



**ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE
PROPOSED GRIMBEEK TOWNSHIP ESTABLISHMENT ON THE
REMAINING EXTENT OF PORTION 46 AND PORTION 58 & 59
OF THE FARM ELANDSHEUVEL 436 IQ IN THE GRIMBEEK
PARK AREA, WITHIN THE JURISDICTION OF JB MARKS LOCAL
MUNICIPALITY, NORTH-WEST PROVINCE**

**PREPARED FOR:
JB MARKS LOCAL MUNICIPALITY
&
HOUSING DEVELOPMENT AGENCY**



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VERIFICATION PAGE			
TITTLE	DRAFT ENVIRONMENTAL MANAGEMENT PLAN FOR PROPOSED GRIMBEEK TOWNSHIP ESTABLISHMENT ON THE REMAINING EXTENT OF PORTION 46 AND PORTION 58 & 59 OF THE FARM ELANDSHEUVEL 436 IQ IN THE GRIMBEEK PARK AREA, WITHIN THE JURISDICTION OF JB MARKS LOCAL MUNICIPALITY, NORTH-WEST PROVINCE		
DATE	November 2025	REPORT STATUS	Final
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Disclaimer:

This report has been compiled by Vhuluvhi Group (Pty) Ltd with the skill and care ordinarily exercised by a qualified Environmental Consultant at the time the Services were performed. The Services were performed by Vhuluvhi Group taking into account the scope of works required by the client (JB Marks Local Municipality and the Housing Development Agency). This report is produced exclusively for the purposes of the client and the competent authority. Vhuluvhi Group is not aware of any interest of or reliance by any party other than the client in or on the services. Unless expressly provided in writing, Vhuluvhi Group does not authorise, consent or condone any party other than the client relying upon the services provided. Any reliance on the services or any part of the services by any party other than the client is made wholly at that party's own and sole risk and Vhuluvhi Group disclaim any liability to such parties.

EAP DECLARATION

I CAIPHUS MUKWEVHO; herewith undertake that I:

- act as an independent environmental consultant in the field of Environmental Sciences;
- Do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;
- do not have and will not have any vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity;
- undertake to disclose, to the competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.



Signature of EAP:

NOVEMBER 2025

Date:

GLOSSARY

Contractor	a person or company engaged by the principal to carry out all or any part of the work involved in the undertaking of the proposed project.
Corrective action	Action taken to correct a detected non-conformity
Cumulative Impact	The impact of an activity that may not be significant but may become significant when added to existing and reasonably foreseeable impacts eventuating from similar or diverse activities or undertakings in the area.
Direct Impacts	Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.
Environment	Organization which its activity is priggged inside weather, water, land, natural resources, plant group (flora), animal group human including ambient these relations.
Environment effect	Positive or negative all type of changes which appear by services, product, and action of organization partly or whole in environment.
Environmental Impact	An action or series of actions that have an effect on the environment.
Environmental Impact Assessment	Environmental Impact Assessment (EIA), as defined in the NEMA EIA Regulations and in relation to an application to which basic assessment must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

Environmental Management Programme	A programme that organizes and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the planning and implementation of a proposal and its on-going maintenance and operation after implementation.
Environmental management system	A tool that systemizes the way an organization goes about its environmental business and demand yearly improvements on targets set by the company
Environment policy	Organization declaration which was done to explain intentions and principles, about general environment performance and to provide frame for actions, environment aim and objectives.
Indirect Impact	Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken, or which occur at a different place as a result of the activity.
Prevention of pollution:	Is to prevent, to decrease, to control pollution. Again, work should be done, other operation dependency should be done, operation should have changes, control mechanism and resources should be used efficiency, including material substitution all type operation and practices should be applied, material or product should be used.
Significant Impact	An impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.
Sustainable development	Development that meet the needs of the present without compromising the ability of future generations to meet their own needs

ACRONYMS

CARA	Conservation Agricultural Resources Act
CBA	Critical Biodiversity Area
CS	Cultural Sensitivity
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ESA	Ecological Support Area
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMPr	Environmental Management Programme
GDP	Gross Domestic Product
GNR	General Notice Regulation
HSE	Health, Safety and Environment
IAPs	Interested and Affected Parties
LED	Local Economic Development
NDP	National Development Plan
NEMA	National Environmental Management Act
NEMBA	National Environment Management: Biodiversity Act
NEMWA	National Environmental Management: Waste Act
NWA	National Water Act
PPP	Public Participation Process
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards

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1. INTRODUCTION

1.1 BACKGROUND AND INTRODUCTION

The JB Marks Local Municipality (proponent) proposes to establish a township at Grimbeek Park on the remaining extent of portion 46 and portion 58 & 59 of the farm Elandsheuvel 436 IQ in the Grimbeek Park Area, within the jurisdiction of JB Marks Local Municipality, North-West province.

The JB Marks Local Municipality is a Category B municipality situated within the Dr Kenneth Kaunda District in the North West Province. The Municipality is the largest by land mass within the district making up almost half its geographical area.

Comprehensive and independent environmental studies must be undertaken in accordance with Environmental Impact Assessment (EIA) regulations in support of an application for Environmental Authorisation. As such, the Housing Development Agency (HDA) has appointed Vhuluvhi Group on behalf of the JB Marks Local Municipality as an independent environmental consultants to undertake the required Environmental Impact Assessment process.

1.2 DETAILS OF ENVIRONMENTAL ASSESSMENT PRACTITIONER AND EXPERTISE TO CONDUCT ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

In accordance with Regulation 12 of the 2014 EIA Regulations; GN R326 (as amended), the applicant has appointed Vhuluvhi Group (Pty) Ltd as an independent environmental consultant to undertake the required EIA process in order to obtain EA for the proposed project. The application for EA will be managed in accordance with the requirements of NEMA, 2014 EIA Regulations and all other relevant and applicable legislation.

Vhuluvhi Group (Pty) Ltd does not have any interests in secondary developments that may arise out of the authorisation of this project. Neither the EAP nor any specialist are subsidiaries or are affiliated to the applicant.

The Lead Environmental Assessment Practitioner for this project is Mr Caiphus Mukwevho:

Mr. Caiphus Mukwevho is a Senior Environmental Assessment and he holds a Bachelor of Environmental Sciences and an Honours of Environmental Sciences in the field of Ecology both at the University of Venda, his honours dissertation was aimed at “assessing the environmental compliance of a landfill site” the study was conducted at Makhado Vondeling landfill site.

Mr Mukwevho has attended various training courses to enhance his knowledge and understanding in the Environmental Field, the courses includes; Geographic Information System (GIS), Environmental Management Systems (ISO 14001:2004), Environmental Law & Compliance. He is a registered Environmental Assessment Practitioner under the Environmental Assessment Practitioners Association of South Africa (EAPASA), and he has applied as Professional Natural Scientist under the South African Council of Natural Science Professions (SACNASP), he is a member of the International Association of Impact Assessment South Africa (IAIASA).

Mr Mukwevho started his career as a research assistant and field assistant, he also undertook an internship at Makhado Local Municipality where he was trained on waste management, upon completion of the internship he started working as Junior Environmental Assessment Practitioner in a private consulting. With 8 years of experience as an Environmental Assessment Practitioner he has been involved in a number of projects including; mining licensing, agricultural development, township establishments, construction environmental compliance monitoring, environmental management plans, search and rescue for protected plant species, water quality monitoring, water use auditing, etc. Mr Mukwevho’s career highlight is a Coal Mining Right Project (Mpumalanga Province) which was successfully completed in the of period 2019/20 under the strict conditions of covid-19. *CV of the EAP is attached.*

1.3 Details of Proponent

The Applicant for this project is JB Marks Local Municipality. The JB Marks Local Municipality is a Category B municipality situated within the Dr Kenneth Kaunda District in the North West Province. The Municipality is the largest by land mass within the district making up almost half its geographical area.

The Details of the applicant are provided in the table below;

Table 1: Details of Proponent

Details of Applicant	
Applicant	JB Marks Local Municipality
Contact Person	Mr Owageng Molomo
Address	Cnr Walter Sisulu & Wolmarans Dan Tloome Complex Potchefstroom 2520
Contact Number	072 723 9445
E-mail Address	owagengm@jbmarks.gov.za

2. PROJECT DESCRIPTION

This chapter provides an overview of the proposed Township establishment and the activities associated with the various phases of the project.

2.1 DETAILS OF SITE LOCATION

The table below provides the details of the proposed township establishment on the remaining extent of portion 46 and portion 58 & 59 of the farm Elandsheuvel 436 IQ in the Grimbeek Park Area, within the jurisdiction of JB Marks Local Municipality, North-West province

Table 2: Details of the proposed site

Property Details	
Farm Name	Farm Elandsheuvel 436 IQ
Portion Number	Portion 46
	Portion 58
	Portion 59
SG 21 Code	T0IQ00000000043600046
	T0IQ00000000043600058
	T0IQ00000000043600059
Nearest Town and Distance	Potchefstroom, 2,27 km away

Site Coordinates: 26 ° 44'0.49"S 27 ° 6'29.76"E

2.2 Proposed Access Road

The proposed development will have one access point off the external road network. The following access points will be provided:

Herman Street Access: the proposed development will take access off this road approximately 800 m west of the intersection of Herman Street and Erica Street.

2.4 PROPOSED PROJECT ACTIVITIES/DESCRIPTION

JB Marks Local Municipality proposes township establishments which will consists of 520 stands of residential, business, public space and institutional areas in land covering 85,2015 hectors.

- ❖ Residential 2 stands: 737 stands
- ❖ Residential 3 stands: 257 stands
- ❖ Business 2 stands: 2 stands
- ❖ Commercial stands: 1
- ❖ Institutional stands: 2
- ❖ Educational stands: 3
- ❖ Municipal area: 1
- ❖ Government area: 2
- ❖ Public open space: 2
- ❖ Roads covers a total of 12.9076 hectares

The proposed township will cover an area of 49,7188 hectares in extent. (Refer to figure 2 below for the layout plan)

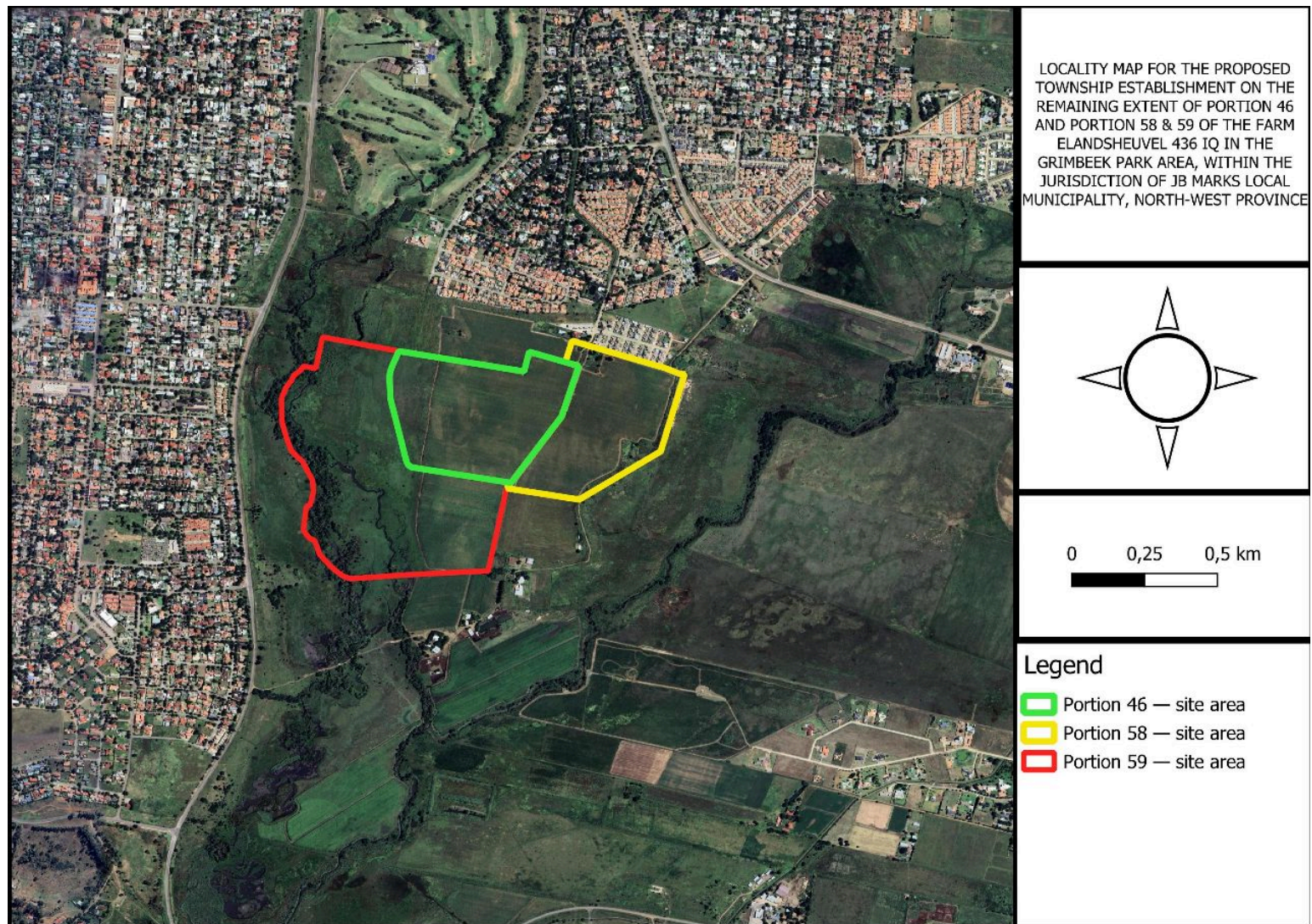


Figure 1: Locality Map

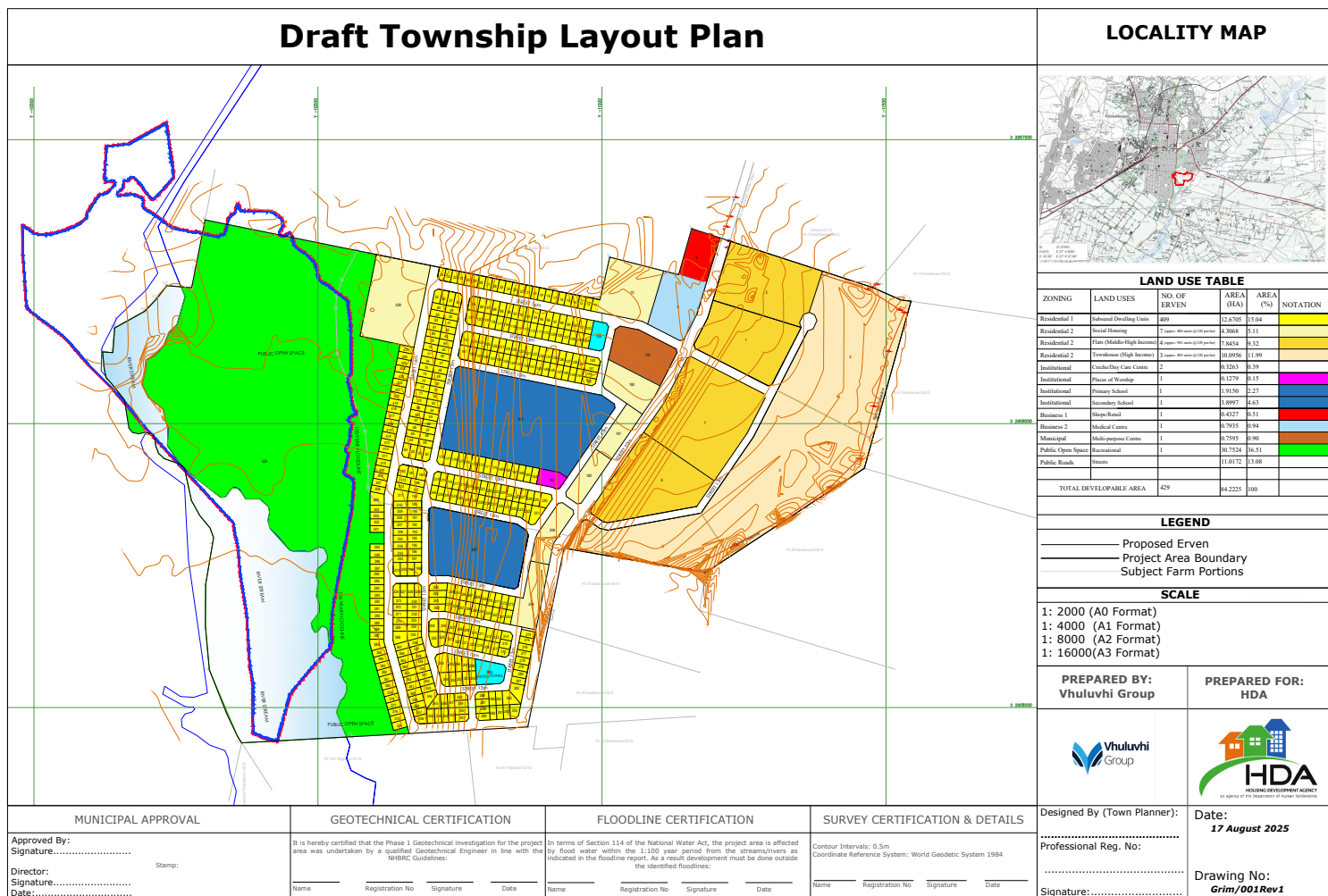


Figure 2: Proposed project layout

3. POLICY AND LEGAL CONTEXT

This chapter provides an overview of the policy and legislative context within which the proposed project will be undertaken. Here we identify the environmental legislation, policies, plans, guidelines, spatial tools, municipal development plans/frameworks and instruments that are applicable to this project and are to be considered in the assessment process which may be applicable to or have bearing on this project.

3.1 APPLICABLE LEGISLATION

Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)

The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996) has significant implications for environmental management. The main effects are the protection of environmental and property rights, the drastic change brought about by the sections dealing with administrative law such as access to information, just administrative action and broadening of the locus standi of litigants. These aspects provide general and overarching support and are of major assistance in the effective implementation of the environmental management principles and structures of the Environment Conservation Act, 1989 (Act No. 73 of 1989) [ECA] and NEMA. Section 24 in the Bill of Rights of the Constitution specifically states: Everyone has the right-

- To an environment that is not harmful to their health or well-being; and
- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that;
 - ✓ Prevent pollution and ecological degradation;
 - ✓ Promote conservation; and
 - ✓ Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

National Environmental Management Act No. 107 of 1998

To provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental

functions exercised by organs of state; and to provide for matters connected therewith.

National Environmental Management: Air Quality Act No. 39 of 2004

To reform the law regulating air quality in order to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development while promoting justifiable economic and social development; to provide for national norms and standards regulating air quality monitoring, management and control by all spheres of government; for specific air quality measures; and for matters incidental thereto land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed. This Act is applicable to this application for environmental authorisation, in the sense that it requires the project applicant to consider the protection and management of local biodiversity. To this end, an ecological assessment is being undertaken to assess the flora and fauna on site.

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

The National Water Act, 1998 (Act No. 36 of 1998) (NWA) aims to provide management of the national water resources to achieve sustainable use of water for the benefit of all water users. This requires that the quality of water resources is protected as well as integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in responsible ways. 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, where the Department of Water and Sanitation (DWS) is the administering body in this regard.

National Heritage Resources Act, 1999 (Act No. 25 of 1999).

This Act legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 hectares and where linear developments (including pipelines) exceed 300 metres in length. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).

Promotion of Access to Information Act, 2000 (Act No. 2 of 2000).

The Promotion of Access to Information Act, 2000 (Act No. 2 of 2000) recognises that everyone has a Constitutional right of access to any information held by the state and by another person when that information is required to exercise or protect any rights. The purpose of the Act is to foster a culture of transparency and accountability in public and private bodies and to promote a society in which people have access to information that enables them to exercise and protect their rights.

Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)

The OHS Act provides practical guidelines for the health and safety of workers as well as people in connection with plants and machinery. It also provides guidelines for the protection of people other than people at work against hazards that may arise out of a connection with the activities of persons at work. Together with the OHS Act, twenty-one other regulations have been published that outline specifications and requirements in different area which they govern. These regulations include health related regulations, general regulations, electrical regulations, machinery regulations, and specific regulations for certificates of competency, diving, explosives, major hazard installation and hazard work by children.

3.2 GENERAL APPLICABLE STANDARDS

Integrated Environmental Management (IEM).

IEM is a procedure for ensuring that environmental considerations are fully integrated into all stages of the development process. This philosophy aims to achieve a desirable balance between conservation and development (DEAT, 1992). The IEM guidelines intend encouraging a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels.

South African National Standards

Standards as published by the South African Bureau of Standards which focus on developing market relevant national standards that are harmonised with international standards. These standards exist principally to provide a reliable basis on which common expectations can be shared regarding specific characteristics of a product, service or process. South African National Standards (SANS) are voluntary in that there is no obligation to apply them or to comply with them, except in those cases where their application is directly demanded by regulatory instruments or contractual obligations. They do however in most cases form a good reference for best practise measures to be implemented.

National Spatial Biodiversity Assessment, 2011

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on its biophysical characteristics, which are ranked according to priority levels.

Protected species - Provincial Ordinances.

Provincial ordinances were developed to protect particular plant species within predetermined provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the provincial departments responsible for environmental affairs.

3.3 GENERAL GUIDELINES

The following measures provide guideline solutions to frequently anticipated issues on most development activities.

- ❖ The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds, etc. is ultimately the responsibility of the applicant/developer. Section 28, National Environmental Management Act [NEMA] (Act No. 107 of 1998)
- ❖ The study area must be clearly defined, surveyed and fenced according to the project authorisation. All workforce members and other construction personnel are not to go beyond the fenced footprint
- ❖ Landowners are not comfortable when strangers come on to their properties. They will look for reasons to interfere with the construction process and may therefore cause delays in the process that can be very costly to the Contractor.
- ❖ The Contractors must adhere to agreed and approved access points and haul roads.
- ❖ No camping is allowed on any private property.
- ❖ Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damage to be repaired immediately and to the satisfaction of the relevant owner.
- ❖ Relevant landowners and businesses must be informed of the starting date of construction as well as the phases in which the construction shall take place.
- ❖ The Contractor must adhere to all conditions of contract including this EMP.
- ❖ Proper planning of the construction process must be undertaken to allow for disruptions due to rain and very wet conditions.
- ❖ Where existing private roads to be utilised as access are in a bad state of repair, such roads' condition must be well documented, including

photographs, before they are used for construction purposes. If necessary some repairs must be done to prevent damage to equipment and plant.

- ❖ All private and public manmade structures (as well as those earmarked to be preserved) on or near the project site must be protected against damage at all times and any damage must be rectified immediately.
- ❖ Proper site management and regular monitoring of site works should be undertaken.
- ❖ Proper documentation and record keeping of all complaints and actions should be taken.
- ❖ Regular site inspections to ensue and good control over the construction process throughout the construction period.
- ❖ A positive attitude towards Environmental Management by all site personnel must be motivated through regular and effective awareness and training sessions.
- ❖ Environmental Audits to be carried out during and upon completion of construction; as well as during the operational phase of the development.

CHAPTER 4: ENVIRONMENTAL MANAGEMENT PROGRAMME

4.1 Approach

This document is compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development. IEM is a key instrument of the National Environmental Management Act [NEMA] (Act No. 107 of 1998). NEMA promotes the integrated environmental management of activities that may have a significant effect on the environment, while IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all stages of the development process. It advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMPr.

The IEM guidelines encourage a pro-active approach to sourcing, collating and presenting information in a manner that can be interpreted at all levels. The basic principles underpinning IEM are that there be:

- informed decision-making;
- accountability for information on which decisions are taken;
- accountability for decisions taken;
- a broad meaning given to the term environment (i.e. one that includes physical, biological, social, economic, cultural, historical and political components);
- an open, participatory approach in the planning of proposals;
- consultation with interested and affected parties;
- due consideration of alternative options;
- an attempt to mitigate negative impacts and enhance positive aspects of proposals;
- an attempt to ensure that the ‘social costs’ of development proposals (those borne by society, rather than the developers) be outweighed by the ‘social benefits’ (benefits to society as a results of the actions of the developers);
- democratic regard for individual rights and obligations;

- compliance with these principles during all stages of the planning, implementation and decommissioning of the proposals (i.e. from ‘cradle to grave’); and
- the opportunity for public and specialist input in the decision-making process.

These principles are in line with NEMA, and is focused primarily on cooperative governance, public participation and sustainable development.

4.2 Implementation

The implementation of the EMPr is not an additional or “add on” requirement. The EMPr is legally binding through NEMA and the relevant Environmental Authorisation (EA) (once issued). The applicant is to ensure that through the project tender process the EMPr forms part of the Project Construction Contract Document to be incorporated in line with:

- a) General project specifications; and
- b) Relevant Standards, Guidelines and Publications (i.e. SANS 1200, SANS 2001, etc.), as applicable.

This document should further be implemented beyond the construction phase; and should form part of the day-to-day to management of the Development during the operational life of the township.

4.3 Principles of EMPr

This EMPr is compiled using the following concepts and implementation requirements so that the higher principles of sustainable development are realised:

- Continuous improvement: The project proponent (or implementing organisation) must commit to review and to continually improve environmental management, with the objective of improving overall environmental performance.
- Broad level of commitment. A broad level of commitment is required from all levels of management as well as the workforce in order for the development and implementation of this EMPr to be successful and effective.

- Accountability: A strong sense of accountability should be maintained by the proponent, contractor and sub-contractor to prevent any party from distancing itself from commitments made to the EMPr.
- Flexible and responsive: The implementation of the EMPr must respond to new and changing circumstances, i.e. rapid short-term responses to problems or incidents. The EMPr is a dynamic “living” document and thus regular planned review and revision of the EMPr must be carried out.
- Integration across operations: This EMPr must integrate across existing line functions and operational units such as health, safety and environmental departments in a company/project. This is done to change the redundant mindset of seeing environmental management as a single domain unit.

Legislation: It is understood that any development project during its construction phase is a dynamic activity within a dynamic environment. The Developer, Engineer, Contractor and Subcontractor must therefore be aware that certain activities conducted during construction may require further licensing or environmental approval, e.g. river or stream diversions, bulk fuel storage, waste disposal, etc. The Contractor must consult the Engineer’s Representative, Environmental Site Officer and/or ECO (as applicable) on a regular basis in this regard.

4.4 Objectives of the EMPr

The EMPr, as a living document in the lifespan of a development, formulates measures and guidelines to mitigate adverse impacts on various environmental components, which have been identified during the impact assessment process and to protect the environmental resources where necessary. The EMPr further provides mechanism in monitoring the effectiveness of the measures throughout the construction and the operational phase of the development. This EMPr include, among others:

- details of the applicant and the EAP;
- specific location of the proposed development in the context of the local and regional environment;
- detail description of all components of the proposed development;

- detail identification of environmental issues/risks associated with the proposed development;
- provision of mitigation measures for construction and operational phase of the development;
- clear roles and responsibilities of parties in the implementation of this EMPr
- monitoring and auditing process during all phases of development; and
- specific timeframe for implementation of proposed mitigation measures as well timeframe for the submission of audit reports.

4.5 Applicable Documentation

Some of the documentation required to undertake the mixed use development and that will be read in conjunction with this EMPr are the following:

- Environmental Impact Assessment report for the proposed Grimbeek Township Establishment;
- EA from the Northwest Department of Economic Development, Environment, Conservation and Tourism (DEDECT); and
- All other approvals required for the development

4.6 Structure of the EMPr

There are three main phases in the EMPr that provide proposed mitigations and management measures in the table below.

Table 3: Structure of the EMPr

Category	Phase	Description
Category A	Pre-Construction	This section provides guidelines on pre-construction activities including site establishment and clearance, environmental induction and training and awareness.
Category B	Construction	This section will provide guidelines on construction methods and practical mitigation measures
Category C	Post-construction / Rehabilitation	This section of the EMPr provides management principles for the rehabilitation phase of the Development. This will include best practices methods, procedures and responsibilities required for various development components and related infrastructure.

4.7 EMPr as a Live Document

The approach use for this EMPr is derived from the below Deming Cycle of continuous improvement that entails the reiterative actions of plan, do, check, act, and back to the planning phase.

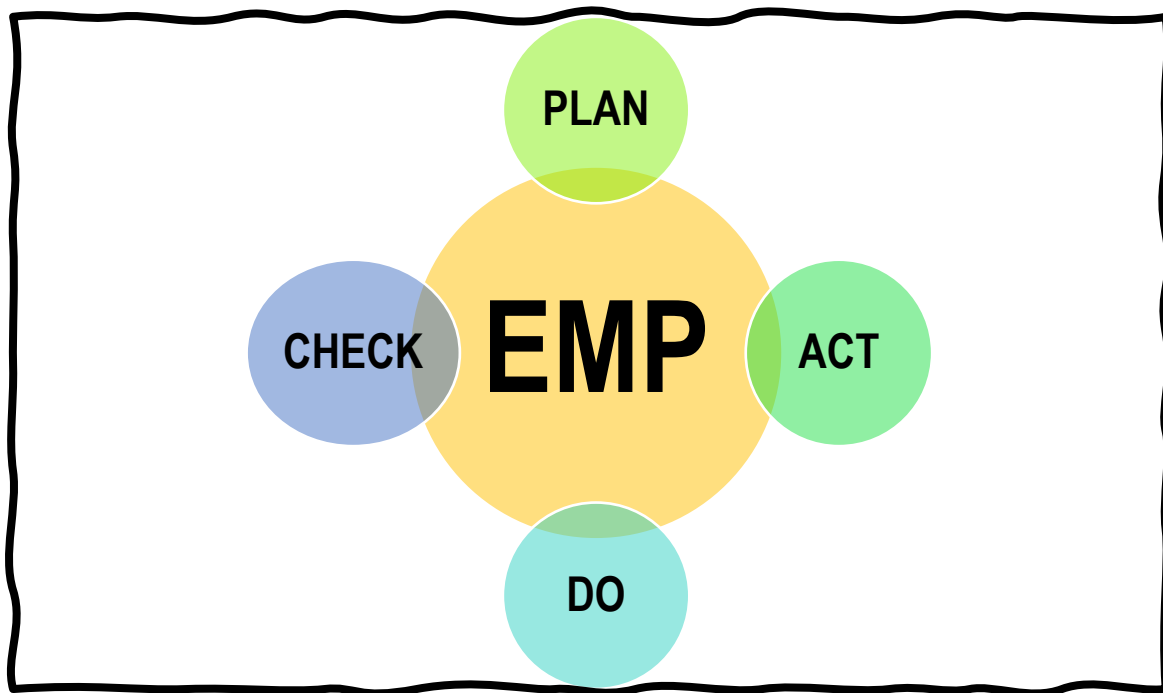


Figure 3: Deming Cycle of Continuing Improvement

4.7.1 Plan

Project-specific planning involves consideration of the legal requirements, development details, and the nature of the receiving environment. This is a starting point for targeted environmental impact management outcomes. Environmental performance indicators are then determined with measurable targets prescribed to monitor the environmental performance of the project.

4.7.2 Do

Throughout the development's life-span, the developer will be required to develop and maintain a Quality Management System designed to ensure that best management practices are implemented on a day-to-day management. Such a QMS should at least include the following information:

- Location and extent of development components and associated infrastructure;
- Associated activities such as the transportation of people and equipment;
- Resources and experience required (staffing);
- Materials and equipment to be used;
- Management actions;
- Human resources used;
- Construction-monitoring activities;
- Emergency/disaster incident and reaction procedures; and
- Rehabilitation procedures for the impacted environment.

These topics will be cross-linked into the contracts related to the development of the project.

4.7.3 Check

A system of assessing monitoring results has been developed to check the environmental management performance. Continuous assessment facilitates proactive management of environmental issues and then mitigation measures can successfully be implemented on an ongoing basis to keep environmental indicators within their target thresholds. Regular auditing of environmental performance is prescribed to prove and preserve accountability.

4.7.4 Act

The assessments and monitoring of the results and findings of the regular audits must be documented within a reporting system. Precautionary mitigation measures and corrective actions will be prescribed and instructions given for implementation. The findings of monitoring and auditing programmes can also be used to update the EMPr. The EMPr is a dynamic project-specific document, which can be updated regularly to address potential changes on the receiving environment.

5. MANAGEMENT AND MONITORING PROCEDURE

5.1 Role Players and Responsibility Matrix

In order for the EMPr to be successfully implemented, all the role players involved in the project need to co-operate. For this to happen, role players must:

- Clearly understand their roles and responsibilities in the project;
- Must be professional;
- Form respectful and transparent relationships; and
- Maintain open lines of communication.

Potential role players or project teams will include; Management (M), Contractor (C), Engineer (E), Environmental Health and Safety Officer (EHS). Furthermore; landowners, interested and affected parties are also important role players. Please refer to Table 5 below for a representation of the different roles and responsibilities.

Table 4: Functions and Responsibilities of the project team

Key	Function	Responsibility
M	Management	Management is responsible for the overall environmental monitoring and implementation of the EMPr and ensuring compliance thereof with the specifications of the Environmental Authorization (EA) issued in terms of NEMA. Management should also ensure that any other permits or licences required as part of this project are obtained and complied with. The Management may, however, at their own costs, render the services of an external environmental consultant to oversee the implementation of the documented mitigation measures of this EMPr. It is also expected that management will appoint an Environmental Control Officer, Environmental Health and Safety Officer, and “Construction” Manager.
C	Contractor	The contractor is bound to the EMPr conditions through contract and is responsible for ensuring that they adhere to all conditions to the EMPr. The Contractor must thoroughly study the EMPr requirements before establishing on site and must request clarification on any aspect of the document, should they be unclear. • The contractor must implement all the requirements of the EMPr daily. The contractor must comply with all instructions (whether verbal or written) given by the Engineer and ECO, in terms of the EMPr. • Keeping a copy of the EMPr and EA on site and implementing the EMPr

		• Appointing a qualified full time Environmental Officer to assist with daily compliance • Preventing negative impacts on the environment by responsible construction • Maintaining a register of complaints and queries by members of the public at the site office. This register is forwarded to the ECO monthly. • Maintaining all approved infrastructure in good working order to effectively fulfil its intended purpose and to prevent negative environmental impacts • Immediately remedying any factors that contribute to negative environmental impacts • Removing non-functional structures • Ensuring waste disposal at a suitable, permitted waste disposal facility • Ensuring that suitable arrangements are made to protect the environment against long term negative impacts arising from construction • Minimizing negative visual impacts • Cleaning up contaminants of the environment immediately • Preventing erosion through regular monitoring and rehabilitation of degraded areas and implementation of erosion controls • Rehabilitating site and maintaining for a minimum of 6 months thereafter
E	Engineer	The Engineer (or project manager) is the appointed role player responsible for coordinating and integrating activities across multiple, functional lines. The Engineer is responsible for ensuring that the contractor considers environmental matters seriously by compelling the contractor to comply. The Engineer is responsible for the following:

		• Keeps copy of EA and EMPr • Ensures that all designs and layout take consideration of sensitive areas and no-go zones and that these are excluded from development where possible (including recommendations made in the EIA and EMPr) • Arrange meetings or consults with IAPs about the impending construction activities and assists in communication throughout the project; • Assessing the Contractor's environmental performance in consultation with the Environmental Officer from which a brief monthly statement of environmental performance is drawn up for record purposes; • Documenting in conjunction with the Contractor, the state of the site prior to construction activities commencing. This documentation will be in the form of photographs or video. • Negotiate with/community members as required. • May on the recommendation of the Environmental Control Officer order the Contractor to suspend any or all works on site if the Contractor or his Subcontractor/ supplier fails to comply with the Environmental Management Program; • Ensure that the ECO has their full backing regarding environmental matters • Requesting amendments to the EMPr when needed, on behalf of contractor or applicant • Ensure that all problems identified during environmental inspections, are addressed, and rectified by the contractor as soon as possible.
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EHS	Environmental Health and Safety Officer	The responsibility of the EHS Officer includes overseeing the implementation of the EMPr during the construction and operational phases, monitoring environmental impacts, record-keeping and updating of the EMPr as and when necessary. The EHS officer is also responsible for monitoring compliance with the conditions of the Environmental Authorization that may be issued Engineer /Contractors. During “construction” (i.e. all activities associated with clearing the land for cultivation), the EHS Manager will be responsible for the following: • Meeting on site with the Construction Manager prior to the commencement of construction activities to confirm the construction procedure and designated activity zones. • Daily or weekly monitoring of site activities during “construction” to ensure adherence to the specifications contained in the EMPr and Environmental Authorization using a monitoring checklist that is to be prepared at the start of the “construction” phase. • Preparation of the monitoring report based on the daily or weekly site visit. • Reporting of any non-conformances within 48 hours of identification of such non-conformance to the relevant agents. • Conducting an environmental inspection on completion of the construction period and ‘signing off’ the construction process with the Construction Manager. During operation, the EHS Officer will be responsible for: • Overseeing the implementation of the EMPr and monitoring programs for the operation phase. • Reviewing the findings of the monitoring and highlight concerns to management where necessary.
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		• Ensuring compliance with the Environmental Authorization conditions and related permits. • Ensuring that the necessary environmental monitoring takes place as specified in the EMPr. • Updating the EMPr and ensuring that records are kept of all monitoring activities and results. • At the time of preparing this EMPr, the EHS Manager appointment is still to be made by the applicant. • The appointment of the EHS Officer is dependent upon the project proceeding to the “construction” phase.
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5.2 Monitoring

A monitoring programme will be in place not only to ensure compliance with the EMPr through the contract/work instruction specifications, but also to monitor any environmental issues and impacts which have not been accounted for in the EMPr that are, or could result in negative environmental impacts for which corrective actions will be required.

As part of the contract or work instruction, monitoring the implementation of the EMPr must be an on-going work throughout the construction and operation of the project. This will be determined from applicable permits and authorisations from authorities. All specialist role players (contractor(s), engineer or site manager, ECO, SHE Officer must ensure that monitoring is done.

5.3 Reporting Procedure

5.3.1 Documentation

The following documentation must be kept on site in order to record compliance with the EMPr:

An Environmental File which must include:

- Copy of the EMPr;
- Copy of the Environmental Authorisations and any addendums;
- Copy of all other licenses/permits;
- Copy of all rehabilitation plans;
- Copy of the Storm Water Management Plan;
- Copy of relevant legislation(s);
- Environmental Policy of the Main Contractor;
- Environmental Method statements compiled by the Contractor;
- Non-conformance Reports;
- Environmental register, which must include:
- Communications Register; including records of complaints, minutes and attendance registers of all environmental meetings;

- Monitoring Results; including environmental monitoring reports, register of audits, Non- Conformance Reports (NCR);
- Incident book; including copies of notification of emergencies and incidents, and this must be accompanied by a photographic record where necessary and possible; and
- Waste establishment sites.
- Waste documentation such as sewerage disposal receipts if there will be any;
- Material Safety Data Sheets for all hazardous substances;
- Dust suppression register;
- Water Quality Monitoring reports (where necessary);
- Written Corrective Action Instructions; and
- Notification of Emergencies and Incidents.

5.3.2 Environmental Register

The Developer will put in place an Environmental Register. The contractor will ensure that the following information is recorded for all complaints/incidents:

- Nature of complaint/incident;
- Causes of complaint/incident;
- Party/parties responsible for causing complaint/incident;
- Immediate actions undertaken to stop/reduce/contain the causes of the complaint/incident;
- Additional corrective or remedial action taken and/or to be taken to address and to prevent recurrence of the complaint/incident;
- Time frames and the parties responsible for the implementation of the corrective or remedial actions;
- Procedures to be undertaken and/or penalties to be applied if corrective or remedial actions are not implemented; and
- Copies of all correspondences received regarding complaints/incidents.

The above records will form an integral part of the Contractors' Records. These records will be kept with the EMP, and will be made available for scrutiny if so requested by the Developer.

5.3.3. Complaints Register

A Non-Conformance Report (NCR) will be issued to the Contractor as a final step towards rectifying a failure in complying with a requirement of the EMP. This will be issued by the ECO to the Contractor in writing. Preceding the issuing of an NCR, the Contractor must be given an opportunity to rectify the issue.

Should the ECO assess an incident or issue and find it to be significant (e.g. non-repairable damage to the environment), it will be reported to the relevant authorities and immediately escalated to the level of a NCR. The following information should be recorded in the NCR:

- Details of non-conformance;
- Nature of the risk and the associated environment;
- Any plant or equipment involved;
- Any chemicals or hazardous substances involved;
- Work procedures not followed;
- Any other physical aspects; and
- Actions agreed to by all parties following consultation to address the non-conformance in terms of specific control measures and should take the hierarchy of controls into account.
- Agreed timeframe by which the actions documented in the NCR must be carried out.
- ECO should verify that the agreed actions have taken place by the agreed completion date; when completed satisfactorily, the ECO and Contractor should sign the Close-Out portion of the Non-Conformance Form and file it with the contract documentation.

5.3.4 Environmental Emergency Response

The Contractor's environmental emergency procedures must ensure appropriate responses to unexpected / accidental actions/incidents that could cause harm to the environment. Such incidents may include:

- Accidental discharges to water (i.e. into the watercourse) and land;
- Accidental spillage of hazardous substances (typically oil, petrol, and diesel);
- Accidental toxic emissions into the air; and
- Specific environmental and ecosystem effects from accidental releases or incidents.

The Environmental Emergency Response Plan is separate to the Health and Safety Plan as it is aimed at responding specifically to environmental incidents and must ensure and include the following:

- Construction employees shall be adequately trained in incidents and emergency situations;
- Details of the organization and responsibilities, accountability and liability of personnel;
- A list of key personnel and contact numbers;
- Details of emergency services (e.g. fire department / on-site fire detail, spill clean-up services);
- Internal and external communication plans, including prescribed reporting procedures;
- Actions to be taken in the event of different types of emergencies;
- Incident recording, progress reporting and remediation measures to be implemented; and
- Information on hazardous materials, including the potential impact associated with each, and measures to be taken in the event of accidental release.

The Contractor and their sub-contractor(s) must comply with the environmental emergency preparedness and incident and accident-reporting requirements.

5.3.5 Method Statements

It is a statutory requirement to ensure the wellbeing of employees and the environment. To allow the mitigation measures in this document to be implemented, task-specific method statements should be developed for each set of tasks.

A Method Statement details how and when a process will be carried out, detailing possible dangers/risks, and the methods of control required.

- Type of construction activity;
- Timing and location of the activity;
- Construction procedures;
- Materials and equipment to be used;
- Transportation of the equipment to and from site;
- How equipment/material will be moved while on site;
- Location and extent of construction site office and storage areas;
- Identification of impacts that might result from the construction activity;
- Methodology and/or specifications for impact prevention/containment;
- Methodology for environmental monitoring;
- Emergency/disaster incident and reaction procedures (required to be demonstrated); and
- Rehabilitation procedures and continued maintenance of the impacted environment.

The Contractor will be accountable for all actions taken regarding compliance of the approved Method Statements. The Contractor shall keep all the Method Statements and subsequent revisions on file, copies of which must be distributed to all relevant personnel for implementation

The following is a list of Method Statements that may be required:

- Construction site and office/yard establishment;
- Cement mixing/concrete batching etc;
- Dust management;
- Environmental awareness course(s);

- Environmental monitoring;
- Erosion control;
- Fire, hazardous and/or poisonous substances;
- Fuels and fuel spills (may form part of the item above);
- Storage, handling and decanting of diesel (may form part of the item above);
- Personnel, public and animal safety;
- Rehabilitation of modified/damaged environment(s);
- Solid and liquid waste management;
- Sources of materials (including MSDSs);
- Top-soil management;
- Stormwater Management; and
- Wash areas.

5.3.6 Public Communication and Liason with IAPs

The Developer must ensure that the adjacent landowners are informed and updated throughout the construction phases. Sufficient signage should be erected around the site informing the public of the construction activities taking place. The sign boards should include the following:

- The name of the Contractor.
- The name and contact details of the site representative to be contacted in the event of emergencies or complaint registration.

6. COMPLIANCE WITH ENVIRONMENTAL SPECIFICATION

The EMPr forms part of the Contract Documentation and is thus legally binding. It is therefore important for the developer and the contractor to include EMPr implementation costs in the budget of the project. In terms of the NEMA, an individual responsible for environmental damage must pay costs both to the environment and human health (*“Polluter Pays Principle”*) and the preventative measures to reduce or prevent additional pollution and/or environmental damage from occurring.

The Contract is deemed not to have complied with the Environmental Specification/EMPr if:

- There is evidence of contravention of the EMPr on the development areas;
- Environmental damage happens due to negligence;
- The Contractor fails to comply with corrective or instructions issued within a specified time; and
- The Contractor fails to respond adequately to complaints from the public.

Application of a penalty clause will apply for incidents of non-compliance. Failure to rectify the damages within specified reasonable period or a repeat of the damage will result in a fine. This fine will be issued by the ECO. The penalty imposed will be per incident. Unless stated otherwise in the project specification, the penalties that may be imposed per incident will be determined by the ECO.

The Developer is responsible for the implementation of the EMPr and for compliance monitoring of the EMPr. The EMPr will be made binding on all contractors (including sub-contractors) operating on the site and will be included in the Contract. Non-Compliance with, or any deviation from, the conditions set out in this document constitutes a failure in-compliance.

7. 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 strictly be adhered to. It is the responsibility of the Contractor to ensure that site personnel understands and adhere to the Code of Conduct.

8. ENVIRONMENTAL IMPACTS AND MANAGEMENT MEASURES

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 lifespan of the project. The EMPr must be binding on all parties involved on the project.

It is vital 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. Where necessary, 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**

This section indicates when the actions for a specific aspect must be implemented and/or monitored.

8.2 Planning Phase (Impact and Management Measures)

Table 5: Planning Phase Impact and Management Measures

Objective/Impact or Requirement	Control Measures	Monitoring Target	Responsibility	Monitoring Timeframe
Design and Planning				
Stormwater Design				
To prevent and minimize erosion, siltation and groundwater pollution	- A detailed Stormwater Management Plan (SMWP) for the development, designed by a suitably qualified engineer; - The SMWP must include measures minimising any potential risks associated with stormwater and run-off over fragile sensitive environment; and - The SMWP must be submitted to Moretele for approval	Approved SWMP	Project Engineer/Developer	Design Phase, Construction and operational phase.
Infrastructure				
Designs to be according to Municipal specifications	Infrastructure requirements must be in accordance with the requirements and standards of the Moretele Local Municipality.	Approved site development plan	Town Planner, Architect, Engineer, Developer	Design Phase
Other Design Requirements				

Identification of ecologically sensitive vegetation units	The ecologically sensitive vegetation should be incorporated into the open space system of the mixed use development. Should this not be possible, pockets of the natural vegetation including indigenous trees should be retained wherever possible during construction as part of the landscape of the development and species preservation as well as reducing areas to be cleared off vegetation for runoff control	Ecological footprint of the final layout plan	Town Planner, Developer, ECO	Design Phase
Ecological Open space System	The buffer around the watercourse must be fenced off prior to construction commencing. All construction related activities excluding those related to approved infrastructure within watercourses should be excluded from the ecological open space system.	Site inspection prior construction to determined	Town Planner, Developer, ECO	Design Phase

8.3 Construction Phase Impact and Management Measures

Table 6: Construction Phase Impact and Management Measures

Objective/Impact or Requirement	Control Measures	Monitoring Target	Responsibility	Monitoring Timeframe
Social and Safety				
To ensure the safety of the public, free traffic flow.	• That all of the analysed intersections be upgraded in accordance with the Traffic report; • That the township access localities be incorporated as identified in the traffic impact assessment report in order to better align with road access management principles; • That all of the proposed access intersections be signalised and be designed in accordance with, the traffic assessment report; • The access of large trucks will be investigated to provide a suitable access route that does not become a nuisance to existing residents; • Only a specified number of trucks at any one time will be allowed onto the property;	Signage erected. No staff quarters allowed on the site.	Site Manager Engineer/Developer, contractor, ECO	Construction

	• Construction vehicles and activities must avoid peak hour traffic times (weekdays 7-8am and 4h30-6pm); • No construction vehicles allowed over weekends; and • Establish an all-weather site access and wheel wash or shake down to prevent soil and materials from being trekked onto the road.			
Prevention of fire hazards (potential)	• Fires shall only be permitted in specially designated areas and under controlled circumstances; • Fire extinguishers must be accessible at the site camp; and • Development site must have trained fire marshal, staff must receive training in the event of fire on site and all staff must know the assembly point in the event of accidental fire.	Training sessions and awareness exercise	Site Manager, Contractor, SHE Officer	Planning stage, construction stage & once every 3 months
To ensure proper site camp establishment and demarcation.	• The construction camp, ablution facilities, equipment, and material stockpiles must be located outside the extent of the watercourse and	Site plan establishment; prior inspect on records (photos) environmental site layout plan	Site Manager, ECO	Upon site establishment, and continuous during construction

	its buffers as well outside 500m from the edge of a watercourse as per the DWS requirements. • The construction camp must also be located on the less sensitive areas or already disturbed areas subject to clearance for the proposed development. • No unnecessary clearance of vegetation outside of proposed development footprint, be it manually or through machinery. • The ECO must inspect each site selected for the development of any activity components such as the construction camp . • The contractor must provide proposed plans for layout of construction camps to the engineer prior to site establishment. The plan shall show at least the following: ○ Ablution areas; ○ Location of waste skips; ○ Lay-down yards; ○ Construction material storage areas; and	Fenced off construction camp		
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	○ Vehicle fuelling areas and fuel storage areas. • Construction camp must be fenced, and access controlled.			
Correct location of development components alongside sensitive open space system	• Construction footprint must be clearly demarcated before any construction activities may take place. • All construction areas must be confined to demarcated areas. • The ecologically sensitive areas and associated buffers south of the development site must be fenced or demarcated with orange netting. Construction vehicles and machinery are not allowed to access the construction site through this area and must only use designated access routes. • The open space system should be fenced off prior to construction commencing (including site clearing and pegging). • All construction related impacts (including service roads, site offices, temporary ablution, disturbance of natural habitat, storing of	environmental site layout plan	Site Manager, Contractor, SHE Officer	Planning stage and construction phase

	equipment/building materials/vehicles or any other activity) should not be located within the open space system. Access of vehicles to the open system should be prevented and access of people should be controlled, both during the construction and operational phase.			
Waste Management				
To ensure proper waste management on the site	- All waste is to be removed from the site and disposed of at a registered facility; - Implementation of an appropriate collection and disposal strategy to ensure regular removal of waste to a permitted waste disposal facility; - Ensuring that the design of the development includes adequate facilities for the temporary storage of waste, in terms of volume, location and enclosure; - Ensuring that waste handling, storage and collection is undertaken in accordance with the	Central waste storage area provided	Site Manager, Contractor, ECO	Construction phase
To prevent unhygienic conditions on the site and pollution of the environment		Waste disposal certificates available Adequate toilets provided	Site Manager, Contractor, ECO	Duration of construction
Prevent contamination resulting from poor handling/management of hazardous material		Designated area for hazardous material	Site Manager, ECO	Construction phase and operation phase

	relevant health and municipal legislation, practices and procedures;	Disposal certificates available on site		
To maintain records of waste management	• Provision of adequate numbers of litter bins throughout the construction site;	waste records file	Site Manager	Duration of construction
To avoid, reuse or recycle material where possible and correctly dispose of unusable waste.	• Promoting the recycling of waste, with specialist service providers appointed to remove the waste from site; and • Monitor the toilet facilities for spillages, and handle any spillages as hazardous waste.	Records of recycled waste	Contractor	Duration of construction
Fuel Management				
To avoid contamination of the environment	• Refuelling will take place in an area with a surface sealed with a plastic liner to prevent spillage and soil contamination. • Fuel storage shall be within the construction camp, and within a bunded area with at least 110% of the volume of the amount of fuel stored, as per agreement and approval of the ECO. No storage of any fuel will be allowed on site, other than what is approved.	Provision for lined and bunded refuelling area	Site Manager, Contractor	Ongoing during construction
Fauna and Flora				

Construction impact on Fauna and flora	• Wood harvesting of any trees or shrubs on the development site or adjacent areas is strictly prohibited. • Clearance of the site must be gradual and preferably from the northern site to allow movement of fauna species to escape to the ecological open space south of the side; • Hunting and/or harvesting of fauna species on the site and adjacent areas is strictly prohibited	Site inspections as part of the environmental audit	Site Manager, Contractor, ECO	Duration of construction
To reuse topsoil for landscape	• During the laying of any cables, pipelines or infrastructure (on or adjacent to the site) topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed. • No rocks should be placed on the top layer of the soil.	Rehabilitation of disturbed areas	Landscape contractor	
Control of invasive plants	All invasive exotic vegetation must be removed from the site. A programme for the removal of invasive exotic vegetation, to be replaced with species indigenous to the area, must be implemented.	No invasive plants on site	Landscape planner or ECO, contractor	During construction and post construction
Visual Impact				

Minimisation of severe visual impact due to the building structures of the development	• Retain existing vegetation throughout the development area as far as possible • Make prospective buyers aware of visual impact mitigation measures include information in this regard; • A thorough communication process undertaken through e-mails and pamphlets distributed to nearby communities must be undertaken to communicate any possible blasting activities during the construction phase. Pro-active communication with representatives of the proposed development in this regard would be required. • The visual impact experienced during the construction phase would be relatively short term and be mitigated by good housekeeping and regular removal of rubble on the site; • An ECO must be appointed. The EMPR must be enforced and monitored by the ECO. The site must be kept clean and tidy at all time;	Inspection of the construction site	Contractor, Site Manager, architect ECO,	Planning stage, construction phase
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	• No activities shall be allowed outside the perimeter of the property, specifically no vegetation shall be damaged or removed outside the property as certain trees and shrubs play a role in screening the site from viewpoints; • Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area; and • Establish a Community Forum or Working Group to monitor compliance and provide advice on the implementation of the Environmental Management Plan (EMP). It is recommended that such a working group could consist of local community representatives, local property owners.			
Soils				
Minimisation of excessive dust from construction	• Dust pollution could occur during the construction works, especially during the dry months. Therefore, the following: • Regular and effective damping down of working areas (especially during the dry and windy periods)	• Dust • Complaints • Measurement of dust rate	Site Manager, Contractor	Duration of construction

	must be carried out to avoid dust pollution. When necessary, these working areas should be damped down in the mornings and afternoons. • Water spray during windy conditions must be used at the construction area or even water sprinkling truck can be used; this must be cautiously applied not to create runoff and/or erosion.			
Contamination of soils and water by the leaking and discharges of machinery.	• No leaking vehicle shall be allowed on site. • Before entering the site, the vehicles and equipment shall be inspected for leaks by a qualified mechanic/other suitably qualified person and the environmental officer. • The mechanic must supply the environmental officer with a letter of confirmation that the vehicles and equipment are leak proof. • Accidental spillages must be removed, and the area rehabilitated immediately. Where huge spillage of hazardous material occurred, the SHE Officer, the ECO and the site manager must determine if a spillage specialist must be called	Inspection of vehicles and machinery Awareness on correct handling of hazardous materials	Site Manager, SHE Officer, ECO	Duration of construction

	immediately to manage, remove/clean up the spillage. • Soil contaminated with hazardous material must be removed from the site and disposed of at the registered landfill site permitted to receive that type of waste; • Contaminated water with hazardous material must be contained at source of pollution and not be allowed to enter stormwater system and then into the natural drainage system.			
Potential dust, erosion and spread of invasive species due to stockpiling.	• Stockpiling will only be done in designated areas where it will not interfere with the drainage systems. • Stockpiling must be on already disturbed areas. • Cover stockpiles and surround downhill sides with a sediment fence to stop materials washing away. • Plastic covers during extreme windy conditions must be used to prevent dust generation and invasive plants from building	Site inspections as part of the environmental audit	Site Manager, ECO	Duration of construction

Prevention of topsoil loss	• Remove vegetation only in areas designated during the planning stage. • Where possible, site clearance must be in phases and areas likely to be developed approximately 6 months later must not be immediately cleared of vegetation. • Rehabilitation is to be done immediately after construction on areas easily susceptible to erosion. • All compacted areas should be ripped prior to them being rehabilitated/landscaped. • The top layer of all areas to be excavated must be stripped and stockpiled in areas where this material will not be mixed with other soil layers, removed or compacted. This stockpiled material should be used for the rehabilitation of the site and for landscaping purposes. • When the stripping of topsoil takes place, the grass component shall be included in the stripped topsoil. The soil will contain a natural grass seed mixture that may assist in the re-growth of grass once the soil is used for back-filling and rehabilitation.	Site inspections as part of the environmental audit	ECO, Site Manager, Contractor	Duration of construction
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	Strip topsoil at start of works and store in stockpiles no more than 2,5 m high in designated materials storage area. No vehicles are allowed to traverse the stockpiled topsoil areas.			
	Establish an all-weather site access and wheel wash or shake down to prevent soil and materials being tracked onto the road.	Site inspections as part of the environmental audit	ECO, Site manager	Duration of construction
Erosion prevention	- Demolition and construction activities should preferably take place during the beginning of dry months. - All surface run-offs shall be managed in such a way to ensure erosion of soil is minimised. - All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed.		Site Manager	Duration of construction

	• Where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion. • This can be done by contouring the site through creation of berms stabilised with sand bags to slow down run-off on the cleared site and guide run-off to the stormwater channels at a controlled speed.			
Excessive stormwater run-off and wastewater impact due the construction and the slope / topography of the development site	• Oil, silt and grit traps should form part of the detailed stormwater management plans. • Disturbed areas should be managed on an ongoing basis to prevent long-term impacts and severe erosion. • No wastewater and/or effluent generated during construction will be discharged to the environment (including the freshwater bodies, groundwater or land surrounding the development); and • A suitable area will be designated for mixing of concrete and will take place on an impervious surface such as a concrete slab, metal or plastic	Inspection and monitoring of Stormwater control measures on site.	Site Engineer, Site Manager, Contractor, ECO	Duration of construction and post construction

	sheeting which is provided with cut-off drains or berms to contain any contaminated run-off.			
Archaeological/Heritage				
Archaeological/Heritage/Cultural artefacts and resources.	• If any archaeological materials are uncovered during construction, the Gauteng Heritage Resources Agency or archaeologist must be informed urgently for further advice and investigation. • If the findings are of human remains or graves, work must cease immediately, and the Northwest Heritage Resources Agency or archaeologist must be called to investigate. In terms of the National Heritage Resources Act (No. 25 of 1999), graves older than 60 years (not in a municipal graveyard) are protected. • 38(4)b - The recommendations provided by the heritage specialists are supported and must be adhered to. • 38(4)c(i) - If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures,	Site inspections as part of the environmental audit	Site Manager, Contractor, ECO, Heritage specialist / Authority	Duration of construction

	indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash • concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA DAU (Nokusho Ngobeni/Natasha Higgitt 021 202 8660) must be alerted as per section 35(3) of the NHRA. Non-compliance with this section of the NHRA is an offence in terms of section 51(1)e of the NHRA and item 5 of the Schedule.			
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8.4 Post Construction/Rehabilitation Impact and Management Measures

Table 7: Post Construction/Rehabilitation impact and management measures

Objective/Impact or Requirement	Control Measures	Monitoring Target	Responsibility	Monitoring Timeframe
Waste Management				
Prevent pollution from remnants of waste	- Decontaminate and collect waste in storage area ready for off-site recycling or disposal; - Arrange for final collection and removal of excess and waste materials; - Promote waste management principles on the development site as it is a mixed-use development by encouraging waste separation at source, recycling around business and retail development components and waste reduction.	No visible waste, closeout report	Site Manager, ECO	After construction
Environmental Control Officer				
Close-out report	Do last inspection on site and sign off that the EMPr has been complied with or identify breaches. Submit to DEDECT.		ECO	Post construction
Alien Vegetation Management				

Potential alien infestation and degradation of the open space areas if not properly maintained	• The Developer must embark on a systematic long-term alien and invasive species control plan to restore the disturbed areas within the open space. • All disturbed areas must be re-vegetated with an indigenous seed mix to ensure that only indigenous plants are used in restoring the area. • Landscape designs in open space areas must incorporate indigenous plant species endemic to the area, particularly of ecologically sensitive vegetation units in the area. • An alien and invasive plant control plan must be developed and implemented by the estate or property managers.	Programme of alien vegetation removal implemented	Body corporate	Operation phase
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9. CONCLUSION

It is of importance to note that all issues discussed in this EMPr establish a basis for the Environmental Management and Monitoring of the proposed development by The Housing Development Agency. In order to achieve sustainable developments, mitigation measures must be discussed during the planning stage of the project and thus implemented throughout. However there may be instances where some elements of the plan may need to be excluded and some to be added it can be concluded that in line with the National Environmental Management Act 107, 1998 of April 2017.

The issues covered in this EMPr suffice to result in an environmentally sustainable development. Furthermore, the EMPr has provided a platform on which the planning, construction and the operational phase of EMPr can be founded by identifying the impacts, mitigation measures, performance indicators, responsibilities, available resources, potential schedule and verification responsibility.

The principles of environmental management system should be applied as follows:

Being under responsibility and policy: Organization should determine environment policy and give adhesion commitment to environment management system.

Plan: Organization should determine sizes of action, product and services and select important things.

Aims and objectives should be determined to realise commitment and to be realized actions should be programmed to reach aim and objectives.

Applying and operation: Organization should develop support mechanism and abilities to reach aim and objectives and to be efficiency applying.

Control and corrective action: Organization should measure environment performance and successful degree of this performance and evaluate monitoring.

Review and developing: Organization should review EMS to develop general environment performance and to develop in this performance general successful degree and always develop.

Parties responsible for transgression of this EMPr should be held responsible for any rehabilitation that may need to be undertaken. Parties responsible for environmental degradation through irresponsible behaviour/negligence should receive penalties.