



PROJECT FIFTY-EIGHT

ENVIRONMENTAL MANAGEMENT PROGRAMME

DEVELOPMENT ON PORTION 58 OF THE FARM KROMDRAAI 520 JQ

DFFE REF NO. 14/12/16/3/3/1/2325

SEPTEMBER 2023



THE PROPOSED PROJECT FIFTY-EIGHT DEVELOPMENT ON PORTION 58 OF THE FARM KROMDRAAI 520 JQ ENVIRONMENTAL MANAGEMENT PROGRAMME

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Submitted to:



**forestry, fisheries
& the environment**

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Table of Contents

GLOSSARY	iv
ACRONYMS	x
1. GENERAL INTRODUCTION	11
1.1 PURPOSE OF THE EMPR	11
1.2 OBJECTIVES OF THE EMPR	11
1.3 NATURE AND STRUCTURE OF THIS EMPR.....	12
2. DETAILS OF THE EAP	14
2.1 ENVIRONMENTAL CONSULTANTS INTERNATIONAL (PTY) LTD	14
2.2 EXPERTISE AND EXPERIENCE OF THE EAP	14
3. PROJECT DESCRIPTION.....	15
3.1 GENERAL PROJECT DESCRIPTION	15
3.2 SPECIFIC ACTIVITIES COVERED BY THE EMPR	15
3.3 IDENTIFIED IMPACTS	18
4. ADMINISTRATIVE STRUCTURE AND RESPONSIBILITIES.....	19
4.1 ROLES AND RESPONSIBILITIES	19
5. ALIEN AND INVASIVE SPECIES MANAGEMENT PLAN	21
6. TRAINING AND ENVIRONMENTAL AWARENESS PLAN	24
7. ENVIRONMENTAL AUDITING	25
8. DETAILED ENVIRONMENTAL MANAGEMENT PLAN	27
8.1 PRE-CONSTRUCTION PHASE	27
8.2 CONSTRUCTION PHASE	29
8.3 OPERATIONAL PHASE	44
8.4 SPECIFIC CONDITIONS FROM COMPETENT AUTHORITIES	55
8.5 CLOSURE AND/OR DECOMMISSIONING PHASE	59

GLOSSARY

Activity (Development)	An action either planned or existing that may result in environmental impacts through pollution or resource use. In this report, the terms 'activity' and 'development' are freely interchanged.
Alien Species	A species that is not an indigenous species; or an indigenous species translocated to a place outside its natural distribution range in nature, but not an indigenous species that has extended its natural distribution range by natural means of migration or dispersal without human intervention.
Alternatives	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
Applicant	The project proponent or Developers responsible for submitting applications (Environmental Authorisation, Waste Management Licence, Water Use Licence etc.) to the relevant environmental authority
Biodiversity	The diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.
Buffer	A buffer is an area that protects adjacent communities from unfavourable conditions. A buffer zone is usually an artificially imposed zone included in a management plan.
Building & Demolition Waste	Building and demolition waste means waste, excluding hazardous waste, produced during the construction, alteration, repair or demolition of any structure, and includes rubble, earth, rock and wood displaced during that construction, alteration, repair or demolition which include (a) discarded concrete, bricks, tiles and ceramics; (b) discarded wood, glass and plastic; (c) discarded metals; (d) discarded soil, stones and dredging spoil; (e) other discarded building and demolition waste.
Construction	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 appointed on behalf of the Client to undertake activities, as well as their sub-contractors and suppliers.
Cumulative Impact	The impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decommissioning	The demolition of a building, facility, structure or infrastructure.
Degradation	The lowering of the quality of the environment through human activities e.g. river degradation, soil degradation.
Demolition	The tearing-down of buildings and other structures, the opposite of construction.
Direct Impact	Impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.
Domestic Waste	Waste, excluding hazardous waste that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes, which include (a) garden and park waste; (b) municipal waste and (c) food waste.
Emergency	An undesired event that results in a significant environmental impact and requires the notification of the relevant statutory body such as a local or provincial authority.
Environment	The surroundings within which humans exist and that are made up of: i. the land, water and atmosphere of the earth; ii. micro-organisms, plants and animal life; iii. any part or combination of (i) or (ii) and the interrelationships among and between them; and iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.
Environmental Control Officer	An individual nominated through the Developer to be present on site to act on behalf of the Developer in matters concerning the implementation and day to day monitoring of the EMPr and conditions stipulated by the authorities.
Environmental Impact	A change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services.
Environmental Assessment	The generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes

	methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.
Environmental Authorisation	An authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.
Environmental Assessment Practitioner (EAP)	The individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.
Environmental Impact Assessment (EIA)	In relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application as defined in NEMA.
Environmental Management	Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.
Environmental Management Programme (EMPr)	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. This EMPr focuses on the construction phase, operation phase and decommissioning phase of the proposed project. Fatal Flaw An event or condition that could cause an unanticipated problem and/or conflict which will could result in a development 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 – i. domestic waste; ii. building and demolition waste; iii. business waste; and iv. inert waste.
Hazardous Waste Landfill Site	A waste disposal site that is designed, managed and permitted to allow for the disposal of hazardous waste.
Human Waste	Excrement, faeces or other waste material discharged from the human body. 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.

Indirect Impacts	Indirect or induced changes that may occur as a result of 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.
Integrated Environmental Management	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 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 (I&AP)	Any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Invasive Species	Any species whose establishment and spread outside of its natural distribution range.
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.
Mitigate	The implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.
Pollution	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.
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. Rehabilitation for the purposes of this Environmental Management Programme is aimed at post-reinstatement re-vegetation of disturbed areas and the stability of the land surface. In attempt to achieve this purpose, disturbed areas should be rehabilitated with the establishment of suitable indigenous vegetation. Revegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.
Sensitive Environments	Any environment identified as being sensitive to the impacts of the development.
Topsoil	The A-horizon of the soil profile. Topsoil is the upper layer of soil from which plants obtain their nutrients for growth. It is often darker in colour, due to the organic (humus) fraction. Where topsoil is referred to, it is deemed to be the soil and grass / ground cover fraction. For the purposes of this management programme, where: topsoil is deemed as the layer of soil from the surface (approximately 300 mm) to the specified depth required for excavation.
Waste	Any substance, whether or not that substance can be reduced, re-used, recycled and recovered - i. that is surplus, unwanted, rejected, discarded, abandoned or disposed of; ii. which the generator has no further use of for the purposes of production; iii. that must be treated or disposed of; or iv. that is identified as a waste by the Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but— v. a by-product is not considered waste; and vi. vi. any portion of waste, once re-used, recycled and recovered, ceases to ix be waste.
Waste Disposal Facility	Any site or premise used for the accumulation of waste with the purpose of disposing of that waste at that site or on that premises.
Watercourse	Defined as: i. a river or spring; ii. a natural channel or depression in which water flows regularly or intermittently; iii. a wetland, lake or dam into which, or from which, water flows; and iv. any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (No

	36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks.
Water Pollution	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 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 Developers 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.

ACRONYMS

AoI	Area of Influence
BAR	Basic Assessment Report
CoHWHS	Cradle of Humankind World Heritage Site
DEAT	Department of Environmental Affairs and Tourism
DFFE	Department of Forestry Fisheries and Environment
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECI	Environmental Consultants International (Pty) Ltd
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
GNR	Government Notice Regulation
ha	Hectares
I&AP	Interested and Affected Party
IEM	Integrated Environmental Management
MCLM	Mogale City Local Municipality
NEMA	National Environmental Management Act (Act No. 107 Of 1998)
NEMBA	National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act
NHRA	The National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NWA	The National Water Act 1998 (Act No 36 of 1998)
Sqm	Square Metres
WULA	Water Use License Application

1. GENERAL INTRODUCTION

The Environmental Management Programme (EMPr) aims to ensure 'good environmental practice' by taking a holistic approach to the management of environmental impacts during the construction and operation of the project.

1.1 PURPOSE OF THE EMPr

In terms of The Constitution of the Republic of South Africa (1996), everyone has the right to an environment that is not harmful to their health or well-being and to have the environment protected, for benefit of present and future generations, through reasonable legislation 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 (Section 24). The needs of the environment as well as affected parties should therefore be integrated into all levels of every project that has the potential to harm people and the environment.

The requirements of the Constitution inform and are supported by the Specific Environmental Management Acts (SEMAs), including:

- National Environmental Management Act (No 107 of 1998 - NEMA),
- National Environmental Management: Waste Act (No 59 of 2008 - NEM:WA),
- National Environmental Management: Air Quality Act (No 39 of 2004 - NEM:AQA),
- National Environmental Management Biodiversity Act (No 10 of 2004 - NEM:BA),
- National Environmental Management Protected Areas Act (No 57 of 2003 - NEM:PAA), and
- National Water Act (No 36 of 1998 - NWA)

This EMPr is developed in terms of the NEMA's and ensures that construction activities meet the requirements of existing environmental legislation and good environmental practice in terms of international norms and standards. This is achieved by identifying those activities for the proposed development that may have a negative impact on the environment; outlining the mitigation measures that will need to be taken and the steps necessary for their implementation and describing the reporting system to be undertaken during construction.

1.2 OBJECTIVES OF THE EMPr

The EMPr has the following objectives:

- To ensure compliance with regulatory authority stipulations and guidelines; which may be local, provincial, national, and/or, international;
- To outline functions and responsibilities of responsible persons;
- To state standards and guidelines, which are required to be achieved in terms of environmental legislation;

- To outline mitigation measures and environmental specifications, which are required to be implemented for all phases of the project to minimise the extent of environmental impacts, and to manage environmental impacts;
- To prevent long-term or permanent environmental degradation;
- To establish a method of monitoring and auditing environmental management practices during all phases of development;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Ensure that all workers, subcontractors and other involved in the project meet legal and other requirements regarding environmental management;
- Incorporate environmental management into project design and operating procedures; and
- Address concerns and issues addressed in the EIA's stakeholder consultation process and those that will likely to continue to arise during the project's lifetime.

An independent **Environmental Control Officer (ECO)** must be appointed (by the proponent) to ensure compliance with the EMPr. The EMPr will be considered an extension of the Conditions of Approval as set forth by the Gauteng Department of Agriculture and Rural Development. Non-compliance with the EMPr will constitute non-compliance with the said Conditions.

1.3 NATURE AND STRUCTURE OF THIS EMPr

This report fulfils the requirements of Appendix 4 of GNR 326 of the 2014 EIA Regulations (as amended April 2017), which clearly specifies the required content of an Environmental Management Programme - as summarised in Table 1 below:

Table 1: GNR 326 Appendix 4: Environmental Management Programme

No.	Requirement	Reference
1 (a)	An EMPr must comply with section 24N of the Act and include - details of- (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Section 2 Appendix C
1 (b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 3
1 (c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 3 Figure 2
1 (d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including- (i) planning and design; (ii) pre-construction activities;	Section 3 Table 2

No.	Requirement	Reference
	(iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	
1 (f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for (v) rehabilitation, where applicable;	Section 5 Section 6 Section 7 Section 8
1 (g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 7
1 (h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 8
1 (i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 8
1 (j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 8
1 (k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section & Appendix A.1-A.6
1 (l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 7
1 (m)	an environmental awareness plan describing the manner in which— (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 6
1 (n)	any specific information that may be required by the competent authority.	Section 8.4
2	Where a government notice gazetted by the Minister provides for a generic EMP, such generic EMP as indicated in such notice will apply.	N/A

2. DETAILS OF THE EAP

2.1 ENVIRONMENTAL CONSULTANTS INTERNATIONAL (PTY) LTD

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The consultants of ECI have been providing environmental management services in the following areas since 1991:

- Strategic Assessment & Planning
- Site selection & Due Diligence
- Landscape Architecture
- Land Management Plans
- Environmental & Social Impact Assessment
- Licensing Applications
- Biodiversity Assessments
- Monitoring & Auditing
- Public Consultation & Stakeholder Engagement
- Peer Reviews
- Environmental Advisory Services

2.2 EXPERTISE AND EXPERIENCE OF THE EAP

Hanlie Van Greunen has a BSc degree in Landscape Architecture and a BSc Honours degree in Environmental Monitoring and Modelling and is a member of the International Association for Impact Assessment of South Africa (IAIAsa Member 6657) as well as a Registered Member of EAPASA (Reg no 2019/1008). With 18 years' experience in the environmental industry her key performance areas include Environmental Licensing, Public Participation, Environmental Compliance Auditing, Visual Impact Assessment and Project Management. See **Annexure B** for EAP's CV.

3. PROJECT DESCRIPTION

3.1 GENERAL PROJECT DESCRIPTION

The Proponent intends to construct a retreat on Portion 58 of the Farm Kromdraai 520 JQ in the Cradle of Humankind World Heritage Site (CoHWHs), Mogale City Local Municipality (MCLM), Gauteng.

The proposed development includes scheduled activities under the 2014 EIA Regulations in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended (NEMA) resulting in the need for Environmental Authorisation (EA) from the DFFE.

Activities applied for under NEMA include GN R No. 327 (Listing Notice 1, Activities 19 and 27) and GN R No. 324 (Listing Notice 3, Activities 4, 6, 12 and 14). Refer to **Figure 1: Locality Map**.



Figure 1: Location Map

3.2 SPECIFIC ACTIVITIES COVERED BY THE EMPR

Project Fifty-Eight aims to develop a tourism facility on Portion 58 of the Farm Kromdraai 520 JQ. The proposed facility can be defined as “a place to restore conscious appreciation for life in all its manifestations and create a model for a regenerative society”.

The property size is approximately 163.3 hectares (ha) in extent and the proposed development will include the following facilities with a total footprint of 6500m².

- Six (6) 300m² residential villas.
- Ten (10) 175m² residential villas.
- Twelve (12) 20m² pods and Eight (8) Hikers huts with 100m² service facilities.
- 200m² wellbeing facility (incl. hydrotherapy, treatments rooms and a gym).
- Existing building that has been renovated and is operational.
- Erected on the existing slab of the former stables and staff accommodation.
- 300m² “third space” and will be a communal lounge, library and covering area for guests and the community.
- 15 rooms, guest services, reception, practitioners' rooms, toilet and administration facilities to be erected on the existing building that is an old workshop, has been renovated.
- 500m² AGRI-HUB packing, sorting, storing and distributing community farm produce, implements, tools, workshop and staff quarters.
- All guest parking will be at Nirox Sculpture Park but there will be a parking area on property.

Refer to the Layout Plan in **Figure 2** below.

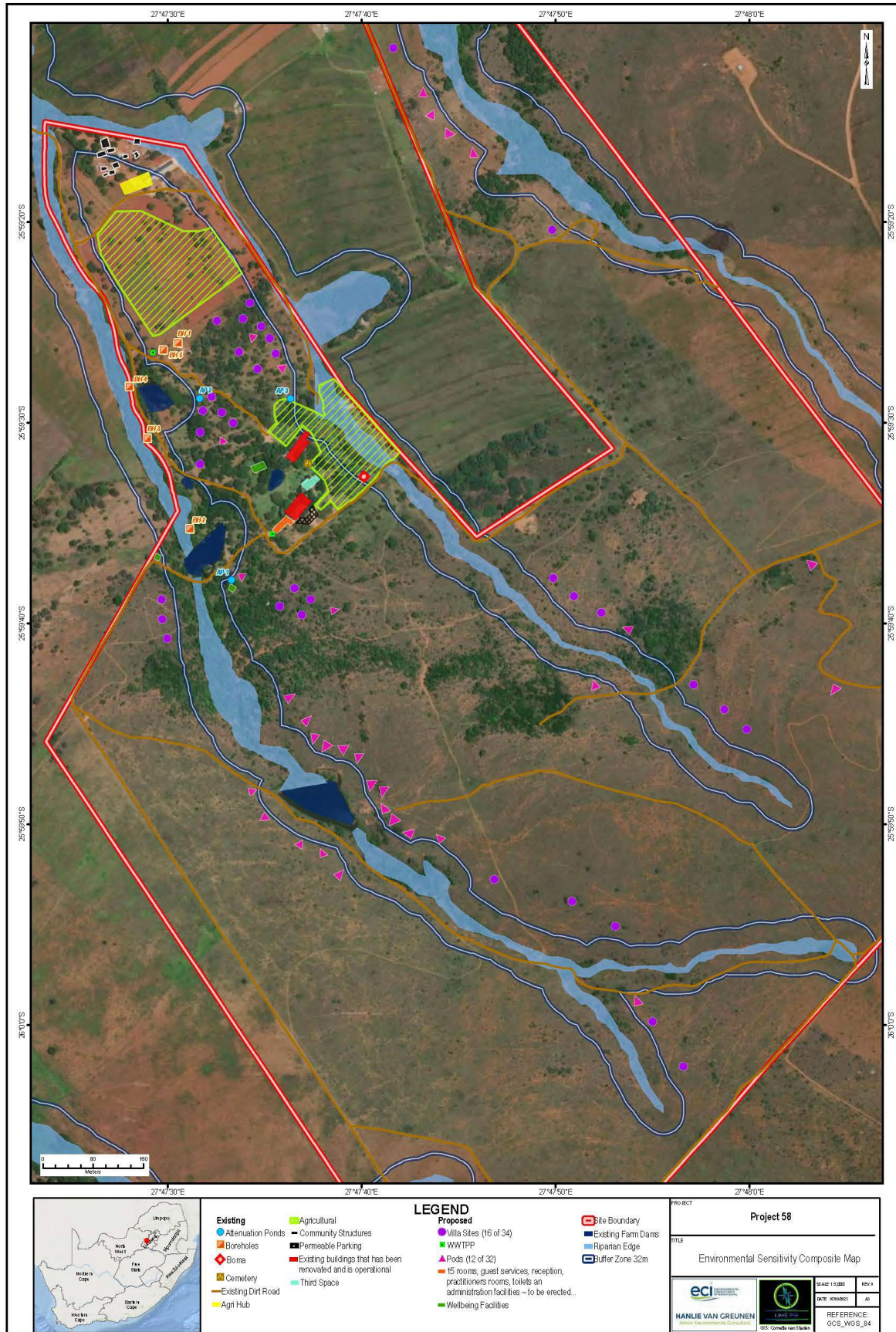


Figure 2: Layout Plan

3.3 IDENTIFIED IMPACTS

Although a number of potential short and long-term environmental and social impacts can be expected during the construction and operational phases of the Proposed Activity, it was found that the significance of these impacts could be reduced through the implementation of appropriate mitigation measures. Refer to **Table 2**.

Table 2: Identified Impacts (before and after mitigation)

Construction Phase Impacts	Impact significance	
	Before Mitigation	After Mitigation
Potential impacts on soil and ground and surface water quality that may occur as a result of the spillage of hydrocarbons, hazardous chemicals and sewage	Medium	Low
Potential impacts on soil and ground and surface water quality that may occur as a result of the generation of waste.	Medium	Low
Increased soil erosion as a result of vegetation clearance and increased stormwater runoff from hard surface	Medium	Low
Potential impacts on vegetation and loss of habitat	High	Medium
Potential impacts on the availability of groundwater	High	Medium
Impacts on ambient air quality dust and noise generation	High	Medium
Change in the visual character of the area	High	Medium
Potential impacts on existing cultural and heritage resources	High	Medium
Potential impacts on traffic	Medium	Low
Economic development, tourism growth and job creation	High Positive	

Operational Phase Impacts	Significance after Mitigation	
	Before Mitigation	After Mitigation
Potential impacts on soil and ground and surface water quality that may occur as a result of the spillage of hydrocarbons, hazardous chemicals and sewage	Medium	Low
Potential impacts on soil and ground and surface water quality that may occur as a result of the generation of waste	Medium	Low
Increased soil erosion as a result of vegetation clearance and increased stormwater runoff from hard surface	Medium	Low
Potential impacts on vegetation and loss of habitat	High	Medium
Potential impacts on the availability of groundwater	High	Medium
Impacts on ambient air quality dust and noise generation	Medium	Low
Change in the visual character of the area	High	Medium
Potential impacts on traffic	Medium	Low
Economic development, tourism growth and job creation	High Positive	

4. ADMINISTRATIVE STRUCTURE AND RESPONSIBILITIES

4.1 ROLES AND RESPONSIBILITIES

PRINCIPAL AGENT / DEVELOPER
<ul style="list-style-type: none"> • Ensure that this EMPr forms part of any contractual agreements with a Contractor(s) and subcontractors for the execution of the proposed project. • Ensure that the Contractor/s is aware of all specifications, legal constraints and standards and procedures pertaining to the project specifically with regards to the environment. • Ensure that all stipulations within the EMPr are communicated and adhered to by its appointed Contractor(s).

CONTRACTOR

- Appoint an Environmental Control Officer (ECO) for the contract.
- Ensure that this EMPr forms part of any contractual agreements with a Contractor(s) and subcontractors for the execution of the proposed project.
- Be responsible for the finalisation of the EMPr in terms of methodologies which are required to be implemented to achieve the environmental specifications contained herein and the relevant requirements contained in the EA;
- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the contract specifications;
- Ensure that all third parties who carry out all or part of the contractor's obligations under the contract comply with the requirements of this EMPr;
- Adhering to any instructions issued by the SHE Officer on advice of the ECO; and
- Arrange for all employees and those of sub-contractors to receive training before the commencement of construction in order that they are aware of the conditions of the EMPr.

ENVIRONMENTAL CONTROL OFFICER (ECO)

- Confirming that all the environmental authorisations and permits required in terms of the applicable legislation have been obtained prior to construction commencing
- Reviewing and approving construction method statements with input from the ESO and engineer, where necessary, to ensure that the environmental specifications contained within this EMPr and EA are adhered to;
- Monitor the implementation of the EMPr during construction activities until the site is handed over by the Contractor.
- Be fully conversant of the recommendations and mitigation measures of all authorisations, permits and this EMPr for the project.
- Ensure site protection measures are implemented on site.
- Ensure that the Principal Contractor, sub-contractors, construction teams and the Principal Agent comply with the EMPr at all times.
- Monitor all site activities for compliance.
- Conduct audits of the site according to the EMPr, and report findings to the Principal Agent/Contractor.
- Recommend corrective action for any environmental non-compliance at the site and issue instructions to the contractor where environmental considerations call for action to be taken.
- Compile a monthly report highlighting any non-compliance issues as well as progress and compliance with the EMPr prescriptions.
- The ECO shall submit regular written reports to the Developer, the Principal Agent (if not the Developer) and the environmental authority (DFFE) monthly or as required.
- Conduct once-off training with the Contractor on the EMPr and general environmental awareness.
- Submission of an environmental audit report to the Client and Principal Agent upon completion of the project.

ENVIRONMENTAL CONTROL OFFICER (ECO)

- It must be noted that the responsibility of the ECO is to monitor compliance and give advice on the implementation of the EMPr and not to enforce compliance.
- Ensuring compliance is the responsibility of the Principal Agent and the SHE Officer.
- Identifying and facilitating any amendments to the EMPr that may become necessary during construction

SAFETY HEALTH AND ENVIRONMENT (SHE) OFFICER

- Be fully conversant with the Environmental Management Programme.
- Be fully conversant with all relevant environmental legislation applicable to the project, and ensure compliance with them.
- Compilation of Method Statements together with the Principal Contractor that will specify how potential environmental impacts in line with the requirements of the EMPr will be managed, and, where relevant environmental best practice and how they will practically ensure that the objectives of the EMPr are achieved.
- Convey the contents of this EMPr to the construction site staff and discuss the contents in detail with the Contractor.
- Undertake regular and comprehensive inspection of the site and surrounding areas to monitor compliance with the EMPr.
- Take appropriate action if the specifications contained in the EMPr are not followed.
- Monitor and verify that environmental impacts are kept to a minimum, as far as possible.
- Order the removal from the construction site of any person(s) and/or equipment in contravention of the specifications of the EMPr.
- Report any non-compliance or remedial measures that need to be applied to the appropriate environmental authorities, in line with the requirements of the EMPr.
- Submit a report at each site meeting which will document all incidents that have occurred during the period before the site meeting.
- Ensure that the list of transgressions issued by the ECO is available on request.
- Maintain an environmental register which keeps a record of all incidents which occur on the site during construction. These incidents include:
 - Public involvement / complaints
 - Health and safety incidents
 - Incidents involving hazardous materials stored on site
 - Non-compliance incidents.

5. ALIEN AND INVASIVE SPECIES MANAGEMENT PLAN

The implementation of this Alien and Invasive Species Management Plan is included in the Detailed Environmental Management Plan for the Construction Phase (Section 8.2) as well as the Operational Phase (Section 8.3) for auditing purposes.

An alien invasive eradication and monitoring programme is recommended for the entire property as this will promote biodiversity in the area and limit the distribution of alien invasive species via water and humans. There are a number of methods to eradicate or control alien invasive species.

Table 3: Control methods for alien invasive species

Method	Description
Mechanical	The removal of species by hand or with appropriate tools, instruments and machines.
Chemical	The optimal use of herbicides to control target species.
Biological	This involves the intentional use of populations of natural enemies of the target alien or invasive species or other methods that adversely affect the biological integrity of the target species.
Habitat management	This control methods uses measures such as prescribed burning, grazing and other activities.
Integrated pest management (IPM)	This involves a combination of methods above based on ecological research regular monitoring and careful co-ordination

A recommended eradication programme includes:

- The areas to be disturbed during construction should be limited.
- Careful removal of indigenous plants before construction commences. Plants should be replanted on the study site (as suggested by the ecologist) as soon as construction is completed.

A suggested method of establishing a continual eradication program is:

- The scope of the problem should be assessed and a clearing plan should be established. Funding should be included in the budget to rehabilitate the areas in which alien and invasive species have been removed in order to prevent further destruction to the ecosystem.
- Decide where control should start and how much can be managed at a time. Remove weeds in the least affected areas and work outwards to the heavier weed infestations thus rapidly safeguarding relatively large areas.
- Identify areas where vigorous indigenous bush meets weedy areas and carefully work outwards from the indigenous area to the weedy area. If possible, always start uphill and work downhill.
- Remove weeds carefully and try to cover exposed soil with cut vegetation or leaf litter that is free of weeds and seeds which will not regrow if in contact with the soil.
- Press any loosened soil down lightly taking care not to damage native plants and mulch with plant material where possible. This will help prevent alien weeds from filling gaps left by weeding.
- Wherever possible try to prevent weeds from producing seeds or fruit by controlling them before they flower. Do not transport seeds, fruits, bulbs, tuber or stems that root easily away from the areas. It is advisable to burn the pieces "on site" if at all possible.

Often the most time and cost-effective way of dealing with heavy infestations is to arrange for the correct use of herbicides e.g., use a spot spray or foliar spray correctly applied to the target plants, thus ensuring minimum soil disturbance and so reducing the chance of invader seeds germinating in the “seed bed” created by “weeding”. In other instances, slash the plant down and return in a few months to foliar spray the re-growth e.g., reeds. Paint or spray the cut stumps of the larger and more difficult plants. Paint the lower stem or frill without disturbing the plant of really “difficult to kill” species like *Lantana camara*.

Follow up control is essential and it requires a regular monitoring programme done on a regular basis to ensure early detection and removal of alien seedlings until the viable invasive seed bank is exhausted and indigenous plants once again are naturally re-established. The ultimate goal in the control and eradication of alien invasive plants must be the restoration and rehabilitation of land.

Alien invasive species present throughout the area, not necessarily on the relevant site, and could spread to the site. Although not in significant numbers and high densities these species still compete with indigenous species for resources and habitat and leads to a decrease in biodiversity as well as ecosystem goods and services and should be eradicated. The longer these species are left to grow and multiply without any form of eradication the more of a foothold they are going to gain within the study site as well as the broader landscape. It is of utmost importance that these alien invasive species be eradicated by mechanical means and that the property is monitored regularly for re-infestation.

6. TRAINING AND ENVIRONMENTAL AWARENESS PLAN

The implementation of training and awareness objectives are included in the Detailed Environmental Management Plan for the Pre-construction Phase (Section 8.1g) for auditing purposes.

The Contractor's Team must have the appropriate level of environmental awareness and competence to ensure continued environmental due diligence and ongoing minimisation of environmental harm. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

The Contractor shall ensure that its employees and sub-Contractors who carry out all or part of the Contractor's obligations are adequately trained regarding the implementation of the EMP, as well as environmental legal requirements and obligations. Training shall be conducted by the Contractor SHE/EO as and when required, as determined by the ECO. The environmental training is aimed at:

- Promoting environmental awareness;
- Informing the Contractor of all applicable environmental procedures, policies and programmes;
- Providing generic training on the implementation of environmental management specifications; and
- Providing job-specific environmental training to understand the key environmental features of the construction site and the surrounding environment.

Training will be done in a verbal and visual 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 maximised.

The Contractor will ensure that records of all training interventions are kept in accordance with the record keeping and documenting control requirements as set out in this EMP and records must be sent to the ECO at intervals determined by the ECO. The training records shall verify each of the targeted personnel's training experience. If necessary, the ECO and/or a translator should be called to the site to further explain aspects of environmental or social behaviour that are unclear.

The Environmental Training shall address the following:

- The importance of conformance with all environmental policies;
- The environmental impacts, actual or potential, of all work activities;
- The environmental benefits of improved personal performance;

- Workers' roles and responsibilities in achieving conformance with the environmental policy and procedures and with the requirement of the EA, EMPr and relevant permits, including emergency preparedness and response requirements;
- The potential consequences of departure from specified operating procedures;
- The mitigation measures required to be implemented when carrying out their work activities.
- Environmental legal requirements and obligations;
- Details regarding floral/faunal species of special concern and protected species and the procedures to be followed should these be encountered during the construction phase;
- The importance of not littering;
- The importance of using supplied toilet facilities;
- The need to use water sparingly;
- Details of and encouragement to minimise the production of waste and re-use, recover and recycle waste where possible; and
- Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

It is the responsibility of the Contractor or site manager of the project to train the workmen and foremen in the procedure to follow when a fossil is accidentally uncovered. In the absence of the Contractor, a member of the staff must be appointed to be responsible for the proper implementation of the chance find protocol as not to compromise the conservation of fossil material.

7. ENVIRONMENTAL AUDITING

Implementation of the Detailed Environmental Management Plan (**Section 8**) will be audited using the criteria set out in **Table 4** below. A weighting factor will also be assigned to the end score in order to reflect the significance of the identified non-conformances. The weighting factor is indicative of the magnitude of the impact in terms of the potential negative effect that it could have on the surrounding environment. Refer to **Table 5** for the weighting factor criteria.

Table 4: Assessment criteria used for environmental compliance

Status	Description	Score
In place	When a commitment/condition is totally conformed to and the management measures which are in place are sufficient. No further actions necessary by the contractor.	100%
Partially in place	When a commitment/condition is not totally conformed to and the management measures which are in place are not sufficient.	50%
Not in place	Should a commitment/condition not be conformed to at all with no management measures in place.	0%

Status	Description	Score
Could not be determined / not applicable	Where the commitment/condition as stipulated in not relevant or applicable to the activities at the active construction site and associated site camp areas / Where a commitment / condition could not be assessed for whatever reason.	N/A

Table 5: Weighting Factor to address significance of non-conformances

Status	Description	Weighting Factor
Low	Non-conformances which is unlikely result in any significant environmental impact but which is necessary in terms of good practice and management of the operation (for example, outstanding documentation)	1
Medium	Non-conformances which may results in environmental impacts which is contained on site (for example small spills and litter)	0.9
High	Non-conformances which may lead to significant environmental impact and which may spread beyond the boundaries of the site into larger systems (for example pollution of a wetland area). Failure to comply with a condition of the EA.	0.8

8. DETAILED ENVIRONMENTAL MANAGEMENT PLAN

8.1 PRE-CONSTRUCTION PHASE

Aspect	Desired outcome	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
Pre-construction phase requirements	Implementation of the EMPr	a. The EA Holder (Developer) must appoint a qualified Environmental Control Officer (ECO) prior to commencement of construction for the full duration of the construction as well as the operational period.	Pre-construction audit (once off)	Developer and ECO	
		b. A declaration of implementation must be signed by the Developer, Contractor and ECO (see Appendix A.1)	Pre-construction audit (once off)	Developer, Contractor and ECO	
	Required documentation to be kept in the Environmental File on site. Refer to Appendix A for Templates of all Compliance Documentation.	c. The EMP must be updated with General and Specific Conditions of the Environmental Authorisation (Section 8.4.1)	Pre-construction audit (once off)	Developer and ECO	
		d. A Water Use Licence must be obtained from DWS and included in the Environmental File. The EMP must be updated with WUL conditions (Section 8.4.2).	Pre-construction audit (once off)	Developer and ECO	
		e. A Section 38 ROD must be obtained from the SAHRA and included in the Environmental File. The EMP must be updated with Heritage conditions (Section 8.4.3).	Pre-construction audit (once off)	Developer and ECO	
		f. The accidental fossil find protocol (as included in the Palaeontological Assessment) must endorsed by the responsible official/s at Maropeng.	Pre-construction audit (once off)	Developer and ECO	
		g. A site layout plan (including construction and laydown areas) should be submitted to the ECO, and be available on site for inspection.	Pre-construction audit (once off)	Developer, Contractor and ECO	
		h. Environmental awareness training (as outlined in Section 6) should be conducted for construction staff. Training record	Pre-construction induction and EO – weekly	C Contractor, EO and ECO	

Aspect	Desired outcome	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		must be included in the Environmental File (see Appendix A.2)	ECO - Monthly		
		i. The following plans and method statements must be approved by the ECO and included in the Environmental File. <ul style="list-style-type: none"> i. Construction Stormwater Management Plan; ii. Construction Waste Management Plan; iii. Emergency Response Plan; iv. Crew camp and construction laydown area; v. Handling & storage of oils and chemicals including refuelling and emergency spill procedures (including MSDS's); vi. Alien and Invasive Management Plan (see Section 5); vii. Stockpile Method Statement; viii. Batching Method Statement; and ix. Dust Suppression Method Statement. 	Pre-construction audit (once off)	Contractor and ECO	
		j. The Environmental File should include a Public Complaints Register where any complaint received from adjacent landowners of any member of the public must be recorded (including details on how the issue was resolved) (see Appendix A.3).	Pre-construction audit and EO – weekly ECO - Monthly	Contractor, EO and ECO	
		k. The Environmental File should include an Environmental Incident Log sheet where all environmental incidents must be recorded (including details on how the incident was resolved) (see Appendix A.4).	Pre-construction audit and EO – weekly ECO - Monthly	Contractor, EO and ECO	
		l. The Environmental File should include a General Waste Disposal Log Sheet (including details of end destination) (see Appendix A.5).	Pre-construction audit and EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Desired outcome	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		m. The Environmental File should include a Sewage Disposal Log Sheet (including details of end destination) (see Appendix A.6).	Pre-construction audit and EO – weekly ECO - Monthly	Contractor, EO and ECO	
		n. The EA, WUL and EMPr must be kept in an Environmental File on site and must be made available to any inspecting authority.	At all times	Developer, Contractor, EO and ECO	
		o. A services survey (of all above and underground infrastructure) must be undertaken and Wayleave must be obtained from the MCLM prior to commencement of construction.	Pre-construction audit (once off)	Contractor and ECO	
	Communication	p. All CA's must be notified in writing of commencement (at least 14 days prior to commencement).	Pre-construction audit (once off)	Contractor and ECO	
		q. The adjacent landowners must be informed of the starting date of construction as well as the phases in which the construction shall take place.	Pre-construction audit (once off)	Contractor and ECO	
		r. Proper, timeous, and continuous liaison between the developer, the contractor and landowners to ensure all parties are appropriately informed at all times.	Pre-construction audit (once off)	Contractor and ECO	

8.2 CONSTRUCTION PHASE

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.2.1 Site Preparation and Establishment					
Demarcation, Topsoil, and	Damage to surrounding areas	a. All sensitive riparian areas including a 32m buffer marked as "high sensitivity" on the Environmental Composite Maps, must be demarcated as "No-Go Areas" and no activities may	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
Stockpile Management		take place within these areas (except for implementation of approved stormwater infrastructure).			
		b. The footprint (clearance area) must be minimised. The area to be cleared must be demarcated and this footprint strictly maintained. No encroaching onto adjacent areas will be allowed.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. The ECO must oversee all setting out of areas to be developed to ensure that no red data floral species such as (<i>Boophone disticha</i>) is disturbed.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Vehicles should only use designated roadways to access the site.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. Adequate toilet facilities must be provided to staff. Log sewage removal (See Appendix A.6).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Under no circumstances may ablutions occur outside of the provided facilities.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Topsoil erosion and contamination	g. Clearing activities and earth scraping should be restricted to the dry season in order to prevent erosion and siltation of the adjacent non-perennial drainage lines.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		h. Topsoil must be reused where possible to rehabilitate disturbed areas to facilitate re-growth of species that occur naturally in the area.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. Stockpiled topsoil should be free of deleterious matter such as large roots, stones, refuse, stiff or heavy clay and noxious weeds, which would adversely affect its suitability for planting.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Stockpile erosion and downstream siltation	j. The contractor’s Stockpile Management Method Statement must be implemented.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		k. All stockpiles must be protected from erosion, stored on flat areas, away from drainage lines, and be surrounded by berms where necessary.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		l. Stockpiles must not exceed more than 2m in height.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		m. Any stockpile stored for long periods must be retained in a bermed area.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Geotechnical mitigation	n. The proposed structures can be constructed on shallow foundations such as strip footings with loads of up to 100kPa with the material under the foundations being removed and replaced down to a depth of 1.5 times the foundation width. The compacted material can be: <ul style="list-style-type: none"> ○ The in situ material, give the PI is less than 15, in Area 1 and that H1 building requirements are followed as per SANS 10400-H ○ The in situ material, give the PI is less than 15, in Area 2 and that dolomite stability conditions described above are taken into consideration ○ The in situ material, in Area 3 ○ The residual soil or weathered rock material in Area 4. 	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	o. In Area 4 the foundations can be placed directly onto in situ soils if excavation inspections reveal these to be stiff or medium dense and not excessively plastic.	EO – weekly ECO - Monthly	Contractor, EO and ECO		
	p. The excavation of shallow foundation trenches is expected to be feasible with a backactor with only limited areas expected to required rock picking either by hand or with pneumatic tools.	EO – weekly ECO - Monthly	Contractor, EO and ECO		
	q. Road pavement layers can be won on site, but base coarse materials will need to be imported for sealed roads. Concrete aggregate is not likely to be available from site excavations.	EO – weekly ECO - Monthly	Contractor, EO and ECO		
	r. Underground steel services should be protected from moderately corrosive soil conditions.	EO – weekly ECO - Monthly	Contractor, EO and ECO		

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		<p>s. infrastructure on dolomitic land the following must be avoided:</p> <ul style="list-style-type: none"> ○ gardens within 5m of buildings. ○ construction of buildings or services over natural watercourses. ○ construction of buildings over wet services. ○ creating unlined rerouting of natural drainage paths. ○ concentration or disposal of storm water onto high risk land. ○ using rigid, short length piping (promote long, unjointed, flexible piping). ○ subsurface water storage tanks. ○ disturbance of surface soil whenever feasible (ensure disturbed areas are properly compacted and reinstated). ○ boreholes for water abstraction. 	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		<p>t. The following WRDM By-laws of relevance to dolomites need to be adhered to:</p> <ul style="list-style-type: none"> ○ Local Government Municipal Systems Act (32/2000): West Rand District Municipality: Civil Contingencies By-law ○ Local Government Municipal Systems Act (32/2000): Disaster management development risk management By-law. 	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.2 Storage and Management of Materials (including hazardous materials)					
Management of materials including hazardous materials	Incorrect storage of material has the potential to pollute surface	a. The Handling & storage of oils and chemicals including refuelling and emergency spill procedures method statement must be approved by the ECO and implemented.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. The ECO must approve the Contractor's Storage areas – away from ecological sensitive areas and drainage lines.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	water resources as well as soils	c. MSDS's of all materials stored must be kept in the Environmental File as well as at the Contractor's store.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Storage areas must be designated, demarcated and fenced/secured.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. A walled concrete platform, dedicated store with adequate flooring or bermed (110% capacity) area should be used to accommodate chemicals such as fuel, oil, paint, herbicide and insecticides, as appropriate, in well-ventilated areas.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. All construction materials liable to spillage are to be stored in appropriate structures with impermeable flooring;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		g. No uncontrolled discharges from the lay down areas (where applicable) to any surface water resources shall be permitted.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Pollution of soil and water from concrete and cement batching	h. The Contractor's Batching Method Statement should be approved by the ECO and implemented.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. Concrete or cement are not to be mixed on bare soil but only in a suitable mixing tray.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		j. Excess cement and concrete mixes are to be contained on the construction site prior to disposal off site at a licenced waste site. Log removal (See Appendix A.5).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Pollution of soil and water from accidental spills	k. Construction vehicles are to be maintained in good working order, to reduce the probability of leakage of fuels and lubricants. Use Drip trays.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		l. Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a sump which will separate these chemicals and oils.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		m. Spilled hydrocarbons shall be treated with oil absorbent such as Drizit or similar and this material should be disposed at an approved waste site. Log incident (See Appendix A.4).	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		n. Topsoil or soil polluted by hazardous substances or cement should also be disposed at an approved waste site. Log removal (See Appendix A.5).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		o. In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water and Sanitation (DWS) must be informed immediately.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		p. Any spillage, which may occur, shall be investigated and immediate action must be taken. This must also be reported to the ECO and depending on the severity reported to the DFFE as stipulated in the conditions of the Environmental Authorisation.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		q. All accidental spills and follow up actions must be recorded on the Environmental Incident Log Sheet (Appendix A.4).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.3 Stormwater Management					
Stormwater Management	Erosion of topsoil resulting in loss of topsoil and nutrients, flooding and downstream siltation	a. During construction a sufficient Stormwater Management Plan should be implemented to prevent sedimentation taking place as a result of vegetation clearance and compaction of soil.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. No stockpiles or construction materials may be stored or placed within any drainage line on site, or in areas where water naturally accumulates.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. Clearing activities and earth scraping should be restricted to the dry season in order to prevent erosion and siltation of the adjacent non-perennial drainage lines.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Ensure silt fences and sediment curtains are inspected on a weekly basis and after any rainfall events exceeding 10mm.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. All erosion control mechanisms need to be regularly maintained.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Drainage must be controlled to ensure that runoff from the site will not culminate in off-site pollution or result in rill and gully erosion in the non-perennial drainage lines.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		g. Runoff from roads and hard surfaces must be managed to avoid erosion. All areas susceptible to erosion must be protected and should be vegetated with species naturally occurring in the area.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	Poor storm water management could lead to the pollution of down stream watercourses	h. Construction of temporary soil berms should be erected at the edge of the cleared area to ensure that no storm water carrying any pollutants leaves the active area.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. Surface water draining off contaminated areas containing oil and petrol would need to be channelled towards a sump which will separate these chemicals and oils;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.4 Habitat (Fauna and Flora)					
Vegetation Clearance	Potential impacts on vegetation and loss of habitat	a. The entire private open space or conservation area must be fenced off prior to construction activities.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. All alien seedlings and saplings must be removed and eradicated in accordance with the Alien and Invasive Species Management Plan (Section 5).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. Any species used for re-vegetation purposes should be indigenous and preferably endemic to the region and the vegetation type.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Imported fill material should be monitored during and after construction for the presence of any alien species. Any such species should be removed immediately.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. No hunting with firearms (shotguns, air rifles or pellet guns) or catapults should be permitted on the property as well as neighbouring areas.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. No vegetation clearance will be allowed during the natural bird breeding season. Ecologist to advise if situation occurs.	EO – weekly ECO - Monthly	Contractor, EO and ECO, Ecologist	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		g. Minimise vegetation clearance and use existing farm roads to access the various sites.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.5 Waste Management					
General waste generated on site	Pollution of surrounding areas	a. The Contractor's Waste Management Plan must be reviewed and approved by the ECO and implemented.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. Provide details of the appointed waste management service provider to DFFE and DWS.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. All waste leaving the site must be recorded including details of type, volume and end-destination. See Appendix A.5 for general waste and Appendix A.6 for sewage.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. No burning, dumping or burying of waste on site will be allowed.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. Sufficient non-leachable refuse bins should be provided on site for construction crews. A zero-tolerance littering policy should be implanted on site.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. A fenced area must be allocated for waste sorting and disposal.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		g. Individual skips for different types of waste should be provided.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		h. Conduct ongoing staff awareness programs so as to reinforce the need to avoid littering. Log training (See Appendix A.2)	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. The construction site should be cleaned daily and litter removed.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		j. A hazardous waste disposal certificate must be obtained from the waste removal company as evidence of correct disposal or any hazardous waste generated on site.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.6 Air Quality					
General Construction Activities	Impacts adjacent landowners with regards to	a. Implement a programme of stakeholder communication that includes community engagement before and during work on site. Log complaints (See Appendix A.3).	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	ambient air quality (dust and odour)	b. The Contractor's Dust suppression Method Statement must be reviewed and approved by the ECO and must be implemented.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. No waste water or potable water may be used for dust suppression. Groundwater from nearby boreholes is preferred.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Should activities be undertaken during dry and windy conditions, special focus must be taken on the impact and results of the conditions to ensure that minimal impact is occurring.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. Ensure that all areas, fencing, barriers and scaffolding is kept clear of debris and dust.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Ensure that all vehicles are switched off when stationary- no vehicles should be idling for extended period.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		g. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		h. Impose and regulate a speed limit of 30 km/h on the site at all times.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. Avoid dry sweeping of large areas.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		j. Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		k. Record all inspections of haul routes and any subsequent action in a site log book.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
	l. Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as practicable.	EO – weekly ECO - Monthly	Contractor, EO and ECO		
	Impacts adjacent landowners with	m. Construction site yards and other noisy fixed facilities should be located well away from noise sensitive areas.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	regards to noise generation	n. All construction vehicles and equipment are to be kept in good repair.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		o. Where possible, stationary noisy equipment (for example compressors, pumps, pneumatic breakers,) should be encapsulated in acoustic covers, screens or sheds. Proper sound insulation can reduce noise by up to 20dBA.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		p. Portable acoustic shields should be used in the case where noisy equipment is not stationary (for example drills, angle grinders, chipping hammers, poker vibrators).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		q. Construction activities should be limited to 07:00 to 17:00 daily.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		r. Machines in intermittent use should be shut down in the intervening periods between active working or throttled down to a minimum.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		s. Construction staff working in areas where the 8-hour ambient noise levels exceed 75dBA should wear ear protection equipment.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.7 Visual					
General Construction Activities	Change in landscape character relating to construction activities	a. Locate the construction camps in areas that are already disturbed or where it is not necessary to remove established vegetation	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. Utilise the existing screening capacity of the site and improve it by enclosing the construction site and stockyards with a dark green or khaki brown shade cloth of at least 20% density and at least 3 metres high, as an additional screen;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. Exposed soil must be covered or 'camouflaged' using a biodegradable soil mat and vegetation cover to reduce the duration of visible scarring of the landscape;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Retain the existing vegetation cover of the site through selective clearing, where practical;	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		e. Dust suppression techniques should be implemented especially on windy days, preferably using biodegradable binding agent;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Remove rubble and other construction rubbish off site as soon as possible or place it in containers in order to keep the construction site free from additional unsightly elements;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		g. Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		h. Monitor all areas for rehabilitation failure and implement remedial action immediately.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
8.2.8 Traffic					
Construction traffic	An increase of traffic and number of construction vehicles and trucks on the road during the construction period.	a. Place adequate advance warnings (Turning Trucks) along the R540.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. Manage the increase in construction traffic in terms of congestion, road surface damage, safety concerns, dust and erosion.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		c. All vehicular traffic on site should adhere to road safety measures;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. All vehicles should be road worthy;	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. Only designated roads should be used for construction vehicles; and	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Ensure drivers and operators of equipment are familiar with the safety policies and regulations.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.2.9 Heritage					
Discovery of important cultural and historical artefacts and/or fossils.	Important cultural and historical artefacts or fossils could be damaged or lost.	a. The Protocol for Chance Finds and Management (Fourie, H. June 2021 – see Appendix B of the EMP) must be endorsed by the responsible official/s at Maropeng and must be implemented.	Initially and ad hoc	Contractor, EO and ECO	
		b. The contractor and workers must be sufficiently briefed to identify fossils and to report accidental findings immediately to the Environmental Control Officer (ECO).	During excavations / earthworks	Contractor, EO and ECO, plio-pleistocene paleoanthropologist	
		c. A plio-pleistocene paleoanthropologist must monitor the site during excavations.	During excavations / earthworks	Contractor, EO and ECO, plio-pleistocene paleoanthropologist	
		d. The ECO must survey for fossils before and/or after clearing, and excavation.	During excavations / earthworks	Contractor, EO and ECO, plio-pleistocene paleoanthropologist	
		e. The ECO must familiarise him or herself with the formation present and fossils and receive pre-construction training.	During excavations / earthworks	Contractor, EO and ECO, plio-pleistocene paleoanthropologist	
		f. Care must be taken during dolomite risk assessment as stromatolites may be present.	During excavations / earthworks	Contractor, EO and ECO, plio-pleistocene paleoanthropologist	
		g. Special care must be taken during the digging, drilling, blasting and excavating of foundations, trenches, channels and footings and removal of overburden.	Initially and ad hoc thereafter	Contractor, EO and ECO	
		h. The cemetery and single grave must be fenced off and access must be restricted.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. A Section 37(2) agreement of the Occupational, Health and Safety Act 85 of 1993 is signed with the relevant contractors to protect the environment (fossils) and adjacent areas as well as for safety and security reasons.	Initially	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		j. If any palaeontological material is exposed during digging, excavating, drilling or blasting, SAHRA must be notified. All development activities must be stopped, a 30 m no-go barrier constructed and a palaeontologist should be called in to determine proper mitigation measures, especially for shallow caves.	Ad hoc	Contractor, EO and ECO	
		k. Work may only resume once clearance is given in writing by the Archaeologist.	Ad hoc	Contractor, EO and ECO, Archaeologist	
8.2.10 Socio-economic					
	Labour and skills development	a. Unskilled and unemployed labour should be sourced from the surrounding local communities (AoI) as far as possible. It is suggested that non-locals should only be hired when specialist skills, which are not available locally, are required and local business providing such skills cannot be created;	Ongoing	Contractor/CLO/Community representatives	
		b. Skills development opportunities should be granted to community members and local job seekers, where needed;	Ongoing	Contractor/CLO/Community representatives	
		c. Make use of any existing skills databases and include the local councillor (Ward 39) and other representative community structures in the process;	Ongoing	Contractor/CLO/Community representatives	
		d. Project contracts between the proponent and the principal contractor should stipulate the use of local labour for unskilled and semi-skilled positions and tasks	Ongoing	Contractor/CLO/Community representatives	
		e. Ensure that the Labour Relations Amendment Act, 2002 (Act No. 12 of 2002) as well as the necessary policies and procedures are taken into consideration to ensure the correct procurement procedures.	Ongoing	Contractor/CLO/Community representatives	
	Local procurement	f. Local suppliers should be used as far as possible	Ongoing	Contractor/CLO/SMME's	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		g. Ensure that local businesses, especially those of HDSA, women and of SMMEs get allocated the maximum appropriate share of project related business opportunities	Ongoing	Contractor/CLO/SMME's	
	Stakeholder engagement	h. Engagement with local communities must follow the culturally appropriate protocols in a manner that will strengthen the relationship between the client and the community;	Ongoing	Contractor/CLO/Community representatives	
		i. Effective communication must involve both engagement and feedback processes;	Ongoing	Contractor/CLO/Community representatives	
		j. A grievance mechanism, accessible to members of public, should be implemented and maintained. Such a register would provide a formal framework within which to record any comments and complaints received, as well as to identify and action appropriate mitigation and/or remediation measures. The register should also include a means of recording and communicating the close-out of issues;	Ongoing	Contractor/CLO/Community representatives	
		k. Engage with the local community representatives to dispense information relating to the project, possible employment opportunities and channels of communication (especially in terms of grievances)	Ongoing	Contractor/CLO/Community representatives	
		l. Engagement with community representatives, ward councillors and other existing community forums should be done to inform the general public about the project and project related impacts or opportunities, especially with reference to the monitoring of impacts.	Ongoing	Contractor/CLO/Community representatives	
8.2.11 Rehabilitation					
Rehabilitation of all impacted areas	Lack of re-vegetation. Large open areas	a. All disturbed areas are to be rehabilitated following completion of construction activities.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		b. Backfilling should occur as soon as possible, with soil compaction undertaken and shaping to original levels.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	exposed erosion to	c. Backfill must be compacted to form a stabilised and durable blanket.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		d. Where excessive loose sediment is created, attenuation swales and / or soils screens should be installed.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		e. Ensure silt fences and sediment curtains are inspected on a weekly basis and after any rainfall events exceeding 10mm.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		f. Left-over excavated material should be removed from site (no stockpiles to remain).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		g. All affected and compacted areas must be scarified to a depth of 200mm in order to encourage natural re-vegetation.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		h. Remove all alien and invasive species as per the Alien and Invasive Species Management Plan (Section 5).	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		i. Progress of vegetation establishment must be monitored regularly, with slow recovery requiring intervention to ensure site recovery and integrity, as well as physical stability.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		j. Vehicle access tracks, footpaths and other areas of soil compaction and vegetation denudation as a result of the construction activities must be appropriately contoured, scarified and re-vegetated where required.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		k. All excess soil stockpile not taken off site or used to fix erosion issues, must be spread evenly over the disturbed areas and capped with topsoil, prior to rehabilitation and re-vegetation.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
l. Construction areas must be rehabilitated to a land surface which integrates with the surrounding slope morphology and river channel form so as not to create areas of soil instability, or flow paths which incorrectly direct stormflows and floods, thereby causing scour, erosion and damage to adjacent habitats and infrastructure.	EO – weekly ECO - Monthly	Contractor, EO and ECO			

Aspect	Impact	Measures and Controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		m. Areas subject to concentrated water flows during rainfall or high flow events must receive particular attention during rehabilitation and re-vegetation.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		n. Artificial embankments, depressions and holes created by the construction activity must be contoured/rehabilitated to minimize risk to, and death of, all fauna types from large mammals to small invertebrates.	EO – weekly ECO - Monthly	Contractor, EO and ECO	
		o. Upon site closure all infrastructure, foreign materials, waste, litter and contaminated water, rock or soil must be removed from site and disposed of in accordance with best environmental practice.	EO – weekly ECO - Monthly	Contractor, EO and ECO	

8.3 OPERATIONAL PHASE

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.3.1 Maintenance Activities					
Maintenance Activities	Pollution of soil and surface water that	a. All maintenance vehicles should be kept in good working condition.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	may occur as a result of the spillage of hydrocarbons, hazardous chemicals.	b. Spilled hydrocarbons shall be treated with oil absorbent such as Drizit or similar and this material should be disposed at an approved waste site.	Developer - continuously ECO - Annually	Developer and ECO	
	Increased soil erosion as a result of vegetation clearance and increased stormwater runoff from hard surfaces.	c. Vehicular and pedestrian movement must be limited to the established roads and footpaths.	Developer - continuously ECO - Annually	Developer and ECO	
		d. If any signs of erosion occur in high trafficked areas or as a result of concentrated flow of stormwater runoff these areas should be rehabilitated according to instructions from a qualified Ecologist.	Developer - continuously ECO - Annually	Developer and ECO	
		e. All maintenance vehicles should be parked in demarcated areas when not in use and drip trays should be placed under vehicles to collect any spillages/ leaks.	Developer - continuously ECO - Annually	Developer and ECO	
		f. In the case of pollution of any surface or groundwater, the Regional Representative of the Department of Water and Sanitation (DWS) must be informed immediately.	Developer - continuously ECO – ad hoc	Developer and ECO	
		g. If any signs of erosion occur in high trafficked areas or as a result of concentrated flow of stormwater runoff these areas should be rehabilitated according to instructions from a qualified Ecologist.	Developer - continuously ECO – ad hoc	Developer and ECO	
8.3.2 Habitat (Fauna and Flora)					
		a. Implement the Alien and Invasive Management Plan (Section 5).	Developer - continuously ECO – Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	Potential impacts on vegetation and loss of habitat	b. Only species which are endemic should be used in rehabilitation to promote water conservation and biodiversity resilience.	Developer - continuously ECO – Annually	Developer and ECO	
		c. The development footprint may not be extended.	Developer - continuously ECO - Annually	Developer and ECO	
8.3.3 Groundwater					
	Monitoring	a. Water quality analysis (chemistry and bacteriological) of all boreholes must be conducted twice a year (in the summer and in the winter). Results must be forwarded to MCLM and comply with MCLM's approved Integrated Water Resource Management Strategy.	Developer - continuously ECO - Annually	Developer and ECO	
		b. Groundwater monitoring (yield and quality) of the five existing boreholes must be monitored and should the yield(s) reduce dramatically a hydro-senses study must be undertaken in order to secure a new sustainable water resource.	Developer - continuously ECO - Annually	Developer and ECO	
8.3.4 Waste					
Domestic waste and biowaste generated on site	Potential impacts on soil and ground and surface water quality that may occur as a result of the generation of waste.	a. Recyclables must be separated.	Developer - continuously ECO - Annually	Developer and ECO	
		b. Domestic waste generated on site must be removed on a weekly basis.	Developer - continuously ECO - Annually	Developer and ECO	
		c. Waste must be stored in a central location in a suitable container (not on bare soil) until collection.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		d. Storage containers must have lockable lids to prevent any windblown waste and/or accessibility to wild animals.	Developer - continuously ECO - Annually	Developer and ECO	
		e. Provide bins for staff and residents at appropriate locations, particularly where food is consumed.	Developer - continuously ECO - Annually	Developer and ECO	
		f. Different waste bins, for different waste streams must be provided to ensure correct waste separation. Bins should be clearly marked and lined for efficient control and safe disposal of waste.	Developer - continuously ECO - Annually	Developer and ECO	
		g. Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site.	Developer - continuously ECO - Annually	Developer and ECO	
		h. Under no circumstances is waste to be burnt or buried on the site.	Developer - continuously ECO - Annually		
		i. MCLM must collect waste from the premises.	Developer - continuously ECO - Annually	Developer and ECO	
8.3.5 Air Quality					
General Operational Activities	Impacts adjacent landowners with regards to ambient air quality (dust and odour)	a. Implement a programme of stakeholder communication that includes community engagement.	Developer - continuously ECO - Annually	Developer and ECO	
		b. Provide a complaint register on site where complaints can be made. This register should enable effective communication of complaints details of steps taken to resolve complaints.	Developer - continuously ECO - Annually	Developer and ECO	
		c. Clearly display the contact details of the environmental site office and manager at the site entrance.	Developer - continuously	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
			ECO - Annually		
		d. Implement and maintain a Dust and Emission Management Plan which provides clear details on preventing, maintaining and improving the air quality in terms of site-specific activities. This plan could possibly incorporate a dust fallout monitoring programme should it be evident that dust emissions is a problem.	Developer - continuously ECO - Annually	Developer and ECO	
		e. Ensure that all vehicles are maintained in good working condition and that they are services on regular intervals. f. Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable	Developer - continuously ECO - Annually	Developer and ECO	
		g. Impose and regulate a speed limit of 30 km/h on the site at all times	Developer - continuously ECO - Annually	Developer and ECO	
		h. Ensure an adequate water supply on the site for effective dust particulate matter suppression (non-potable water) where possible.	Developer - continuously ECO - Annually	Developer and ECO	
		i. Bonfires and burning of waste materials is prohibited	Developer - continuously ECO - Annually	Developer and ECO	
	Impacts adjacent landowners with regards to noise generation	j. No noise nuisance or noise disturbance above threshold levels, as defined in terms of the said Act, will be allowed at any given time.	Developer - continuously ECO - Annually	Developer and ECO	
		k. The permissible day time ambient noise level of 55 dB (A) - measured on the property boundary - may not be exceed at any given time.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		l. The permissible night time ambient noise levels at any time may not exceed 45 dB (A) - measured on the property boundary - may not be exceed at any given time.	Developer - continuously ECO - Annually	Developer and ECO	
		m. In any event, the volume of sound shall be so controlled that it will not be unreasonably loud, raucous, disturbing or a nuisance;	Developer - continuously ECO - Annually	Developer and ECO	
		n. No loud music to be played after 22h00 at night	Developer - continuously ECO - Annually	Developer and ECO	
		o. Where possible, stationary noisy equipment (for example compressors, pumps, pneumatic breakers,) should be encapsulated in acoustic covers, screens or sheds. Proper sound insulation can reduce noise by up to 20dBA.	Developer - continuously ECO - Annually	Developer and ECO	
		p. Operational activities should be limited to 07:00 to 17:00 daily.	Developer - continuously ECO - Annually	Developer and ECO	
		q. Machines in intermittent use should be shut down in the intervening periods between active working or throttled down to a minimum.	Developer - continuously ECO - Annually	Developer and ECO	
		r. In general, operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No 85 of 1993).	Developer - continuously ECO - Annually	Developer and ECO	
		s. Staff working in areas where the 8-hour ambient noise levels exceed 75dBA should wear ear protection equipment.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.3.6 Visual					
General Operational Activities	Change in landscape character relating to construction activities	a. Natural trees, shrubbery and grass species must be retained wherever possible;	Developer - continuously ECO - Annually	Developer and ECO	
		b. Trees with good screening properties must be utilised in sections where direct views is visible.	Developer - continuously ECO - Annually	Developer and ECO	
		c. The ecologist must approve the tree species to be utilised for screening purposes.	Developer - continuously ECO - Annually	Developer and ECO	
		d. Structures must be painted using earthy colours to blend in with ridgeline and vegetation;	Developer - continuously ECO - Annually	Developer and ECO	
		e. Treat all steelwork with a matt paint to limit reflection;	Developer - continuously ECO - Annually	Developer and ECO	
		f. Be sensitive towards the use of glass or materials with a high reflectivity to avoid glare from the shiny surfaces and to avoid visual discomfort for viewers during the day;	Developer - continuously ECO - Annually	Developer and ECO	
		g. Deflect all external lighting downwards	Developer - continuously ECO - Annually	Developer and ECO	
		h. Maintain the facility to a high standard (buildings as well as landscaping).	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.3.7 Traffic					
Operational traffic	An increase of traffic and number of vehicles, including trucks, on the road	a. Servitudes registered over Portions 17 and 22 of the farm Kromdraai 520-JQ. A formal access to the development is proposed to be constructed at the existing eastern access off the R374.	Developer - continuously ECO - Annually	Developer and ECO	
		b. All vehicular traffic on site should adhere to road safety measures.	Developer - continuously ECO - Annually	Developer and ECO	
8.3.8 Socio-economic					
	Labour and skills development	a. Unskilled and unemployed labour should be sourced from the surrounding local communities (Aol) as far as possible. It is suggested that non-locals should only be hired when specialist skills, which are not available locally, are required and local business providing such skills cannot be created;	Ongoing	Owner/ Community representatives	
		b. Skills development opportunities should be granted to community members and local job seekers, where needed	Ongoing	Owner/ Community representatives	
		c. Make use of any existing skills databases and include the local councillor (Ward 39) and other representative community structures in the process;	Ongoing	Owner/ Community representatives	
		d. Project contracts between the proponent and the principal contractor should stipulate the use of local labour for unskilled and semi-skilled positions and tasks;	Ongoing	Owner/ Community representatives	
		e. Ensure that the Labour Relations Amendment Act, 2002 (Act No. 12 of 2002) as well as the necessary policies and	Ongoing	Owner/ Community representatives	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		procedures are taken into consideration to ensure the correct procurement procedures.			
	Local procurement	f. Local suppliers should be used as far as possible	Ongoing	Owner/ Community representatives	
		g. Ensure that local businesses, especially those of HDSA, women and of SMMEs get allocated the maximum appropriate share of project related business opportunities.	Ongoing	Owner/ Community representatives	
	Stakeholder engagement	h. Engagement with local communities must follow the culturally appropriate protocols in a manner that will strengthen the relationship between the client and the community;	Ongoing	Owner/ Community representatives	
		i. Effective communication must involve both engagement and feedback processes;	Ongoing	Owner/ Community representatives	
		j. A grievance mechanism, accessible to members of public, should be implemented and maintained. Such a register would provide a formal framework within which to record any comments and complaints received, as well as to identify and action appropriate mitigation and/or remediation measures. The register should also include a means of recording and communicating the close-out of issues.	Ongoing	Owner/ Community representatives	
		k. Engage with the local community representatives to dispense information relating to the project, possible employment opportunities and channels of communication (especially in terms of grievances);	Ongoing	Owner/ Community representatives	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		i. Engagement with community representatives, ward councillors and other existing community forums should be done to inform the general public about the project and project related impacts or opportunities, especially with reference to the monitoring of impacts.	Ongoing	Owner/ Community representatives	
8.3.9 Sustainability					
Green building / sustainability principles must be implemented where possible.	Water saving principles	a. Rainwater runoff from roofs and hard surfaces must be harvested and used for irrigation of landscaped areas.	Developer - continuously ECO - Annually	Developer and ECO	
		b. All water supply lines will be metered and monitored for leak detection.	Developer - continuously ECO - Annually	Developer and ECO	
		c. Drip irrigation methods must be used.	Developer - continuously ECO - Annually	Developer and ECO	
		d. Water wise plants (indigenous and endemic) must be utilised.	Developer - continuously ECO - Annually	Developer and ECO	
	Energy saving principles	e. Energy efficient light fittings must be implemented.	Developer - continuously ECO - Annually	Developer and ECO	
		f. Efficient geysers (solar/heat pumps), lights (skylights, CLFs, LEDs), use of renewable energy (solar, rooftops PV panels must be implemented.	Developer - continuously ECO - Annually	Developer and ECO	
		g. Residences must face north where possible.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		h. Passive heating and cooling techniques must be utilized	Developer - continuously ECO - Annually	Developer and ECO	
		i. Building roofs and walls will be insulated.	Developer - continuously ECO - Annually	Developer and ECO	
	Waste Management	j. Separation at source (collection of recyclables)	Developer - continuously ECO - Annually	Developer and ECO	
		k. Composting must be encouraged	Developer - continuously ECO - Annually	Developer and ECO	
		l. On-site utilisation of green waste (after shredding)	Developer - continuously ECO - Annually	Developer and ECO	
		m. Recycling must be encouraged.	Developer - continuously ECO - Annually	Developer and ECO	
	Landscape Development Measures	n. As a minimum, an indigenous tree - endemic to the area - for every 4 parking bays need to be planted	Developer - continuously ECO - Annually	Developer and ECO	
		o. Trees will be no smaller than 2 meters in height from at least a 50l container. The onsite storm water retention and conservation measures can be incorporated in the open space plan.	Developer - continuously ECO - Annually	Developer and ECO	
		p. Trees in lawn and paved areas will be provided with a concrete tree ring of no less than 1 meter in diameter and will be covered with a grid if such tree is closer than three meters from a pedestrian walkway.	Developer - continuously ECO - Annually	Developer and ECO	

Aspect	Impact	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
		q. All surfacing for driveways and parking areas must be permeable.	Developer - continuously ECO - Annually	Developer and ECO	

8.4 SPECIFIC CONDITIONS FROM COMPETENT AUTHORITIES

Aspect	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.4.1 Environmental Authorisation Conditions				
Specific Conditions	a. A full Visual Impact Assessment Report as per the recommendation of the management authority of the Cradle of Human Kind must be submitted to SAHRA for approval prior commencement of the project.	Once-off	Developer and ECO	
	b. Findings of the VIA and SAHRA's approval must be incorporated to the final EMPr to be submitted to the Department.	Once-off	Developer and ECO	
	c. No activities will be allowed to encroach into a water resource without a water use authorisation being in place from the Department of Water and Sanitation.	Continuously	Contractor, Developer and ECO	
	d. Wastewater must not be discharged into a watercourse.	Continuously	Contractor, Developer and ECO	
	e. No development is permitted within the identified no-go areas as detailed in the sensitivity maps	Continuously	Contractor, Developer and ECO	

Aspect	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	f. The footprint of the development must be limited to the areas required for actual construction works and operational activities.	Continuously	Contractor, Developer and ECO	
	g. Areas outside of the footprint, including sensitive areas and buffer areas, must be clearly demarcated (using fencing and appropriate signage) before construction commences and must be regarded as "no- go" areas.	Continuously	Contractor, Developer and ECO	
	h. All areas of disturbed soil must be reclaimed using only indigenous grass and shrubs.	Continuously	Contractor, Developer and ECO	
	i. Topsoil from all excavations and construction activities must be salvaged and reapplied during reclamation.	Continuously	Contractor, Developer and ECO	
	j. An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling and re-use options where appropriate. Where solid waste is disposed of, such disposal shall only occur at a landfill licensed in terms of section 20(b) of the National Environment Management Waste Act, 2008 (Act 59 of 2008).	Continuously	Contractor, Developer and ECO	
	k. The holder of this authorisation must take note that no temporary site camps will be allowed outside the footprint of the development area as the establishment of such structures might trigger a listed activity as defined in the Environmental Impact Assessment Regulations.	Continuously	Contractor, Developer and ECO	
	l. Borrow materials must be obtained only from authorised and permitted sites. Permits must be kept on site by the ECO.	Continuously	Contractor, Developer and ECO	
	m. Should any archaeological sites, artefacts, paleontological fossils or graves be exposed during construction work, work in the immediate vicinity of the find must be stopped, the South African Heritage Resources Agency (SAHRA) must be informed, and the services of an accredited heritage professional obtained for an assessment of the heritage resources.	Ad hoc	Contractor, Developer and ECO	

Aspect	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
	n. All declared aliens must be identified and managed in accordance with the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983). There should be an alien species monitoring and eradication program to prevent encroachment of these problem plants for the duration of the operation.	Continuously	Contractor, Developer and ECO	
General Conditions	o. The recommendations of the EAP in the BAR dated September 2021 and the specialist studies attached must be adhered to. In the event of any conflicting mitigation measures and conditions of the Environmental Authorisation, the specific condition of this Environmental Authorisation will take preference.	Continuously	Contractor, Developer and ECO	
	p. A copy of the Environmental Authorisation, the audit and compliance monitoring reports, and the approved EMP, must be made available for inspection and copying- <ul style="list-style-type: none"> o at the site of the authorised activity; o to anyone on request; and o where the holder of the Environmental Authorisation has a website, on such publicly accessible website. 	Continuously	Contractor, Developer and ECO	
	q. National government, provincial government, local authorities or committees appointed in terms of the conditions of this authorisation or any other public authority shall not be held responsible for any damages or losses suffered by the holder of the authorisation or his/her successor in title in any instance where construction or operation subsequent to construction be temporarily or permanently stopped for reasons of non-compliance by the holder of the authorisation with the conditions of authorisation as set out in this document or any other subsequent document emanating from these conditions of authorisation.	Continuously	All parties	
8.4.2 Water Use Licence Conditions				
	(to be inserted once obtained)			

Aspect	Measures and controls	Monitoring Frequency	Responsible Person(s)	ECO Score (%)
8.4.3 SAHRA Conditions				
	(to be inserted once obtained)			

8.5 CLOSURE AND/OR DECOMMISSIONING PHASE

The closure and/or decommissioning of the proposed development is not envisaged at this stage. Should this become necessary, the developer or owner of the activity must appoint a suitably qualified professional to develop a site specific EMPr.

Appendix A:

Environmental Compliance Auditing Templates

A.1 Undertaking to implement the EMPr

UNDERTAKING TO IMPLEMENT THE EMPr

Undertaking by the **Developer**

I,, acting on behalf of (the Developer), hereby indicate that I have read through the Environmental Management Programme (EMPr) and understand the measures required to be implemented in terms of the EMPr. I hereby undertake to implement these measures and carry out my duties as specified herein.

Signed on at on(date)

Developer's Environmental Representative Signature

Witness.....

Witness.....

UNDERTAKING TO IMPLEMENT THE EMPr

Undertaking by the **Contractor**

I,, acting on behalf of (the Contractor), hereby indicate that I have read through the Environmental Management Programme (EMPr) and understand the measures required to be implemented in terms of the EMPr. I hereby undertake to implement these measures and carry out my duties as specified herein.

Signed on at on(date)

Contractor's Environmental Representative Signature

Witness.....

Witness.....

UNDERTAKING TO IMPLEMENT THE EMPR

Undertaking by the **Environmental Control Officer**

I,, the Environmental Control Officer appointed by....., hereby indicate that I have read through the Environmental Management Programme (EMPr), and understand the measures required to be implemented in terms of the EMPr and hereby undertake to fulfil my duties as specified herein.

Signed on at on(date)

Environmental Control Officer Signature

Witness.....

Witness.....

Appendix B - Protocol for Chance Finds and Management

(from “The Proposed Project Fifty-Eight Development on Portion 58 of the Farm Kromdraai 520-JQ. Mogale City Local Municipality, West Rand District Municipality, Gauteng Province, Fourie, H. June 2021”)

Appendix 1 (1k,1l,1m): Protocol for Chance Finds and Management plan for EMP'r

This section covers the recommended protocol for a Phase 2 Mitigation process as well as for reports where the Palaeontological Sensitivity is **LOW**; this process guides the palaeontologist / palaeobotanist on site and should not be attempted by the layman / developer. As part of the Environmental Authorisation conditions, an Environmental Control Officer (ECO) will be appointed to oversee the construction activities in line with the legally binding Environmental Management Programme (EMPr) so that when a fossil is unearthed they can notify the relevant department and specialist to further investigate. Therefore, the EMPr must be updated to include the involvement of a palaeontologist during the digging and excavation (ground breaking) phase of the development.

The EMPr already covers the conservation of heritage and palaeontological material that may be exposed during construction activities.

- The protocol is to immediately cease all construction activities if a fossil is unearthed and contact SAHRA for further investigation.
- The area must be fenced-off with a 30 m barrier and the construction workers must be informed that this is a no-go area.
- If fossils were found, they must be placed in a safe area for further investigation.
- The ECO should familiarise him- or herself with the fossiliferous formations and its fossils.
- A site visit is recommended after drilling, excavations and blasting and the keeping of a photographic record. A regular monitoring presence over the period during which excavations are made, by a palaeontologist, is generally not practical, but can be done during ground breaking or predetermined.
- Most Museums and Universities has good examples of Pliocene Fossils.
- The developer may be asked to survey the areas affected by the development and indicate on plan where the construction / development will take place. Trenches may have to be dug to ascertain how deep the sediments are above the bedrock (can be a few hundred metres). This will give an indication of the depth of the topsoil, subsoil, and overburden, if need be trenches should be dug deeper to expose the interburden.

Mitigation will involve recording, rescue and judicious sampling of the fossil material present in the layers sandwiched between the geological / coal layers (if present). It must include information on number of taxa, fossil abundance, preservational style, and taphonomy. This can only be done during mining or excavations. In order for this to happen, in case of coal mining operations, the process will have to be closely scrutinised by a professional palaeontologist / palaeobotanist to ensure that only the coal layers are mined and the interlayers (siltstone and mudstone) are surveyed for fossils or representative sampling of fossils are taking place.

The palaeontological impact assessment process presents an opportunity for identification, access and possibly salvage of fossils and add to the few good fossil localities. Mitigation can provide valuable onsite research that can benefit both the community and the palaeontological fraternity.

A Phase 2 study is very often the last opportunity we will ever have to record the fossil heritage within the development area. Fossils excavated will be stored at a National Repository.

A Phase 2 Palaeontological Impact Assessment: Mitigation will include (SAHRA) -

1. Recommendations for the future of the site.
2. Description and purpose of work done (including number of people and their responsibilities).
3. A written assessment of the work done, fossils excavated, not removed or collected and observed.
4. Conclusion reached regarding the fossil material.
5. A detailed site plan and map.
6. Possible declaration as a heritage site or Site Management Plan.
7. Stakeholders.
8. Detailed report including the Desktop and Phase 1 study information.
9. Annual interim or progress Phase 2 permit reports as well as the final report.
10. Methodology used.

Three types of permits are available; Mitigation, Destruction and Interpretation. The specialist will apply for the permit at the beginning of the process (SAHRA 2012).

The Palaeontological Society of South Africa (PSSA) does not have guidelines on excavating or collecting, but the following is suggested:

1. The developer needs to clearly stake or peg-out (survey) the areas affected by the mining (if applicable)/ construction/ development operations and dig representative trenches and if possible supply geological borehole data.
2. When clearing topsoil, subsoil or overburden and hard rock (outcrop) is found, the contractor / developer needs to stop all work.
3. A Palaeobotanist / palaeontologist (contact SAHRIS for list) must then inspect the affected areas and trenches for fossiliferous outcrops / layers. The contractor / developer may be asked to move structures, and put the development on hold.
4. If the palaeontologist / palaeobotanist is satisfied that no fossils will be destroyed or have removed the fossils, development and removing of the topsoil can continue.
5. After this process the same palaeontologist / palaeobotanist will have to inspect and offer advice through the Phase 2 Mitigation Process. Bedrock excavations for footings may expose, damage or destroy previously buried fossil material and must be inspected.
6. When permission for the development is granted, the next layer can be removed, if this is part of a fossiliferous layer, then with the removal of each layer of sediment, the palaeontologist / palaeobotanist must do an investigation (a minimum of once a week).
7. At this stage the palaeontologist / palaeobotanist in consultation with the developer / mining company must ensure that a further working protocol and schedule is in place. Onsite training should take place, followed by an annual visit by the palaeontologist / palaeobotanist.

Fossil excavation if necessary, during Phase 2:

1. Photography of fossil / fossil layer and surrounding strata.
2. Once a fossil has been identified as such, the task of extraction begins.
3. It usually entails the taking of a GPS reading and recording lithostratigraphic, biostratigraphic, date, collector and locality information.

4. Use Paraloid (B-72) as an adhesive and protective glue, parts of the fossil can be kept together (not necessarily applicable to plant fossils).
5. Slowly chipping away of matrix surrounding the fossil using a geological pick, brushes and chisels.
6. Once the full extent of the fossil / fossils is visible, it can be covered with a plaster jacket (not necessarily applicable to plant fossils).
7. Chipping away sides to loosen underside.
8. Splitting of the rock containing palaeobotanical material should reveal any fossils sandwiched between the layers.

SAHRA Documents:

Guidelines to Palaeontological Permitting Policy.

Minimum Standards: Palaeontological Component of Heritage Impact Assessment reports.

Guidelines for Field Reports.

Palaeotechnical Reports for all the Provinces.

Appendix 2: Table of Appendix 6 requirements (bold and bracketed in text).

Section in Report	Point in Act	Requirement
B	1(c)	Scope and purpose of report
B	1(d)	Duration, date and season
B	1(g)	Areas to be avoided
D	1(ai)	Specialist who prepared report
D	1(aii)	Expertise of the specialist
F Figure 3	1(h)	Map
B	1(ni)(niA)	Authorisation
B	1(nii)	Avoidance, management, mitigation and closure plan
G Table 1	1(cA)	Quality and age of base data
G Table 2	1(cB)	Existing and cumulative impacts
D	1(f)	Details or activities of assessment
G	1(j)	Description of findings
H	1(e)	Description of methodology
H	1(i)	Assumptions
J	1(o)	Consultation
J	1(p)	Copies of comments during consultation
J	1(q)	Information requested by authority
Declaration	1(b)	Independent declaration
Appendix 2	1(k)	Mitigation included in EMPr
Appendix 2	1(l)	Conditions included in EMPr
Appendix 2	1(m)	Monitoring included in EMPr
D	2	Protocol or minimum standard

Appendix C

Environmental Assessment Practitioner (EAP)








Curriculum Vitae

POSITION : SENIOR ENVIRONMENTAL CONSULTANT
NAME OF FIRM : ENVIRONMENTAL CONSULTANTS INTERNATIONAL (PTY) LTD
NAME OF STAFF : Hanlie Van Greunen
DATE OF BIRTH : 22 July 1981
NATIONALITY : South African

SUMMARY of qualifications:

Hanlie Van Greunen has a BSc degree in Landscape Architecture and a BSc Honours degree in Environmental Monitoring and Modelling. With 18 years' experience in the environmental industry;

Her key experience includes:


-  Environmental Licensiing (Basic Assessment, Scoping and EIA, Water Use License Application, Waste Management Application, Air Emission License Application);
-  Mining related licensing (Mining Right, Prospecting, Mine Closure and Rehabilitation);
-  Environmental Compliance Auditing;
-  Management Planning;
-  Visual Impact Assessment;
-  Project Management and co-ordination, and
-  Development of terms of reference and project proposals.

EDUCATION:

INSTITUTION : University of Pretoria
QUALIFICATION : BSc Landscape Architecture
YEAR OBTAINED : 2003


INSTITUTION : University of Pretoria
QUALIFICATION : BSc Honours Environmental Monitoring & Modelling
YEAR OBTAINED : 2010

MEMBERSHIPS of professional associations:

-  Member of International Association of Impact Assessors (IAIAsa Reg. No: 6657)

COUNTRIES of work experience:

 Mozambique

 South Africa
(all provinces)

 United Kingdom






LANGUAGES:

<i>Language</i>	<i>Speaking</i>	<i>Reading</i>	<i>Writing</i>
English (1 st Language)	Excellent	Excellent	Excellent
Afrikaans	Excellent	Excellent	Excellent

EMPLOYMENT record:

From:	Jul 2017	To: Current
Employer:	Environmental Consultants International (Pty) Ltd	
Position held:	Senior Environmental Consultant	
From:	Aug 2016	To: Dec 2016
Employer:	LEAP cc.	
Position held:	Environmental Manager	
From:	Jun 2015	To: Aug 2016
Employer:	GIBB Engineering (Pty) Ltd	
Position held:	Environmental Manager	
From:	Mar 2012	To: Jun 2015
Employer:	Strategic Environmental Focus (Pty) Ltd	
Position held:	Environmental Manager	
From:	Aug 2010	To: Mar 2012
Employer:	Cave Klapwijk Associates (Pty) Ltd	
Position held:	Landscape Architect / Environmental Consultant	
From:	Apr 2010	To: Aug 2010
Employer:	Jacana Environmentals cc.	
Position held:	Environmental Consultant	
From:	Jan 2005	To: Dec 2008
Employer:	Groundwork Caerphilly	
Position held:	Landscape Architect	
From:	Apr 2004	To: Dec 2005
Employer:	James Blake Associates	
Position held:	Landscape Architect	

TYPICAL TASKS UNDERTAKEN:

-  Auditing, Licensing and Authorisations;
-  Visual Impact Assessments;
-  Rehabilitation and Management Plans;
-  Public Participation, and
-  Landscape Design.

PROJECT experience:

AUDITING, LICENSING AND AUTHORISATIONS

YEAR	:	2010 – Current
LOCATION	:	South Africa (<i>Gauteng, North-West Province, Mpumalanga & Limpopo</i>)
CLIENT	:	Various Clients
MAIN PROJECT ASPECT	:	Environmental Licensing for roads, housing estates, mines, energy projects, industrial processes and general land use developments.
POSITION(S) HELD	:	Environmental Manager
VARIOUS FILLING STATIONS	:	<i>An abbreviated list of projects of this nature includes:</i>

-  Vredendal and Baufort West Feasibility Study (December 2022)
-  Six Dams Letaba Estates S&EIR (November 2022)
-  Letaba Estates Solar Basic Assessment (July 2022)
-  Ptn 18 Rooibank Basic Assessment (June 2022)
-  Quiver Tree Basic Assessment (March 2022)
-  Mandela Village S&EIR, Dinokeng (January, 2022)
-  Supa Sand Mining Permit Application (August 2021);
-  Despatch Park Mixed-use Development: Scoping and Environmental Impact Assessment (July 2021);
-  Project 58, Cradle of Humankind: Basic Assessment (April 2021);
-  Lanseria Ext. 75 Power Cable: Basic Assessment (May 2021);
-  Forest Farm Mixed-use Development: Basic Assessment (January 2021);
-  Portion 78 Klipdrift 90 Tourism Facility, Dinokeng: Basic Assessment (August 2020);
-  Riverside View Ext. 58: Basic Assessment (June 2020);
-  Broadacres Assisted Living Apartments: Basic Assessment (April 2020);
-  Dinokeng: Section 24G Group Application (November 2019);
-  Portions 71 and 81 of the Farm Klipdrift 90: Basic Assessments (November 2019);
-  Tshwane Fresh Produce Market: Environmental Status Quo Report (April 2019);
-  Egoli Gas: Appeal (March 2019);

- Elandsfontein Abattoir: Scoping, EIA and Waste Management License (January 2019);
- K14 Apies river crossing: EA Amendment Application (August 2018);
- Rietvlei Lifestyle Estate: Scoping and Environmental Impact Assessment (ongoing);
- Delmore Park Ext. 8 Residential Development: Mine Closure Application (ongoing);
- Rainbow Junction pipeline crossing: Environmental Compliance Audits (April 2018 – ongoing);
- Fourways Crossing and Attenuation Dam: Environmental Compliance Audits (July 2017 – ongoing);
- Olivedale Amsterdam: Environmental Compliance Audits (July 2017 – ongoing);
- Walkersons: Integrated Water Use License Application (July 2017 – ongoing);
- Huddle Park: Environmental Compliance Audits (July 2017 – ongoing);
- Perth Solar PV Facilities: Scoping and Environmental Impact Assessment (January 2016);
- Hazeldean Boulevard Class 3 Road: Scoping and Environmental Impact Assessment (January 2015);
- Hartenbos Heuwels Township Development: : Scoping and Environmental Impact Assessment (January 2015);
- Letaba Ranch: Basic Assessment and Water Use License Application (April 2015);
- Finetown Proper and Ennerdale South Township Developmentt: Basic Assessment (March 2014);
- Dullstroom Municipal Dam Water Treatment Works: Basic Assessment and Water Use License Application (October 2013);
- Vlakfontein East Block Open Cast Coal Mine: Scoping and Environmental Impact Assessment (April 2013);
- Glencore Paardekop and Amersfoort Underground Coal Mines: Scoping and Environmental Impact Assessment (September 2012); and;
- N3 (National Highway Project) Keeversfontein to Warden (De Beers Pass Section): Scoping and Environmental Impact Assessment (2011).

**a more comprehensive list is available should it be required*

VISUAL IMPACT ASSESSMENTS

YEAR : 2010 – Current
LOCATION : South Africa (*Gauteng, Mpumalanga & Eastern Cape*)
CLIENT : Various Clients

MAIN PROJECT ASPECT : Undertaking Visual Impact Assessments for land development in pristine areas.

POSITION(S) HELD : Visual Specialist

ACTIVITIES PERFORMED : *An abbreviated list of projects of this nature includes:*

-  Project 58: Visual Impact Assessment (August 2021);
-  Elandsfontein Eco-Estate: Visual Impact Assessment (February 2021);
-  God’s Window Skywalk: Visual Impact Assessment (January 2015);
-  Aquarelle Mining Right Application: Visual Impact Assessment (November 2014);
-  Mareetsane Batho-Batho Solar PV Facility: Visual Impact Assessment (June 2013);
-  Huddle Park Development: Visual Impact Assessment (August 2012);
-  Xstrata Paardekop and Amersfoort Visual Impact Assessment (September 2012); and
-  The Giant Flag Project: Visual Impact Assessment (October 2012).

**a more comprehensive list is available should it be required*

REHABILITATION AND MANAGEMENT PLANS

YEAR : 2010 – Current

LOCATION : Gauteng

CLIENT : Various Clients

MAIN PROJECT ASPECT : Compiled various rehabilitation plans.

POSITION(S) HELD : Environmental Manager

ACTIVITIES PERFORMED : *An abbreviated list of projects of this nature includes:*

-  Broadacres Wetland Rehabilitation Plan (2021);
-  Leopard Cave Safaris Management Plan (2016);
-  Hazeldean Rehabilitation Plan (2016);
-  Hazeldean Construction Management Plan (September 2012);
-  West-end Rehabilitation and Monitoring Plan (October 2012);
-  Westlake View Integrated Management Plan (July 2012); and
-  Highlands Wetland Rehabilitation Plan (July 2012).

**a more comprehensive list is available should it be required*

PUBLIC PARTICIPATION


YEAR : 2010 – Current

LOCATION : South Africa







CLIENT : Various Clients







MAIN PROJECT ASPECT : Facilitate statutory Public Participation processes for various Environmental Authorisation Applications.

POSITION(S) HELD : Environmental Manager

ACTIVITIES PERFORMED : *An abbreviated list of projects of this nature includes:*
 Facilitation of Public Participation processes including, notification, advertisements, public meetings, stakeholder engagement and the compilation of statutory documentation for submission.
**a more comprehensive list is available should it be required*

LANDSCAPE DESIGN

YEAR : 2004 – 2012
LOCATION : United Kingdom and South Africa
CLIENT : Various Clients
MAIN PROJECT ASPECT : Landscape design and project management for various landscape design projects from inception to practical completion.
POSITION(S) HELD : Landscape Architect
ACTIVITIES PERFORMED : *An abbreviated list of projects of this nature includes:*
 Johannesburg City Parks – Occupational Health and Safety compliance project (March 2013);
 Maunde Street Traffic Circle (June 2012);
 Oudtshoorn Township Regeneration Project (February 2011);
 Goudrand Park Play Area (September 2011);
 Orange Farm Entrance Sketch Plan (November 2011);
 The Development, design, implementation and management of a series of community-led landscape projects in South Wales (UK) between 2005 and 2008, including:

-  Abertysswg Mining Memorial;
-  Crosskeys Canal Access Scheme;
-  Commin Road Regeneration Project;
-  Markhan Resource Centre Sensory Garden;
-  Mountain View Estate Regeneration Project; and
-  Wattsville Community Garden.

**a more comprehensive list is available should it be required*

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications and my experience.



Signature: _____

Date: 2 December 2022



Registration No. 2019/1008

Herewith certifies that

Hanlie Van Greunen

is registered as an

Environmental Assessment Practitioner

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar





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IAIAsa Confirmation of Membership: 2023/2024
Hanlie Van Greunen Membership Number: 6657

25 Mar 2023

TO WHOM IT MAY CONCERN

Mrs Hanlie Van Greunen, Environmental Consultants International (Pty) Ltd (IAIAsa membership Number **6657**) is a paid-up Full Member in good standing of International Association for Impact Assessment, South Africa and has been a member of IAIAsa since 01 Mar 2021.

Membership has been continuous from 01 Mar 2021 to date.

This membership is valid from 01 Mar 2023 to 29 Feb 2024.

IAIAsa is a voluntary organisation and is not a statutory body regulating the profession. Its members are however expected to abide by the organisation's code of ethics which is available on our website.

IAIAsa is an Affiliate of IAIA which is an international body through a memorandum of understanding. IAIA is not responsible or liable for the actions or activities of the Affiliates. Membership of one does not imply membership of the other.

Any enquiries regarding this membership may be directed to the Secretariat at the above contact details.

Yours sincerely

Monique Sham
President 2022/2023