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**PROPOSED GA-RANKUWA ERF 1719 UNIT 23 AND ERF 1427
UNIT 25 RESIDENTIAL DEVELOPMENT AND ASSOCIATED
INFRASTRUCTURE**

CITY OF TSHWANE METROPOLITAN MUNICIPALITY

GAUTENG PROVINCE

GAUT: 002/22-23/E3452

Applicant: CITY OF TSHWANE METROPOLITAN MUNICIPALITY

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TABLE OF CONTENTS

1. INTRODUCTION.....	3
1.1 DETAILS OF APPLICANT.....	3
1.2 DETAILS OF EAP	3
2. PHASES, ROLES & RESPONSIBILITIES	3
2.1 Phases of the Project.....	3
2.1.1 Planning or Design Phase (DS)	3
2.1.2 Construction Phase	4
2.1.3 Operational Phase	4
2.1.4 Decommissioning Phase.....	4
2.2 Roles and Responsibilities	4
2.2.1 Contract Manager (CM) (Developer Representative)	4
2.2.2 Architects (Arch).....	4
2.2.3 Engineer (Eng)	4
2.2.4 Environmental Control Officer (ECO).....	4
2.2.5 Community Liaison Officer (CLO).....	5
3. IMPLEMENTATION AND MONITORING	5
3.1 Auditing/Inspections	5
3.2 Methods Statements.....	5
3.3 Record Keeping	5
4. STANDARDS.....	6
5. EMPr OBJECTIVES	6
6. LEGISLATION	6
7. TRAINING AND ENVIRONMENTAL AWARENESS	6
8. ENVIRONMENTAL CODE OF CONDUCT	7
9. PROJECT OVERVIEW	7
10. RECEIVING ENVIRONMENT	10
11. DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME	11
11.1. CATEGORY A: PLANNING OR DESIGN PHASE	13
11.2. CATEGORY B: CONSTRUCTION PHASE	17
11.3. CATEGORY C: OPERATIONAL PHASE	34
12. REHABILITATION PLAN	Error! Bookmark not defined.
13. CONCLUSION	36
APPENDIX A: ABBREVIATIONS AND DEFINITIONS	
APPENDIX B: EAP CV	

1. INTRODUCTION

The purpose of an Environmental Management Program (EMPr) is to guide the planning and design, construction and operational phases of the development. The EMPr should be developed in parallel with the planning and design phase, which enables environmental guidelines and criteria to be incorporated into the detailed design. This is done to eliminate or mitigate the various possible risks to the environment and its surrounding inhabitants during the planning and pre-construction phase. And it will subsequently ensure that minimal damage will occur to these areas during the construction and operational phases of a project.

1.1 DETAILS OF APPLICANT

Project Applicant	City of Tshwane Metropolitan Municipality
Contact Person	Francois Swanepoel
Telephone	012 358 4198
Email	FrancoisS@TSHWANE.GOV.ZA

1.2 DETAILS OF EAP

Company	Setala Environmental
Contact Person	Mientjie Coetsee
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Email	mientjie@setalaenvironmental.co.za
Physical Address	44 Melrose Blvd, Melrose Arch, Johannesburg
Expertise/Experience <i>Refer to EAP CV attached as Appendix B.</i>	Mientjie Coetsee has more than 18 years' experience in the Environmental Sector and has gained experience as Environmental Assessment Practitioner and Project Manager working on a wide range of projects including residential, mixed land-use, industrial, roads and filling stations. Her primary skills include Environmental Screening Assessments, Environmental Impact Assessments (EIAs), Waste Management License Applications, Public Participation and Environmental Management Programmes (EMPrs). EAPASA Registration number: 2019/1774. IAIAsa Membership number: 3359.

2. PHASES, ROLES & RESPONSIBILITIES

The Point of departure for any EMPr is to take a pro-active route by addressing and minimising any potentially significant problem before it occurs. In particular this EMPr deals with the following phases:

2.1 Phases of the Project

The Point of departure for any EMPr is to take a pro-active route by addressing and minimising any potentially significant problem before it occurs. In particular this EMPr deals with the following phases:

2.1.1 Planning or Design Phase (DS)

It is essential that possible problematic situations be eliminated or mitigated during the planning phase, to ensure that contingency plans are prepared for any possible accidental situation that may arise during the construction

phase. By having these contingency plans in order before construction starts it will limit any further potentially detrimental impacts to the environment and its surrounding inhabitants.

2.1.2 Construction Phase

The majority of possible impacts on a site would occur during the construction phase, and most of them will have immediate effect (e.g. dust pollution, fuel spillage). It is therefore vital that the site is monitored on a continual basis during this phase, as it would be possible to identify and correct these impacts as they occur, thus minimising their possible impact.

2.1.3 Operational Phase

By being pro-active during the design and construction phases, potentially harmful impacts originating in the operational phase will be minimised or eliminated.

2.1.4 Decommissioning Phase

Thoughtful design, thorough monitoring and strict adherence to the EMPr during the construction and operational phases will ensure that the decommissioning phase (if and when applicable) will be done efficiently and with minimal damage to the bio-physical and social environments.

2.2 Roles and Responsibilities

Various role players have a range of responsibilities to perform during the different phases of a project:

2.2.1 Contract Manager (CM) (Developer Representative)

- The CM will be responsible for overseeing the contract from initiation to completion of construction on the site
- The CM will appoint a team of contractors, which will be responsible for the construction of the entire project
- The CM will be responsible for ensuring that the development is implemented according to the requirements as set out in the EMPr
- The CM should ensure that sufficient resources are available to the other role players to efficiently perform their tasks in terms of the EMPr
- The CM must appoint an independent ECO to ensure strict adherence to the EMPr

2.2.2 Architects (Arch)

Only architects approved by the CM will be allowed to work on the project.

2.2.3 Engineer (Eng)

An engineer act as a direct, on-site resource for all technical aspects related to the development. He is available on the construction site at all times, overseeing all phases of the construction activities.

2.2.4 Environmental Control Officer (ECO)

The ECO will be appointed at the start of the construction phase and is mandated to do the following:

- Ensure that all contractors/subcontractors/employees are fully aware of their environmental responsibilities. This will take the form of an initial environmental awareness-training program in which requirements of this document will be explained
- Any damage to the environment must be repaired as soon as possible after consultation between the ECO, Consulting Engineer and Contractor

- The ECO shall monitor their actions to ensure that the developer staff and/or contractor are adhering to all stipulations of the EMPr
- The ECO shall be responsible for monitoring the construction activities throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes
- The ECO must sign off that the PM certify that they shall ensure that all clean-up and rehabilitation or any remedial action required, are completed prior to transfer of properties
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMPr have been adhered to

2.2.5 Community Liaison Officer (CLO)

Where necessary / required a representative of the community, as nominated by the community, will be the CLO and has the role of representing the community and managing all communication between the ECO, the Contractor and the community (I&APs). (The details of the CLO are to be forwarded to the Ward Municipality or for the area.)

3. IMPLEMENTATION AND MONITORING

3.1 Auditing/Inspections

- The appointed ECO on a regular basis, and also ad hoc basis will inspect the site where necessary
- The CM as well as the contractor's representative will accompany the ECO, on-site inspections
- The contractor will use the formats presented in this EMPr to report to the CM as to the compliance to this document

When, in the opinion of the ECO, a construction activity will result in environmental damage, the ECO will issue instructions to the CM, who will in turn order the Contractor to halt the activity. Spot fines or penalties may be levied for non-compliance.

3.2 Methods Statements

Methods statements from the Principal contractor and or subcontractor – where applicable will be required for specific sensitive actions on request of the authorities or ECO. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMP document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of ECO, the format should clearly indicate the following:

- What – a brief description of the work to be undertaken
- How – a detailed description of the process of work, methods and materials
- Where – a description / sketch map of the locality of work
- When – the sequencing (phases) of actions with commencement date and completion date estimates

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ECO.

3.3 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ECO diary, methods statements etc.) must be kept together in an office where it is safe. Records should be kept for two years and at any time be available for scrutiny by any relevant authority.

4. STANDARDS

- The ECO will keep written and photographic records of the site and it's surrounding before, after and during construction on the site
- The Contractor will keep records of construction activities, instructions received from the ECO and CM concerning environmental matters
- The ECO will keep records of cases of non-compliance and remedial actions taken
- Where no quantitative standards are applicable, visual standards will apply
- The contractor will rehabilitate the site to a condition acceptable to the ECO, and respond timeously to any complaints and instructions regarding construction activities

5. EMPr OBJECTIVES

This EMPr must be used during the pre-construction, construction and operational phases of the proposed project.

The objectives of this plan are to:

- Ensure all environmental safeguards are carried out correctly
- Manage site activities effectively and coordinate with other trades
- Minimise adverse impacts on the environment
- Ensure that environmental mitigation measures are in place from the start of the project
- Minimise disruption to fauna and flora
- Monitor the project

6. LEGISLATION

The EMPr is compiled in order to comply with the following legislative documents:

- The Constitution of South Africa (No. 108 of 1996)
- Environmental Conservation Act, 1989 (Act 73 of 1989)
- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- National Environmental Management : Air Quality Act (Act no 39 of 2004)
- National Environmental Management : Waste Act (Act No. 59 of 2008) as amended
- The National Water Act, 1998 (Act 36 of 1998)
- National Heritage Resource Act (No. 25 of 1999)
- The Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
- National Forest Act (No. 84 of 1998)
- Occupational Health and Safety Act (Act 85 of 1993)
- Local Municipality By-Laws
- Municipal Systems Act, 2000 (Act 32 of 2000)
- Municipal Structures Act, 1998 (Act 117 o 1998)

7. TRAINING AND ENVIRONMENTAL AWARENESS

It is important to ensure that the Contractor has the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. Training needs should be identified based on the available and existing capacity of site personnel (including the Contractors and Sub-contractors) to undertake the required EMPr management actions and monitoring activities. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard. The environmental training is aimed at:

- Promoting environmental awareness;
- Informing the Contractor of all environmental procedures, policies and programmes applicable;
- Providing generic training on the implementation of environmental management specifications; and

- Providing job-specific environmental training in order to understand the key environmental features of the construction site and the surrounding environment.

Training will be done in a verbal format. The training will be a once-off event; however the Contractor should make provision for weekly training or Toolbox Talks. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This ensures that environmental accidents are minimised and environmental compliance maximized.

8. ENVIRONMENTAL CODE OF CONDUCT

One of the objectives of the EMPr is to ensure that the workforce, contractors, sub-contractors and construction staff have an understanding of environmental issues and potential impacts that may arise from site activities. This environmental code of conduct provides the basic rules that should be strictly adhered to. It is the responsibility of the Contractor to ensure that site personnel understands and adhere to the Code of Conduct.

ENVIRONMENTAL CODE OF CONDUCT

ALL PERSONS ARE OBLIGED TO KEEP TO THE RULES OF THIS CODE OF CONDUCT Ignorance, negligence, recklessness or a general lack of commitment resulting in environmental degradation or pollution shall not be tolerated!

ENVIRONMENTAL RULES

- Only use authorised accesses;
- Do not litter;
- Dispose solid waste to the correct waste containers provided;
- Prevent pollution;
- Use the toilet facilities provided;
- Do not dispose contaminated waste water into the storm water or the environment
- Immediately report any spillage from containers, plant or vehicles;
- Do not burn or bury any waste on the site and;
- Do not trespass onto private properties;
- Do not waste electricity, water or consumables;
- Strictly leave all animals alone. Never tease, catch or set devices to trap or kill any animal.
- Never damage or remove any trees, shrubs or branches unless it forms part of working instructions and authorization has been received where necessary;
- Do not deface, draw or cut lettering or any other markings on trees, rocks or buildings in the area;
- Know the firefighting procedure and locations of firefighting equipment; and
- Know the environmental incident procedures.

9. PROJECT OVERVIEW

Setala Environmental (Pty) Ltd has been appointed as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed residential development and associated infrastructure on Stand 1719 Unit 23 and Stand 1427 Unit 25 Ga-Rankuwa (herein after referred to as "the site"), City of Tshwane Metropolitan Municipality, Gauteng Province. The residential development site is 21.9803 hectares in extent and is situated approximately 13 km west of Soshanguve and the R80, and 8km to the north of the N4 towards Brits. The site is in close proximity to the border between Gauteng and North West Province.

The proposed development is a City of Tshwane Metropolitan Municipality (CTMM) Human Settlements Housing Project.

Refer to Figure 1, Locality Map, Figure 2, Aerial Map and Figure 3, Layout Map.

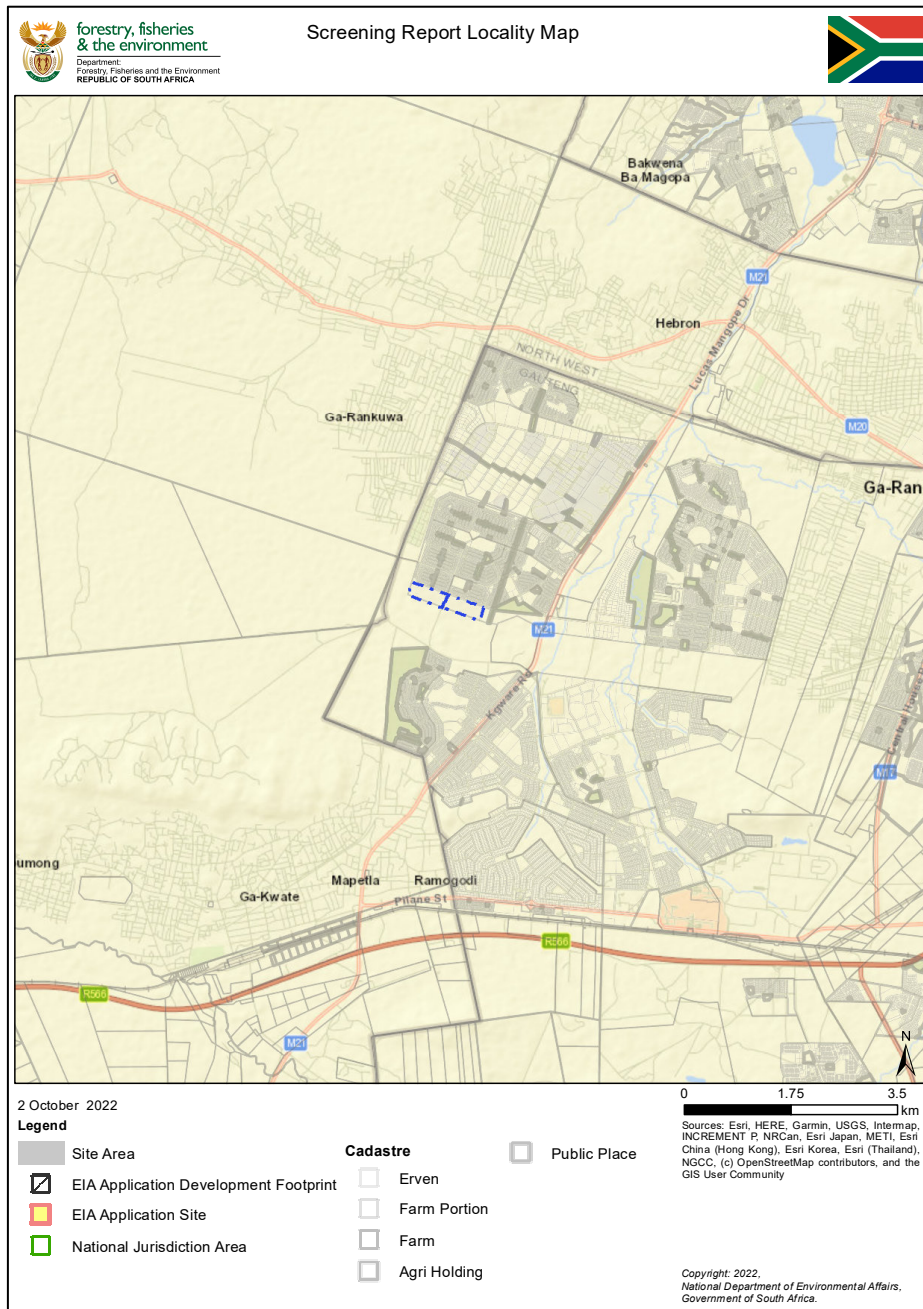


Figure 1: Locality Map

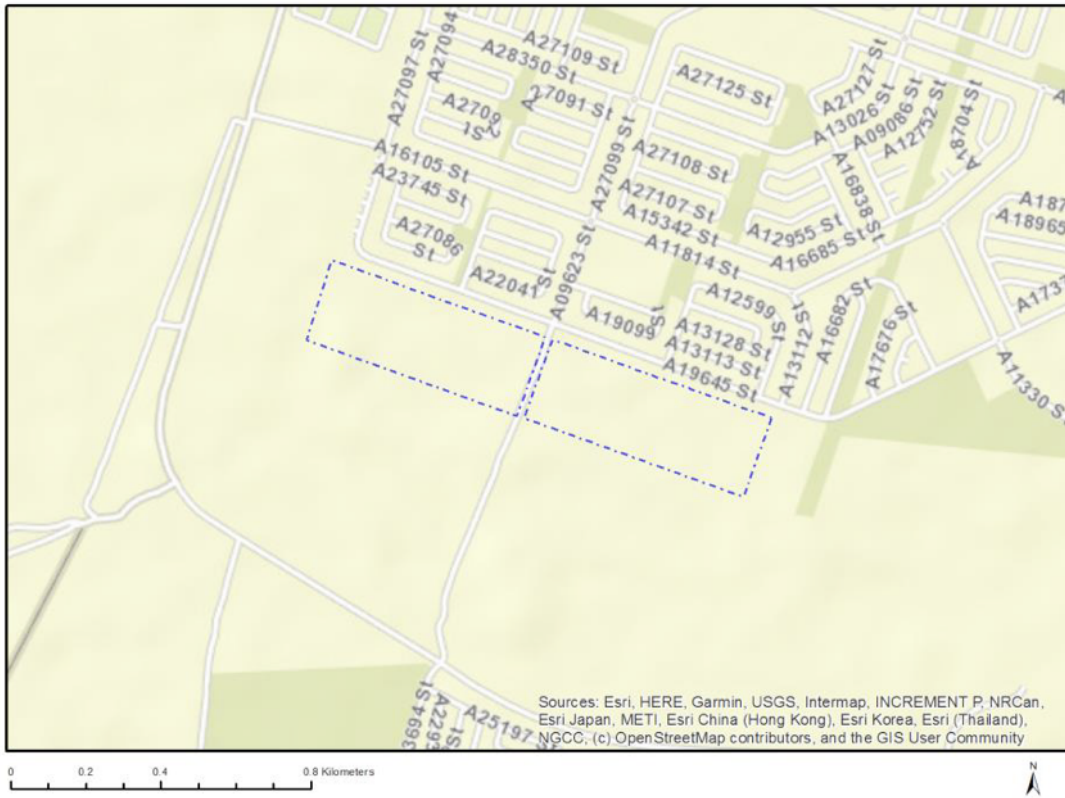


Figure 2: Locality Map



Figure 3: Locality Map (Aerial)

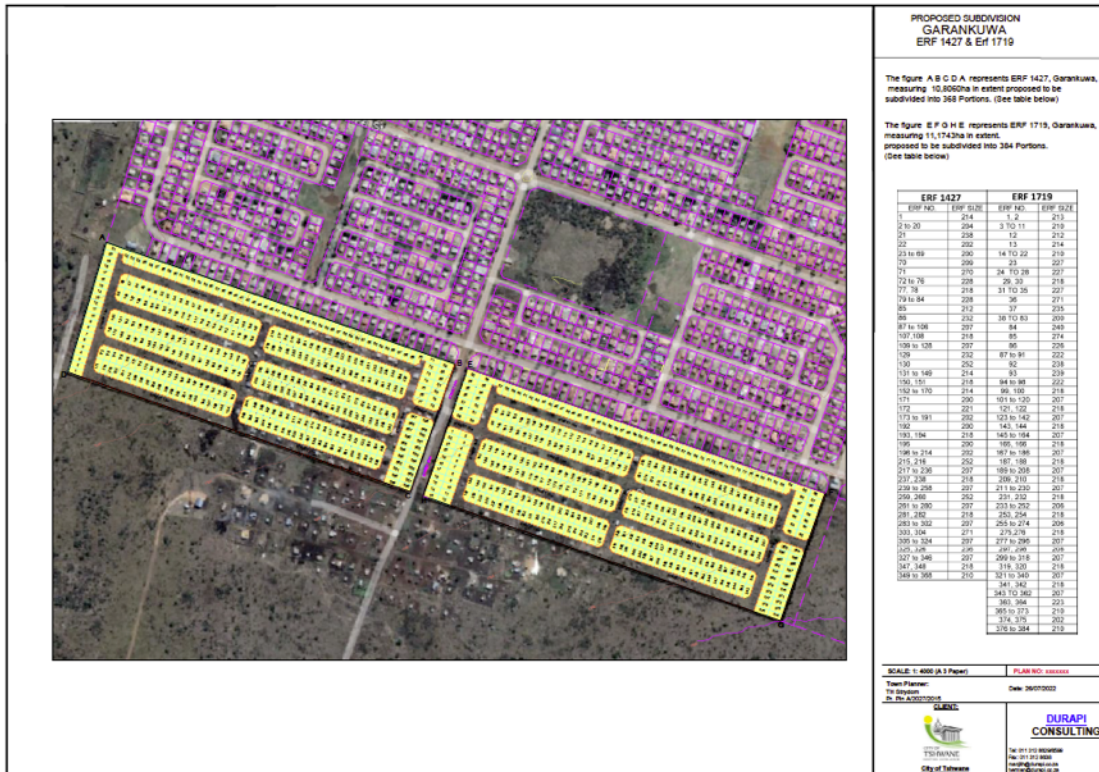


Figure 4: Layout Plan

10. RECEIVING ENVIRONMENT

Geology

- The greatest portion of the site is covered by colluvium comprising mainly of transported hillwash underlain by weathered gabbro while the rest of the terrain is covered by highly active, thick clays.
- Most of the in-situ materials can be used as subgrade and fill materials. However, it is recommended that construction materials be imported to the site to optimize the development potential of the site.
- Adequate bearing capacity exists for the intended housing structures. However, precautionary measures should be taken during design and construction for the expected differential settlement associated with compressibility, collapse potential and activity of the transported and residual soils which may occur between the founding depth and bedrock. The uneven weathered bedrock may result in differential movements in the super structures.
- First class site drainage must be provided to reduce the risk of subsurface materials from becoming saturated, the risk of differential settlement and to prevent scouring and erosion of the surface materials.
- It is recommended that a water-borne sewerage system be used for sanitation.
- No severe problems are envisaged for mechanical excavations for the installation of services and foundations.
- It may be discovered that soil conditions are at variance with those discussed in the report do occur in very small, localised patches. The involved geotechnical engineers are, however, of the opinion that the soils are generally of a somewhat homogenous nature and little variability is expected, except in the hard rock profile variation.

Biodiversity

- The study site is within the original extent of the veldtype known as Marikana Thornveld, which is a threatened veldtype / ecosystem with a status of 'Endangered'. However, most of the site is either transformed (by existing houses and fields) or badly degraded (by over-utilisation of resources such as wood).
- During site investigations no red data listed (RDL) fauna or flora, or other species of conservation concern were observed on the study site.
- There are no watercourses in the study area or immediately adjacent, including wetlands.

- The study site is not with any national priority areas.
- Sections of the study site are within a critical biodiversity area (CBA).
- The biodiversity of the study area was found to be a mix of 'Low' (the transformed areas); and 'Medium' (the degraded open thornveld areas).

Refer to Figure 5, Sensitivity Map.



Figure 5: Sensitivity Map

Heritage

- The proposed residential development project is located within a degraded area and have reduced sensitivity for the presence of high significance physical cultural site remains, be they archaeological, historical, or burial sites, due to previous destructive land use activities.
- Limited ground surface visibility on sections of the proposed residential development project site was impeded by built up informal settlement. It should be borne in mind that the absence of confirmable and significant archaeological cultural heritage site is not evidence in itself that such sites do not exist within the proposed residential development project.

11. DETAILED ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr specifies the minimum requirements to be implemented by the Developer as per the scope of works and scope of the environmental authorisation, in order to minimise and manage the potential environmental impacts and ensure sound environmental management practices. It also provides the framework for environmental monitoring throughout the construction and operational phases.

The provisions of this EMPr are binding on the Developer during the life of the project. The EMPr must be binding on the Developer or any authority to which responsibility for the construction activities has been delegated to, until such time that the Gauteng Department of Agriculture and Rural Development (GDARD) or applicable environmental authority has formally absolved the Developer from its responsibilities in terms of this EMPr.

It is essential that the EMPr requirements be carefully studied, understood, implemented, and adhered to at all time. To simplify the EMPr requirements, each aspect related to the EMPr has been addressed in the table below. Each action within the EMPr is supported by the priority of when the specific action will need to be implemented. Each of these aspects is briefly described below for ease of reference.

- Environmental Measures, Actions and Controls

This section indicates the actions required to either prevent and/or minimise the potential impacts on the environment that is associated with the project.

- Responsibility

This section indicates the party responsible for implementing the environmental measures and action plans laid out in the EMPr.

- Monitoring Frequency

11.1. CATEGORY A: PLANNING OR DESIGN PHASE

CATEGORY A: PLANNING AND DESIGN PHASE				
IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
Design	Design of the township takes into account the specialists recommendations	<p>The final township layout or design must, where practical, take into consideration the following:</p> <ul style="list-style-type: none"> • Recommendations made in the EIA Report. • Recommendations made by specialists attached in the EIA Report. • Any recommendations made by key stakeholders and state departments. . • Sustainable development principles that seek to optimise resource efficiency while promoting the transition to a green economy should be incorporated in the architectural design of the buildings and structures where possible. • Sustainable design criteria should include: <ul style="list-style-type: none"> • Thermally Efficient Design • Sustainable building materials • Renewable energy options • Sustainable water and sanitation systems • Waste minimisation and recycling • The architectural design of the buildings and structures should conform to best practice in visual and aesthetic standards. • A detailed Stormwater Management Plan (SWMP) for the development site must be designed by a suitably qualified engineer. 	Developer Town Planner Arch Eng	Once-off

Authorisations, Permits, Licences and appointments	All necessary authorisations, permits and licenses must be obtained for the implementation of the activity;	<ul style="list-style-type: none"> • The EMPr must form part of the contractual agreement with the contractors and subcontractors for the duration of the proposed project; • Tender documents should, where possible, include the use of local communities or local community organisations where possible in supplying services and labour for construction purposes. • The contractor must ensure adequate provision in their budgets for the implementation of the EMPr and; • The proponent must appoint an independent Environmental Control Officer (ECO) for the duration of the construction phase. The ECO to ensure that the mitigation/rehabilitation measures and recommendations are implemented and to ensure compliance with the provisions of the EMPr. • The final site development plan or layout including building plans must be approved by the City of Tshwane Town Planning Department. • The SWMP must be submitted to the CoT Integrated Stormwater Planning Division for approval. • A Landscape Development Plan (LDP) must be submitted to the Environmental Planning and Open Space Management Section CoT for approval. 	Developer CM	As required
Preparation of Method Statements	Preparation of all necessary method statements	<ul style="list-style-type: none"> • Method Statements must be prepared by the contractor as identified in section 3 or as requested. These may relate to water and stormwater management requirements, traffic requirements, solid waste management requirements, fuel storage and filling and dispensing of fuel (diesel and petrol), hydrocarbon spills, contaminated water treatment, the storage of hazardous materials, standard emergency procedures, and biohazard control. 	CM	As required

		<ul style="list-style-type: none"> The ECO will monitor the implementation of the Statements. 		
Site Access	Adequate routing and Haulage Roads	<ul style="list-style-type: none"> The contractor must take into account any limitations identified and recommendations made during the environmental studies when deciding on an access route to the site. The location of all underground services and servitudes must be identified and confirmed. Choice of access routes should take into account minimum disturbance to residents/surrounding developments. All roads for construction access must be planned and approved by the Engineer and ECO before construction begins. They must not be created on ad-hoc bases. The boundaries of the development footprint areas are to be clearly defined. It should be ensured that all activities remain within the defined footprint. The construction site must be safely fenced off prior to construction. Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the proposed development. Roads must have as little cut and fill as possible. Agreed turning areas for haulage vehicles are to be formalized and used by the Contractor. No turning manoeuvres other than the designated places shall be permitted. 	CM ECO	Once off
Setting up and management of construction camp	Provision for Waste Disposal and Ablutions	<ul style="list-style-type: none"> Bins and / or skips shall be provided at convenient intervals for disposal of waste within the construction camp. Bins should have liner bags for efficient control and safe disposal of waste Recycling and the provision of separate waste receptacles for different types of waste should be encouraged. 	CM	Ongoing

		<ul style="list-style-type: none"> • Chemical toilets must be provided (one for every 20 workers). 		
Establishing Storage Areas General and Hazardous Substances and Materials	Adequate and secure storage areas	<ul style="list-style-type: none"> • Choice of location for storage areas must take into account prevailing winds, distance to water bodies and general on-site topography. • Storage areas must be designated, demarcated and fenced if necessary. • Storage areas should be secure so as to minimize the risk of crime. They should also be safe from access by children / animals etc. • Fire prevention facilities must be present at all storage facilities. • Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Hazardous storage and refuelling areas must be bunded with an impermeable liner to protect groundwater quality. The Contractor shall submit a method statement to the Engineer for approval. • Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected. • Storage areas containing hazardous substances / materials must be clearly signed. • Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. • Contractors shall submit a method statement and plans for the storage of hazardous materials and emergency procedures. 	Contractor	Ongoing

Environmental Training Awareness	All contractors, subcontractors and casual labourers must be inducted	<p>The EA and EMPr form part of the formal site induction for all contractors, sub-contractors and casual labourers, preferably in their native language. The induction training will, as a minimum, include the following:</p> <ul style="list-style-type: none"> • The importance of conformance with all environmental policies; • The environmental impacts, actual or potential, of their work activities; • The environmental benefits of improved personal performance; • Their roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirements of the Consultant's environmental management systems, including emergency preparedness and response requirements; and • Construction staff must be adequately trained by the ECO, and the SHE Officer about the provisions included in the EMPr and general environmentally friendly practice. • The Contractor is expected to have "tool box" talks. These talks must be in accordance with the risks and trends associated with the project. • Proof of these talks must be kept onsite. 	CM ECO SHE Officer CLO	Once-off for induction Ongoing
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11.2. CATEGORY B: CONSTRUCTION PHASE

CATEGORY B: CONSTRUCTION PHASE				
IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
GEOLOGY				
Geological stability and soils	<ul style="list-style-type: none"> • To mitigate the loss of topsoil through 	<ul style="list-style-type: none"> • Where required, erosion berms should be installed below access roads, in order to prevent siltation and 	CM ECO	On going Monthly

	erosion and other means	<p>erosion on site. The following points should serve to guide the placement of erosion berms:</p> <ul style="list-style-type: none"> • Where the track has slope of less than 2%, berms every 50m should be installed; • Where the track slopes between 2% and 10%, berms every 25m should be installed; • Where the track slopes between 10%-15%, berms every 20m should be installed; and • Where the track has slope greater than 15%, berms every 10m should be installed. • The footprint for vertical drilling should remain as small as possible, to limit the disturbance to the receiving environment; • All excavated soil must be stripped and stockpiled within a designated area, in the vicinity of the construction site. • Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the proposed residential development. • Stockpiles must be protected from the wind and rain with the use of tarpaulins, where necessary; • It must be ensured that weeds are eradicated from topsoil prior to spoiling; • Litter and general waste must be removed from the soil prior to stockpiling; • All/any erosion and silt control mechanisms need to be regularly maintained for the duration of the construction phase; • Any areas compacted as a result of construction activities, where applicable, shall be ripped to a depth of approximately 150mm, using hand-held equipment, prior to being infilled with topsoil. 		
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	<ul style="list-style-type: none"> To ensure stability of structures 	<ul style="list-style-type: none"> When excavated areas are backfilled the surface must be level with the surrounding land surface, unless stated otherwise, to minimise soil erosion from the areas when the excavation is complete. Most of the in-situ materials can be used as subgrade and fill materials. However, it is recommended that construction materials be imported to the site to optimize the development potential of the site. Adequate bearing capacity exists for the intended housing structures. However, precautionary measures be taken during design and construction for the expected differential settlement associated with compressibility, collapse potential and activity of the transported and residual soils which may occur between the founding depth and bedrock. The uneven weathered bedrock may result in differential movements in the super structures. First class site drainage must be provided to reduce the risk of subsurface materials from becoming saturated, the risk of differential settlement and to prevent scouring and erosion of the surface materials. It is recommended that a water-borne sewerage system be used for sanitation. 		
HYDROGEOLOGY				
Groundwater contamination due to construction activities	To mitigate groundwater contamination due to construction activities	<p>Construction Site</p> <ul style="list-style-type: none"> Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This would reduce solid and liquid waste production and water demand at the site camp. 	CM ECO	On going Monthly

		<ul style="list-style-type: none"> • During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into any watercourse is avoided. <p>Diesel, hydraulic fluid and lubricants</p> <ul style="list-style-type: none"> • Minimise on-site storage of petroleum products. • Ensure measures to contain spills readily available on site (spill kits). • All petrochemical leaks and spills must be appropriately contained and disposed of at a licensed waste disposal site. <p>Construction Vehicles</p> <ul style="list-style-type: none"> • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. No repairs may be undertaken beyond the contractor laydown area. • Should any transfer of vehicle fuel take place on site, it is important to demarcate a specific area for this purpose. This area should be covered with an impermeable layer to prevent any penetration of fuel and oil spillage into the soil. The area could also be sloped towards an oil trap or sump to ease collection of spilled substances. <ul style="list-style-type: none"> • All construction vehicles should be serviced on a regular basis to minimise the risk of oil spillage on site. • Servicing of vehicles or equipment must take place off-site at appropriate workshop facilities. • When not in use, construction vehicles must be parked in an area provided with an impermeable layer to prevent leaks and spills from penetrating the substrate. 		
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		<p>Construction site domestic waste and sewage</p> <ul style="list-style-type: none"> • Minimise on-site accommodation. • Deposit solid waste in containers and dispose at municipal waste disposal sites regularly. • Dispose of liquid waste (grey water) with sewerage. • Install appropriate ablution facilities. • Preferably utilise municipal systems or chemical toilets. <p>Construction site inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc)</p> <ul style="list-style-type: none"> • Ensure compliance with stringent daily clean up requirements on site. • Dispose at municipal waste disposal sites. <p>Construction site hazardous waste</p> <ul style="list-style-type: none"> • All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • Material safety data sheets (MSDSs) are to be clearly displayed for all hazardous materials. • The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report. • Employees should be provided with absorbent spill kits and disposal containers to handle spillages. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • Employees should record and report any spillages to the responsible person. • An Emergency Preparedness and Response Plan will be developed and implemented should and incident occur. • Access to storage areas on site must be restricted to 		
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		<p>authorised employees only.</p> <ul style="list-style-type: none"> Contractors will be held liable for any environmental damages caused by spillages. 		
HYDROLOGY				
Increased urban run-off	To prevent erosion due to increased urban run-off	<ul style="list-style-type: none"> Land disturbance must be minimized in order to prevent erosion and run-off - this includes leaving exposed soils open for a prolonged period of time. As soon as vegetation is cleared (including alien) the area must be re-vegetated if it is not to be developed on in future. A Stormwater Management Plan must be implemented for each phase of the development. 	CM Eng ECO	Continuously Monthly
VEGETATION AND FAUNA				
Fauna, Flora and Ecology	To mitigate habitat destruction and alteration due to construction activities	<ul style="list-style-type: none"> Any temporary storage, lay-down areas or accommodation facilities to be setup in the study area itself and not within any open veld outside of the study site. Ensure small footprint during construction phase, with high controls on fringe impacts on any adjacent thornveld. No new access roads may be developed through the open thornveld outside of the study site during the construction phase. All hazardous materials must be stored appropriately to prevent these contaminants from entering the water environment (including the groundwater). All excess materials brought onto site for construction must be removed after construction. <u>Very strict control and monitoring must be put in place to ensure that no building rubble, excavated soils and rocks, etc. are dumped in the nearby open veld.</u> All rubble must 	ECO Contractor	Monthly On going

		<p>be transported to a registered landfill site and proof of off-loading obtained and kept on site with other records for easy inspection and site audits.</p> <ul style="list-style-type: none"> • No open trenches or mounds of soils to be left. All disturbed areas to be re-contoured to blend in with original contours and lines of undisturbed and undeveloped adjacent areas. • A rehabilitation plan for the project is required. • A weed control programme is required. • Site specific stormwater management plan is required, which should form part of the initial engineering / layout plans of the project. As part of the plan all attempts must be made to keep the surface stormwater flow / movement as free and natural as possible. • It is recommended that numerous indigenous trees be planted in the public open spaces and along the main streets in the townships. 		
Loss of natural vegetation	To prevent loss of natural vegetation	<ul style="list-style-type: none"> • A weed control programme must be implemented. This can form part of the routine maintenance programme for the overall Townships. The responsibility falls to the municipality once operational and this is usually problematic due to lack of implementation. • A site-specific rehabilitation plan is required for the project. 	ECO CM	Continuous As required
Loss or impact on wildlife	To prevent disturbance or killing of fauna	<ul style="list-style-type: none"> • Care must be taken not to interact directly with any wild life encountered. • Any bird nests or active animal burrows encountered during construction phase must not be interfered with. If 	CM	Continuous

		<p>encountered must first be discussed with specialist as how best to proceed.</p> <ul style="list-style-type: none"> Some form of offset is recommended such as establishment of bat houses and owl boxes. These can be set up along the western boundary of the study site, which opens up into existing thornveld. 		
Impeding & impounding of watercourses	To mitigate potential impeding & impounding of watercourses	<ul style="list-style-type: none"> There are no watercourses on the study site. However, surface stormwater flow may be diverted but the flow must be kept as natural as possible where possible. Erosion potential is low on the study site due to the flatness of the topography and total lack of any significant ravines or valleys. 	CM ECO	Ongoing Monthly
Fringe impacts arising from the construction phase	To mitigate fringe impacts arising from the construction phase	<ul style="list-style-type: none"> Due to the nature of the project the potential for any significant fringe impacts are realistic and inevitable. Depending on the amount of offset and containment the fringe impacts might increase over time, but they are initially low due to the mostly built up areas surrounding the study area. Care must be taken with heavy machinery used on the project. All access roads used during construction must be monitored and maintained. Soils and stones excavated may be used on site as backfill, fixing of roads, filling of dongas, etc. Excavated soils and rocks may not be simply dumped in any nearby open veld. All temporary access roads, laydown areas, temporary camps, site offices, etc. must be fully rehabilitated by the 	CM ECO	Ongoing Monthly

		<p>contractors prior to final signing off of the construction phase of the project.</p> <ul style="list-style-type: none"> Dust suppression must be used during the dry autumn and winter months during construction. 		
WASTE MANAGEMENT				
Waste Management	<ul style="list-style-type: none"> To ensure effective management of waste and prevent unhygienic usage and pollution of the natural assets. To prevent lettering of site and surrounding 	<ul style="list-style-type: none"> A Waste Management Plan to be implemented Office waste (e.g. food, waste, paper, plastic); Operational waste (clean steel, wood, glass); and General domestic waste (food, cardboards, paper, bottles, tins). Adequate number of general waste receptacles, including bins must be arranged around the Construction Camp, on site to collect all domestic refuse, and to minimise littering. Bins must be clearly marked and lined for efficient control and safe disposal of waste. Different waste bins, for different waste streams must be provided to ensure correct waste separation. A fenced area must be allocated for waste sorting and disposal on the site. General waste produced on site is to be collected in skips for disposal at a registered landfill site. Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. No general waste is to be disposed of at the spoil area. Under no circumstances is waste to be burnt or buried on site. The excavation and use of rubbish pits on site is forbidden. Waste bins must be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance. All general waste must be removed from the construction areas on a daily basis and disposed of in suitable waste receptacles at the Construction Camp. 	Contractor ECO	Ongoing/Daily Monthly

		<ul style="list-style-type: none"> The Contractor must ensure that all general waste is disposed of at an appropriately licensed waste disposal facility. Through exploring practical means for reducing, reusing and recycling waste generated in undertaking the activity, the Contractor must dispose of the minimum amount of waste possible. 		
Hazardous waste	To prevent contamination from hazardous and chemical waste	<p>Hazardous waste produced on site includes:</p> <ul style="list-style-type: none"> Oil and other lubricants, diesel, paints, solvent; Containers that contained chemicals, oils or greases; Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). Hazardous waste is to be disposed of at a Permitted Hazardous Waste Landfill Site. The ECO must identify an approved waste disposal site at the inception of the project. Hazardous waste bins must be clearly marked and stored in a contained area (or have a drip tray) and covered (either stored under a roof or the top of the container must be covered with a lid). A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal 	Contractor ECO	Ongoing/Daily Monthly
Pollution	Minimise soil and groundwater pollution	<ul style="list-style-type: none"> Contractors must ensure provision and proper utilisation, maintenance and disposal of ablution facilities. Wastewater must not be allowed to come into direct contact with exposed soils or run across the site. No temporary accommodation or temporary storage sites to be erected within 100m of any watercourse. All hazardous material such as but not limited to paint, turpentine and thinners must be stored appropriately to 	CM ECO	Ongoing/Daily Monthly

		<p>prevent these contaminants from entering the terrestrial and water environments.</p> <ul style="list-style-type: none"> • Provide containment areas for potential pollutants at construction camps • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed, bunded and lined • 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). • Any residue from spillages must be removed from site by appropriate contractors. Handling, storage and disposal of excess or containers of potentially hazardous materials must be in accordance with the requirements of the adjudicating authority or any other relevant department. • Any oil spillages, diesel or any other hazardous substance will be treated and disposed of at a permitted hazardous landfill site. • 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 must 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 refuelling of machinery and to catch incidental spills and pollutants. 		
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		<ul style="list-style-type: none"> • 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. • The Contractor must have a basic spill control kit available at each construction camp site and around the construction site. The spill control kits must include absorptive material that can handle all forms of hydrocarbon as well as floating blankets / pillows that can be placed on watercourses. 		
Concrete and cement preparation and handling	<p>The use and preparation of concrete on site has the potential to impact negatively on the environment.</p> <p>Water borne contaminants must be contained on site and mitigated.</p>	<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/excess concrete must be removed together with contaminated soil • Waste material to be removed to a licensed Landfill site • Waste disposal certificates must be obtained for any waste that is disposed of. 	CM ECO	Ongoing Monthly
AIR POLLUTION				
Air pollution Dust and air Pollution	Minimise air pollution	<ul style="list-style-type: none"> • The liberation of dust into the surrounding environment shall be effectively controlled by the use of inter alia, water spraying and/or other dust allaying agents such a dust nets. • Dust pollution could occur during the construction works, especially during the dry months. Regular and effective damping down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have negative impact on the surrounding environment. • When necessary, these working areas should be damped down every 3-4 hours. 	CM ECO	Monitored daily, Continuous Monthly

		<ul style="list-style-type: none"> The speed of trucks and other vehicles must be strictly controlled to avoid dangerous conditions and excessive dust. Preferably trucks should not exceed a speed of 2 km/hr. Machinery or equipment used on site must not constitute a pollution hazard in respect of air pollution via excessive exhaust fumes This shall be inspected regularly by the contractor and rectified immediately. 		
NOISE POLLUTION				
Noise pollution	To maintain noise levels below “disturbing” as defined in the National Noise Regulations.	<ul style="list-style-type: none"> Site workers must comply with the noise requirements; Construction should be limited/ to normal working hours, which is stipulated to be from 07h00 and 17h00, Monday to Friday and Saturday from 06h00 and 15h 00. No construction activities will be allowed on Sundays and Public Holidays; except in extreme emergencies and with the prior approval of the Project Manager and ECO and with notification to the direct surrounding landowners. 	CM ECO	Monitored daily Continuous Monthly
Noise pollution	To mitigate localized vibration	Activities that may cause localised vibrations should be limited to normal working hours only, between 07h00 and 17h00 on weekdays and between 08h00 and 15h00 on Saturdays. No construction activities will be allowed on Sundays, and public holidays.	CM ECO	Monitored daily Continuous Monthly
HERITAGE				
Loss of Heritage/ Cultural /Archaeological	Protection of the discovery of artefacts and prevention of damage to Heritage / Cultural and Archaeological sites	<ul style="list-style-type: none"> Use chance find procedure to cater for accidental finds. Should chance archaeological materials or human remains be exposed during construction on any section of the proposed residential development project site, work should cease on the affected area and the discovery must be reported to the heritage authorities immediately so that an investigation and evaluation of the finds can be made. The overriding objective, where remedial action is warranted, is to minimize disruption in project scheduling while recovering archaeological and any affected 	CM HERITAGE SPECIALIST ECO	Continuous When required Monthly

		<p>cultural heritage data as stipulated by the NHRA regulations.</p> <p><u>Chance Find Procedure</u></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 developer, one of its subsidiaries, contractors and subcontractors, or service 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><u>Monitoring Program for Palaeontology</u></p> <ul style="list-style-type: none"> • The following procedure is only required if fossils are seen on the surface and when drilling/excavations commence. • When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (trace fossils, fossils of plants, insects, bone or coalified material) should be put aside in a suitably protected 		
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		<p>place. This way the project activities will not be interrupted.</p> <ul style="list-style-type: none"> • Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones. This information will 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 then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible. • Fossil plants or vertebrates 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 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"> • Use chance find procedure to cater for accidental finds. 	CM HERITAGE SPECIALIST	Continuous When required

			ECO	Monthly
	Protection structures and buildings older than 60 years.	<ul style="list-style-type: none"> Construction management and workers must be educated about the value of historical buildings and structures. 	CM HERITAGE SPECIALIST ECO	Continuous When required Monthly
TRAFFIC IMPACTS				
There will be an increase in traffic from construction vehicles.	To mitigate increased traffic	<ul style="list-style-type: none"> Construction vehicles are to avoid main roads during peak traffic hours. All vehicles entering the Site are to be roadworthy. When using heavy or large vehicles / equipment, "spotters" are to be present to assist the driver with his blind spots. Any incident or damage to a vehicle must be reported immediately. 	CM	Continuous
SOCIO ECONOMIC IMPACTS				
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) (OHS) 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 	CM OHS	Continuous Continuous

		<p>compliance with all safety measures as laid out in the OHSA.</p> <ul style="list-style-type: none"> • An environmental awareness training programme for all staff members must be put in place by the Contractor. Before commencing with any work, all staff members must be appropriately briefed about the EMPr and relevant occupational health and safety issues. • All construction workers must 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 of any emergency on the site. <p>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.</p>		
Public safety during construction, especially the informal settlers residing on the site.	To ensure public safety during construction, especially the informal settlers residing on the site.	<ul style="list-style-type: none"> • Construction areas to be fenced off to prevent entry from informal settlers residing on the site. • Safety measures to be in place to prevent injury to informal settlers due to construction activities and vehicles. • Members of the public adjacent to the construction site should be notified of construction activities in order to limit 	CM OHS	Continuous Continuous

		unnecessary disturbance or interference. <ul style="list-style-type: none"> Construction activities will be undertaken during daylight hours and not on Sundays. 		
Employment opportunities	Make provision for employment where possible	<ul style="list-style-type: none"> Make use of local labour, specifically from the Ga-Rankuwa area 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. 	CM CLO	Continuous Continuous
Increased crime during construction	To mitigate crime	The Developer must determine which security system should be utilised for the site. Entrance points of the construction road must be secured. Loitering must be avoided by clearly indicated signs showing NO JOBS placed around the outside of the site.	DEVELOPER CM	Once-off Continuous
A residential dwelling has been constructed along the alignment of the southern extension of Road C (access road). This dwelling unit will need to be relocated.	To ensure relocation of dwelling impacted by road alignment.	The residents of the affected residential dwelling to be accommodated in the proposed development.	DEVELOPER CM	Once-off

11.3. CATEGORY C: OPERATIONAL PHASE

CATEGORY C: OPERATIONAL PHASE				
IMPACT	OUTCOME/ OBJECTIVE	MITIGATION MEASURES/ACTIONS	RESPONSIBILITY	MONITORING FREQUENCY
Slow or no revegetation to stabilise soil; loss or degradation of habitat	To ensure revegetation to stabilise soil	Agreed schedule for regular follow-up watering, weed control, mulch supplements and amenity pruning, if needed. Replace all plant failures within three-month period after planting.	Developer	Continuous

Landscaping plans not implemented	To ensure the use of indigenous vegetation	The use of indigenous vegetation should be optimised during the landscaping of the development	Landscape Designer	Continuous
Increased infestation of exotic or alien invasive plant species	To prevent increased infestation of exotic or alien invasive plant species	Monitoring and eradication of alien invasive plant species.	Developer	Continuous
Structural damage. Loss of site materials.	Protection of structures	Inspect all structures monthly to detect any cracking or structural problems. Confirm with designer if there are design problems. Rectify with materials to match, or other agreed solution.	CM	Monthly
On-site and drainage failures. Drainage pollution.	Effective on site. Confer with site problems.	Inspect all site drainage works and repair any Storm design engineer and to correct management plan implemented or flooding.	CM	Monthly
Leaks of untreated water from pipelines may occur and impact on the groundwater quality. Inadequate sewerage systems and waste management systems may impact on groundwater quality.	To mitigate groundwater pollution	<ul style="list-style-type: none"> Any leaks should be fixed immediately, and areas rehabilitated as needed. Adequate sewerage systems to be in place. A waste management system to be implemented. 	Developer	Continuously
Storm water management	Maintenance of stormwater management system	<ul style="list-style-type: none"> Regular maintenance of system. Separation of clean and dirty storm water. 	Developer	Continuously
Generation and disposal of domestic waste by the proposed development.	To handle waste	<ul style="list-style-type: none"> A Waste Management Plan to be implemented. Waste minimisation and recycling. 	Developer	As required

12. CONCLUSION

The EMPr should be seen as a day-to-day management document which sets out the environmental standards that are required to minimise the negative impacts and maximise the positive benefits of the proposed development. The EMPr is a “live document”, and if continuously reviewed and managed correctly can result in successful construction and operation of the development.

All attempts should be made to have this EMPr available, as part of any contractual documentation, so that the contractors are made aware of the potential cost and timing implications needed to fulfil the implementation of the EMPr, thus adequately costing for them.

Further, guidance should also be taken from conditions contained in the Environmental Authorisation, if the project is granted approval, and that these GDARD conditions must be incorporated into the final EMPr.

APPENDIX A

LIST OF ACRONYMS

DWS	Department of Water Affairs
EA	Environmental Authorisation
EIA	Environmental Impact Assessment
EAP	Environmental Assessment Practitioner
EIR	Environmental Impact Assessment Report
ECO	Environmental Control Officer
EMPr	Environmental Management Programme
EMS	Environmental Management System
GDARD	Gauteng Department of Agriculture and Rural Development
HIA	Heritage Impact Assessment
HSRA	Health and Safety Risk Assessment
I&AP	Interested and Affected Parties
LOS	Level of Service
NCR	Non Conformance Report
NHBRC	Nation Home Builders Registration Council
OHS	Occupation Health and Safety
PM	Post Meridian
QMS	Quality Management System
SAHRA	South African Heritage Resource Agency
SHE	Safety Health and Environment
TES	Traffic Engineering Services
WUL	Water Use License

GLOSSARY OF TERMS

ARCHAEOLOGICAL RESOURCES: This includes (a) material remains resulting from human activity which are in a state of disuse and are in or on land and which are older than 100 years including artefacts, human and hominid remains and artificial features and structures; (b) rock art, being any form of painting, engraving or other graphic representation on a fixed rock surface or loose rock or stone, which was executed by human agency and which is older than 100 years, including any area within 10m of such representation; wrecks, being any vessel or aircraft, or any part thereof, which was wrecked in South Africa, whether on land, in the internal waters, the territorial waters or in the maritime culture zone of the republic as defined in the Maritimes Zones Act, and any cargo, debris or artefacts found or associated therewith, which is older than 60 years or which SAHRA considers

to be worthy of conservation; features, structures and artefacts associated with military history which are older than 75 years and the site on which they are found.

BUILDING AND DEMOLITION WASTE: Waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any building structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition.

CONSTRUCTION PROJECT MANAGEMENT TEAM: The team consists of a Project Manager as well as a Safety and Health Officer as required in terms of the Occupation Health and Safety Act and an Environmental Control Officer as required in terms of NEMA.

CONSTRUCTION: means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

CONTRACTOR: Companies and or individual persons appointed on behalf of the Client to undertake activities, as well as their sub-contractors and suppliers.

CULTURAL SIGNIFICANCE: This means aesthetic, architectural, historical, scientific, social, spiritual, linguistic or technological value or significance.

DEVELOPMENT - This means any physical intervention, excavation, or action, other than those caused by natural forces, which may in the opinion of the heritage authority in any way result in a change to the nature, appearance or physical nature of a place or influence its stability and future well-being, including:

- Construction, alteration, demolition, removal or change in use of a place or a structure at a place;
- Carrying out any works on or over or under a place;
- Subdivision or consolidation of land comprising a place, including the structures or airspace of a place;
- Constructing or putting up for display signs or boards;
- Any change to the natural or existing condition or topography of land; and
- Any removal or destruction of trees, or removal of vegetation or top soil.

DEGRADATION: The lowering of the quality of the environment through human activities e.g. river degradation, soil degradation, atmospheric degradation.

DOMESTIC WASTE: Domestic waste means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes generated directly by the consumption of products for domestic use.

ENVIRONMENT: In terms of the National Environmental Management Act (NEMA) (No 107 of 1998) Environment means the surroundings within which humans exist and that are made up of:

- The land, water and atmosphere of the earth;
- micro-organisms, plants and animal life;

- any part or combination of (i) or (ii) and the interrelationships among and between them; and
- the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing

EMERGENCY: An undesired event that results in a probable significant environmental impact and requires the notification of the relevant statutory body such as a local or provincial authority.

ENVIRONMENTAL ASSESSMENT PRACTITIONER: The individual responsible for planning, management and coordination of environmental impact assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

ENVIRONMENTAL CONTROL OFFICER: An individual nominated through the Client to be present on site to act on behalf of the Client in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities as prescribed in NEMA

ENVIRONMENTAL IMPACT: A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.

ENVIRONMENTAL MANAGEMENT PROGRAMME: A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

FATAL FLAW: is an issue or conflict (real or perceived) that could result in developments being rejected or stopped.

GENERAL WASTE: General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes-

- domestic waste;
- building and demolition waste;
- business waste; and
- inert waste.

GROUNDWATER: All subsurface water that fills voids between highly permeable ground strata comprised of sand, gravel, broken rocks, porous rocks, etc. And move under the influence of gravitation.

HAZARDOUS WASTE: Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.

HERITAGE RESOURCES: This means any place or object of cultural significance, including all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made

an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa.

IMPACT: A description of the potential effect or consequence of an aspect of the development on a specified component of the biophysical, social or economic environment within a defined time and space.

INCIDENT: An undesired event which may result in a significant environmental impact but can be managed through internal response.

INTEGRATED ENVIRONMENTAL MANAGEMENT: is a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision- making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity - at local, national and international level - that has a potentially significant effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision- making tools (such as multi-criteria decision support systems or advisory councils).

INTERESTED AND AFFECTED PARTY is, for the purposes of Chapter 5 of the NEMA and in relation to the assessment of the environmental impact of a listed activity or related activity, an interested and affected party contemplated in Section 24(4)(a)(v), and which includes – a (a) any person, group of persons or organisation interested in or affected by such operation or activity; and (b) any organ of state that may have jurisdiction over any aspect of the operation or activity.

METHOD STATEMENT: A method statement is a written submission by the Contractor to the Engineer in response to the specification or a request by the Engineer, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, identified by the relevant specification or the Engineer when requesting a Method Statement. It contains sufficient detail to enable the Engineer to assess whether the Contractor's proposal is in accordance with the Specifications and/or will produce results in accordance with the Specifications.

MITIGATION: Measures designed to avoid, reduce or remedy adverse impacts.

POLLUTION: The National Environmental Management Act, No. 107 of 1998 defined pollution to mean any change in the environment caused by – substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.

RECYCLE: A process where waste is reclaimed for further use, this involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material.

REHABILITATION: Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (wherever possible) which it was before disruption.

RE-USE: To utilise articles from the waste stream again for a similar or a different purpose without changing the form of properties of the articles.

SAFETY, HEALTH AND ENVIRONMENTAL OFFICER: The SHE officer is a Contractor representative, responsible for the safety, health and environmental aspects on the construction site. The SHE officer will be responsible for the day-to-day monitoring of the EMPr and Health and Safety Plan as per the OHS Act.

URBAN AREAS: mean areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined or adopted, it refers to areas situated within the edge of built-up areas.

WASTE: Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered-

- that is surplus, unwanted, rejected, discarded, abandoned or disposed of;
- which the generator has no further use of for the purposes of production;
- that must be treated or disposed of; or
- that is identified as a waste by the relevant Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but—
- a by-product is not considered waste; and
- any portion of waste, once re-used, recycled and recovered, ceases to be waste.

WATER POLLUTION: The National Water Act, 36 of 1998 defined water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it – less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful (aa) to the welfare, health or safety of human beings; (bb) to any aquatic or non-aquatic organisms; (cc) to the resource quality; or (dd) to property.

WETLAND: means land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.

WORKFORCE: The entire project team including people employed by the Applicant / Client/Developer directly, his Principal Agent or the Contractor, persons involved in activities related to the project, or person present at or visiting the construction area, including permanent contactors and casual labour.

APPENDIX B

EAP CV

Abbreviated Curriculum Vitae

Mientjie Coetzee
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Executive Profile

Mientjie Coetzee has 18 years experience in the Environmental Sector and has gained experience as environmental consultant and project manager working on a wide range of projects including residential, mixed land-use, industrial, roads and filling stations. Her primary skills include screening assessments, Environmental Impact Assessments (EIAs), Waste Use License Applications, Public Participation and Environmental Management Programmes (EMPrs).

Relevant Experience

October 2015 – current	Setala Environmental Consultants Environmental Assessment Practitioner
June 2014 – Sept 2015	Un De Nos Project Management Services Johannesburg, SA Environmental Consultancy Services
Jan 2001 – May 2014	Bokamoso Landscape Architects and Environmental Consultants Senior Environmental Consultant
	Compilation of various Environmental Reports in terms of NEMA Compilation of Waste License Applications in terms of NEMWA Environmental Auditing Environmental Compliance

Education

B.Sc, B.Sc (Hons), M.Sc, Higher Education Diploma
 UNIVERSITY OF STELLENBOSCH

Professional Membership

IAIAsa (3359)
 EAPASA (2019/1774)