONMENTAL MANAGEMENT AND MITIGATION MEASURES	23
8.1 DESIGN AND PLANNING PHASE	24
8.2 CONSTRUCTION PHASE	27
8.3 DECOMMISSIONING PHASE	32
8.4 OPERATIONAL PHASE	36
9. ENVIRONMENTAL MONITORING PROGRAMME	38
9.1 MONITORING PROGRAMME	38
9.2 MONITORING COMPLIANCE	39
9.2.1 NON-COMPLIANCE	39
9.2.2 EMERGENCY PREPAREDNESS	40
9.2.3 INCIDENT REPORTING AND REMEDY	41
9.2.4 PENALTIES	41
10. ENVIRONMENTAL AWARENESS	45
10.1 AWARENESS ENVIRONMENTAL TRAINING	45
10.2 MONITORING OF ENVIRONMENTAL TRAINING	46
11. AN UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP IN RELATION TO:	47

LIST OF TABLES

Table 1: Proposed Activity interms of 2014 EIA regulations.....	12
Table 2: Farm Names of Proposed Development	16
Table 3: Surveyor-General 21 digit of Farm Portions.....	17
Table 5: Proposed Mitigation Measures during Design and Planning Phase	24
Table 6: Proposed Mitigation Measures during the Construction Phase	27
Table 7: Proposed rehabilitation measure during Decommissioning Phase.....	32
Table 8: Proposed mitigation measures during Operational Phase.....	36
Table 9: EMP Construction Monitoring Programme	43

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LIST OF APPENDICES

APPENDIX 1: LOCALITY MAP OF PROJECT SITE

APPENDIX 2: THE MAP SHOWING FARM PORTIONS.

APPENDIX 3: THE LAYOUT PLAN OF PROPOSED BULKWATER PIPELINE

1. Details and Expertise of Environmental Assessment Practitioner (EAP)

PERSONAL PARTICULARS (EAP)

Name and Surname: Mr. Kgomotso Motsepe

Years of experience: 17 of working experience environmental sector and 9 years as independent water and environmental resources consultant

EDUCATION

- Management Development Programme, University of South Africa, 2006,
 - Certificate in Business Management, University of South Africa , 2004,
 - B Tech Chemistry, Pretoria Technikon 2003,
 - N Diploma: Analytical Chemistry, Pretoria Technikon 1998
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MEMBERSHIP OF PROFESSIONAL INSTITUTIONS

- South African Council for Scientific Professions – Pr.Sci.Nat.
 - International Association of Impact Assessments – MIAIA.
 - Water Institute of South Africa – MWISA
 - Institute of Waste Management in South Africa – MIWMSA
-

KEY RELEVANT EXPERIENCE

- 2014, Environmental Impact Assessment for continuation of mining through wetlands for Optimum Colliery in Hendrina
 - 2014, Environmental Impact Assessment for Construction of Bridges in Edenvale for Ekurhuleni Metropolitan Municipality
 - 2014, Environmental Impact Assessment for construction of bulkwater pipeline in Garankua and Mabopane Township for Tshwane Metropolitan Municipality
 - 2014, Application for Water Use Licence Application for Wescoal – Elandspruit Colliery Project
 - 2013, Application for Water Use License Application for Optimum – Kwagga North and Tweefontein
-

CERTIFICATION

I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualifications, and my experience. I hereby confirm my involvement in the proposed project.

Kgomotso Motsepe

Date:_____

2. INTRODUCTION

2.1 Objectives of an EMPr

The EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be done during the construction of the bulkwater pipeline and associated infrastructure, as well as to ensure that all relevant factors are considered to ensure for environmentally responsible development. The purpose of the EMPr is to provide specifications for "good environmental practice" for application during construction.

This EMPr informs all relevant parties, which are in this case, the Project Coordinator, the Contractor, the Environmental Control Officer (ECO) and all other staff employed by Umzinyathi District Municipality at the site as to their duties in the fulfilment of the legal requirements for the construction and operation of the water supply scheme with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant environmental permitting authority.

The objectives of an EMPr are to:

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- Ensure that there is sufficient allocation of resources on the project budget so that the scale of EMPr-related activities is consistent with the significance of project impacts;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could

reduce and mitigate the potential impacts to minimal or insignificant levels;

- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures that could optimize beneficial impacts;
- Create management structures that addresses the concerns and complaints of I&APs with regards to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with;
- Specify time periods within which the measures contemplated in the final environmental management programme must be implemented, where appropriate;

2.2 Structure and Function of an EMPr

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies what measures will be in place or will be actioned to manage any incidents and emergencies that may occur during operation of the facility.

As such the EMPr provides specifications that must be adhered to, in order to minimise adverse environmental impacts associated with the operations of the bulkwater supply scheme and associated reticulation. The content of the EMPr is consistent with the requirements as set out in Regulation 19(4) and information contained in Appendix 4 of the EIA regulations (December 2014) stated below,

According to regulation 19(4) of GN R 982 – Appendix 4, an environmental management programme must include

Content of environmental management programme (EMPr)

1. (1) An EMPr must comply with section 24N of the Act and include-

(a) details of

(i) the EAP who prepared the EMPr; and

(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;

(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;

(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;

(d) a description of the impact management objectives, including management statements,

identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-

(i) planning and design;

(ii) pre-construction activities;

(iii) construction activities;

(iv) rehabilitation of the environment after construction and where applicable post closure; and

(v) where relevant, operation activities;

(e) a description and identification of impact management outcomes required for the aspects

contemplated in paragraph (d);

(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and

(e) will be achieved, and must, where applicable, include actions to –

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;

- (ii) comply with any prescribed environmental management standards or practices;
- (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and
- (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;
- (g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);
- (h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);
- an indication of the persons who will be responsible for the implementation of the impact management actions;
- (j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;
- (k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);
- a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;
- (m) an environmental awareness plan describing the manner in which-
 - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
 - (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and
- (n) any specific information that may be required by the competent authority.

2.3 Legal requirements

Construction must be according to the best industry practices, as identified in the project documents. This EMPr, which forms an integral part of the contract documents, informs the Contractor as to his/her duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The Contractor should note that obligations imposed by the approved EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

The Contractor shall identify and comply with all South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. Key legislation currently applicable to the construction and implementation phases of the project must be complied with. The list of applicable legislation provided below is intended to serve as a guideline only and is not exhaustive:-

- i. Constitution Act (No. 108 of 1996)
- ii. Environmental Conservation Act (No. 73 of 1989)
- iii. EIA Regulations (December 2014)
- iv. National Environment Management Act (No. 107 of 1998)
- v. National Environmental Management: Biodiversity Act (No. 10 of 2004)
- vi. National Water Act (No. 36 of 1998)
- vii. National Environmental Management: Waste Management Act (No. 59 of 2008)
- viii. National Heritage Resource Act (No. 25 of 1999)

The environmental authorization is issued in terms of the Environmental Impact Assessment Regulations, December 2014 promulgated in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998). The listed activity and its description is described in **Table 1**.

Table 1: Proposed Activity interms of 2014 EIA regulations

Government Notice R327 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R327)	Describe the portion of the development as per the project description that relates to the applicable listed activity
9	<p>The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or storm water—</p> <p>(i) with an internal diameter of 0,36 metres or more; or</p> <p>(ii) with a peak throughput of 120 litres per second or more;</p> <p>excluding where—</p> <p>(a) such infrastructure is for bulk transportation of water or storm water or storm water drainage inside a road reserve or railway line reserve; or</p> <p>where such development will occur within an urban area.</p>	<p>The bulwater supply pipeline project will consist of:</p> <ul style="list-style-type: none"> • Bulk Gravity mains – 29.3 km, pipe diameter ranging from 32 mm – 160 mm (uPVC and HDPE pipe) • Reticulation – 66 km, pipe diameter ranging from 32 mm – 90 mm (uPVC and HDPE pipe)
19	<p>The infilling or depositing of any material of more than 10 cubic metres into, or the</p>	<p>The bulwater supply pipeline project will consist of:</p> <ul style="list-style-type: none"> • Bulk Gravity mains – 29.3

Government Notice R327 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R327)	Describe the portion of the development as per the project description that relates to the applicable listed activity
	<p>dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(a) will occur behind a development setback;</p> <p>(b) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(c) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or where such development is related to the development of</p>	<p>km, pipe diameter ranging from 32 mm – 160 mm (uPVC and HDPE pipe)</p> <ul style="list-style-type: none"> • Reticulation – 66 km, pipe diameter ranging from 32 mm – 90 mm (uPVC and HDPE pipe) <p>The pipeline will be crossing of the water course during construction and more than 10 cubic meters of soil will be removed at the crossings.</p>

Government Notice R327 Activity No:	Describe the relevant Scoping and EIA Activity(ies) in writing as per Listing Notice 1 (GN No. R327)	Describe the portion of the development as per the project description that relates to the applicable listed activity
	a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	

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3. Description of the scope of the proposed construction of Bulkwater Pipeline

3.1 Description of proposed project scope

The bulkwater supply pipeline project will consist of:

- Bulk Gravity mains – 29.3 km, pipe diameter ranging from 32 mm – 160 mm (uPVC and HDPE pipe)
- Reticulation – 66 km, pipe diameter ranging from 32 mm – 90 mm (uPVC and HDPE pipe)
- Construction of 6 Reservoirs ranging between 80kl to 250kl
- Installation of 180 Stand pipes

4. The Location Description and Locality Map

This project involves construction of bulk water supply pipeline in ward 29, spanning the villages of Umfolozi, Bulala, Manteku, Zwelethu, Phathekile and Cwaka in Mbizana Local Municipality. The ward 29 falls within the Mbizana Local Municipality in Alfred Nzo District Municipality, the latter being the Water Services Authority. As per Alfred Nzo District Municipality's water supply development plan priority for Mbizana Local Municipality, aim to provide adequate, safe and sustainable water supply to the communities within villages in the area.

Mbizana Local Municipality is a category B municipality situated within the Alfred Ndzo District Municipality in the Eastern Cape Province. It is made up of the main town of Mbizana and surrounding villages. It covers an area of approximately 2 806 km². Mbizana, the political and administrative municipal seat, is located on the R61 road connecting KwaZulu Natal South Coastal boundary to the N2 leading to Mthatha. Dominant land uses within Mbizana Municipality are mostly rural with a large emphasis on subsistence agriculture in the interior and some tourism development along the coast. The natural environment in the coastal belt of the area is in an unspoiled condition and has exceptionally high conservation value. The conservation value of the inland areas is significantly lower than the coastal areas due to human activities. The municipal area is divided into 31 wards. The map showing the Ward 29 Area within Mbizana Local Municipality and Alfred Nzo District Municipality is attached herewith in **Appendix 1**.

The development of bulkwater supply pipeline scheme occurs on the following properties as tabulated in **Table 1**:

Table 2: Farm Names of Proposed Development

Farm Name	ERF	Portion
IMIZI	55	0
UMNYAKA	56	0
HLOLWENI	57	0

Table 2 contains the Surveyor-General 21 digit site reference numbers for the farms shown in **Table 1**.

Table 3: Surveyor-General 21 digit of Farm Portions

C	0	8	6	0	0	0	0	0	0	0	0	0	0	5	5	0	0	0	0
C	0	8	6	0	0	0	0	0	0	0	0	0	0	5	6	0	0	0	0
C	0	8	6	0	0	0	0	0	0	0	0	0	0	5	7	0	0	0	0

The coordinates for bulkwater pipeline is shown in **Appendix 2**

5. Layout Plan of the Bulkwater Pipeline

The layout plan for the proposed bulkwater pipeline is shown in **Appendix 3**.

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6. Scope of the EMPr

In order to ensure a holistic approach to the management of environmental impacts during the construction and operation of the proposed pipeline, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved. The EMPr is a dynamic document subject to influences and changes as are wrought by variations to the provisions of the project specification.

6.1 Layout of the EMPr

The EMPr is divided into three phases of development. Each phase has specific issues unique to that period of the construction and operation of the bulkwater pipeline and associated infrastructure. The impacts are identified and given a brief description. The three phases of the development are then identified as below:

6.1.1 Planning and Design Phase

This section of the EMPr provides management principles for the planning and design phase of the project. Environmental actions, procedures and responsibilities as required from Umzinyathi District Municipality during the planning and design phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Coordinator and ECO.

6.1.2 Construction Phase

This section of the EMPr provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Coordinator and ECO.

6.1.3 Operational and Maintenance Phase

This section of the EMPr provides management principles for the operation and maintenance phase of the project. Environmental actions, procedures and responsibilities as required from Umzinyathi District Municipality during the operation and maintenance phase are specified.

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7. Roles and Responsibilities

7.1 Project Coordinator

The Project Coordinator is responsible for overall management of project and EMPr implementation. The following tasks will fall within his / her responsibilities:

- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures.
- Monitor site activities on a daily basis for compliance.
- Conduct internal audits of the construction site against the EMPr.
- Confine the construction site to the demarcated area.
- Rectify transgressions through the implementation of corrective action.

7.2 Environmental Control Officer (ECO)

For the purposes of implementing the conditions contained herein, The Umzinyathi District Municipality shall appoint an ECO for the contract. The ECO shall be the responsible person for ensuring that the provisions of the EMPr as well as the environmental authorisation are complied with during the construction period. The ECO's duties in this regard will include, inter alia, the following:

- Conduct regular site visits to be able to report on and respond to any environmental issues;
- Report compliance and non-compliance issues to the municipal representative and authorities as applicable;
- Advise the Contractor on environmental issues within the defined work areas;
- Review access and incident records that may pertain to the environment and reconcile the entries with the observations made during site inspection, monitoring and auditing;
- Recommend corrective action when required for aspects of non-compliance with the EMPr;
- Take immediate action on site where clearly defined and agreed "no-go" areas are violated or in danger of being violated and to inform a

Umzinyathi District Municipality representative of the occurrence immediately and to take action;

- Be contactable by the public regarding matters of environmental concern as they relate to the operation of the works; and
- Take immediate action on site when prescriptive conditions are violated, or in danger of being violated and to inform the Umzinyathi District Municipality representative of the occurrence and action taken.

7.3 Contractor

The contractor is responsible for the overall execution of the activities envisioned in the construction phase including the implementation and compliance with recommendations and conditions of the EMPr. The Contractor must therefore ensure compliance with the EMPr at all times during construction activities and maintain an environmental register which keeps a record of all environmental incidents which occur on the site during construction of the bulkwater pipeline and associated infrastructure. These incidents may include:

- Public involvement / complaints
- Health and safety incidents • Incidents involving Hazardous materials stored on site
- Non compliance incidents The Contractor is also responsible for the implementation of corrective actions issued by the ECO and Project Coordinator within a reasonable or agreed period of time.

8. Environmental Management and Mitigation Measures

According to regulation 19(4) of GN R 982 – Appendix 4, an environmental management programme must include

Content of environmental management programme (EMPr)

1. (1) An EMPr must comply with section 24N of the Act and include-

(d) a description of the impact management objectives, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including-

(i) planning and design;

(ii) pre-construction activities;

(iii) construction activities;

(iv) rehabilitation of the environment after construction and where applicable post closure; and

(v) where relevant, operation activities;

(e) a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d);

(f) a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) will be achieved, and must, where applicable, include actions to –

(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;

(ii) comply with any prescribed environmental management standards or practices;

(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and

(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

8.1 Design and Planning Phase

Table 4: Proposed Mitigation Measures during Design and Planning Phase

Potential impacts:	Proposed mitigation during Design and Planning Phase	Responsibility	Outcomes Standard
Loss of vegetation	<ul style="list-style-type: none"> Minimize vegetation destruction to minimum area of Test pit excations along the sampling points for geotechnical assessment. 	Project Engineer/Cordinator	Photographic Evidence of Area before and after Geotech activity
Soil Erosion	<ul style="list-style-type: none"> Top soil removed during Test pit excations along the sampling points for geotechnical assessment must be backfilled and leveled to prior natural conditions 		
Water pollution	<ul style="list-style-type: none"> Test pit excavation to be conducted outside 100m of the banks of water courses 		1:50 Map with Geographical Cordinates of where samples collected
Dust generation	<ul style="list-style-type: none"> TLB's to only be driven in area that is identified for sampling 		Competency Training Certificate of Operators and Induction Training
Hazardous Substance contamination	<ul style="list-style-type: none"> The TLB's must be provided with drip trays when not in use 		
Noise generation	<ul style="list-style-type: none"> Avoid excessive revving and ignition of equipment. 		
Waste pollution	<ul style="list-style-type: none"> Dispose waste at registered waste disposal facility 		Waste Disposal Weigh Bridge Certificates
Fire ignition	<ul style="list-style-type: none"> TLB's to always have fire extinguishers and have employees trained on their use 		Competency Training Certificate of

Potential impacts:	Proposed mitigation during Design and Responsibility Planning Phase		Outcomes Standard
			Operators and Induction Training
Loss of fauna and Flora	<ul style="list-style-type: none"> ▪ Test pit excavation to be conducted outside 100m of the banks of water courses ▪ Minimize vegetation destruction to minimum area of Test pit excations along the sampling points for geotechnical assessment. 		Photographic Evidence of Area before and after Geotech activity
Damage to existing infrastructure e.g. sewage lines	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. 		Existing Infrastructure Layout Map
Injury to public and animals due to falling into workings	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area 		Approved Certificate of occupying construction site with designs
Traffic congestion	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Plan work area to minimize traffic obstruction 		
Traffic incidents	<ul style="list-style-type: none"> ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 		
Pedestrian injuries and route closures	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 		
Stormwater Management	<ul style="list-style-type: none"> ▪ The contractor will be advised to implement proper storm management plan 		

Potential impacts:	Proposed mitigation during Design and Responsibility Planning Phase		Outcomes Standard
Cultural Heritage Resources	<ul style="list-style-type: none"> If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to SAPS. 		Notification Letter to Responsible Authorities
Land use character of surrounding area	<ul style="list-style-type: none"> The pipeline survey and positioning decision should be based on the least based execution whereby it is aligned to existing servitudes at all times 	Project Cordinator/Engineer	Approved Pipeline Design Layout by Engineer of Municipality

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8.2 Construction Phase

Table 5: Proposed Mitigation Measures during the Construction Phase

Potential impacts:	Proposed mitigation measure during Construction Phase	Responsibility:	Outcomes Standard
Loss of vegetation	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. ▪ Top soil stock piling must be well protected and cordoned off from other soil material generated on site, so as to allow natural seeds to regerminate successfully during the rehabilitation of construction works. ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate 	Contractor	<ul style="list-style-type: none"> • Photographic Evidence of Area before construction. • Approved Site Plan.
Loss of soil hardness	<ul style="list-style-type: none"> ▪ The backfilling and compaction of soil material must be supervised by a Professional Engineer to at best be pre-natural soil conditions 		Method Statement for Backfilling and Compaction.
Loss of Geological Stability			

Potential impacts:	Proposed mitigation measure during Construction Phase	Responsibility:	Outcomes Standard
Soil Erosion	<ul style="list-style-type: none"> ▪ Minimize vegetation destruction to minimum area where construction operations are. ▪ Divert stormwater away from the disturbed areas and loose soils ▪ Compact well after pipe laying ▪ Cover soil heaps to prevent erosion ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate 		<ul style="list-style-type: none"> • Photographic Evidence of Area before construction. • Approved Site Plan • Method Statement for Backfilling and Compaction.
Land use character of surrounding area	<ul style="list-style-type: none"> ▪ The contractor construction schedule should only be allowed to excavate reasonable length of excavation pit to layoff pipelines, backfill and compact the area to minimise disruption or occupancy of land normally used as communal space. 		<ul style="list-style-type: none"> • Construction Plan
Water pollution	<ul style="list-style-type: none"> ▪ Avoid soil erosion (see above) ▪ Avoid loss of vegetation (see above) ▪ Diverted stormwater must be returned to the water course without contamination ▪ Conditions setout by the Department of Sanitation for water quality must be adhered to. 		<ul style="list-style-type: none"> • Photographic Evidence of Area before construction. • Approved Site Plan • Method Statement for Backfilling and Compaction. • Water Quality Reports up stream and down stream of river course.
Dust generation	<ul style="list-style-type: none"> ▪ Limit loss of vegetation (see above) ▪ Avoid over movement of plant on site 		<ul style="list-style-type: none"> • Speed signs of 20 km/hr displayed on

Potential impacts:	Proposed mitigation measure during Construction Phase	Responsibility:	Outcomes Standard
	<ul style="list-style-type: none"> ▪ Limit speed to 20km/hr. or less in the construction site ▪ Apply dust suppression regularly and as required ▪ Cover soil heaps 		<ul style="list-style-type: none"> • site always • Dust Suppression Roster
Hazardous Substance contamination	<ul style="list-style-type: none"> ▪ Avoid refueling onsite ▪ Refueling to occur at designated areas and with drip trays installed ▪ Training of substance handlers for correct handling 		<ul style="list-style-type: none"> • Approved Site Plan • Training Records for Handling Hazardous Substances
Noise generation	<ul style="list-style-type: none"> ▪ Proper plant, machinery and motor maintenance ▪ Use noise reduction apparatus where applicable ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 		<ul style="list-style-type: none"> • Maintenance Records of Plant Equipments • Operator Competency Records
Waste pollution	<ul style="list-style-type: none"> ▪ Use dedicated waste bins ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 		<ul style="list-style-type: none"> • Approved Site Plan • Waste Disposal Weigh Bridge Certificates
Fire ignition	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees 		<ul style="list-style-type: none"> • Records of training for employees on Fire Hazards • Service Records of Fire Extinguishers

Potential impacts:	Proposed mitigation measure during Construction Phase	Responsibility:	Outcomes Standard
	trained on their use		
Loss of fauna and Flora	<ul style="list-style-type: none"> ▪ Avoid vegetation loss (see above) ▪ Avoid fires (see above) ▪ Avoid hazardous substance contamination of soil and water (see above) ▪ Prevent collection/capture of fauna by employees 		<ul style="list-style-type: none"> • Photographic Evidence of Area before construction. • Approved Site Plan
Damage to existing infrastructure e.g. sewage lines	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 		Existing Infrastructure Layout Map
Injury to public and animals due to falling into workings	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe burying. ▪ Close dig-up areas as soon as pipes have been laid. 		<ul style="list-style-type: none"> • Approved Certificate of occupying construction site with designs
Traffic congestion	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 		<ul style="list-style-type: none"> • Method Statement of Excavations • Traffic Control Measures
Traffic incidents	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures 		

Potential impacts:	Proposed mitigation measure during Construction Phase	Responsibility:	Outcomes Standard
	<ul style="list-style-type: none"> ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 		
Pedestrian injuries and route closures	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 		
Stormwater Management	<ul style="list-style-type: none"> ▪ The contractor will be advised to implement proper storm management plan 		<ul style="list-style-type: none"> • Stormwater Management Plan
Cultural Heritage Resources	<ul style="list-style-type: none"> ▪ If any cultural and heritage resources can be discovered on the proposed site the construction will have to be halted and the case be reported to SAPS. 		<ul style="list-style-type: none"> • Notification Letter to Responsible Authorities

8.3 Decommissioning Phase

Table 6: Proposed rehabilitation measure during Decommissioning Phase

Potential impacts:	Proposed rehabilitation measures during Decommissioning Phase	Responsibility	Outcome Standard
Loss of vegetation	<ul style="list-style-type: none"> ▪ Topsoil removed must be used to level the area, in order to allow the seeds to regerminate ▪ Indigenous vegetation (if any) will need to be relocated and planted again ▪ A Specialist Rehabilitation Specialist/contractor must be appointed to develop rehabilitation plan prior to construction and implement it post construction. The purpose is to rehabilitate the construction footprint to closest the natural state of the site. 	Contractor/ Rehabilitation Engineer/Scientist	<ul style="list-style-type: none"> • Rehabilitation Plan – Method Statement
Soil Erosion	<ul style="list-style-type: none"> ▪ Rows of straw, hay or bundles of cut vegetation may also be used. In this instance, the hay, straw or vegetation is dug into the soil in contours, in order to help slow surface wash and capture eroded soil. ▪ The spacing between rows would be dependant on slope and the specific area. 		
Water pollution	<ul style="list-style-type: none"> ▪ Waste Materials collected on site after decommissioning the site must not be diverted into nearby water courses 	Contractor	<ul style="list-style-type: none"> • Waste Disposal Certificates
Dust generation	<ul style="list-style-type: none"> ▪ Avoid over movement of plant on site ▪ Limit speed to 20km/hr. or less in the construction site 		<ul style="list-style-type: none"> • Maintenance Records of Plant Equipments • Operator

Potential impacts:	Proposed rehabilitation measures during Decommissioning Phase	Responsibility	Outcome Standard
			Competency Records
Hazardous Substance contamination	<ul style="list-style-type: none"> ▪ Refueling to occur at designated areas and with drip trays installed ▪ All waste material generated on site must be disposed off at registered hazardous landfill site. ▪ Proof of disposal must be made available to Site Engineer 		<ul style="list-style-type: none"> • Approved Site Plan • Training Records for Handling Hazardous Substances
Noise generation	<ul style="list-style-type: none"> ▪ Avoid excessive revving and ignition of equipment. ▪ Operational hours between 07h00 and 17h00 		<ul style="list-style-type: none"> • Maintenance Records of Plant Equipments • Operator Competency Records
Waste pollution	<ul style="list-style-type: none"> ▪ Use dedicated waste bins ▪ Practice waste separation (General and Hazardous) ▪ Dispose waste at registered waste disposal facility 		<ul style="list-style-type: none"> • Approved Site Plan • Waste Disposal Weigh Bridge Certificates
Fire ignition	<ul style="list-style-type: none"> ▪ Avoid lighting fires on site ▪ Ban smoking near flammable substances ▪ Ensure correct handling of flammable substances ▪ Have fire extinguishers and have employees trained on their use 		<ul style="list-style-type: none"> • Records of training for employees on Fire Hazards • Service Records of Fire Extinguishers
Loss of fauna and Flora	<ul style="list-style-type: none"> ▪ Rehabilitate the area workings within the water course to allow natural flows 	Contractor	<ul style="list-style-type: none"> • Rehabilitation Plan – Method Statement

Potential impacts:	Proposed rehabilitation measures during Decommissioning Phase	Responsibility	Outcome Standard
	<ul style="list-style-type: none"> ▪ Remove structures that can impede natural flow in the water ▪ Use Gabion baskets and Rhino mattress to stabilize river banks 		
Damage to existing infrastructure e.g. sewage lines	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	Project Coordinator/Engineer	<ul style="list-style-type: none"> • Existing Infrastructure Layout Map
Injury to public and animals due to falling into workings	<ul style="list-style-type: none"> ▪ Prevent unauthorized entry to the working area ▪ Barricade all works with barricade fence ▪ NO ENTRY and DANGER signs erected and maintained ▪ Smallest lead times between trenching and pipe burying. ▪ Close dig-up areas as soon as pipes have been laid. 	Contractor	<ul style="list-style-type: none"> • Approved Certificate of occupying construction site with designs • Method Statement of Excavations • Traffic Control Measures
Traffic congestion	<ul style="list-style-type: none"> ▪ Avoid traffic jamming e.g. move machinery and plant outside of rush hour ▪ Move plant and machinery away from high traffic areas ▪ Plan work area to minimize traffic obstruction 		
Traffic incidents	<ul style="list-style-type: none"> ▪ Avoid traffic congestion (see above) ▪ Implement traffic safety measures ▪ Install illuminating warning lights, traffic calming structures, etc. ▪ Use flagman to slow and direct traffic 		

Potential impacts:	Proposed rehabilitation measures during Decommissioning Phase	Responsibility	Outcome Standard
Pedestrian injuries and route closures	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from working areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 		
Stormwater Management	<ul style="list-style-type: none"> ▪ The design of drainage and stormwater pipes should be to reduce flow velocity and avoid soil erosion. This can be achieved through the construction of water velocity dissipators below the pipe head wall. ▪ Rocks, boulders or concrete blocks may be utilised for these purposes, and they are set into the concrete pron below the headwall. Stone pitching may also be utilised. 	Project Cordinator/Engineer	<ul style="list-style-type: none"> • Stormwater Management Plan • Rehabilitation Plan

8.4 Operational Phase

Table 7: Proposed mitigation measures during Operational Phase

Potential impacts:	Proposed mitigation measures during Operational Phase	Responsibility	Outcomes Standard
Soil Erosion	<ul style="list-style-type: none"> ▪ Implement the appropriate topsoil and stormwater runoff control management measures to prevent the loss of topsoil. ▪ The site should be graded well to permit drainage and to prevent ponding 	Rehabilitation Engineer	<ul style="list-style-type: none"> • Rehabilitation Plan – Method Statement
Water pollution	<ul style="list-style-type: none"> ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst ▪ A use pressure reducing valves must be implemented 	Municipality	<ul style="list-style-type: none"> • Operation and Maintenance Procedure of Bulkwater Pipelines
Loss of fauna and Flora	<ul style="list-style-type: none"> ▪ Trees and shrubs conserved shall be clearly introduced to the site under the supervision of the Project Engineer. ▪ This trees cannot be planted directly on the pipeline, but appropriate planting site must be negotiated well with all interest and affected parties ▪ Pipeline crossing over the stream must always be freed of debris building up 	Rehabilitation Engineer/Scientists	<ul style="list-style-type: none"> • Rehabilitation Plan – Method Statement • Operation and Maintenance Procedure of Bulkwater Pipelines
Damage to existing infrastructure e.g. sewage lines	<ul style="list-style-type: none"> ▪ Infrastructure mapping and confirmation. ▪ Servitude applications ▪ Contingency and emergency measures 	Project Engineer	<ul style="list-style-type: none"> • Existing Infrastructure Layout Map

Potential impacts:	Proposed mitigation measures during Operational Phase	Responsibility	Outcomes Standard
Traffic incidents	<ul style="list-style-type: none"> ▪ A comprehensive water pressure management must be adhered to prevent pressure build ups resulting in pipe burst ▪ A use pressure reducing valves must be implemented ▪ Implement traffic safety measures in case of pipe burst ▪ Install illuminating warning lights, traffic calming structures, etc. should flooding be the resultant impact ▪ Use flagman to slow and direct traffic 	Municipality	<ul style="list-style-type: none"> • Operation and Maintenance Procedure of Bulkwater Pipelines • Traffic Control Procedure • Emergency Management Protocol
Pedestrian injuries and route closures	<ul style="list-style-type: none"> ▪ Redirect pedestrians away from pipe burst areas ▪ Use barricades and signage ▪ Prevent unauthorized access to working areas 		<ul style="list-style-type: none"> • Stormwater Management Plan
Stormwater Management	<ul style="list-style-type: none"> ▪ Ensure effective storm water management will be exercised to limit negative impacts on the environment and enhance the positive impacts ▪ All contaminated standing water should be immediately removed and treated or disposed of appropriately. ▪ Surfaces and conduits should be constructed to drain the run off more efficiently 		

9. Environmental Monitoring Programme

According to regulation 19(4) of GN R 982 – Appendix 4, an environmental management programme must include

Content of environmental management programme (EMPr)

1. (1) An EMPr must comply with section 24N of the Act and include-

(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);

(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f); an indication of the persons who will be responsible for the implementation of the impact management actions;

(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;

(k) the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f); a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;

9.1 Monitoring Programme

A monitoring programme will be implemented for the duration of the construction and operation of the Keates Drift Water Supply Scheme for Phase 3 and 4. This programme will include:

- Establishing a baseline of pre-construction site conditions validated with photographic evidence.
- Monthly audits will be conducted by an independent ECO for the construction phase to ensure compliance to the EMPr conditions, and where necessary make recommendations for corrective action. These audits can be conducted randomly and do not require prior arrangement with the Project Coordinator.
- Compilation of an audit report with a rating of compliance with the EMPr. The ECO shall keep a photographic record of the demarcated site and construction area. The Contractor shall be held liable for all unnecessary damage to the environment. A register shall be kept of all complaints from the

community. All complaints / claims shall be handled immediately to ensure timeous rectification / payment by the responsible party.

The following monitoring programme in **Table 9** must be adopted during construction and operation of project.

9.2 Monitoring Compliance

A copy of the EMPr must be kept on site at all times during the construction period. The EMPr will be binding on all contractors operating on the site and must be included within the Contractual Clauses. It should be noted that in terms of Section 28 of the National Environmental Management Act (No. 107 of 1998) those responsible for environmental damage must pay the repair costs both to the environment and human health and the preventative measures to reduce or prevent further pollution and/or environmental damage (The "polluter pays" principle).

9.2.1 Non-compliance

The contractors shall act immediately when notice of non-compliance is received and take corrective action. Complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints.

Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant authority for them to deal with the transgression, as it deems fit.

The Contractor is deemed not to have complied with the EMPr if, inter alia:

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site, site extensions and roads;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction site;
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site; and/or;
- The Contractor fails to comply with corrective or other instructions issued by the Engineer within a specific time period.

It is recommended that the engineers/contractors institute penalties for the following less serious violations and any others determined during the course of work, as

detailed below:

- Littering on site
- Lighting of illegal fires on site
- Persistent or unrepaired fuel and oil leaks
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas
- Excess dust or excess noise emanating from site
- Possession or use of intoxicating substances on site
- Any vehicles being driven in excess of designated speed limits
- Removal and/or damage to fauna, flora or cultural or heritage objects on site
- Urination and defecation anywhere except at designated facilities

9.2.2 Emergency Preparedness

The Contractor shall compile and maintain environmental emergency procedures to ensure that there will be an appropriate response to unexpected or accidental actions or incidents that will cause environmental impacts, throughout the construction period. Such activities may include, inter alia:

- Accidental waste water discharges to water and land
- Accidental exposure of employees to hazardous substances, relating to the decommissioning of the old oxidation ponds
- Accidental fires
- Accidental spillage of hazardous substances
- Specific environmental and ecosystem effects from accidental releases or incidents

These plans shall include:

- Emergency organisation (manpower) and responsibilities, accountability and liability
- A list of key personnel and contact details
- Details of emergency services available (e.g. the fire department, spill clean-up services, etc.)
- Internal and external communication plans, including prescribed reporting procedures where required by legislation
- Actions to be taken in the event of different types of emergencies
- Incident recording, progress reporting and remediation measures required to be implemented
- Information on hazardous materials, including the potential impact associated

with each, and measures to be taken in the event of accidental release

- Training plans, testing exercises and schedules for effectiveness

The Contractor shall comply with the emergency preparedness and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act (No. 85 of 1993), the NEMA (No. 107 of 1998) and the National Water Act (No. 36 of 1998) as amended and/or any other relevant legislation.

9.2.3 Incident Reporting and Remedy

If a leakage or spillage of hazardous substances occurs on site, the local emergency services must be immediately notified of the incident. The following information must be provided:

- the location;
- the nature of the load;
- the extent of the impact; and
- the status at the site of the accident itself (i.e. whether further leakage is still taking place, whether the vehicle or the load is on fire).

Written records must be kept on the corrective and remedial measures decided upon and the progress achieved therewith over time. Such progress reporting is important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

9.2.4 Penalties

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, the developer and/or contractor shall be liable.

The following violations, and any others determined during the course of work, should be penalised:

- Hazardous chemical/oil spill and/or dumping in non-approved sites
- Damage to sensitive environments
- Damage to cultural and historical sites
- Unauthorised removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas
- Uncontrolled/unmanaged erosion
- Unauthorised blasting activities (if applicable)
- Pollution of water sources
- Unnecessary removal or damage to trees

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Table 8: EMP Construction Monitoring Programme

Action	Details, Who, Outcomes	Frequency/ When
ECO appointment	The Municipality must appoints ECO and informs DEDTEA in writing of the name and contact details.	At least 30 days prior to construction activities
Rehabilitation Specialist	The Municipality must appoints Rehabilitation Specialist and informs DEDTEA in writing of the name and contact details	At least 30 days prior to construction activities
Safety File	ECO and Municipality ensure EMP included in the Contractors' Safety File.	At least 10 days prior to construction
Baseline Audit	ECO must conduct a baseline audit of all environmental assets, conditions, and landscapes.	10 days prior to construction
	Rehabilitation Specialists must conduct a baseline audit of all environmental assets, conditions, and landscapes.	
Inform Authorities of Intention to Commence with Construction	The developer shall inform DAEARD in writing on date of starting of construction activities.	At least 30 days prior to construction.
Complaints Register	ECO and Contractor develops Complaints Register for the site	At least 5 days prior to Commencement of

		Construction
Induction	ECO conducts Environmental Awareness and Induction of Management, employees, etc. An attendance register is generated.	On first day of construction commencement
Monthly Audits	ECO conducts monthly audits for the first 3 months of commencement of construction. Monthly Audit Reports are produced	Every Month-end. Reports to Authorities in 14 days.

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10. Environmental Awareness

According to regulation 19(4) of GN R 982 – Appendix 4, an environmental management programme must include

Content of environmental management programme (EMPr)

1. (1) An EMPr must comply with section 24N of the Act and include-
 - (m) an environmental awareness plan describing the manner in which
 - (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and
 - (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and
 - (n) any specific information that may be required by the competent authority.

10.1 Awareness environmental training

Contractors shall ensure that its employees and any third party who carries out all or part of the Contractor's obligations are adequately trained with regard to the implementation of the EMPr, as well as regarding environmental legal requirements and obligations. Training shall be conducted by the ECO where necessary.

Environment and health awareness training programmes should be targeted at three distinct levels of employment, i.e. the executive, middle management and labour. Environmental awareness training programmes shall contain the following information:

- The names, positions and responsibilities of personnel to be trained.
- The framework for appropriate training plans.
- The summarised content of each training course.
- A schedule for the presentation of the training courses.

The ECO shall ensure that records of all training interventions are kept in accordance with the record keeping and documentation control requirements as set out in this EMPr. The training records shall verify each of the targeted personnel's training experience.

The Municipality shall ensure that adequate environmental training takes place. All employees shall be given an induction presentation on environmental awareness and the content of the EMPr. The presentation needs to be conducted in the language of

the employees to ensure it is understood. The environmental training shall, as a minimum, include the following:

- The importance of conformance with all environmental policies.
- The environmental impacts, actual or potential, of their work activities.
- The environmental benefits of improved personal performance.
- Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the Agency's environmental management systems, including emergency preparedness and response requirements.
- The potential consequences of departure from specified operating procedures.
- The mitigation measures required to be implemented when carrying out their work activities.
- Environmental legal requirements and obligations.
- Details regarding floral/faunal species of special concern and protected species, and the procedures to be followed should these be encountered during the construction of approach roads or construction camps.
- The importance of not littering.
- The importance of using supplied toilet facilities.
- The need to use water sparingly.
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible.
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

10.2 Monitoring of environmental training

The Contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and are being followed. If necessary, the ECO and / or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear. Toolbox talks are recommended.

11. An undertaking under oath or affirmation by the EAP in relation to:

I, **KGOMOTSO MOTSEPE**

declare that, I:

- am the independent environmental practitioner in this application;
- will comply with the requirements for an EAP as stipulated in Regulation 13 of the EIA Regulations, 2014;
- do not have and will not have any vested interest (either business, financial, personal or other) in the undertaking of the proposed activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- declare that there are no circumstances that may compromise my objectivity in performing such work;
- have expertise in conducting environmental impact assessments, including knowledge of the National Environmental Management Act, 1998 (Act 107 of 1998), regulations and any guidelines that have relevance to the proposed activity;
- will comply with the National Environmental Management Act, 1998 (Act 107 of 1998), regulations and all other applicable legislation;
- undertake to disclose to the applicant and the KZN Department of Economic Development, Tourism & Environmental Affairs all material information in my possession that reasonably has or may have the potential of influencing its decision with respect to this application;
- will ensure that information containing all reports in respect of this application is distributed or made available to interested and affected parties and that their participation is facilitated in such a manner that they will be provided with a reasonable opportunity to participate and provide comments on the reports;
- will provide the competent authority with access to all information at my disposal regarding this application, whether such information is favourable to the applicant or not;
- declare that all the particulars furnished by me in this form are true and correct;
- I am aware that a person is guilty of an offence in terms of Regulation 48 (1) of the EIA Regulations, 2014, if that person provides incorrect or misleading information. A person who is convicted of an offence in terms of sub-regulation 48(1) (a)-(e) is liable to the penalties as contemplated in section 49B(1) of the National Environmental Management Act, 1998 (Act 107 of 1998); and
- I will comply with all the requirements as indicated in the National Environmental Management Act, 1998 (Act 107 of 1998) and Environmental Impact Assessment Regulations, 2014.

Name of the Environmental Assessment Practitioner

Signature of the Environmental Assessment Practitioner

Name of company

Date

Name of Commissioner of Oaths

Signature of Commissioner of Oaths

Date

Designation

Official stamp (below)