

ENVIRONMENTAL MANAGEMENT PLAN

NW GATEWAY PROJECT (NW GATEWAY X2)

**TOWNSHIP DEVELOPMENT ON PORTIONS
(AND PORTIONS OF PORTIONS) 233, 234, 235, 236
AND 237 AND THE REMAINDER OF PORTION 151
OF THE FARM HARTEBEESTFONTEIN 445-JQ, NW PROVINCE**

NWP/EIA/37/2018

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LIST OF CONTENTS

1. **INTRODUCTION**
 - 1.1 OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)
 - 1.2 DETAILS OF THE PERSON WHO PREPARED THE EMP
 - 1.3 DETAILS OF THE PROPOSED ACTIVITY
 - 1.4 LEGAL REQUIREMENT
 - 1.5 DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF EMP
 - 1.6 AGREEMENT & UNDERTAKING OF THE APPLICANT
 - 1.7 PROPOSED MECHANISM FOR COMPLIANCE

2. **SPECIFICATIONS APPLICABLE THROUGHOUT ALL PHASES OF PROJECT DEVELOPMENT**
 - 2.1 ROLES AND RESPONSIBILITIES
 - 2.2 COMPLIANCE WITH RELEVANT LEGAL REQUIREMENTS
 - 2.3 NON-COMPLIANCE

3. **DESIGN AND PRE-CONSTRUCTION PHASE**
 - 3.1 TOWNSHIP LAYOUT AND REQUIREMENT
 - 3.2 DESIGN AND PLANNING REQUIREMENT
 - 3.2.1 ENGINEERING SERVICES
 - 3.2.2 GROUNDWATER
 - 3.2.3 STORM WATER MANAGEMENT
 - 3.2.4 WATERCOURSE AND NATURAL HABITAT PROTECTION
 - 3.2.5 CULTURAL-HERITAGE PROTECTION
 - 3.2.6 PALEAONTOLOGICAL MONITORING
 - 3.2.7 GREEN APPROACH
 - 3.2.8 LANDSCAPING AND REHABILITATION
 - 3.2.9 FENCING
 - 3.3 CONSTRUCTION SITE
 - 3.4 APPOINTMENT OF CONTRACTORS

4. **CONSTRUCTION PHASE**
 - 4.1 GENERAL ENVIRONMENTAL REQUIREMENT
 - 4.2 GROUND AND SURFACE WATER
 - 4.3 WASTE MANAGEMENT
 - 4.3.1 GENERAL WASTE
 - 4.3.2 CONSTRUCTION WASTE
 - 4.3.3 SEWAGE
 - 4.3.4 HAZARDOUS WASTE
 - 4.4 SOIL EROSION
 - 4.5 COMMUNITY (LIAISON, SAFETY, SECURITY, NOISE, DUST, ETC.)
 - 4.6 SITE REHABILITATION

5. **POST-CONSTRUCTION & OPERATIONAL PHASE**
 - 5.1 LANDSCAPING & FENCING
 - 5.2 MONITORING AND RECTIFICATION
 - 5.3 NOISE IMPACT
 - 5.4 STORM WATER MANAGEMENT
 - 5.5 WASTE MANAGEMENT
 - 5.6 RECOMMENDED GREEN APPROACH
 - 5.7 GENERAL
 - 5.8 HOMEOWNERS ASSOCIATION / BODY CORPORATE / SECTION 21 COMPANY
 - 5.9 DECOMMISSIONING

- Annexure A** *Township Layout*
Annexure B *Environmental Impact Assessment Table*
Annexure C *Environmental Authorisation (to be attached once available)*
Annexure D *Water Use Authorisation (to be attached once available)*

INTRODUCTION

Note that this Environmental Management Plan (EMP) should be read and implemented in conjunction with the following documents attached (and to be attached once available) as annexures.

- ❖ *Environmental Impact Assessment Table*
- ❖ *Environmental Authorisation*
- ❖ *Water Use Authorisation*

The EMP, once accepted/approved by the North West Department of Rural, Environment and Agricultural Development (READ) (normally approved as part of the Environmental Authorisation) is a legally binding document and must be adhered to during all phases of project development.

1.1 OBJECTIVES OF THE ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The Environmental Management Plan (EMP) has the following objectives:

- To state the standards and guidelines which the Applicant will be required to adhere to in terms of environmental legislation;
- To set out the mitigation measures and environmental specifications which the Applicant will be required to implement for the design, construction and implementation phases of the project in order to minimize the extent of environmental impacts, and where possible to improve the condition of the environment;
- To provide guidance regarding the method statements which the Applicant will be required to compile and implement to achieve the environmental specification;
- To define corrective actions which the Applicant must take in the event of non-compliance with the specifications of this EMP;
- To mitigate potential negative impact associated with the project and ensure optimization of positive impact;
- To prevent long-term or permanent environmental degradation;
- To ensure that the applicant, construction workers and the operational and maintenance staff are well acquainted with their responsibilities in terms of the environment;
- To ensure that communication channels to report on environment related issues are in place.

1.2 DETAILS OF THE PERSON(S) WHO PREPARED THE EMP

This Environmental Management Plan was prepared by Landscape Dynamics CC, an environmental consultancy firm established in May 1997. Its core business involves the execution of Environmental Impact Assessments that includes the compilation of Environmental Management Plans. The Environmental Assessment Practitioners responsible for the compilation of this EMP is Ms Annelize Grobler and Ms Susanna Nel. A Company Profile with the relevant Curriculum Vitae's is available on the website www.landscape-dynamics.co.za

1.3 DETAILS OF THE PROPOSED ACTIVITY

Locality

The proposed development site is located at the north-eastern corner of the Damdoryn four-way stop (Road R512 and Road R104 crossing), downstream of the Hartbeespoort Dam under the jurisdiction of the Madibeng Local Municipality in the Northwest Province.



Project components

The Applicant must ensure that the layout in Annexure A is the final version of the approved layout. No significant changes may be made to the layout, nature of the development and/or project components without written approval from the Madibeng Local Municipality; the North West Department of Rural, Environment and Agricultural Development (READ) and the North West Department of Public Works and Roads. Note also that if any changes are required, note that at no stage can any development be allowed within the watercourse and buffer zone area indicated as Private Open Space in the township, without water use authorisation for that specific activity only.

The relevant land-uses/project components are as follows:

Entertainment and resort

- Shops, Places of refreshment, Amusement, Entertainment
- Waste Water Treatment Plant
- Private resort
- 60 storage units

- Trailer and caravan parking
- Boutique guest house and spa

Hotel and Private Resort

- Administration and Welcome Centre
- 150 room hotel
- 22 Luxury Retirement Village units
- 112 2-bedroom Retirement Village units
- Green Zone / Private Open Space
- Restaurant
- Industrial Kitchen and Laundry
- Recreation Centre
- Wellness Clinique
- Clubhouse
- Chapel
- Bowling grounds
- Gardens and walkways

Institutional (medical facilities)

- Hospital and step-down clinic and/or a neurological centre (i.e. where Alzheimer's patients could be treated).

Ancillary and Subservient

- Parking
- Personnel parking
- Staff Quarters
- Delivery yard

Cemetery for existing graves only

- 225m² around the existing graves will be fenced in with access for family members.

1.4 LEGAL REQUIREMENT

Legal requirement directly related to this Environmental Management Plan is summarised below :

THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT 107 OF 1998)

This Environmental Authorisation (attached as Annexure C) was obtained in terms of the National Environmental Management Act, 1998 (Act No 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations published in Government Notice No. R.982 of December 2014 as amended. Environmental Authorisation was requested for the following listed activities:

In terms of the NEMA legislation, application for environmental authorisation was lodged with the **North West Department of Rural, Environment and Agricultural Development (READ)**. The Environmental Authorisation must be attached to this document as Annexure C.

No activity apart from those specified and approved on the following pages, may take place in the absence of approval by READ.

RELEVANT ACTIVITY	APPLICATION
GOVERNMENT NOTICE 327: LISTING NOTICE 1	
<p>Activity Number 12 The development of—</p> <ul style="list-style-type: none"> (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— <ul style="list-style-type: none"> (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; <p>excluding—</p> <ul style="list-style-type: none"> (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared 	<p>Infrastructure of more than 100m² will be constructed within 32m from the watercourse</p>
<p>Activity Number 19 The infilling or depositing of any material of more than 10 cubic metres into, or the 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> <ul style="list-style-type: none"> (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies. 	<p>More than 10m³ will be deposited / removed from the watercourse.</p>
<p>Activity Number 27 The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <ul style="list-style-type: none"> (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan. 	<p>More than 1 hectare of indigenous vegetation will be cleared for construction purposes.</p>

GOVERNMENT NOTICE 325: LISTING NOTICE 2 (REQUIRED A FULL SCOPING & EIR PROCESS)**Activity Number 15**

The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for

- (i) the undertaking of a linear activity; or
- (ii) maintenance purposes undertaken in accordance with a maintenance management plan.

The total development site is approximately 30 hectares.

GOVERNMENT NOTICE 324: LISTING NOTICE 3**Activity Number 4**

The development of a road wider than 4 meters with a reserve less than 13.5 meters

h. North West

- (i) A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;
- (ii) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority;
- (iii) Sites or areas identified in terms of an international convention;
- (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;
- (v) Core areas in biosphere reserves;
- (vi) Areas within 5 kilometres from protected areas identified in terms of NEMPAA or from a biosphere reserve;
- (vii) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority or zoned for a conservation purpose; or
- (viii) All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999).

The development site falls within the buffer area of the protected Magaliesberg Biosphere Reserve. The biosphere was established by UNESCO which is an international institution/organisation. The North West Department of Rural, Environment and Agricultural Development (the Competent Authority in this application) is recognising and protecting the Biosphere according to specific management plans. Refer to the applicable Biosphere maps as included Appendix A. The development site falls with a CBA.

Activity Number 6

The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more.

h. North West

- (i) World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;
- (ii) A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;
- (iii) All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);
- (iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;
- (v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or
- (vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.

The development site falls within the buffer area of the protected Magaliesberg Biosphere Reserve. The biosphere was established by UNESCO which is an international institution/organisation. The North West Department of Rural, Environment and Agricultural Development (the Competent Authority in this application) is recognising and protecting the Biosphere according to specific management plans. The development site falls within a CBA. The development will take place within 100m from the edge of the watercourse.

<p>Activity Number 12</p> <p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>h. North West</p> <p>(i) World Heritage Sites; core of biosphere reserve; or sites or areas identified in terms of an international convention;</p> <p>(ii) A protected area including municipal or provincial nature reserves as contemplated by NEMPAA or other legislation;</p> <p>(iii) All Heritage Sites proclaimed in terms of National Heritage Resources Act, 1999 (Act No. 25 of 1999);</p> <p>(iv) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority;</p> <p>(v) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or</p> <p>(vi) Areas within a watercourse or wetland, or within 100 metres from the edge of a watercourse or wetland.</p>	<p>The development site falls within the buffer area of the protected Magaliesberg Biosphere Reserve. The biosphere was established by UNESCO which is an international institution/organisation. The North West Department of Rural, Environment and Agricultural Development (the Competent Authority in this application) is recognising and protecting the Biosphere according to specific management plans. Refer to the applicable Biosphere maps as included Appendix A.</p> <p>The development site falls with a CBA (refer to Appendix A for the applicable SANBI map). The development will take place within 100m from the edge of a watercourse.</p>
<p>Activity Number 14</p> <p>The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbor.</p>	<p>Infrastructure and structure of more than 10m² will be constructed within 32m from the edge of a watercourse.</p>

THE NATIONAL WATER ACT, 1998 (ACT NO 36 OF 1998)

The **Department of Water & Sanitation (DWS)**, is the competent authority for this township. Water Use Authorisation is required specifically for the crossing of the watercourse (engineering infrastructure including the bridge, water and sewer pipelines and sewer infrastructure) in terms of the following:-

- Section 21 (c) *'Impeding or diverting the flow of water in a watercourse'*
- Section 21 (i) *'Altering the bed, banks, course or characteristics of a watercourse'*

The Waste Water Treatment Plant triggers water use authorisation in terms of the following:-

- Section 21 (f) *'Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall of other conduit'*

- If oxidation ponds are relevant, then Section 21 (g) is also applicable : '*Disposing of waste in a manner which may detrimentally impact on a water resource.*'

The Water Use License Application (WULA) has been undertaken separately to the application for Environmental Authorisation. The final authorisation with conditions must be attached to this document as Annexure D.

THE NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The township fall within the scope of Section 38 of the National Heritage Resources Act, (NHRA), (Act 25 of 1999) and the applicable activities are:

- the construction of a road, wall, power line, pipeline, canal or similar form of linear development or barrier exceeding 300m in length;
- any development or other activity which will change the character of a site-
 - exceeding 5 000m² in extent
 - involving three or more existing erven or subdivisions thereof
- the re-zoning of a site exceeding 10 000m² in extent

A Heritage Impact Assessment was compiled and submitted to the South African Heritage Resources Association and the North West Provincial Heritage Resources Authority for comment. The requirement from the HIA that the existing small gravesite needs to be protected has been incorporated in the final layout in Annexure A and general mitigation measures are also supplied herein.

1.5 DETAILS OF PERSONS RESPONSIBLE FOR IMPLEMENTATION OF EMP

The Applicant who is responsible for the implementation of this EMP is as follows :

Shalimaloq Investments CC; Posbus 74598, Lynnwoodrif, 0040

Contact Person: Mr Riaan van Zyl; Tel Number: 082 870 6626; E-mail:

riaanvz@kleinfontein.net

1.6 AGREEMENT & UNDERTAKING OF THE APPLICANT

By submitting this signed document to the **North West Department of Rural, Environment and Agricultural Development (READ)** prior to construction as per legal requirement, the Applicant confirms his/her knowledge and awareness of the content of this Environmental Management Plan, as well as his responsibility to comply with relevant legislation pertaining to the nature of the work to be done.

1.7 PROPOSED MECHANISM FOR COMPLIANCE

The key impacts associated with the proposed mixed land use township that also includes a filling station are:-

Planning Phase (critical issues that must be addressed in design and planning phase):

- Impact on the watercourse and natural habit (fauna & flora)
- Impact on the Magaliesberg Biosphere Reserve
- Impact on groundwater
- Increased run-off resulting in erosion and a loss of soil
- Impact on cultural-heritage and paleontological environment
- Visual impact
- Increase in traffic

Construction Phase

- Impact on the watercourse and natural habit (fauna & flora)
- Increased risk for groundwater pollution
- Increased risk for erosion resulting from construction activities
- Influx of labourers with associated crime, access control, risk for habitat destruction
- Health & safety risk during construction
- Impacts associated with construction activities such as noise and dust
- Impact on cultural-heritage environment

During Operational Phase

- Continuous risk to the watercourse and natural habit (fauna & flora)
- Continuous risk for ground and surface water pollution
- Increased risk for impact on surrounding environment (i.e. habitat destruction and veld fires)
- Increased run-off resulting in erosion
- Increased traffic
- Increased pressure on municipal infrastructure

The Environmental Impact Assessment Table provided in Annexure B supplies detail description of the nature, significance and extent of the expected impact with the proposed mitigation measures.

Specifications and conditions are confirmed/provided in the EMP to limit and/or prevent impact on the above-mentioned components during all the phases of project development, under the following headings :

- ❖ Specifications applicable throughout all Phases of Project Development
- ❖ Design & Pre-construction Phase
- ❖ Construction Phase
- ❖ Post-construction & Operational Phase

2. SPECIFICATIONS APPLICABLE THROUGHOUT ALL PHASES OF PROJECT DEVELOPMENT

2.1 ROLES AND RESPONSIBILITIES

The Applicant will

- be responsible for the overall implementation of the Environmental Management Plan (EMP).
- ensure that all third parties (i.e. Contractors; suppliers, etc.) comply with the requirements of this EMP. The relevant specifications of the EMP must be included in all contracts with the Contractors.
- ensure that all future owners (i.e. of the filling station, the Municipality, etc.) are well aware of their legal responsibilities in terms of development and operation.

Responsibilities include the following measures in terms of Environmental and Health Training and Awareness; Emergency Preparedness; Spillage and Fire Management,

Environmental and Health Training and Awareness

The contractor will ensure that its employees are adequately trained with regard to the implementation of the EMP, as well as regarding environmental legal requirements and obligations. It is proposed that all employees should have an induction presentation on environmental awareness. Where possible the presentation will be conducted in the language of the employees.

The environmental training should, as a minimum, include the following:

- The importance of conforming with relevant environmental policies, procedures, plans and systems;
- The significant environmental impacts, actual or potential, which could result from their work activities;
- The environmental benefits of improved personal performance;
- The roles and responsibilities in achieving conformance with the environmental policy and procedures, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures to be implemented when carrying out their work activities;
- The importance of not littering;
- The need to use water sparingly;
- Details of, and encouragement to, minimizing 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.

Paleontological Awareness training must be built into the environmental awareness procedures for the township. Photographs of fossiliferous material (trace fossils) must be provided to the developer and contractors to assist in recognizing the fossil plants in the shales and mudstones.

Emergency Preparedness

- The Contractor and/or the Applicant must ensure that there will be an appropriate response to unexpected and/or accidental actions or incidents that will cause environmental impacts, throughout the life cycle of the project. Such incidents may include, inter alia:
 - Accidental discharges to the land;
 - Accidental exposure of employees to hazardous substances;
 - Accidental spillage of hazardous substances;
 - Specific environmental and ecosystem effects from accidental releases or incidents
- Construction and permanent employees shall be adequately trained in terms of incidents and emergency situations.
- An emergency preparedness plan will include details of the organization (manpower) and responsibilities, accountability and liability of personnel.
- The emergency preparedness plan shall include a list of key personnel.
- Details of emergency services (e.g. the fire department, spill clean-up services, etc.) shall be listed.
- Internal and external communication plans, including prescribed reporting procedures shall be listed.
- Actions to be taken in the event of different types of emergencies shall be included.
- The Emergency Management Plans for all major and minor incidents should be documented and made available to all relevant role players on site.
- Incident management protocols should include considerations for air, groundwater, soil and surface water.
- Spill clean-up kits and absorbent material must be kept on site to assist in immediate clean-up of any hazardous material spillages.
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release shall be listed.
- Training plans, testing exercises, and schedules for effectiveness shall be included.
- The Contractor and the Applicant will comply with the emergency preparedness, and incident and accident-reporting requirements, as required by the Occupational Health and Safety Act, 1993 (Act No 85 of 1993), the National Environmental Management Act, 1998 (Act No 107 of 1998), the National Water Act, 1998 (Act No 36 of 1998) and the National Veld and Forest Fire Act, 1998 (Act No 101 of 1998) as amended, and/or any other relevant legislation.

Spillages

- In the event of a spillage during the construction phase, the responsibility for spill treatment will be with the Contractor and he will be responsible to arrange for competent assistance to clear the affected area.
- *Incident Reporting and Remedy*
 - The individual responsible for, or who discovers a hazardous waste spill must report the incident to the Contractor who must immediately involve the Applicant.
 - The immediate response will be to contain the spill. The exact treatment of polluted soil and/or water must be determined in consultation with the Applicant.
 - No person shall be allowed to approach a spill, fire, etc. unless he and/or she is equipped with the personal protective clothing and equipment.
 - The risk involved shall be assessed before anyone approaches the scene of the incident with the emergency response plan.

- A written report shall be compiled and forwarded to the Department of Water and Sanitation with the following contact details (to be confirmed at the time required):
 Department of Water and Sanitation, Chief Engineer: Water Resources Management, Limpopo-North West Proto CMA, Mr Rens Botha; tel 012 392 1308 / 082 808 9560; E-mail : bothar@dwa.gov.za
- Written record of the corrective and remedial measures decided upon, and the progress achieved therewith over time, must be kept. Such progress reporting will be important for monitoring and auditing purposes. The written reports may be used for training purposes in an effort to prevent similar future occurrences.

Fire Management

- In case of a fire, the local fire department must immediately be contacted.
- The adjacent land users must be informed and/or involved in case of any fire.
- It must be ensured that the basic fire-fighting equipment is supplied to the site office, kitchen areas, workshop areas and stores.
- Welding gas cutting or cutting of metal will only be allowed inside the working/demarcated areas and with appropriate fire-fighting equipment at hand.
- “No smoking” signs must be placed in visible areas on site.
- No fires may be made for the burning of vegetation and waste.
- No open fires are to be made on site – cooking facilities must be provided to personnel and labourers.
- No firewood may be collected from nearby land.

Hospital approval

The Applicant is reminded that the approval for a private hospital issued by the North West Province Department of Health on 21 November 2018 states the following requirement :-

- The Applicant is required to submit original copies of the building plans for technical inspection by the Department.
- A six monthly progress report has to be submitted to the Bojanala District Management team as prescribed by the National Policy Frameworks and the Provincial Private Facility Adjudication Committee (PFAC) policy.
- It is a mandatory requirement of the license to complete the project within the stipulated 18 months, failing which it will lapse and a new application with the same terms and conditions will have to be lodged.

2.2 COMPLIANCE WITH RELEVANT LEGAL REQUIREMENTS

Occupational Health & Safety Act, 1993 (Act Nr 181 of 1993)

- Specific care is required during project development and operation where dangerous material and substances are stored, handled and managed. The Applicant must ensure strict compliance during all phases of project development.

The National Water Act, 1998 (Act No 36 of 1998)

- In terms of Section 19 (1) of the National Water Act, Act No 36 of 1998 “An owner of land, a person in control of land or a person who occupies or uses the land on which (a) any activity or process is or performed or undertaken; or (b) any other situation exists which causes, has caused or is likely to cause pollution of a water resource, must take all reasonable measures to prevent

any such pollution of a water resource from occurring, continuing or recurring.”

- No waste may knowingly or negligently be disposed in a water body, or at any facility unless the disposal of that waste is authorised by law.
- The National Water Act (NWA) guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities which may impact on water resources through the categorisation of ‘listed water uses’ encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources. The Department of Water & Sanitation (DWS) is the administering body in this regard.
- No relevant activity that requires Water Use Authorisation is associated with this site and project.

Forest Act (Act 122 of 1984)

Numerous *Sclerocarya birrea* (marula) trees occur, which require that a permit be obtained from the Department of Forestry and Fisheries for the removal, cutting and trimming of all these trees. Authorization in terms of this Act is required the Department of Agriculture, Forestry and Fisheries.

The National Heritage Resources Act (Act 25 of 1999)

- Section 38 of the National Heritage Resources Act. 1999 (Act No 25 of 1999 is always potentially relevant. Relevant listed activities are the following:
 - the construction of a road, wall, power line, pipeline, canal or similar form of linear development or barrier exceeding 300m in length;
 - any development or other activity which will change the character of a site exceeding 5 000m² in extent
 - involving three or more existing erven or subdivisions thereof
 - the re-zoning of a site exceeding 10 000m² in extent
- Relevant conditions as per recommendations from the Heritage Impact Assessment and requirement from the South African Heritage Resources Agency (SAHRA) and the North West Provincial Heritage Resources Authority (PHRA) are supplied in paragraph 3.2.5 of this document.
- In the event that artefacts, paleontological fossils, graves or other heritage resources are discovered during the course of the development, all development activities must immediately be halted and the following authority must be contact to determine further actions required:

2.3 NON-COMPLIANCE

The Applicant will be deemed not to have complied with the EMP if

- there is evidence of contravention of the EMP specifications within the boundaries of the construction site, site extensions and access roads;
- there is contravention of the EMP specifications which relate to activities outside the boundaries of the construction site;
- environmental damage ensued due to negligence;
- construction activities take place outside the defined boundaries of the site;
- the Applicant fails to comply with corrective or other instruction.

3. DESIGN AND PRE-CONSTRUCTION PHASE

3.1 TOWNSHIP LAYOUT

Should any changes be required to the township layout, the following conditions must be met at all times :-

- The ecologist for the township identified the watercourse with riparian and sensitive vegetation with a 15m buffer zone to be excluded as Private Open Space from the development area. This allows for a significant portion of the property to be conserved which is way bigger than the 1:100 year floodline. This must be indicated as a "Natural Watercourse and Riparian Area" in the township.
- The heritage impact assessment undertaken confirmed the existence of a small informal graveyard. The dedicated erf identified according to requirement supplied by the cultural-heritage consultant must ensure the protection of these existing graves.
- During the WULA Pre-Application Meeting, the Department of Water and Sanitation confirmed that the watercourse between the "Natural Watercourse and Riparian Area" and the road to be canalised. Stormwater run-off from the mountain is already channelled underneath the road into a hand-dug stormwater channel to accumulate the run-off into the natural water course on the site. The canalised watercourse/culvert is indicated on the layout plan as a "Channelled Watercourse".
- Four accesses to the township are required by the North West Province Department of Road and Transport. The exact positioning thereof accommodates the safe distance between each other and the Damdoryn traffic lights as per legal requirement.
- Allowance had to be made to allow for an access road to be used by the Department of Water and Sanitation for their large trucks for maintenance of the dam wall and outlet structures, specifically the large radial gates. The road must be controlled with a locked gate by DWS who will also be responsible for the maintenance of the road.

All the conditions for approval of the township resulting from the SPLUMA application submitted by the town planners to the Madibeng Local Municipality must be met.

3.2 DESIGN AND PLANNING REQUIREMENT

3.2.1 ENGINEERING SERVICES

Design of engineering infrastructure

- The design standards to be followed for the design of all the civil engineering services must be in accordance with the standards specified in the "Guidelines for Human Settlement Planning and Design" and the "Guidelines for the Provision of Engineering Services and Amenities in Township Development, The Red Book.
- Standards to which the electrical design must adhere to, include the relevant SABS safety and equipment standards, as well as the NRS 048 Quality of Supply Standard.
- All engineering designs must address the conditions as stipulated in the water use authorisation obtained from the Department of Water and Sanitation.

Geotechnical constraints

- A Phase 2 Geotechnical Study must be undertaken to confirm any site-specific constraints.
- The design engineer must implement the recommendations of the geotechnical study in the design of foundations and construction methods.
- This study must also address foundation restrictions and mitigation in the decommissioned plantation area.

Access and Traffic Requirement

- Direct access will be obtained from the Direct access from Road P2-4 and Road P251-1 to the township had been communicated with the North West Department of Public Works and Roads and their requirements must at all times be reflected in the final township layout.
- All requirements in terms of road upgrade and wayleave approvals as required by the North West Department of Public Works and Roads (Bojanala District Office) must be implemented.
- All internal roads must comply with the requirement of the Engineering Department of the Madibeng Local Municipality.
- All requirements from the Traffic Impact Study provided by Civilconsult Consulting Engineers must be integrated with the designs:
 - Conversion of *Intersection 1* to a roundabout;
 - Implementation of roundabouts as intersection control measures at all four development accesses;
 - That the implementation of a staged crossing for the side road traffic to enter the free-flow traffic stream be evaluated at *Intersection 10*. This can seemingly be achieved by amending road markings on the R511;
 - That a formal walkway be provided along the most part of the development boundaries with Road P2/4 and the R513 (Road P251-1); and
 - That a bus/taxi bay be provided in front of the shopping centre (Erf 58) downstream from *Intersection 1* along Road P2/4.
- Specialized heavy vehicles could affect and/or disrupt the traffic flows. During this phase issues of possible increased traffic congestion, temporary impediments on the existing roadway and influence on adjacent developments must be considered.
- Appropriate signage and traffic measures for the operational phase should be designed and installed at the site to ensure safe and convenient access for passing traffic volumes.

Services Agreement

Once all the designs are in place and have been approved by the relevant departments within the municipality, the Applicant must sign a Services Agreement and pay the required fees.

Medical Waste Disposal

Note that the hazardous waste applicable to the township is medical waste. The EMP states clearly that no medical waste can be stored or disposed of or incinerated on site. An agreement for removal by the relevant authority / institution of the medical waste is a condition to fulfil during the Design & pre-Construction Phase.

3.2.2 GROUNDWATER

General requirements in terms of risk for pollution of groundwater are the following :

- A **Groundwater Monitoring Plan** must be identified that include the following :
 - Establishment of two boreholes (directly upstream and directly downstream of the WWTW).
 - Baseline data must be obtained prior to commencement of construction.
 - Groundwater samples must be collected from the boreholes for water quality monitoring purposes.
 - Record keeping procedures.
 - Action plan, mitigation measures and reporting procedures should groundwater pollution be detected.

- All the conditions of the water use authorisation (included in Appendix D) must be integrated with the designs; the construction method and operational methods of the structures (of the WWTW; the bridge and pipeline crossings over the watercourse).
- The quality of groundwater should be protected during all the phases of the development.
- Any measures to reduce the likelihood of accidental spills will reduce the risk of groundwater contamination.
- Separate dirty from clean storm water;
- Contaminated soil and building waste must be removed after construction.
- Storm water from rooftops must be directed away from the storage area and be released as sheet flow to prevent erosion.

3.2.3 STORM WATER MANAGEMENT

- A **Stormwater Management Plan** must be compiled by a suitably qualified engineer that addresses the following:
 - Cognisance must be taken of the following :-

Stormwater run-off from the mountain south of the site is channelled underneath the road into an hand-dug stormwater channel which was built many years ago to accumulate the run-off into the natural water course on the site. It must be maintained and upgraded as a concrete channel/culvert as part of the stormwater management for the site. The engineers require that a 3,0m wide servitude be registered for this purpose. The length is calculated at approximately 275m before the water would be released into the natural open watercourse. The proposed township layout reflects the correct position and width of the servitude required. Energy dissipating measures must be implemented to prevent erosion at this outlet.
 - The storm water drainage network system must be kept separate from the waste water (sewage) system.
 - No pollutant or any harmful substance may be allowed to be released into the system via the storm water pipeline. The system must be designed to remove any waste or harmful substances before reaching the watercourse system.
 - Drainage must be controlled to ensure that runoff from the site will not culminate in off-site pollution or result in gully erosion in the watercourse/drainage areas.
 - The storm water system must be designed such that no large amount of water is released into the watercourse/stream system at one point only and the force of the

- water must be reduced to prevent erosion.
- A green approach such as Infrastructure and Sustainable Urban Drainage (SUD) principles is proposed to be implemented as far as practical to ensure that the surface areas for driveways and parking areas are permeable to increase infiltration.
- Sheet flow should be directed into onsite infiltration trenches, filter drains and filter strips rather than gullies and pipes.
- Severely eroded areas should be stabilised with gabions and/or reno mattresses with sediment trapping material. The careful position of soil piles, and runoff control, during all phases of development, and planting of some vegetative cover after completion (indigenous groundcover, grasses etc.) will limit the extent of erosion occurring on the site.

3.2.4 WATERCOURSE AND NATURAL HABITAT PROTECTION

- The watercourse with a buffer zone of 15 meters as identified by Dr Leslie Brown from Enviroguard Ecological Services should offer sufficient protection for the watercourse and freshwater system if implemented in the township layout.
- This area has to be excluded from the development area.
- No activity may take place within this area in the absence of water use authorisation for the specific activity, necessary to obtain prior to construction.
- A Water Use License Application (WULA) has been made as per the requirement confirmed with the Department of Water and Sanitation during the WULA Pre-Application meeting.
- The ecologist must visit the site prior to commencement of any construction activities and he must mark all trees and clumps of trees that should be maintained, specifically in the *Vachellia torilis-berchemi zyeheri* woodland and the *Combretum apiculatum-Senegaia caffra* woodland which occurs north of the delineated riparian zone.
- All *Slerocarya birrea* (marula) trees occurring on the entire project area must be identified and clearly marked and documented so that a permit application could effectively be made for the trees which would be in the direct line of the construction activities.

3.2.5 HERITAGE PROTECTION

A Phase 2 Heritage Impact Assessment must be undertaken prior to commencement of construction. The following actions are required, with reference to the map below:

- Site 2 (graves)
 - The graves must be kept *in situ*.
 - An area of at least 225m² must be fenced to ensure protection of the existing graves.
 - This area must be indicated as a separate erf in the Site Layout Plan and must have an appropriate zoning.
 - A management plan for the sustainable utilisation and preservation of the site needs to be drafted and submitted to SAHRA for their approval.
- Sites 1, 3 and 4 (remains of stone and clay houses)
 - The remains of all three stone and clay houses must be documented and included in the heritage register.

- Due to its close association with the graves, it is recommended that only Site 1 be mitigated as per the following requirements:
 - Test excavations must be done
 - A site map must be compiled
- All three structures may be demolished, but only after the above was done and after the necessary permit was obtained from the relevant heritage authority.
- Sites 5, 6, and 7 (remains of storage buildings)
 - Destruction of the sites may be granted at the discretion of the relevant heritage authority without a formal permit application, subjected to the granting of the EA.
- Site 8 (farm yard)
 - Destruction of the sites may be granted at the discretion of the relevant heritage authority without a formal permit application, subjected to the granting of Environmental Authorisation.
- The North West PHRA requires that an application form has to be completed and proof of payment need to be provided for all structures older than 60 years as these are protected under section 34 of the NHRA.



3.2.6 PALEONTOLOGICAL MONITORING

- A Monitoring Programme for Palaeontology must commence once the excavations begin. Note however that this procedure is only required if fossils are seen on the surface and when excavations for foundations and infrastructure commence.
- The monitoring programme if required involves the following :-
 - When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils) should be put aside in a suitably protected place. This way the building activities will not be interrupted.

- Photographs of similar trace fossils must be provided to the developer to assist in recognizing the fossil plants in the shales and mudstones. This information must be built into the EMP's training and awareness plan and procedures.
- 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 site to inspect the selected material and check the dumps where feasible.
- Trace fossils (not mudcracks or ripple marks) that are considered to be of good quality or scientific interest by the palaeontologist 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 the site inspections by the palaeontologist will not be necessary. Annual reports by the palaeontologist must be sent to SAHRA.
- If no fossils are found and the excavations have finished then no further monitoring is required.

3.2.7 GREEN APPROACH

- The collection of storm water from the roofs of the buildings for recycling should be encouraged.
- The separation of waste, temporary storage onsite and removal by recycling companies should be considered the final site layout.
- Construction waste should be sold for recycling purposes.
- It is recommended that green technologies be incorporated in the design of the on-site buildings (office and guard housing, etc.), i.e. :
 - Proper insulation of the ceilings is required, because as much as 50% of heat losses in a building can be attributed to a lack of ceilings and ceiling insulation. This will significantly reduce heating and cooling expenses.
 - The architectural design should ensure that proper natural flow of air into and out of the buildings occur deliberately as ventilation.
 - Energy efficient heaters and air conditioners should be purchased.
 - Conservation of energy or the utilisation of renewable and sustainable energy technologies is encouraged. This includes solar panels that generate and store electricity in suitable battery packs, solar water heater(s), backed up with gas, as well as gas appliances.
 - Compact fluorescent lights lamps are recommend instead of ordinary bulbs for all light required for non-security purposes. Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs.
 - Solar water heater(s) conserve energy and can be backed up with gas or electric geysers.
 - Installing a geyser blanket on geysers and hot water storage tanks will reduce the amount of heat lost by the geyser to cold air outside and thus conserves energy.
 - Hot water pipes should also be insulated to prevent heat loss.
 - Any outdoor cooling units must be protected from the sun. They should therefore be placed on the southern sides of the buildings.

3.2.8 LANDSCAPING AND REHABILITATION

- A **Landscape Rehabilitation and Plant Plan** must be compiled for construction site rehabilitation and landscaping of communal areas in the township. It must be implemented during the construction phase while all equipment and personnel are available on site.
- It should include the following :
 - Requirements for stockpiling of topsoil, including sufficient distance from watercourse, etc.
 - Slope shaping and stabilising methods
 - Mixed grass mixture (indigenous species from the area, inclusive of both quick-growing annual creepers and tough perennials)
 - Vegetation should be introduced to areas cleared of vegetation as soon as possible to prevent erosion by reducing the speed of run-off and to have a filtering effect of stormwater.
 - The timing of clearing activities is of vital importance. Clearing activities and earth scraping should preferably be restricted to the dry season to prevent erosion and siltation. The dry months are also the period when most species are either dormant or finished with their breeding activities.
 - A plant plan should be provided for the communal areas.
 - The clumps of trees to be maintained in the township should preferably be included in Private Open Space areas amongst residential erven.
 - Only indigenous vegetation occurring in the macro area should be introduced.
 - List of indigenous plants and shrubs with basic planting methods to present to new property owners to promote water-saving principles and natural landscaping.
 - Ecological management measures must be identified for the Private Open Spaces in the township to be actively managed and overseen by the owners of the proposed development.

3.2.9 FENCING

- Allowance should be made for free flow of water and drainage from the site; therefore only approved palisade fencing/combined palisade and solid wall fencing must be constructed along the outside boundaries of the township.

3.2 CONSTRUCTION SITE

- The construction site office and storage areas for material and equipment must be kept inside the development area within the relevant property to prevent impacts and human interference to spread further than the site.
- Storage facilities for construction equipment must be provided for.
- The construction site must be fenced.
- Accommodation for labourers must be limited to guarding personnel on the construction site (with labourers transported to and from the site).
- Sufficient ablution and proper cooking facilities must be provided at the construction site.
- On-site storage of petroleum products for construction purposes should be limited.
- Servicing measures of vehicles to be in designated areas with appropriate spill management procedures (spill kits) should be in place.
- Solid domestic waste should be placed in containers and regularly disposed of via the municipal waste removal system.
- Strict clean up requirements of the site camp is required (waste concrete, reinforcing rods, waste bags, wire, timber etc.) and disposal at a municipal waste disposal site must be done regularly.

3.3 APPOINTMENT OF CONTRACTORS

- Environmental clauses as referred to in this EMP, should be included in contract documents of all contractors.
- The appointment of contractors with proven track records of sound environmental performance should be given priority.
- The contractor must be aware that all construction waste material generated during and after construction should be disposed of at a permitted landfill site and an agreement letter between the municipality and the contractor should be available on request.
- All recommendations in the EMP are binding on all contractors, labourers and personnel on site.

4. CONSTRUCTION PHASE

4.1 GENERAL ENVIRONMENTAL REQUIREMENT

- Appropriate ablution facilities must be provided for. Chemical toilets must be supplied and regularly serviced by a registered company. It may not be placed closer than 100m from any watercourse. No sewage effluent may be dumped in the veld.
- No open fires may be made for preparation of meals.
- Removal of all construction material and equipment after construction must take place.
- Removal of all waste construction material to an approved waste disposal site must take place.
- Littering must be prevented. Bins for general waste must be provided and must be emptied on a daily basis.
- No trees, shrubs or rocks may be disturbed and/or removed, no snares may be placed and no hunting of small fauna species and birds may take place on adjacent land.
- Alien vegetation shall be managed according to the NEMA : Biodiversity Act in terms of the Alien Species Regulations, 2014 as well as in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. The Contractor shall prevent the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading of such plants onto the land as a result of construction activities.

4.3 GROUND AND SURFACE WATER

- The **Stormwater Management Plan** described in Paragraph 3.2.5 must be implemented.
- Site specific mitigation requirements for spills as included in the table in the section "Specification applicable to all Phases of Project Development" must be adhered to.
- Under no circumstances must surface or ground water be polluted.
- Adequate oil containment precautions must be taken.
- A bio-remediation contractor must be appointed to rehabilitate large oil spills. The regional officer of the Department of Water and Sanitation will advise in this regard. Contact details are provided in Paragraph 2.2 above and they must be notified within 24 hours about any incidents during construction or operations that may impact on water resources.
- Small oil spills must be cleaned immediately with an oil spill kit that must at all times be available on site.
- Proper maintenance procedures for vehicles and equipment must be followed.
- Servicing of vehicles may only take place in designated areas with appropriate spill management procedures in place.
- Drip trays should be used during the servicing of vehicles. The content thereof must be disposed in accordance with relevant hazardous material disposal requirement.
- All storm water runoff must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the unnecessary loss of soil.
- To cause the loss of soil by erosion is an offence under the Soil Conservation Act, Act No 76 of 1969.) The access road and site surface must be monitored for deterioration and possible erosion. Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.

- Construction during the dry months of the year should be considered in order to overcome the problems caused by excessive moisture.
- All storm water runoff must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties.
- During and after construction, storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. to avoid the export of soil into the watercourse.
- Storm water should not be discharged into the working areas and it should be ensured that storm water leaving the footprint of the proposed development areas is not contaminated by any substance, whether that substance is solid, liquid, vapor or any combination thereof.
- Stockpiling of construction material and soils should be such that pollution of water resources is prevented and that the materials will be retained in a storm event.

4.4 WASTE MANAGEMENT

4.4.1 GENERAL WASTE

- Littering or illegal dumping of any waste material is prohibited.
- No waste disposal holes may be made on site.
- Under no circumstances should waste be burnt on site.
- Waste separation should be encouraged for recycling purposes.
- Provision must be made for the collection of all general waste materials. Rubbish bags and bins must be provided on the construction site and must be emptied on a regular basis. It is expected that removal of waste will be handled by the municipality; however, if this municipal service cannot be provided, the Contractor must remove the waste to a registered landfill facility.
- Liquid waste (grey water) must be disposed with sewerage.

4.4.2 CONSTRUCTION WASTE

- Compliance with stringent daily clean up requirements of site camp inert waste (waste concrete, reinforcing rods, wire, timber, etc.) and disposal at municipal waste disposal sites must take place.
- Construction waste must be collected and sold for recycling purposes.

4.4.3 SEWAGE

- Appropriate toilet facilities must be provided. If existing ablution cannot be utilised, then chemical toilets must be supplied and must be provided by a registered company and be serviced on a regular basis.
- No effluent may be dumped in the veld or streams in the macro area.

4.4.4 HAZARDOUS WASTE

- Oil contaminated waste (soil, cloths used to clean small spills, spill kits, content of drip trays, etc.) must be disposed of at a facility that is registered as a hazardous landfill facility.
- All hazardous substances at the site must be adequately stored and accurately identified, recorded and labelled.
- Hydrocarbon (oil, diesel, petrol) waste as well as hydrocarbon containing material must be regarded as hazardous waste and separated from general waste.
- Persons who remove hazardous waste must be appropriately qualified and authorized.

4.5 EROSION

- The **Stormwater Management Plan** compiled during the Pre-Construction and Design Phase must be implemented.
- Access roads and site surfaces must be monitored for deterioration and possible erosion. Pro-active measures must be implemented to curb erosion and to rehabilitate eroded areas. All areas susceptible to erosion must be installed with temporary and permanent diversion channels and berms to prevent concentration of surface water and scouring of slopes and banks, thereby countering soil erosion.
- To reduce the risk of erosion, run-off over the exposed areas should be mitigated to reduce the rate and volume of run-off and prevent erosion towards the stream.
- Construction during the dry months of the year should be considered in order to overcome the problems caused by excessive moisture and prevent soil being washed away towards the lower-lying areas and the watercourse eco-system.
- If construction is done during the wet months, the watercourse area should be protected against soil erosion with sandbags packed along its edge to prevent any soil washed into the system during rainfall events.
- Rehabilitation and re-vegetation should preferably take place before commencement of the rainy season.
- Storm water control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. especially to avoid the export of soil into the water course.
- The storm water system must be constructed in such a way that the force of the water entering the watercourse system is broken to prevent any possibility of erosion taking place.
- Any erosion channels developed during the construction period or during site vegetation establishment period must be back-filled and compacted and the areas restored to a proper condition.
- The Contractor must at all times ensure that cleared areas are effectively stabilised to prevent and control erosion.
- Stockpiling of soils should take place as follows :-
 - Soil stockpiles must be protected from possible erosion, e.g. through covering of the stockpiles with tarpaulin and limiting the height and slope of the stockpile.
 - Soil stockpiles should not exceed 1m in height.
 - Soil stockpiles must be sufficiently away from drainage areas..
- Rehabilitation of the pipeline construction areas should take place as follows:-
 - All construction activities must be from sub-soil and must be replaced in the layers in which it was excavated (with the topsoil being the top-layer).
 - Excavations for trenches must be done portion by portion and covered as soon as a section of the pipe had been laid.
 - The area must be rehabilitated and reseeded after the pipeline has been laid.
 - Shaping (to blend into the landscape) and stabilisation of the slopes must be done via rock protection, topsoil redistribution, etc.
- No development activities may take place within the watercourse and buffer zone without water use authorisation for that specific activity in place.

4.6 COMMUNITY (LIAISON, SAFETY, SECURITY, NOISE, DUST, ETC.)

- Reasonable liaison will be maintained with adjacent businesses and landowners to ensure that the following is effected:
 - Feedback on the environmental performance of the project must take place if and when required.

- A complaints' register needs to be opened and maintained by the Applicant. The register will contain the contract details of the person who made complaints and information regarding the complaint itself, including the date of submission.
- Any conservation authority and/or government institution should be allowed reasonable access to the construction site on request and arrangement with the Contractor and/or Applicant.
- Labourers
 - In order to prevent and/or minimize crime, it is required that only guarding personnel be supplied with controlled serviced accommodation
 - All construction workers will be allowed only for specified day light hours.
 - Transport should be made available by the Contractor to remove labourers from the site after working hours.
 - Supervision of labourers must at all times take place.
 - No wandering on adjacent properties may be allowed.
- Noise

In the event that noise complaints are received, the following must be implemented :-

 - Construction activities involving use of the service vehicle, machinery, hammering etc, must be limited to the hours between 7:00 am and 6 pm weekdays; 7:00 am and 1:30 pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays.
 - Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc.) must be preceded by notice being given to the affected neighbours at least 24 hours in advance.
 - Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers, etc.) must be used as per operating instructions and maintained properly during site operations.
- Dust

Sweeping of construction sites, clearing of building rubble and debris and watering of construction sites (storage areas, roads, etc.) must take place at least once a day to prevent dust pollution as a result of construction activities.

 - All excavated areas must be clearly marked and barrier tape must be placed around them to prevent humans and animals from falling into them.
 - The Contractor must implement traffic control measures to prevent congestion of traffic as a result of construction vehicles.

4.6 SITE REHABILITATION

The following mitigation measures must be implemented as soon as possible after the main construction activities had been finalized, whilst construction personnel and equipment are still on site.

- The **Landscaping & Plant Plan** described in Paragraph 2.3.7 above must be implemented whilst the labourers and contractors are still on site.
- After construction all building material, signs of excess concrete, equipment, houses, temporary ablution facilities, building rubble, refuse and litter must be removed and cleaned up from the construction site.
- Items that can be used again should be recycled. Unusable waste steel and aluminum should be sold to scrap dealers for recycling,

5. POST-CONSTRUCTION & OPERATIONAL PHASE

5.1 LANDSCAPING & FENCING

- It is proposed to present a list of indigenous plants and shrubs with basic planting methods to new property owners to promote water-saving principles and natural landscaping as part of the marketing material of the township. The compilation of such a list/pamphlet is described as part of the **Landscape Rehabilitation and Plant Plan** in Paragraph 3.2.7.
- The use of indigenous trees and/or shrubs must be strongly promoted with new property owners.
- All prospective buyers must be made aware of the restriction on removal of specific tree species and clumps of trees on their stands.
- The owners of the township must actively implement the management measures for the operation and control of the Private Open Space areas in the township as identified in the Landscape Rehabilitation and Plant Plan in Paragraph 3.2.7.
- New property owners should be made aware that palisade fencing or a combination of palisade and solid wall fencing should be built to allow for natural stormwater flow, migration of small fauna species as well as a see-through effect in terms of visual impact.

5.2 MONITORING AND RECTIFICATION

- The **Groundwater Monitoring Plan** described in Paragraph 3.2.2 must be implemented.
- Any incidents resulting from the structures and/or operation of the sewage infrastructure that could have a detrimental impact on the environment must immediately be investigated and rectification measures must be implemented and monitored accordingly.
- All incidents must be reported to the Department of Water and Sanitation (CMA) within 24 hours of the occurrence who will advise on emergency procedures to follow.

5.3 NOISE IMPACT

- The Applicant must handle reasonable complaints from adjacent land-users in a cooperating manner.
- Strict management rules for personnel in terms of volume or communicating must be identified and enforced if required.

5.4 STORMWATER CONTROL

- All storm water run-off must be managed efficiently so as to avoid storm water damage and erosion to adjacent properties.

5.5 WASTE MANAGEMENT

General Waste

- Littering or illegal dumping of any waste material is prohibited.
- No waste disposal holes may be made on site.

- Under no circumstances should waste be burnt on site.
- Waste separation should be encouraged for recycling purposes.
- Liquid waste (grey water) must be disposed with sewerage.
- Waste must be disposed of as per the Services Agreement between the Applicant and the Municipality. General household waste should be collected from businesses and households and removed by the municipality and transported to a registered waste fill site.

Medical Waste

- All medical must be disposed of at a facility that is registered as a medical waste facility.
- Persons who remove medical waste must be appropriately qualified and authorized.
- No medical waste may be burnt and incinerated on site. The project components for which Environmental Authorisation was obtained for this township does NOT include an incineration facility.

5.6 RECOMMENDED GREEN APPROACH

The Applicant must commit to promoting the following environmentally sustainable principles:

Green technologies to be incorporated in the design of the buildings, i.e.:

- Proper insulation of the ceilings is required, because as much as 50% of heat losses in a building can be attributed to a lack of ceilings and ceiling insulation. This will significantly reduce heating and cooling expenses.
- The architectural design should ensure that proper natural flow of air into and out of the buildings occur deliberately as ventilation.
- Energy efficient heaters and air conditioners should be purchased.
- Conservation of energy or the utilisation of renewable and sustainable energy technologies is encouraged. This includes solar panels that generate and store electricity in suitable battery packs, solar water heater(s), backed up with gas, as well as gas appliances.
- Compact fluorescent lights lamps are recommend instead of ordinary bulbs for all light required for non-security purposes. Fluorescent lamps give five times the light and last up to 10 times as long as ordinary bulbs.
- The installation of gas appliances rather than electrical appliances must be encouraged.
- Convection ovens should also be installed as they use less energy than conventional ovens and cooking time is substantially reduced.
- Solar water heater(s) conserve energy and can be backed up with gas or electric geysers.
- Installing a geyser blanket on geysers and hot water storage tanks will reduce the amount of heat lost by the geyser to cold air outside and thus conserves energy.
- Hot water pipes should be insulated to prevent heat loss.
- The outdoor cooling units must be protected from the sun. They should therefore be placed on the southern sides of the buildings.
- The collection of stormwater from the roofs of the buildings for irrigation should be encouraged.

Recyclable waste management should include the following during the operational phase :-

- An designated area in the township should be identified where waste can be sorted and stored for collection must be identified;
- The waste collection area must have a concrete surface and it must be under roof

- (for protection against rain, stormwater runoff and fire)
- The site must be accessible for collection vehicles.
- A dedicated worker must be trained in the recycling of waste (baling; compaction; breaking of glass, etc.) to ensure effective recycling of relevant material.
- These recycling waste sites on each stand must be regularly cleaned and disinfected
- It is proposed that the applicant contact glass, plastic and can recycling companies for collection of relevant waste and set up of proper agreements i.e. when; how often; etc.

5.7 GENERAL

- The Applicant must at all times follow acceptable maintenance and operational practices to ensure consistent, effective and safe performance of the infrastructure.
- The Applicant must ensure compliance with relevant legal requirement and industry standard at all times.
- The Department of Water and Sanitation (DWS) must be allowed at all times to use the access road indicated on the final township layout for their large trucks for maintenance of the dam wall and outlet structures, specifically the large radial gates. The road must be controlled with a locked gate by DWS who must also be responsible for the maintenance of the road. The contact details are :

Department of Water and Sanitation, Northwest Region, Water Resource Management
 Crocodile West Marico WMA
 For attention: Acting Director: Northern Operations: The Area Manager (Hartbeespoort):
 Mr JJ (Hannes) Pretorius and the Chief Admin Clerk : Ms Cornia Theunissen
 Tel nrs. 082 889 7930 (Ms Theunissen) / 012 253 1093/4 and 082 806 3681 (Mr Pretorius)
 E-mails : theunissenc@dws.gov.za / pretorih@dws.gov.za

5.8 HOMEOWNERS ASSOCIATION / BODY CORPORATE / SECTION 21 COMPANY

A Homeowners Association / Body Corporate / Section 21 Company must be established to manage and control the township according to the requirements in the Environmental Management Plan. The EMP should be formally integrated with the rules of the township.

5.9 DECOMMISSIONING

Due to the nature of the township, decommissioning is not foreseen. In the unlikely event that it has to be decommissioned, decommissioning must take place in compliance with the relevant environmental legislative requirement applicable at that time.

Annexure A

Township Layout

Annexure B

Environmental Impact Assessment Table

Annexure C

Environmental Authorisation (to be attached once available)

Annexure D

Water Use Authorisation (to be attached once available)