



ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

**MAGATLE FILLING STATION AND SHOPPING CENTRE
(A PART OF THE FARM ZEBEDIELAS LOCATION 123 KS)**

Ref Nr. 12/1/9/1-C245

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ABBREVIATIONS

CBA	Critical Biodiversity Area
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
I & AP's	Interested and Affected Parties
LIHRA	Limpopo Provincial Heritage Resources Authority
NEMA	National Environmental Management Act
OHSA	Occupational Health and Safety Act
PPE	Personal Protective Equipment
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SAPS	South African Police Service
RDL	Red Data Listed
UST	Underground Storage Tank

INFORMATION SHEET

1. Details of the Environmental Assessment Practitioner

Consultant	Lokisa Environmental Consulting CC
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Qualifications	<p><u>Elaine Minnaar</u> B(TRP) (Pretoria), Environmental Management (NWU), Waste Management (NWU), Environmental Law (NWU), Implementing Environmental Management Systems (SABS/ISO 14001) (NWU)</p> <p><u>Faith Makena</u> National Diploma Environmental Sciences (TUT) Baccalaureus Technologiae Environmental Sciences (TUT)</p>
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ENVIRONMENTAL MANAGEMENT PROGRAMME

2 Introduction

Executive Petroleum appointed Lokisa Environmental Consulting CC to obtain Environmental Authorisation from the Limpopo Department of Economic Development, Environment and Tourism (LEDET) for the proposed development of a Filling Station and Mini Shopping Centre to be situated on a Part of the Farm Zebedielas Location 123 KS.

The site is situated approximately 15km to the south of the R518 Road, 13km north west of the R579 Road, 5.6km north of Molapo Village and directly opposite the Magatle Police Station, Magatle, Limpopo Province. The Nkumpi River a tributary of the Olifants River, is situated approximately 300m to the east of the site.

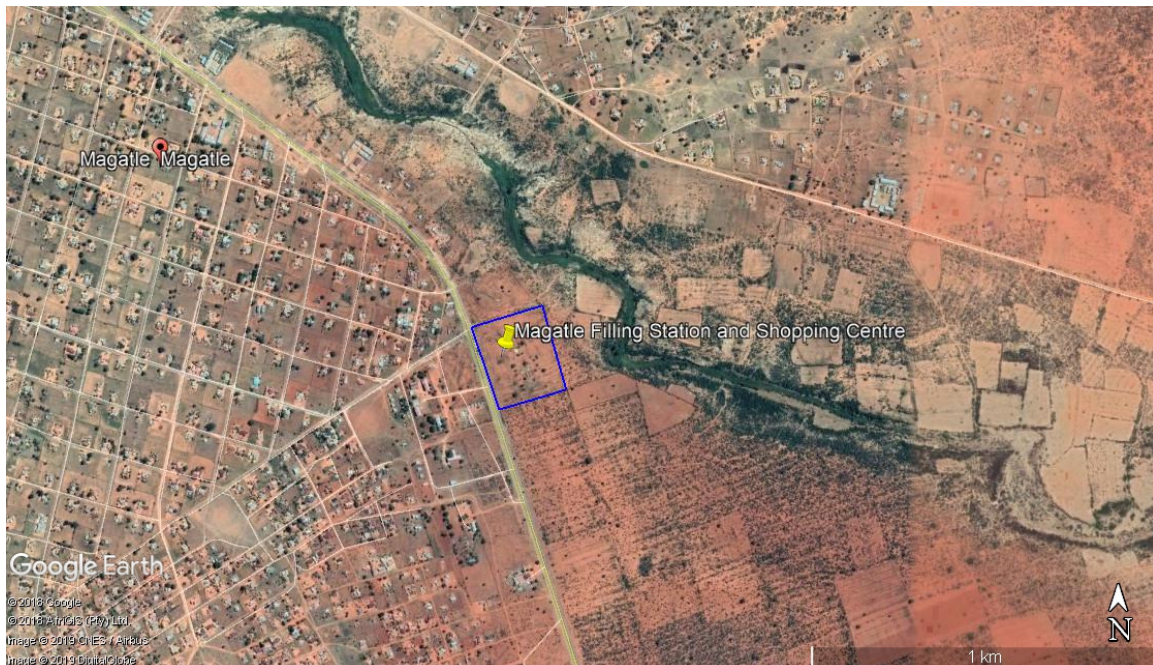


Figure 1: Locality of the site

— The site

Project description

The development entails the establishment of a Filling Station that is to accommodate 499m³ of fuel on site as well as a Mini shopping centre on a Part of the Farm Zebedielas Location 123 KS. The development is to include all required services thereto.

Filling Station

The fuel tanks will be stored underground on the north western part of the site. The filling station will include a Car wash, Convenient store and a Parking area.

Tank installation

Tanks are to be installed according to applicable South African National Standards.

Mini shopping Centre

The Mini shopping centre will be situated on the southern part of the site and will include a delivery area and parking facilities.

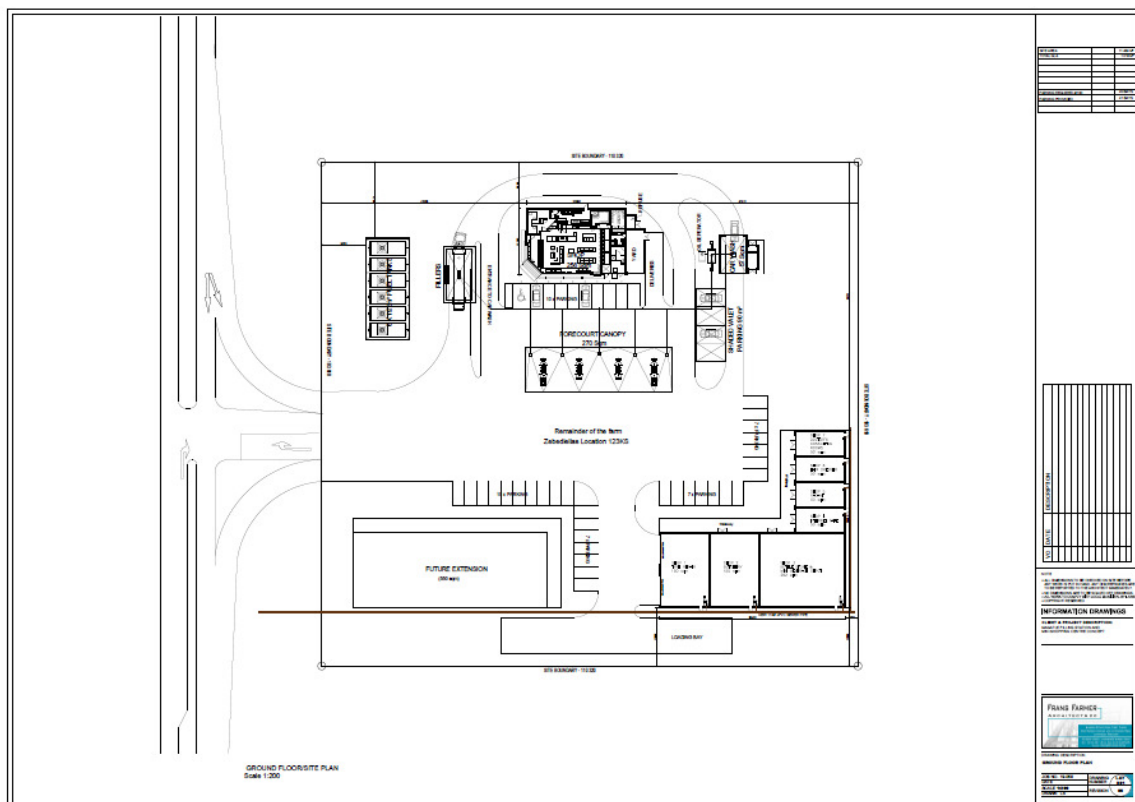


Figure 2: Layout plan

Ecological Sensitivity of the Study Area

Flori Scientific Services CC was appointed as the Independent Consultancy to conduct a Specialist Biodiversity Impact Assessment, which includes a Terrestrial Ecological Assessment and a Wetland Impact Assessment of the study site during April 2019. The findings are described below:

Vegetation:

The vegetation of the study site is moderately to highly degraded and transformed thornveld (Springbokvlakte Thornveld). The conservation status of Springbokvlakte Thornveld is vulnerable. The site was previously used as the show grounds for Magatle Village and surrounding areas. Therefore, the area was cleared of most bushveld years ago and the grass regularly cut. During the site investigations it appeared that the site has stood dormant for a while and some of the grasses, with a few short acacia thorn shrubs, have returned and grown. Most of the site is still cleared of bush and trees. There are a few trees growing on the site that were obviously left on purpose, mostly invasive gumtrees but some of which are protected trees species of Marula (*Sclerocarya birrea*) and Stink Sheperd's tree (*Boscia foetida*). The site is situated within the savanna biome of South Africa.

Priority species

During field investigations no Red Data Listed (RDL) species were observed and none are expected to occur.

Protected tree species identified in the study area

Two protected trees are present on the study site. Marula (*Sclerocarya birrea*), which is a national protected tree, and Stink Sheperd's tree (*Boscia foetida*) which is a provincial protected tree.

Fauna

Mammals

No large-medium sized mammals were observed during field investigations, with the exception of some common bird species and a few signs of mongoose and field mice. Some rodent species are more than likely to be present, although not observed during field investigations, except for signs such as droppings. Some priority species (including RDL species) are likely to occur in the study area due to the openness of bushveld areas to the south and west (in particular) as well as the presence of the nearby Nkumpi River. However, large and medium sized mammals will be limited in variety and numbers due to rural villages (such as Magatle) and the cultivation of lands (farming) in the area. Large free-roaming mammals are non-existent to rare in the region.

Avifauna

A few common species to the area such as doves, bulbuls, swallows, swifts, bee-eaters, francolins (*Pternistis spp*), guineafowl (*Numida meleagris*) and some raptors were observed. The study site is not situated within, or adjacent to, any Important Bird Areas (IBAs). The closest IBA (Wolkberg Forest Belt) is shown in the map below, which is approximately 16 km north of the site. No nesting or breeding birds were observed on the study site. A few nests were observed down at the Nkumpi River in the riparian zone. These were of more common bird species such as weavers. The river and riparian habitat is

suited to a number of common bird species. The study site and proposed activities will not have any impact on the river or riparian zone.

Reptiles

No reptiles were observed during field investigations. Lizards tend to prefer rocky habitats and there are no rocky outcrops (koppies), rocky ridges or areas of large rock sheets within the study area. The likelihood is rare that any priority lizard species will be present in the study area. Snakes tend to be more mobile and adaptable to various and altered environments. It is likely that some common snake species will be found on site from time to time, due especially to the nearby Nkumpi River.

Invertebrates

Invertebrates such as spiders, scorpions and butterflies are important faunal groups, but are difficult to fully assess in a short time period. During field investigations specific attention was given to priority species such as Mygalomorphae arachnids (Trapdoor and Baboon spiders) and red data butterflies. A few common sheet-web spiders (Linyphiidae) were found on site but no priority species were observed.

Faunal Species of Conservation Concern

During field investigations no faunal species of conservation concern were encountered. The general habitats present in the study area are not ideal for most priority species, including mammals, reptiles and most birds. Priority species, if encountered, will most likely be encountered traversing the area and not so much as breeding on the study site, due to lack of ideal habitat. No active or even old animal burrows were found in the study site.

Aquatic Ecology

Watercourses in the study area

There are no watercourses in the study area, including distinctive drainage lines, wetlands and freshwater pans (which is a type of wetland). The closest main river is the Nkumpi River, which is approximately 120m to 200m east of the study site. The proposed project will have no negative or positive impacts on the river, but the river was highlighted for the sake of transparency and investigations into the broader surrounding areas of the study site.

The outer edges of the river and riparian zone have been delineated as per the figure below. Between the study area and the river area existing negative impacts in the form of cultivated lands (farm lands).



Figure 3: Delineated watercourses

Ecology Sensitivity Analysis

The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. The highest calculated sensitivity unit of the two categories is taken to represent the sensitivity of that ecological unit, whether it is floristic or faunal in nature, please refer to the table below:

Table 1: Ecological sensitivity analysis

Ecological community	Floristic sensitivity	Faunal sensitivity	Ecological sensitivity	Development Go-ahead
Degraded Bushveld Thornveld	Medium/Low	Medium/Low	Medium/Low	Go-Slow

Go slow: Areas of medium/Low sensitivity.

These would typically be areas where large portions of the veld has been transformed and/or is highly infested with alien vegetation and lacks real faunal component. Few mitigation measures are typically needed, but it is always wise to approach these areas properly and slowly.

Priority areas

National priority areas include formal and informal protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National fresh water ecosystem priority areas (NFEPA) and National protected areas expansion strategy (NPAES) areas. The study site is not situated within any priority areas.

Critical Biodiversity Areas (CBAs)

The study area is situated within a critical biodiversity area (CBA). The CBA is delineated as an Optimal Area (CBA 2).

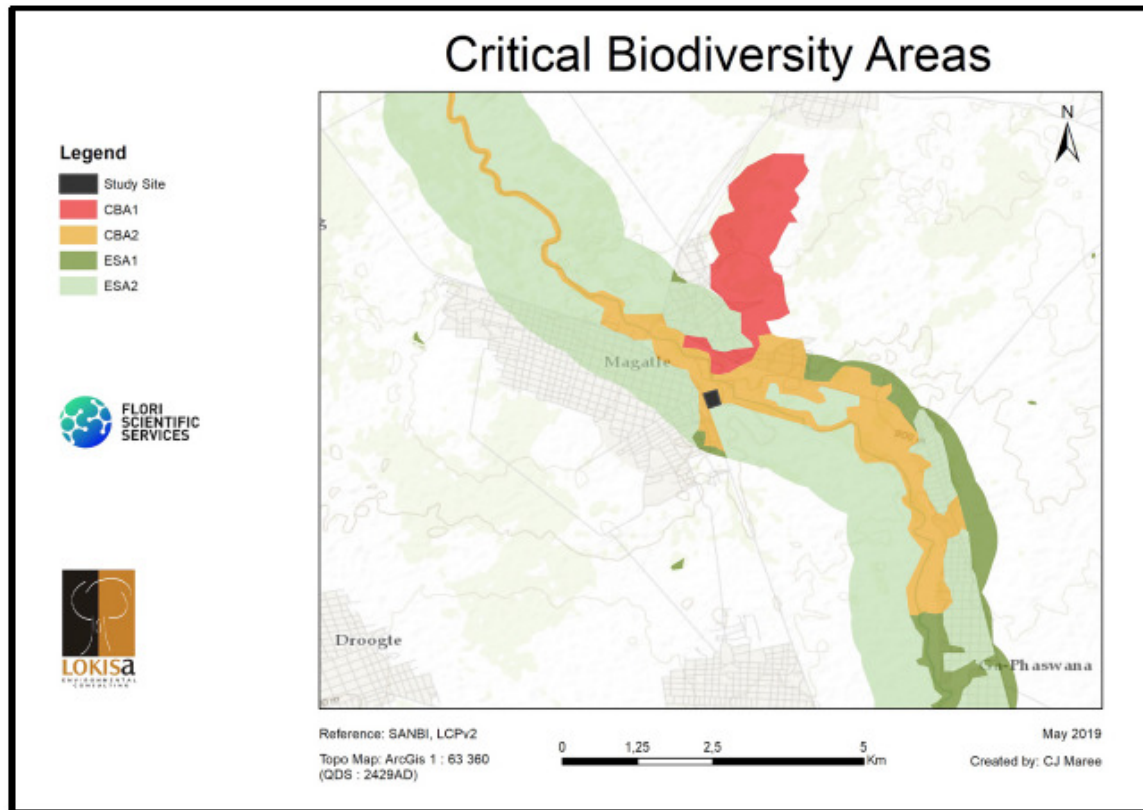


Figure 4: CBAs & ESAs

Fatal flaws

There are no fatal flaws and the project may proceed.

Sensitivity map

No high sensitive areas or 'No-Go' zoned were identified during field investigations. All information and data sets are taken into account when determining the sensitivity of the study site, including CBAs, ESAs, priority areas, ideal habitats for priority species (fauna and flora), watercourses, ridges, koppies (rock outcrops), presence of RDL and ODL species, threat status of the veldtype in which the study site is situated and the present levels of development, degradation found on site.

According to datasets the delineation of the study area within a CBA has been taken into consideration. But it also needs to be kept in mind that the actual site is mostly degraded and transformed due to the fact that it was historically used as a show grounds for the region. The resulting sensitivity map is shown below.



Figure 5: Sensitivity map of the site



Figure 6: Protected trees on site

Number of trees	Coordinates
1	24°27'36.36"S; 29°24'48.97"E
2	24°27'33.61"S; 29°24'48.80"E
3	24°27'33.44"S; 29°24'50.01"E
4	24°27'33.99"S; 29°24'51.93"E
5	24°27'33.47"S; 29°24'51.23"E
6	24°27'33.06"S; 29°24'50.92"E
7	24°27'32.73"S; 29°24'51.21"E
8	24°27'31.50"S; 29°24'49.73"E
9	24°27'30.81"S; 29°24'49.01"E

3 Objectives of the EMPr

As per Section (1) of Appendix 4 of Regulation 982 an EMPr must comply with Section 24N of the Act and include –

Table 2: Requirements according to Appendix 4 of GNR 982

Requirements according to Appendix 4 of GNR 982	Section in report
a) Details of the EAP who prepared the EMPr and the expertise of that EAP to prepare the EMPr, including curriculum vitae.	Section 1
b) A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 2
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.	Section 2
d) A description of the impact management outcomes, 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 – <ul style="list-style-type: none"> • Planning and design; • Pre-construction activities; • Construction activities; • Rehabilitation of the environment after construction and where applicable post closure; • Where relevant, operation activities. 	Section 4

<p>f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must where applicable, include actions to –</p> <ul style="list-style-type: none"> • Avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; • Comply with any prescribed environmental management standards or practices; • Comply with any applicable provisions of the Act regarding closure where applicable; • Comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable; 	Section 5
<p>g) The method of monitoring the implementation of the impact management actions as mentioned in the above paragraph (f);</p>	Section 7
<p>h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);</p>	Section 7
<p>i) An indication of the persons who will be responsible for the implementation of the impact management actions;</p>	Section 6
<p>j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;</p>	Section 12
<p>k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);</p>	Section 6
<p>l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;</p>	Section 7
<p>m) An environmental awareness plan describing the manner in which -</p> <ul style="list-style-type: none"> • The applicant intends to inform his or her employees of any environmental risk which may result from their work; and • Risks must be dealt with in order to avoid pollution or the degradation of the environment; and 	Section 8
<p>n) Any specific information that may be required by the competent authority.</p>	-

4 A description of the Impact Management Outcomes

The purpose of the EMPr is to act as an instrument to be used by the Applicant to ensure sound environmental practices are incorporated during the construction and operation of the development.

This EMPr is a detailed programme for the implementation of the mitigation measures to minimise negative environmental impacts during the life-cycle of the development. The EMPr contributes to the preparation of the contract documentation by developing clauses to which the contractor must adhere for the protection of the environment. The EMPr specifies how the construction of the project is to be carried out and includes the actions required for the Post-Construction Phase to ensure that all the environmental impacts are managed for the duration of the project's life-cycle.

The EMPr is to be implemented in a co-operative spirit with all parties (Applicant, Contractor, affected parties) involved in the setting of environmental objectives and practices.

The table below provides a summary of the identified impacts for the following phases of the proposed development-

- Construction phase; and
- Operational phase;

Due to the nature of the development it is anticipated that the infrastructure would be permanent, thus not requiring decommissioning or rehabilitation.

Table 3: Summary of Environmental aspects and potential Environmental Impacts

Environmental Aspect	Probable Impact
Fauna & Flora	<ul style="list-style-type: none"> • Impacts on fauna and flora • Degradation and destruction of habitats
Geology and soils	<ul style="list-style-type: none"> • Soil erosion, loss of topsoil, deterioration of soil quality • Soil pollution
Hydrology	<ul style="list-style-type: none"> • Storm water flow and drainage • Surface water pollution (i.e. Nkumpi River)
Aesthetics, Landscape Character and Sense of Place	<ul style="list-style-type: none"> • Noise • Visual impact (Light pollution)
Social well-being and quality of the Environment	<ul style="list-style-type: none"> • Safety & Security • Job opportunities • Air pollution/Dust
Historical environment	<ul style="list-style-type: none"> • Destruction of cultural / heritage sites

Infrastructure and services	<ul style="list-style-type: none"> • Pressure on existing infrastructure and services • Traffic
Waste	<ul style="list-style-type: none"> • Construction waste • Domestic waste

5 A description of the proposed impact management actions

The specifications outlined in the EMPr are applicable to all activities undertaken by all persons involved in the execution of the works, including sub-contractors, the workforce and suppliers for the duration of the activities for the proposed Magatle Filling Station and Mini Shopping Centre development.

In order to attain the impact management outcomes as outlined in Section 4 the EMPr is to address issues in the following manner:

The objective of the EMPr is to address the following issues:

1. Environmental Management considerations are implemented from the start;
2. Precautions against damage are taken timely, and
3. Impacts of the development on the environment are minimised.

6 Implementation of the EMPr

6.1 The Applicant

- 6.1.1 The overall responsibility for ensuring compliance lies with the Applicant.
- 6.1.2 The Applicant shall comply with the conditions set in the Environmental Authorisation by LEDET.
- 6.1.3 The Applicant shall ensure that the Contractor and all staff members, sub-contractors and suppliers understand and adhere to the EMPr.
- 6.1.4 The Applicant shall ensure that all sub-contractors and suppliers are contractually bound to adhere to the EMPr and Environmental Code of Conduct.

6.2 Environmental Control Officer

- 6.2.1 The Applicant shall appoint a suitably qualified Environmental Control Officer (ECO) to supervise the implementation of the EMPr.
- 6.2.2 The Contractor must be notified of this appointment and furnished with the contact details of the ECO.

- 6.2.3 The ECO shall be responsible for:
- Day to day implementation of the EMPr and coordination of all environmental matters on site.
 - Ensuring that all staff members are adequately trained and aware of the EMPr and its Environmental Code of Conduct.
 - Fortnightly environmental inspections (according to the criteria specified in the EMPr).
 - Liaison with the project manager, client and public.

6.3 Contractor

- 6.3.1 The Contractor, including all sub-contractors, shall comply with the specifications in the EMPr.
- 6.3.2 A representative of all sub-contractors will receive a copy of the EMPr.
- 6.3.3 A representative of each sub-contractor will be required to sign the Environmental Code of Conduct to give assurance that they understand the EMPr and that they undertake to comply with conditions therein.

7 Environmental Reporting Procedures

An Environmental Incidents Register and an Environmental Complaints Register will be in place and will be maintained by the ECO. Upon occurrence of non-compliance or a complaint of an environmental nature the incident will be recorded in the relevant register.

The registers must be made available to the ECO upon every fortnightly site visit. EMPr related issues would be discussed at all construction site meetings. A copy of the relevant sections of the minutes of these site meetings must be made available to the ECO.

8 Environmental Awareness Training/Induction

The ECO will be responsible for putting in place an Environmental Awareness Training Programme for all staff members. Before commencing with any work, all staff members shall be briefed about the Environmental Code of Conduct. The training programme has to be approved by the ECO. After being briefed about the contents of the Environmental Code of Conduct, staff members shall sign an Environmental Training register as proof of their training.

9 Environmental Control Measures

The EMPr outlines measures to be implemented in order to minimise any potential environmental degradation associated with the construction activities. It should serve as a guide for the Contractor and the construction workforce on their roles and responsibilities concerning environmental management on the construction site and provide a framework for environmental monitoring throughout the construction period.

Measures to control potential environmental impacts during the construction phase are specified. Except where otherwise stated, all these control measures will apply throughout the construction period and, as part of the project contract, the Contractor shall adhere to these measures at all times.

10 Contract

The Contractor/s shall be handed a copy of all relevant documentation regarding the project and shall, before any work is conducted, meet with the ECO in order for the Contractor to familiarise himself with the environmental issues concerning the site.

A commitment from the Contractor is required on the following issues:

- To take into consideration the landowners in the surrounding area;
- Always behave professionally on and off site;
- To ensure quality of work done, technical and environmental;
- To resolve problems and claims arising from damage immediately to ensure a smooth flow of operations (take relevant steps to ensure no further damage or disturbance and resolve environmental problems adequately with the use of risk management and emergency response procedures);
- To use this EMPr for the benefit of all involved;
- To have an eco-friendly approach;
- Not to litter; and
- To preserve the natural environment by limiting destructive actions on site.

An agreement is to be signed by the Contractor that:

- He/She knows and understands the content of the EMPr,
- He/She is able and shall comply with all legislation pertaining to the nature of the work to be done and all things incidental thereto.

11 Statutory, Legal and other requirements

The following sources of South African Law have been identified and will form the basis of the EMPr:

- Constitution of the Republic of South Africa, Act 1996 (Act 108 of 1996)
- National Environmental Management Act, 1998 (Act 107 of 1998)
- NEMA EIA Regulations, 2014 (Government Notice Regulations Nos. 982, 983, 984, 985)
- National Water Act, 1998 (Act 36 of 1998)
- National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
- National Environment Management: Air Quality Act, 2004 (Act 39 of 2004)
- National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
- National Road Traffic Act, 1996 (Act 93 of 1996)
- Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
- Occupational Health and Safety Act, 1993 (Act 85 of 1993)
- National Heritage Resources Act 1999, (Act 25 of 1999)
- South African Guidelines for Sustainable Drainage Systems
- Applicable Lepelle-Nkumpi Local Municipality By-Laws

12 Environmental Standards

12.1 Water Quality Standards

The National Water Act 1998 (Act 36 of 1998)

The aim of this Act is to provide for the fundamental reform of the law relating to water resources; to repeal certain laws; and to provide for matters connected therewith. The quality of both the surface and underground water should be protected during all the phases of the development.

The following standards and guidelines should be adhered to at any time during the development:

- ❑ The South African Water Quality Guidelines, DWAF, Department of Health & Water Research Commission, 2nd edition 1999, a set of guidelines for water pertaining to the respective areas of domestic, recreational, industrial and agricultural use.

12.2 Noise Standards

The following standards will be used for this purpose:

- ❑ SABS 0103:1994 – The Measurement and Rating of Environmental Noise with respect to Annoyance and to Speech Communication
- ❑ SABS APR 020:1992 – Sound Impact Investigations on Integrated Environmental Management.

13 Environmental Management Programme

The following tables form the core of this EMPr for the construction and operational phases of this development. These tables should be used as a checklist on site, especially during the construction phase.

Table 4: Planning, Design and Pre-Construction Phase

IMPACT	OUTCOME/OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
<p>Compliance to Pre-construction conditions</p>	<p>Ensure compliance to all necessary conditions</p>	<p>According to datasets the delineation of the study area within a CBA has been taken into consideration. But it also needs to be kept in mind that the actual site is mostly degraded and transformed due to the fact that it was historically used as a show grounds for the region. The few protected trees on site have also been taken into consideration. The proposed project should have no impact on these trees and recommendations are that they should not be removed at all, but nurtured and protected.</p> <p>If (as an absolute last resort) some of the trees need to be removed, then a tree permit application through National and Provincial Departments will first need to be done.</p>	<p>Project team and Applicant</p>	<p>Ongoing</p>

TABLE 5: MANAGEMENT PLAN: CONSTRUCTION PHASE

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
CONSTRUCTION CAMP AND RELATED ACTIVITIES	Access Control	<ul style="list-style-type: none"> • Construction related traffic to and from site to be minimised. • Access to construction site to be controlled. • Only existing roads to be used by vehicles during construction. • All vehicle and machinery tracks and disturbed areas should be rehabilitated immediately after the construction phase. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month • Monthly report
	Provision and control of ablution facilities	<ul style="list-style-type: none"> • The Contractor shall make available safe drinking water fit for human consumption at the construction camp and all other working areas. • Washing and toilet facilities shall be provided on site and in the construction camp. • At least 1 toilet must be available per 15 workers using the construction camp. • Toilet paper must be provided and must be available at all times. • The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately. • The chemical toilets must be emptied on a regular basis. 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month • Monthly report
GEO-TECHNICAL ASPECTS	Prevent the destruction or loss of topsoil	<p><u>Recommendations as per the Geotechnical report</u></p> <p>Founding conditions are favourable for the proposed development and conventional construction methods can be implemented. Depending on the design and loads to be applied, the following foundation recommendations are made:</p> <p><u>Strip footing</u></p> <ul style="list-style-type: none"> • The width of the strip footings must be at least 600mm in the case of a foundation to a load-bearing or free standing masonry wall or to a timber framed wall supporting a roof. • Where any strip foundation is laid at more than one level, the 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month • Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>higher portion of the foundation shall extend over lower portion for a distance at least equal to the thickness of the foundation.</p> <p><u>Precautions</u> The following precautions may be considered during construction on the site:</p> <ul style="list-style-type: none"> • The site is relatively flat therefore extensive site drainage and plumbing/service precautions must be considered. • Structures to have damp proofing. • The site must be graded to prevent ponding of storm water. • 1.5m apron around the structures to prevent water ingress under the immediate area or the foundation. • Walkways and drive ways must be paved to allow easy access to the property during wet seasons. • Planting of grass/lawn on the stands may be considered to prevent erosion • Roads must be paved or tarred. Specialist advice must be sought for installation of the roads. • Care must be taken with foundation designs where foundations straddle different soil mediums such as rock and soil. <p><u>Pavement layers</u> The soils underlying the site exhibit good compaction characteristics or road building and pavement construction. According to the TRH14 guidelines, the residual sandstone soils underlying the site are classified as G5 and G6, therefore are suitable for subbase, selected layer and subgrade construction.</p>		
FLORA & FAUNA	Protection of existing indigenous flora and fauna against degradation,	<ul style="list-style-type: none"> • Only existing roads to be used by vehicles during construction. Roads to be rehabilitated after construction by constructors. 	<ul style="list-style-type: none"> • ECO • Contractor 	<ul style="list-style-type: none"> • Ongoing by Contractor • Twice a month

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
	destruction of habitats/ecosystem Prevention of impacts on existing fauna and flora Eradication of invasive species	<ul style="list-style-type: none"> The contractor must ensure that no fauna species are disturbed, trapped, hunted, or killed during the construction phase. No trees to be cut down and removed unless within actual development zone. Disturbed surface areas in the construction phase to be rehabilitated. No open trenches to be left. No mounds of soils created during construction to be left. All aloes found in the study areas must be lifted and transplanted in a similar nearby habitat. 		<ul style="list-style-type: none"> by ECO Monthly report
AIR QUALITY	Limitation of dust	<ul style="list-style-type: none"> The construction area is to be physically screened off with a shade cloth fence (preferably dark green or grey as it will blend in well with the surrounding environment) at least 1.8m in height, to prevent dust from being blown onto the road or neighbouring properties. Dust must be suppressed on access roads and construction areas during dry periods by the regular application of water or a biodegradable soil stabilisation agent. Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution. Excavating, handling or transporting erodible materials in high wind or when dust plumes are visible should be avoided. All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials 	<ul style="list-style-type: none"> Contractor ECO 	<ul style="list-style-type: none"> Ongoing Twice a month Monthly report
VISUAL	Minimise Visual intrusion and light pollution	<ul style="list-style-type: none"> The construction camp must be located as far from residential properties as possible. Light pollution should be minimised. Construction / management activities must be limited to the daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays. Lighting on site is to be sufficient for safety and security purposes, 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO. Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>but shall not be intrusive to neighbouring residents, disturb wildlife, or interfere with road traffic.</p> <ul style="list-style-type: none"> • Should overtime/night work be authorised, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighbouring residents. In this situation low flux and frequency lighting shall be utilised. • The site must be managed appropriately and all rubbish and rubble that can't be recycled must be removed to a licensed Landfill site. • Waste disposal certificates must be obtained for any waste that is disposed of. • Waste must not remain on site for more than 2 weeks. • Site development to be limited to development footprint and access road. 		
NOISE	Reduce noise from construction activities impacting on neighbours.	<ul style="list-style-type: none"> • Noise levels shall be kept within acceptable limits, and construction crew must abide by National Noise Laws and local by-laws regarding noise. • No sound amplification equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc.) must be preceded by a notice being given to the affected neighbours at least 24 hours in advance • The use of equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc.) is encouraged as per operating instructions and maintained properly during site operations. 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Daily by contractor • Twice a month by ECO. • Monthly report
TRAFFIC	Construction vehicles	<ul style="list-style-type: none"> • The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. • Construction vehicles to use public roads outside peak hours. • No construction vehicles exceeding defined speed limits. • Appropriate traffic safety signage will be provided to warn the 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Daily by contractor • Twice a month by ECO. • Monthly

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		public of construction traffic and flagmen will be on duty where traffic merges with normal road traffic.		report
INFRASTRUCTURE AND SERVICES	Infrastructure and services not to be impacted.	<ul style="list-style-type: none"> • Ensure services are not adversely affected by construction. • Integrity of existing services to be ensured. • Adherence to the conditions provided by Eskom: • There is a 9 metres building and tree restriction on either side of the centre line of the 22Kv power lines respectively, which must be acknowledged to in future development. • Eskom Distribution's services and equipment must be acknowledged at all times and may not be tempered or interfered with. • All work within Eskom Distribution reserve area must be done in accordance with the requirements of the Occupational Health and Safety Act No. 85 of 1993 as amended. • Special attention must be given to the clearances between Eskom's conductors, structures, cables and electrical apparatus and the proposed work as stipulated by Regulation R15 of the Electrical Installations Regulations of the aforementioned Act or any other legal requirements. • No construction work may be executed closer than 9 metres from any of Eskom's structures from the middle of the power line and no squatting to be allowed in the restriction area. • No tree shall be planted within the restriction area or will be allowed to grow to a height in excess of the horizontal distance of that tree from the nearest conductor or any power line or to grow in such a manner as to endanger that line should it fall or be cut down. • Natural ground level must be maintained within Eskom Distribution restriction area. • Eskom Distribution shall not be liable for the death or injury to that person or for the loss of or damage to any property whether as a result of the encroachment or of the use of the area where Eskom Distribution has its services, by the applicant, his/her agent, 	<ul style="list-style-type: none"> • Contractor 	<ul style="list-style-type: none"> • Monthly by contractor • Twice a month by ECO. • Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>contractors, employees, successors in title and assigns.</p> <ul style="list-style-type: none"> The applicant indemnifies Eskom against loss, claims or damages including claims pertaining to interference with Eskom Distribution services or apparatus or otherwise. The applicant's attention is drawn to section 27 (3) of the Electricity Act 1987, as amended in 1994, which stipulates that the applicant can be fined and/or imprisoned as a result of damage to Eskom's apparatus. Eskom Distribution shall at all times have unobstructed access to and egress from its services. The ineffective management and handling of waste is of crucial importance. No dumping shall be allowed within Eskom Distribution restriction areas. All unwanted (gaseous, liquid or solids) should be disposed of at a registered waste disposal site as stipulated under Section 20 of the Environmental Conservation Act (Act 73 of 1989). Any relocation of Eskom's services, due to this development, will be for the account of the Developer. The Developer will also be responsible for granting Eskom an alternative route for the power line. Please contact Eskom Customer Contact Centre; 0860 37566 in connection with cost. The Eskom's unauthorised area representative for Zebediela Technical Service Area, Nthabiseng Mamabolo at Telephone Number: 015 230 4395 / 073 732 6442, MamaboND@eskom.co.za. 		
SOLID WASTE MANAGEMENT	Control of dumping of building material, rubble and any material used during construction or rehabilitation.	<ul style="list-style-type: none"> No dumping of building material and rubble shall take place other than where it is required to be used as fill. Proper rubbish/waste bins to be provided. These to be emptied weekly and the waste to be removed to an official waste disposal site. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO. Monthly report
	Refuse and waste control including waste storage and	<ul style="list-style-type: none"> Proper rubbish/waste bins to be provided. These are to be emptied weekly and the waste to be removed to an official/licensed waste disposal site. Once again only by officially 	<ul style="list-style-type: none"> Contractor ECO 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
	sorting at source.	<p>registered waste-disposal companies and only to official waste sites.</p> <ul style="list-style-type: none"> • Domestic waste generated on site will be separated at source and recycled. • Recycling of building material. • Stripping and storage of topsoil for rehabilitation. • Waste must not remain on site for more than two weeks. • The site must be managed appropriately and all rubbish and rubble that cannot be recycled must be removed to a Licensed Landfill site. • Waste disposal certificates must be obtained for any waste that is disposed off and presented to the ECO prior to each fortnightly site visit. • No burning of waste. 		<p>by ECO.</p> <ul style="list-style-type: none"> • Monthly report
	Stockpiled material	<ul style="list-style-type: none"> • Methodology of storing topsoil to be approved by ECO • All construction material, equipment and any foreign objects brought into the area by contractors and staff to be removed immediately after completion of construction. • Waste disposal certificates must be obtained for stockpiled material that is disposed of and presented to the ECO prior to each fortnightly site visit. 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month by ECO. • Monthly report
	Removal of excavated material	<ul style="list-style-type: none"> • To avoid compaction of soil and material left in heaps. • Trucks removing excavated material should use existing roads. • No waste may be placed in any excavations on site. • Spoil should be disposed of at a Licensed Landfill site. • Waste disposal certificates must be obtained for any waste that is disposed of and presented to the ECO prior to each fortnightly site visit. 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Ongoing by Contractor • Twice a month • Monthly report
POLLUTION	Minimise soil erosion, loss of topsoil, deterioration of soil quality and soil pollution.	<ul style="list-style-type: none"> • Appropriate erosion and storm water management structures must be installed around the construction site. • No mounds of soils created during construction to be left. Soils around erected poles to be leveled and sculptured to the original contours of the surrounding soils. 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month by ECO. • Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> • Disturbed surfaces to be rehabilitated with locally indigenous grass species. No open trenches to be left. • Ensure correct position of construction caps, equipment yards, refueling depots, concrete batching plant, bitumen facility, etc. to avoid areas susceptible to soil and water pollution. • Provide containment areas for potential pollutants at construction camps, refueling depot, concrete batching plants and bitumen facilities. • All hazardous materials such as but not limited to paint, turpentine and thinners must be stored appropriately to prevent these contaminants from entering terrestrial and water environments. • Ensure handling, transport and disposal of hazardous substances are adequately controlled and managed according to the Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste (2nd Edition, 1998). • Remove polluted soil from site to be remediated. • All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. • Machinery and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or at the construction camp. • Drip trays are to be utilised during daily greasing and re-fuelling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. 		
CONCRETE AND CEMENT PREPARATION AND HANDLING	The use and preparation of concrete on site has the potential to impact negatively on the environment.	<ul style="list-style-type: none"> • Cement preparation areas or bulk cement delivery areas must be located prior to construction. • Do not mix cement and concrete directly on the ground. • After closure of batching plants and/or concrete preparation areas all waste concrete shall be removed together with contaminated soil. • Waste material to be removed to a Licensed Landfill site. 	<ul style="list-style-type: none"> • Contractor • ECO 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month by ECO. • Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> Waste disposal certificates must be obtained for any waste that is disposed of. 		
SAFETY AND SECURITY	Ensure social well-being of site personnel.	<ul style="list-style-type: none"> Signs should be erected on all entrance gates indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) [OHSA] and the National Building Regulations. All structures that are vulnerable to high winds must be secured (including toilets). Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). All vehicles and equipment used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the OHSA. An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMPr and relevant occupational health and safety issues. All construction workers shall be issued with ID badges and clearly identifiable uniforms. Access to fuel and other equipment stores is to be strictly controlled. Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided. Adequate emergency facilities must be provided for the treatment 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO. Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>of any emergency on the site.</p> <ul style="list-style-type: none"> The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction crew camps at all times. 		
EMPLOYMENT OPPORTUNITIES	Make provision for employment where possible	<ul style="list-style-type: none"> Make use of local labour. Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations. Provide skills training for construction workers. 	<ul style="list-style-type: none"> Contractor Project manager 	<ul style="list-style-type: none"> Ongoing Twice a month by ECO Monthly report
HYGIENE	Ensure proper hygiene on site	<ul style="list-style-type: none"> The Contractor shall make available safe drinking water fit for human consumption at the site offices and all other working areas. Washing and toilet facilities shall be provided on site and in the Contractors camp. Adequate numbers of chemical toilets must be maintained in the Contractors camp to service the staff using this area. At least 1 toilet must be available per 20 workers using the camp. Toilet paper must be provided. The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately. The chemical toilets must be emptied on a regular basis. HIV AIDS awareness and education should be undertaken by all Contractor staff. 	<ul style="list-style-type: none"> Contractor 	<ul style="list-style-type: none"> Ongoing Twice a month by ECO Monthly report
HYDROLOGY (Storm water management and impacts on surface water resources i.e. Nkumpi River and underground water)	Manage storm water flow and drainage	<ul style="list-style-type: none"> Excavations should be open for as short period as practically possible, while cleared and stripped areas should be vegetated as soon as possible. Ensure vehicle and heavy machinery used on-site are regularly inspected for leaks and serviced at frequent intervals. Spill trays to be used where possible. All material, fuels and chemicals must be stored in a secured in a 	<ul style="list-style-type: none"> Contractor ECO 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO. Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>sealed and bunded area to prevent pollution from spillage and leakages. The use of chemicals must be controlled.</p> <ul style="list-style-type: none"> • Construction camp should be situated outside the riparian buffer. • Storm water management plans to be compiled and implemented. Special attention to be given to areas along the northern and western boundaries of the site. It is in these areas that there is a slight down gradient and polluted water can potentially flow from here into the Nkumpi River catchment. • It is important to ensure vegetation cover as widely as possible, to improve the potential water quality emanating from the site. • No temporary laydown areas or site offices may be established within 100m of any watercourses, with particular reference to the Nkumpi River. • All watercourses are 'no-go' zones in terms of the movements of people, vehicles and materials. • No water may be extracted from the Nkumpi River for construction use, unless the client and contractor have acquired relevant permits. • No vehicles, especially cement trucks may be washed down by the river. • No construction vehicles may go within 100m of the Nkumpi River. • Utilize proper was management practices. • Ensure that the handling, transport, storage and disposal of hazardous substances is adequately controlled and managed. • Provide containment areas for potential pollutants at construction camps, refueling, depot and concrete batching plants. 		
GRAVES, ARCHAEOLOGICAL AND OTHER HERITAGE SITES	Protection of Archaeological and heritage sites.	<ul style="list-style-type: none"> • The possibility of the occurrence of subsurface finds or previously unknown sites cannot be excluded. Therefore, if during construction any possible finds such as tool scatters, artefacts or bone and fossil remains are made, the operations must be stopped and a qualified archaeologist must be contacted for an assessment of the find and therefore the chance find procedure should be in place for the project. 	<ul style="list-style-type: none"> • Contractor • ECO • LIHRA 	<ul style="list-style-type: none"> • Ongoing by Contractor. • Twice a month by ECO. • Monthly report

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>Chance find procedure:</p> <ul style="list-style-type: none"> • If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the Applicant, one of its subsidiaries, contractors and subcontractors, or services provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager. • It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area. • The senior on-site Manager will inform the ECO of the chance find and its immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA. <p>Monitoring Programme for Palaeontology – to commence once the excavations begin</p> <ul style="list-style-type: none"> • The following procedure is only required if fossils are seen on the surface and when excavations commence. • When excavations begin, the rocks must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insets, bone coal) should be put aside in a suitably protected place. This way the project activities will not be interrupted. • Photographs of similar fossil plants must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones. • Photographs of the putative fossils can be sent to the Palaeontologist for a preliminary assessment. • If there is any possible fossil material found by the developer/environmental officer/miners then the qualified palaeontologist sub-contracted for this project should visit the 		

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<p>site to inspect the selected material and check the dumps where feasible.</p> <ul style="list-style-type: none"> Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the paleontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils. If no fossils are found and the excavations have finished then no further monitoring is required. 		
	Protection of graves.	<ul style="list-style-type: none"> Should human bones, skeletons or graves/burial sites be found, the SAPS and SAHRA's BGG office must be notified immediately and all work must cease until the SAPS has finalised its investigation. 	<ul style="list-style-type: none"> Contractor ECO LIHRA SAPS SAHRA 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO. Monthly report
CLOSURE AND REHABILITATION	Reduction in the potential of land if construction and construction camp sites are not rehabilitated.	<ul style="list-style-type: none"> To ensure that the rehabilitation of the construction area take place and the impact of these activities are limited. Rehabilitation should preferably take place during a dry spell. Disturbed surface areas in the construction phase to be rehabilitated. No pen trenches to be left. No mounds of soils created during construction to be left. All construction materials, equipment and any foreign objects brought into the area by contractors to be removed immediately after completion of the construction phase. 	<ul style="list-style-type: none"> Contractor ECO 	<ul style="list-style-type: none"> Ongoing Twice a month by ECO Monthly report
	Rehabilitation	<ul style="list-style-type: none"> To introduce an indigenous mixed grass cover to the areas disturbed by construction activities but not part of the development that is representative of the former habitat found at the site. 	<ul style="list-style-type: none"> Contractor ECO 	<ul style="list-style-type: none"> Ongoing by Contractor. Twice a month by ECO.

ISSUE	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> • All areas disturbed during construction shall be reinstated to a state that approximates or better the state that they were in before construction. • The re-vegetation programme must take cognisance of the climatic and seasonal conditions with the most favourable period being in spring and early summer. • Construction of the development would require a substantial amount of vegetation clearance and earth moving to take place. These disturbances could in all likelihood lead to the colonisation of the site by exotic invasive plant species that specialise in populating disturbed areas. Invasive species are to be removed. • Areas denuded during construction phase to be rehabilitated with locally indigenous grass species. It is also recommended, but not obligatory for the contractor / client to plant locally indigenous trees such as bush willows (<i>Combretum</i> species) along the outer boundary of the site to add buffers and even improve the environment. 		<ul style="list-style-type: none"> • Monthly report

TABLE 6: MANAGEMENT PLAN: OPERATIONAL PHASE

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
AIR QUALITY	Control emissions that might come from the Filling Station	<ul style="list-style-type: none"> • Standard vents fitted to the breather pipes minimise the loss of vapours. • Emissions from the Filling station will be of low level and thus disperse into the atmosphere. • The emissions from the Filling Station would be dispersed according to the prevailing wind direction, with increased distance the concentration of the emitted particles will decrease. 	• Applicant	• Ongoing
HYDROLOGY STORM WATER MNAGEMENT	Maintenance of the storm water system Protection of surface and underground water.	<ul style="list-style-type: none"> • The use of all detergents, oil, fuels and chemicals which could potentially leach into underground water must be controlled. This can be done by sealing of the forecourt and refuelling bay area to prevent infiltration of hydrocarbon into the aquifer underlying the site. • Storm water draining from the surfaced areas should be collected in a sealed sump to be treated or removed. All contact water should be discharged into the municipal system with the required approval and not into any streams, or adjacent areas. • Subsurface fuel storage facilities should be constructed in concrete encasements with a sump system to prevent spilled fuel from entering the soil and weathered rock. Storage facilities should also be fitted with a leakage detection system. • Fuel lines and dispensers should be rendered leak-proof by a competent person. Fuel pumped into underground fuel tanks should be accounted for, for the early detection of leakages. • An on-site monitoring borehole should be drilled and monitored on a quarterly basis in order to identify changes in water quality timeously. • The proposed development's storm water to be adequately managed. • Storm water systems to be checked on a regular 	• Applicant	• Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<p>basis to ensure working properly and there are no leaks, blockages, erosion, siltation, etc.</p> <ul style="list-style-type: none"> • It is important to ensure vegetation cover as widely as possible. • Inspection of access gravel roads to take place routinely and any erosion to be corrected. 		
ALIEN INVASION AND LOSS OF BIODIVERSITY	Control alien invasive species	<ul style="list-style-type: none"> • Mechanical control of alien plants around disturbed areas to be implemented within three months of completion of construction. Thereafter every six months. Mechanical control to be of such nature as to allow local, indigenous grasses and other pioneers to colonise the previously disturbed areas, thereby keeping out alien invasives. After the first year weed control can form part of the routine maintenance programme. • No chemical control (herbicides) of alien plants to be used within 100m of any watercourses. 	• Applicant	• Ongoing
NOISE	Minimise unacceptable levels of noise	<ul style="list-style-type: none"> • Ensure acceptable noise levels 	• Applicant	• Ongoing
SOCIO ECONOMIC	Avoid a large influx of uncontrolled numbers of people seeking employment opportunities. This might also pose a security risk.	<ul style="list-style-type: none"> • Implement local labour • Provide clear and realistic information regarding employment opportunities and other benefits for local communities in order to prevent unrealistic expectations. 	• Applicant	• Ongoing
VISUAL IMPACT	<p>Minimise an adverse impact on the visual quality of the area because of the following:</p> <p>The buildings and advertising signs may be visually intrusive.</p> <p>Lights from the</p>	<ul style="list-style-type: none"> • The buildings must be regularly painted. • Signs for advertising must conform to the standards of South African Manual for Outdoor Advertising Control (SAMOAC). • Light pollution should be minimised • Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring residents, disturb wildlife, or interfere with road traffic 	• Applicant	• Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
	service/filling station may be visually intrusive.	<ul style="list-style-type: none"> • All lights used for non-security purposes should be energy efficient for example compact fluorescent lights (CFL). Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs • Outside lights will have to be downward shining (eyelid type), low wattage and should not be positioned higher than 1 m above the ground surface • Areas that have been landscaped must be maintained. 		
WASTE MANAGEMENT	General waste separated at source	<ul style="list-style-type: none"> • Sorting of waste • Waste yard to be kept clean and neat • Adequate numbers of waste disposal receptacles are to be positioned at strategic locations within the development. • All types of waste generated during operation of the proposed uses must be disposed of in accordance with the municipal waste disposal requirements. It is recommended that the integrated waste management approach which incorporates waste reduction, reuse and recycling is implemented where appropriate in order to reduce the amount of waste sent to landfills. 	• Applicant	• Ongoing
SAFETY AND SECURITY	Ensure proper safety and security on site	<ul style="list-style-type: none"> • Appropriate measures should be in place for the correct storage and handling of fuel as well as the procedures for dealing with dangerous situations. • Staff should be adequately trained with respect to dealing with crime. • Equipment and materials must be handled by staff that has been adequately trained. • Staff must be adequately updated about safety procedures. • Emergency contact details for the police, Security 	• Applicant	• Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		Company and fire department must be readily available.		
PRESSURE ON EXISTING INFRASTRUCTURE AND SERVICES	Minimise pressure on existing infrastructure and services	<ul style="list-style-type: none"> • Integrity of existing services in the area to be ensured. 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing
GROUNDWATER POLLUTION	Prevent ground water pollution	<ul style="list-style-type: none"> • The use of all detergents, oil, fuels and chemicals which could potentially leach into underground water must be controlled. This can be done by sealing of the forecourt and refuelling bay area to prevent infiltration of hydrocarbon into the aquifer underlying the site. • Storm water draining from the surfaced areas should be collected in a sealed sump to be treated or removed. All contact water should be discharged into the municipal system with the required approval and not into any streams, or adjacent areas. • Subsurface fuel storage facilities should be constructed in concrete encasements with a sump system to prevent spilled fuel from entering the soil and weathered rock. Storage facilities should also be fitted with a leakage detection system. • Fuel lines and dispensers should be rendered leak-proof by a competent person. Fuel pumped into underground fuel tanks should be accounted for, for the early detection of leakages. • An on-site monitoring borehole should be drilled and monitored on a quarterly basis in order to identify changes in water quality timeously. • Strict procedures for the management of the site must be developed and adhered to. • An emergency accidental spillage plan must be in place and workers must be trained to handle such accidents. • Leak detection measures/systems must be 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<p>implemented in all fuel storage and transmission lines and tanks.</p> <ul style="list-style-type: none"> • A monitoring borehole should be identified and used as a ground water monitoring point. If contamination is detected the ground water monitoring cycle must be shortened to a two monthly cycle. • Fuel dispenser pumps must be located on a hardened surface to contain spillages. • Chemical storage areas should be sufficiently contained, and the use of chemicals should be controlled. • The pump, refuelling and forecourt areas should all be located on a hardened surface which drains into a common drain. This drain must feed onsite oil and water separator such as a Zorbit Grease Trap. The accumulated grease and oil must be removed by an accredited company. • Overfill and spillages during tanker refuelling and fuel dispensing should be prevented by the installation of automatic cut off devices. • Tanker delivery driver must be present during delivery of fuel with the emergency cut off switch • In the event of the pump dispenser or the hoses being knocked over or ripped off the fuel supply must be cut off by shear off valves. • Strict procedures for the management of the site must be developed and adhered to. • Staff must be trained to prevent spillages during fuel dispensing. • Staff must be trained adequately so as to identify and minimise the impacts of leaks. • The UST's must comply with the relevant SANS standards with respect to tank manufacture and installation. 		

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> • UST's must have corrosion protection. 		
TRAFFIC	Minimise traffic congestion on surrounding roads.	<ul style="list-style-type: none"> • Compliance to Traffic and Municipal By-Laws 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing
ADDITIONAL ISSUES ASSOCIATED WITH THE FILLING STATION				
FUEL DELIVERY AND ENVIRONMENTAL RISK The transport of potentially hazardous substances can, if not properly controlled, be a danger to the public	Prevent danger to the public	<ul style="list-style-type: none"> • Site management and the driver of the delivery trucks must comply with the Fuel Provider's Fuel Delivery Standards. • Management must ensure effective stock inventory monitoring and recording. Regular auditing must take place for early identification of possible leaks and to keep a leak history for the site. Management must implement the so called SIAM (Statistical Inventory Analysis Management) for wet stock management and leakage detection. For the correct procedures related to, control and reporting of excessive daily losses, refer to the "Fuel Provider's HSEQ Manual, Leak Detection and Wet Stock Management Standards. 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing
STORAGE TANK AREA HAZARDS AND MANAGEMENT PRACTICES	Prevention of injury or damage i.e. ensuring safety on site	<ul style="list-style-type: none"> • In order to minimise the risk of injury to staff, customers and members of the public and damages to the environment management must identify the hazards on the site and define preventative controls to eliminate or control the risks. This would include at least the following: <ul style="list-style-type: none"> • flammable vapour and fire risk • combustible materials • moving vehicles • slippery and uneven surfaces • hot surfaces • compressed air falling objects 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> moving machinery For more detail refer to the Fuel Provider's Service Station HSEQ Manual, General Forecourt Hazards and Practices. 		
LEAK DETECTION AND WET STOCK MANAGEMENT	Prevention of pollution	<ul style="list-style-type: none"> Leak monitoring wells must be checked on a weekly basis. Records of such tests must be kept in good working order. 	• Applicant	• Ongoing
OIL SEPARATORS (SOIL AND GROUND WATER)	Prevention of pollution	<ul style="list-style-type: none"> The oil separator must be inspected and emptied on a regular basis. The collected residue must be disposed at a suitable waste disposal facility. Chain of custody documentation is to be completed as proof of suitable end recipient or disposal facility. Storm water drains should be regularly cleared of debris and soil to prevent overflowing and or blockage of such drains. 	• Applicant	• Ongoing
FUEL STORAGE AND HANDLING FACILITIES	Prevention of pollution	<ul style="list-style-type: none"> Underground Storage Tanks (UST's) must be of glass reinforced polyester-coated mild steel design to minimise the risk of corrosion failure of the tanks. Tank floatation must be incorporated in the design and correctly installed to prevent the flotation of the tank. Underground tank manholes must be raised above ground level to prevent water ingress. Cast-iron manhole covers must have removable centre core for tank dipping. Product identification must be in the form of a colour-coded collar around the dip pipe, painted manhole cover and frame. Dip caps must be lockable and the seal must be flexible and not deformed. Submersible pump installations must be fitted with leak detectors. 	• Applicant	• Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> • An appropriate number of observation wells must be installed in the fills surrounding the UST's to check for production losses (visual and olfactory) and recovery/remediation in the case of product loss. • Ensure that well caps are installed and in place. • The vent pipe must terminate at least 3,5m above the ground or 0,6m above the building roof level. • The vent pipe must vent to open air and it must be located at least 3m from any source of ignition. • Outlet of the vent pipe must be fitted with a screen. • Vent pipe to be earthed with a copper cable and copper earth spike. • Filler manholes must be leak proof and it should be able to hold at least 35 litres (contain the capacity of the delivery discharge hose) of product in the event of spillage during tanker offloading. • Each filler pipeline must be located in a separate containment manhole to prevent product contamination. • The tank filling pipework must be fitted with overflow protection devices to prevent overflowing of the UST during filling operations. • Manholes to be raised above ground level to prevent water ingress. • Product identification must be in the form of a colour-coded collar around the dip pipe, painted manhole cover and frame. • Filler caps must be lockable and the seal must be flexible and not deformed. Filler coupling must be 		

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<p>12 tooth for petrol and 18 tooth for diesel Pump dispensers must be securely mounted 300mm from the edge of a pump island that is 150mm above floor level.</p> <ul style="list-style-type: none"> • Dispenser must be fitted with an emergency shut-off (shear) valve with stabilizer bracket in the event the dispenser is knocked over by a vehicle. • The pipework system must be of an internationally approved non-corrosive design and materials to reduce the risk of pipe failure due to corrosion all pipes (vent, filler and delivery) must slope back to the UST so that fuel does not remain in the pipes. • The storage area must be sloped to the collection manholes to ensure that any spillages or contaminated water would drain to the manholes. • The collection manholes must pipe spillages and water to a proper oil/water separator system. • An industry accepted oil interceptor system must be installed to ensure that the contaminated water would be product/oil free before discharged into the municipal sewer system. • The design and construction of the oil separator must comply with the applicable standards 		
EMERGENCY PREPAREDNESS	Ensuring safety on site	<ul style="list-style-type: none"> • In order to minimise the injuries, losses or environmental damage that could occur as a result of an incident emergency preparedness must be addressed. This would include aspects such as: <ul style="list-style-type: none"> ○ emergency planning ○ fire ○ petroleum product spills and leaks ○ injuries to people ○ incident reporting 	• Applicant	• Ongoing

ISSUE	OBJECTIVE	MITIGATION MEASURES	RESPONSIBILITY	MONITORING FREQUENCY
		<ul style="list-style-type: none"> ○ incident investigation 		
GROUNDWATER	Minimise impact on groundwater resources	<ul style="list-style-type: none"> • Leak detection systems must be implemented in all fuel storage and transmission lines and tanks. • An emergency accidental spillage plan must be placed in place and workers must be trained to handle such accidents. • Chemical storage areas should be sufficiently contained and the use of chemicals should be controlled. 	<ul style="list-style-type: none"> • Applicant 	<ul style="list-style-type: none"> • Ongoing

14 Site documentation, monitoring and reporting

14.1 What needs to be monitored

- On-site sanitary facilities
- Geotechnical matters
- Community relations
- Removal of rubble
- Disposal of Material
- Construction activities
- Protection of buildings and structures
- Site Development Plan
- Construction of structures
- Progress in terms of construction programme
- Rehabilitation
- Re-vegetation
- Impact on existing infrastructure
- Water monitoring as per the hydrology report

14.2 How, what procedures

- Site inspections by the ECO
- Reporting to by the Project Manager
- Random inspection by the Applicant's representative.
- Registered hydrologist

14.3 Recording of Information/Data

The standard site documentation shall be used to keep records on site. All documents shall be kept on site and be made available for monitoring purposes. The documentation shall be signed by all parties to ensure that such documents are legal.

The following documentation shall be kept on site:

- Environmental Authorisation
- Environmental Complaints register
- Environmental Incidents register
- Environmental Training register
- Copy of the Environmental Management Programme

14.4 Reporting

Who should be reported to?

- Applicant
- LEDET
- SAHRA
- LIHRA

15 Post Construction Audit

A post construction environmental audit is to be conducted by the ECO in order to ensure that all conditions of the EMPr have been adhered to.

16 Amendments to the EMPr

The EMPr is to be submitted to the LEDET for approval prior to implementation. Any changes to the EMPr are to be indicated in the form of addendums.

ANNEXURE A

Environmental Code of Conduct

The Applicant is committed to ensuring that the construction of the development is done according to the highest environmental standards so that the ecological footprint of the development is minimised where possible.

The Applicant requires that all construction personnel involved in the construction process accept their responsibilities towards the EMPr and the environment. This includes all permanent, contract or temporary workers as well as any other person involved with the project or visiting the site. Ignorance, negligence, recklessness or a general lack of commitment will not be tolerated.

If you do not understand the rules you must seek assistance to ensure compliance. The following people can assist you in ensuring compliance with the EMPr.

Your Supervisor:

Environmental Control Officer:

Project Manager:

ANNEXURE B

Environmental Complaints Register					
Name of Complainant	Contact Details	Nature of Complaint	Responsible Person	Date Action Taken	Details of Action Taken

ANNEXURE D

Environmental Training Register

Company	Employee	Employee Signature	Supervisor	Supervisor Signature

ANNEXURE E

MONITORING GUIDELINE AS PER HYDROLOGICAL REPORT

A monitoring program consists of taking regular measurements of the quantity and/or quality of a water resource at specified intervals and at specific locations to determine the chemical, physical and biological nature of the water resource and forms the foundation on which water management is based. Monitoring programmes are site-specific and need to be tailored to meet a specific set of needs or expectations. DWA's Best Practice Guideline – G3: Water Monitoring Systems (DWA, 2006), as illustrated in the Figure below used as guideline for the development of this water monitoring program.

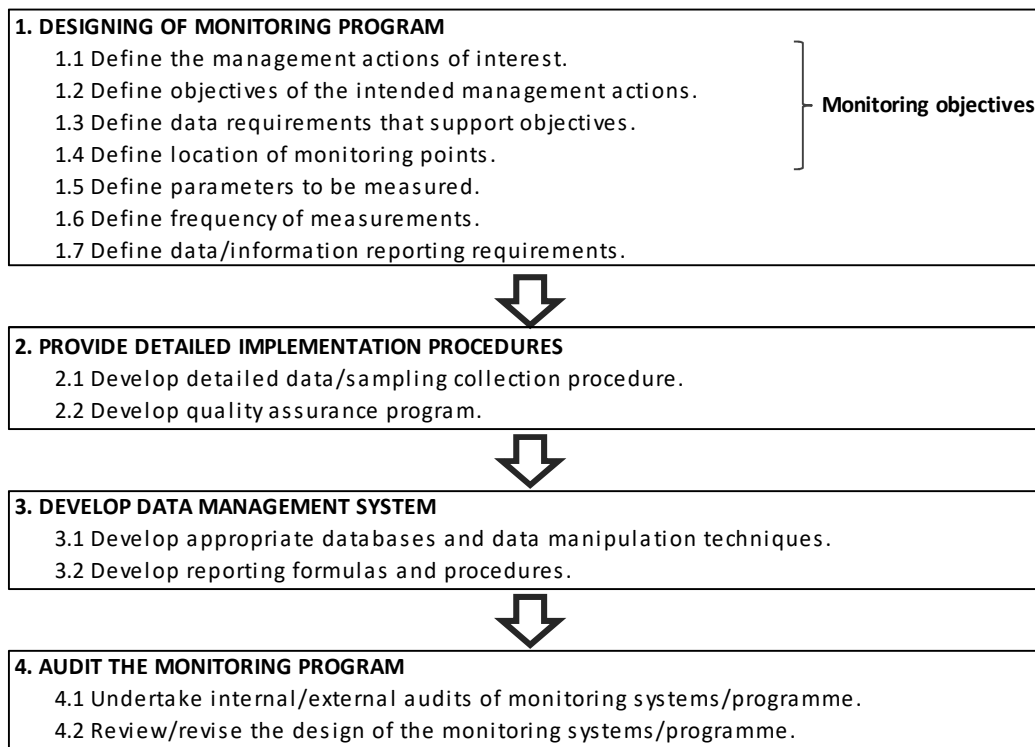


Figure 7: Monitoring programme (DWA, 2006)

Monitoring objectives

Monitoring, measuring, evaluating and reporting are key activities of the monitoring programme. These actions are designed to evaluate possible changes in the physical and chemical nature of the aquifer and geo-sphere in order to detect potential impacts on the groundwater. This will ensure that management is timely warned of problems and unexpected impacts that might occur and can be positioned to implement mitigation measures at an early stage. Key objectives of monitoring are:

- To provide reliable groundwater data that can be used for management purposes.
- The early detection of changes in groundwater quality and quantity.

- Provide an on-going performance record on the efficiency of the Water Management Plan.
- Obtain information that can be used to redirect and refocus the Water Management Plan.
- Determine compliance with environmental laws, standards and the water use licence and other environmental authorisations.

Monitoring network

Geosites incorporated into the monitoring network along with relevant information are listed in the table below and depicted in the figure below:

Groundwater: Due to the nature of the proposed site, it is suggested that no groundwater monitoring boreholes be drilled directly on site as it may increase the contamination risk of the aquifer and form a preferred pathway. It is rather recommended that existing hydrocensus boreholes be incorporated into the groundwater monitoring program for monitoring purposes.

Site ID	Latitude	Longitude	Monitoring frequency		Locality description
			Water quality	Water level	
H01-1283	-24,457910	29,413460	Quarterly	Quarterly	Northern neighbouring borehole, up-gradient of proposed site.
H01-2323	-24,464680	29,420300	Quarterly	Quarterly	Borehole located +/- 750 m southeast of the site, relatively down-gradient of proposed site.

Frequency

It is recommended that groundwater quality and water-level monitoring be conducted on a quarterly basis. Water quality reports summarising monitoring results should be submitted to the Regional Head with timeframes as stipulated in the water use license (WUL) conditions.

Determination for analysis

It is recommended that all water samples undergo an initial comprehensive water quality analyses to evaluate hydrochemical composition and identify potentially elevated parameters going forward. Chemical variables comprising the quarterly water monitoring programme is listed below.

Ground water

- **Physical and aesthetic determinants:** pH, electrical conductivity (EC) and total dissolved solids.
- **Macro determinants:** Total alkalinity (MAlk), sulphate (SO₄), Nitrate (NO₃), Chloride (Cl), Fluoride (F), Calcium (Ca), Magnesium (Mg), Potassium (k) and sodium (Na).
- **Micro determinants:** Aluminium (Al), Iron (Fe) and manganese (Mn).

- **Total Petroleum Hydrocarbons (TPH):** gasoline range organics (GRO) C6-C10, diesel range organics (DRO) C10-C28, oil range organics (ORO) C28-C40 and BTEXN.

Sampling procedure

The sampling procedure for groundwater should be done according to the protocol by Weaver, 1992.

The actions can be summarised as follows:

- i. Calibrate the field instruments before every sampling run. Read the manufacturers manual and instructions carefully before calibrating and using the instrument.
- ii. Bail the borehole.
- iii. Sample for chemical constituents – remove the cap of the plastic 1 litre sample bottle, but do not contaminate inner surface of cap and neck of sample bottle with hands. Fill the sample bottle without rising. Sampling containers for hydrocarbons should be glass and dark in colour.
- iv. Leave sample air space in the bottle (at least 2.5 cm) to facilitate mixing by shaking before examination.
- v. Replace the cap immediately.
- vi. Complete the sample label with a water-resistant marker and tie the label to the neck of the sample bottle with a string or rubber band. The following information should be written on the label.
- vii. A unique sample number and description.
- viii. The date and time of sampling.
- ix. The name of the sampler.
- x. Place sample in a cooled container (e.g. cool box) directly after collection. Try and keep the container dust-free and out of any direct sunlight. Do not freeze samples.
- xi. Complete the data sheet for the borehole.

See to it that the sample gets to the appropriate laboratory as soon as possible, samples for chemical analysis should reach the laboratory preferably within seven days.

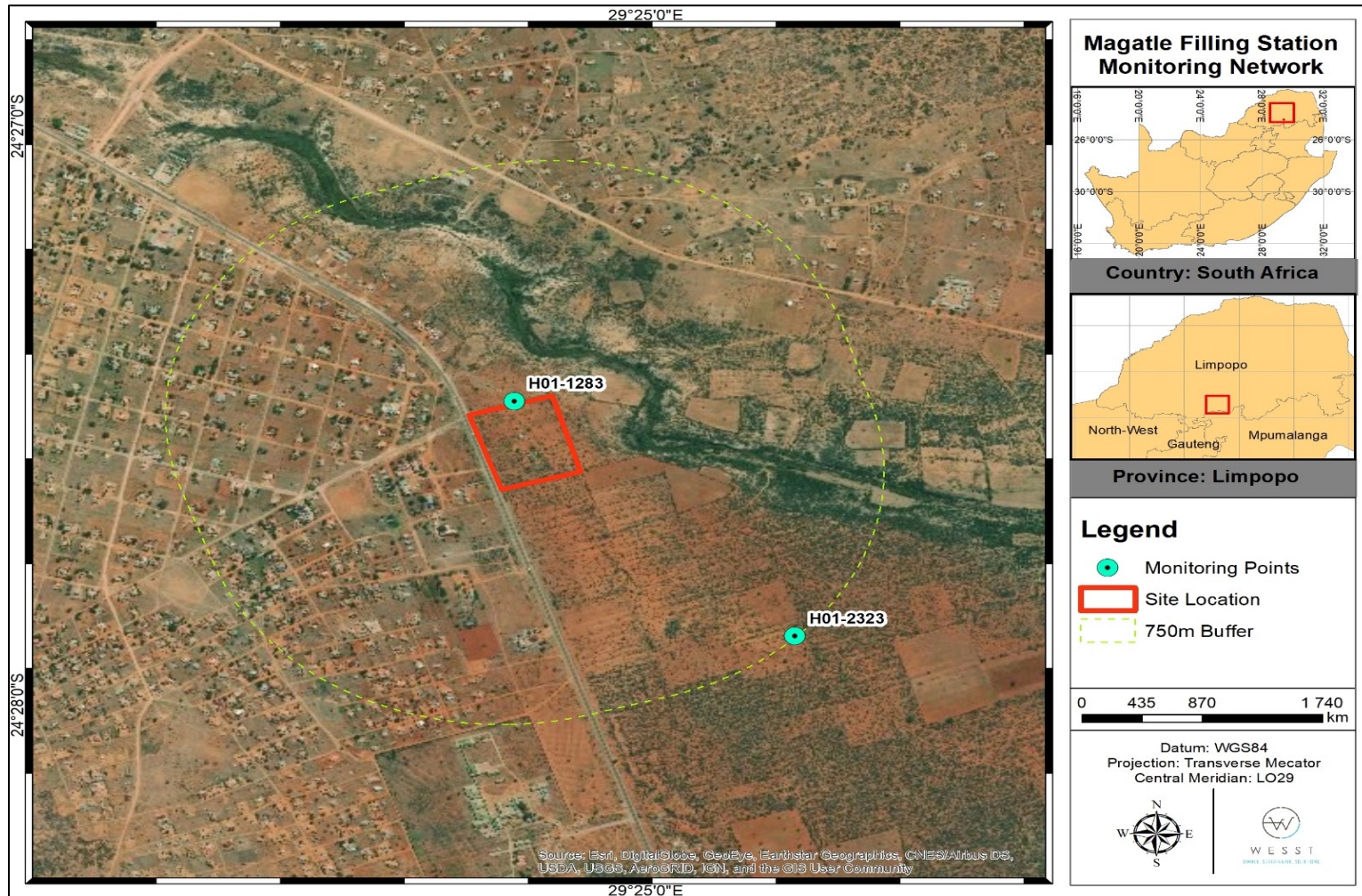


Figure 8: Groundwater monitoring network

