ENVIRONMENTAL MANAGEMENT PROGRAMME

THE DEVELOPMENT OF A RECEPTION/ VISITORS CENTRE AND STAFF QUARTERS AT KLOOFENDAL NATURE RESERVE

AS PART OF THE PROPOSED MASTERPLAN DEVELOPMENT FOR KLOOFENDAL NATURE RESERVE

October 2020

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LIST OF ACRONYMS USED IN THIS DOCUMENT

BA	Basic Assessment
BAR	Basic Assessment Report
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme (this document)
EMS	Environmental Management Systems
GDARD	Gauteng Department of Agriculture and Rural Development
I&APs	Interested & Affected Parties
IDP	Integrated Development Plan
ISO	International Organisation for Standardisation
NEMA	National Environmental Management Act
NHRA	National Heritage Resources Agency
NWA	National Water Act
PA	Principal Agent
PM	Project Manager
PHRA-G	Provincial Heritage Resources Authority Gauteng
SAHRA	South African Heritage Resources Agency
SDF	Spatial Development Framework

DEFINITIONS USED IN THIS EMPr

The definitions contained within this document are for explanatory purposes only. In the event that any conflict occurs between the definitions herein and those contained within the final Contract, those within the Contract shall prevail.

Alien Species/Vegetation: Declared weeds and invader plant species have the tendency to dominate or replace the canopy or herbaceous layer of natural ecosystems, thereby transforming the structure, composition and function of natural ecosystems. Previously declared weeds and invasive plants were controlled by regulations of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983) (CARA). Later Alien and Invasive Species Regulations, as well as a new draft list of categories of invasive species in terms of NEM:BA was published in the Government Gazette No. 32090, in April 2009. Several amendments followed. Considering Sections 66(1), 67(1) 70(1)(a), 71(3) and 71A of NEM:BA, the latest Alien and Invasive Plant Species List was published in 2016 (Government Gazette 40166, Notice 864, 29 July 2016) This notice replaces and repeals any Alien and Invasive Species Lists published under the Act, including Notice 599 of 1 August 2014, (Government Gazette 37886) and Notice R507, 508 and 509 of 19 July 2013 (Government Gazette 36683)

Batching area: Site for the large-scale mixing and production of concrete or plaster, and associated equipment and materials.

Bund: Enclosure under / around a storage facility to contain any spillage.

Contaminated Water: means water polluted by contractor's activities like concrete water and run-off from plant/ personnel wash areas.

Contract: means the general conditions of contract and special conditions, specifications, drawings, tender, written records of matters agreed after submission of the Contractor's tender, letter of acceptance and agreement, together with other documents which the parties have agreed in writing shall form part of the contract and such amendments or additions to the contract as may be agreed in writing between the parties.

Contractor: refers to the person/company awarded the contract to undertake the proposed work. For the purposes of this EMPr "Contractor" also refer to the person (s) undertaking any of the proposed activities whether awarded a contract or not.

Construction Camp: refers to the area for temporary site offices, storage and stockpile sites, staff accommodation, container sites, workshops and testing facilities, and other areas required to undertake construction activities.

Designated Environmental Officer (DEO): is the site-based designated person responsible for implementing the environmental provisions of the Construction Contract and is appointed by the service provider that

carries out construction activities. The DEO shall be the designated responsible person, for implementing any remedial measures as required from time to time and for any authorizations/licences that are required in terms of the service contract. The DEO shall record and communicate environmental issues (as they occur) to the Contractor and maintain records thereof. The DEO shall report concurrently to the contractor and the ECO.

Engineer: A person representing the Developer/Implementer on site and who is responsible for the technical and contractual implementation of the works to be undertaken. This is usually the engineer, but may be any other person, such as an architect or project manager, authorized by the Developer to fulfill this role.

Environmental Control Officer (ECO): A suitably qualified and experienced person or entity appointed for the Construction Works, to perform the obligations specified in the environmental authorisation. The ECO's duties shall include, *inter alia*:

- Confirming that all required environmental authorizations and permits, where necessary, have been obtained from the relevant authorities;
- Monitoring all activities relating to the project, on a daily basis (or as agreed), for compliance with the provisions of the environmental authorisation, environmental legislation and recommendations of the EMP;
- Conducting annual environmental performance audits in respect of the activities undertaken relating to the project.

Environmental Aspect: An environmental aspect is any component of a contractor's construction activity that is likely to interact with the environment.

Environmental Authorisation: A written statement from the relevant environmental authority, with or without conditions, that records its approval of a planned undertaking to build the accommodation facilities and other associated structures and infrastructure and the mitigating measures required to prevent or reduce the effects of environmental impacts during the life of a contract.

Environmental Impact: An impact or environmental impact is the change to the environment, whether desirable or undesirable, that will result from the effect of a construction activity. An impact may be the direct or indirect consequence of a construction activity.

Environmental Impact Assessment: The process of examining the environmental effects of a proposed development.

Environmental Management System: The internationally accepted and recognized environmental management system (EMS) which enables companies, organizations and operations to systematically manage, prevent and reduce environmental problems and associated costs. In terms of ISO 14001 an EMS is defined as, "*that part of the overall management system includes organizational structure, planning activities, responsibilities, procedures, processes and resources for developing, implementing, reviewing and maintaining the environmental policy.*"

Environmental Policy: A statement by the organisation of its intentions and principles in relation to its overall environmental performance which provides a framework for action and for the setting of its environmental objectives and targets.

Environment: means the surroundings within which humans exist and that are made up of-

i) The land, water and atmosphere of the earth;
ii) Micro-organisms, plant and animal life;
iii) Any part or combination of i) and 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 well-being.

Interested and Affected Party: Refers to an interested and affected party contemplated in section 24(4)(d) of the National Environmental Management Act, 1998 (Act No. 107 of 1998) and which in terms of that section includes–

a) Any person, groups of persons, organization interested in or affected by an activity, and;

b) Any organ of state that may have jurisdiction over any aspect of the activity.

Method Statement: is a written submission that describes the scope of the intended work in a step by step description in order for the Environmental Officer and Engineer to understand the Contractor's intentions. This will enable them to assist in devising any mitigation measures, which would minimize environmental impact during these tasks. For each instance wherein it is requested that the Contractor submit a method statement to the satisfaction of the Engineer and ECO, the format should indicate the following:

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

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

An example of a method statement has been included as annexure B

Mitigate: The implementation of practical measures to reduce the adverse impacts, or to enhance beneficial impacts of a particular action.

No-Go Area: Areas where construction activities and construction personnel are prohibited.

Pollution: According to the National Environmental Management Act, No. 107 of 1998, pollution can be defined as, "Any change in the environment caused by (i) substances; (ii) radioactive or other waves; or (iii) 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".

Potential hazardous substance: is a substance that, in the reasonable opinion of the Engineer and/or relevant environmental authority, can have a deleterious effect on the environment.

Rehabilitation: To re-establish or restore to a healthy, sustainable capacity or state.

Species of Special Concern: Those species listed in the Rare, Indeterminate, or Monitoring categories of the South African Red Data Books, and/or species listed in Globally Near Threatened, Nationally Threatened or Nationally Near Threatened categories (Barnes, 1998).

Solid waste: means all waste in a solid form, including construction debris, chemical waste, excess cement/concrete, wrapping materials, timber, tins and cans, drums, wire, nails, food and domestic waste.

Threatened species: Threatened species are defined as: a) species listed in the Endangered or Vulnerable categories in the revised South African Red Data Books or listed in the Globally Threatened category; b) species of special conservation concern (i.e. taxa described since the relevant South African Red Data Books, or whose conservation status has been highlighted subsequent to 1984); c) species which are included in other international lists; or d) species included in Appendix 1 or 2 of the Convention of International Trade in Endangered Species (CITES).

Topsoil**:** The top part of the soil profile and may include top material such as vegetation, plant litter, and rock. This part is distinguished by the dark colour as compared to the pale deeper profiles underneath.

1 INTRODUCTION

1.1 Background

The City of Johannesburg Metropolitan Municipality has embarked on the process of proclaiming the Kloofendal Nature Reserve in accordance with the National Environmental Management: Protected Areas Act (Act No. 57 of 2003) (NEMPAA). A management plan for the Nature Reserve has been developed by GladAfrica Environmental Management (Pty) Ltd in 2014. The management plan deals with the land use framework for the Nature Reserve with aspects such as the buffer policy and a zoning map. The zoning map is used to determine areas of potential usage of specific parts of a Protected Area. The Administrative Development Zone, indicated in red on the zoning map, is the area that accommodates facilities to cater for Reserve administration. Johannesburg City Parks and Zoo (JCPZ) appointed Phunga Holdings, as the lead consultant, to prepare a Landscape Master Plan for the Administrative Development Zone. JCPZ identified the need to develop a Reception/ Visitor's Centre and Staff Quarters to enhance the management and preservation of the Nature Reserve.

The Environmental Management Programme (EMPr) forms part of the submission of the Basic Assessment Report and is in accordance with Appendix 4 of the EIA Regulations, 2017 (as amended).

This EMPr includes the following:

- Background to the proposed development
- Assumptions and uncertainties
- General Objectives and Purpose of the EMPr
- Legal Requirements
- Roles and Responsibilities
- Mitigation and management measures relating to impacts identified with associated timeframes and responsibilities for implementation and monitoring.

1.2 Objectives of the EMPr

The key objectives of this EMPr is to document appropriate actions and to assign responsibility for those actions, to ensure that any impacts resulting from the construction phase of the Reception/ Visitor's Centre and Staff Quarters are minimised and mitigated. This ensures that the basis on which any decision is taken includes environmental considerations and that the impacts on the surrounding environment are minimised.

This EMPr serves as a stand-alone document to be disseminated to and used by the contractor during the construction phase and by the proponent during operational phase. By its very nature, the EMPr is a dynamic document and updating should occur as and when required.

The purpose of this EMPr is to:

- Outline the JCPZ environmental management commitments for the site during construction;

- Ensure adherence to all relevant environmental, health and safety legislation;
- Act as a performance standard that activities can be audited against; and
- Ensure that appropriate monitoring is undertaken.

The EMPr has been compiled to provide recommendations and guidelines according to which compliance monitoring can be done during the construction and operation at Kloofendal Nature Reserve as well as to ensure that all relevant factors are considered to ensure for environmentally responsible development.

This EMPr informs all relevant parties, which in this case are the Project Manager/Principal Agent, the Contractor, the Environmental Control Officer (ECO) and all other staff employed at the site as to their duties in the fulfilment of the legal requirements for the construction of the Reception/ Visitor's Centre and Staff Quarters with particular reference to the prevention and mitigation of anticipated potential environmental impacts.

All parties should note that obligations imposed by the EMPr are legally binding in terms of the environmental authorisation granted by the relevant Regulatory Authority, which in this case is the Gauteng Department of Agriculture and Rural Development (GDARD).

The objectives of an EMPr are to:

- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and/or international;
- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events;
- Provide feedback for continual improvement in environmental performance;
- Identify a range of mitigation measures which could reduce and mitigate the potential impacts to minimal or insignificant levels;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Identify measures that could optimize beneficial impacts;
- Create management structures that addresses the concerns and complaints of I&APs with regards to the development;
- Establish a method of monitoring and auditing environmental management practices during all phases of the activity;
- Ensure that safety recommendations are complied with;
- Specify time periods within which the measures contemplated in the EMPr must be implemented, where appropriate.

JCPZ is responsible for ensuring adherence to the conditions detailed in the EMPr. The project manager, contractor(s) etc., are all bound by the EMPr and must use this document as a guide to avoid, minimise and manage environmental impacts.

1.3 Structure of the EMPr

An EMPr is focused on sound environmental management practices, which will be undertaken to minimise adverse impacts on the environment through the lifetime of a development. In addition, an EMPr identifies what measures will be in place or will be taken to manage any incidents and emergencies that may occur during construction and operation of the facility or infrastructure. The content of the current EMPr is consistent with the requirements as set out in the EIA regulations as stated below:

According to the EIA Regulations (GN R326, April 2017), an EMPr must include:

1) Details of –

i) The person who prepared the environmental management programme; and

ii) The expertise of that person to prepare an environmental management programme;

2) Description of impact management outcomes or mitigation, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated through the environmental impact assessment process for all phases of the development including of –

i) Planning and Design**,** Pre-construction and Construction activities;

ii) Rehabilitation of the environment after construction and where applicable post closure; and

iii) where relevant, operation activities;

3) A detailed description of the aspects of the activity that are covered by the draft environmental management programme;

4) An identification of the persons who will be responsible for the implementation of the measures;

5) Proposed mechanisms for monitoring compliance with and performance assessment against the environmental management programme and reporting thereon;

6) As far as is reasonably practicable, measures to rehabilitate the environment affected by the undertaking of any listed activity or specified activity to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development, including, where appropriate, concurrent or progressive rehabilitation measures;

7) A description of the manner in which it intends to –

i) Modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;

ii) Remedy the cause of pollution or degradation and migration of pollutants;

iii) Comply with any prescribed environmental management standards or practices;

iv) Comply with any applicable provisions of the Act regarding closure, where applicable;

v) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;

8) Time periods within which the measures contemplated in the draft environmental management programme must be implemented;

9) The process for managing any environmental damage, pollution pumping and treatment of extraneous water or ecological degradation as a result of undertaking a listed activity;

10) 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;

Where appropriate, closure plans, including closure objectives.

1.4 Legal Framework and Components of the EMPr

The implementation of an EMPr for a listed activity is a requirement of in the provisions for Duty of Care and remediation of environmental damage contained in Section 28 of the NEMA. As such, failure to comply with this EMPr will constitute an offence and the Applicant and/or their Contractor may be liable for penalties and/or legal action. Therefore, it is important for all the responsible parties to understand their duties and undertake them with duty and care.

This EMPr, which forms an integral part of the contract documents, informs the project team as to their duties in the fulfillment of the project objectives, with particular reference to the prevention and mitigation of environmental impacts caused by construction activities associated with the project. The team should note that obligations imposed by the approved EMPr are legally binding in terms of environmental statutory legislation and in terms of the additional conditions to the general conditions of contract that pertain to this project. In the event that any rights and obligations contained in this document contradict those specified in the standard or project specifications then the latter shall prevail.

Construction should be done in compliance with South African national and provincial environmental legislation, including associated regulations and all local by-laws relevant to the project. The list of applicable legislation provided below is intended to serve as a guideline only and is not exhaustive: -

- The Constitution of the Republic of South Africa (Act 108 of 1996)
- National Environmental Management Act (Act 107 of 1998)
- National Environmental Management: Biodiversity Act (Act 10 of 2004)
- National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
- Regulations for the Proper Administration of Nature Reserves (GN R99 of 8 February 2012) in terms of the National Environmental Management: Protected Areas Act (Act No. 57 of 2003)
- The Norms and Standards for the Management of Protected Areas in South Africa (GN 382 of 31 March 2016)
- National Heritage Resources Act (Act 25 of 1999)
- National Environmental Management: Waste Act (Act 59 of 2008)

- National Water Act (Act 36 of 1998)
- Hazardous Substances Act (Act 15 of 1973)
- Major Hazard Installation Regulations 1998) in terms of the Occupational Health and Safety Act (Act 85 of 1993)
- SANS Standards (SANS 10089:2003)

2 DETAILS AND EXPERTISE OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

2.1 Details of the EAP

This EMPr was prepared by Odwa Ntshanga of IKAMVA Consulting. In fulfillment of this requirement, provided below are the details of IKAMVA Consulting:

IKAMVA Consulting

Physical Address: No. 7 Baobab Street, Zwartkop X4, Centurion, 0181

Telephone: 012 663 5310; Fax: 086 626 8914

Email: lisolomzi@kamva.co.za

Website: www.kamva.co.za

2.2 Expertise of the EAP

IKAMVA Consulting is an experienced company, which has a sound track record in providing Environmental Management services to individuals, Companies, Municipalities, and other Governmental and non-governmental organizations within the entire Republic of South Africa. The Company primarily specializes in assessing the impacts of development on the natural, social and economic environments. IKAMVA's core expertise lies in the fields of integrated environmental management, environmental management plans, environmental management systems, ecological assessments, environmental risk assessment, environmental auditing and monitoring, integrated coastal zone management, social impact assessment and state of environment reporting. Specific to Environmental Management Consulting, IKAMVA Consulting has multi-disciplinary team of consultants. The organization has undertaken major environmental projects since the year 2000 for the National Government, Provincial Government, Non-governmental organizations, private companies, District and Local Municipalities, and individual developers throughout South Africa.

Provided below is a short curriculum vitae (CVs) of the Environmental Assessment Practitioner who prepared the document.

Odwa Ntshanga (BSc Honours in Geography)

Odwa is the Environmental Consultant and researcher for IKAMVA Consulting with experience in Environmental Impact Assessments (EIAs), Integrated Waste Management Plans (IWMPs), Environmental Compliance Monitoring and Environmental Awareness Trainings. She has undertaken various Basic

Assessments and Full EIAs for projects in the Eastern Cape, Gauteng and Limpopo Provinces since the year 2018

3 DETAILS OF THE PROPOSED ACTIVITY

3.1 Project Description

JCPZ intends to develop Kloofendal Nature Reserve with new infrastructure for the management and preservation of the Nature Reserve. The proposed development will comprise of the following infrastructure:

- The development of a two story Reception/ Visitor's Centre. The ground floor will include reception area, lobby, water feature, outside seating, timber deck seating, bathrooms, cleaners store, 3 offices, stove and guard house. The first floor will include a canteen, kitchen, viewing deck, outside seating and roof garden.
- The development of staff accommodation will include four separate units with a bedsitter, kitchenette and bathroom.

A Master Plan is being developed for the area. This plan will address:

- Parking upgrade;
- The landscape around the parking area to create good integration;
- The access from the Reception/ Visitor's Centre to the various site elements, including the Planet Walk, heritage elements, the Lapa, the Amphitheatre etc.
- The incorporation of an outdoor gym, as the site is used a lot by persons doing physical activities;
- A formalised picnic area;
- The children's play area; and
- A walk for disabled persons.

The existing office behind the Amphitheatre stage will be converted into storerooms and a workshop to manage and maintain the Reserve, including staff changing area.

The existing Ecological Centre can be used as a conference / meeting facility. The current exhibits can be displayed in a more appropriate manner in the new Visitors Centre.

The existing ablution block will also be upgraded.

3.1.1 Infrastructure

- **Water supply**

Water supply will be provided by the municipality through existing water supply system.

- **Sewerage**

A Bulk sewage system will connect into the existing sewer line.

- **Road access**

The site is currently accessed via Galena Avenue

- **Electricity**

The site will be connected via the existing power line.

- **Storm water**

A storm water management system consisting of several drains, culverts and manholes will be designed to effectively manage storm water from the site. All storm water will eventually be diverted into the wetland.

3.2 Property Description

JCPZ intends to develop a Reception/ Visitor's Centre and Staff Quarters at Kloofendal Nature Reserve, Erf 769 Kloofendal, Roodepoort, within the City of Joburg. The proposed site is land zoned as Public Open Space which incorporates Erf 769, Portion 530 of the Farm 197.

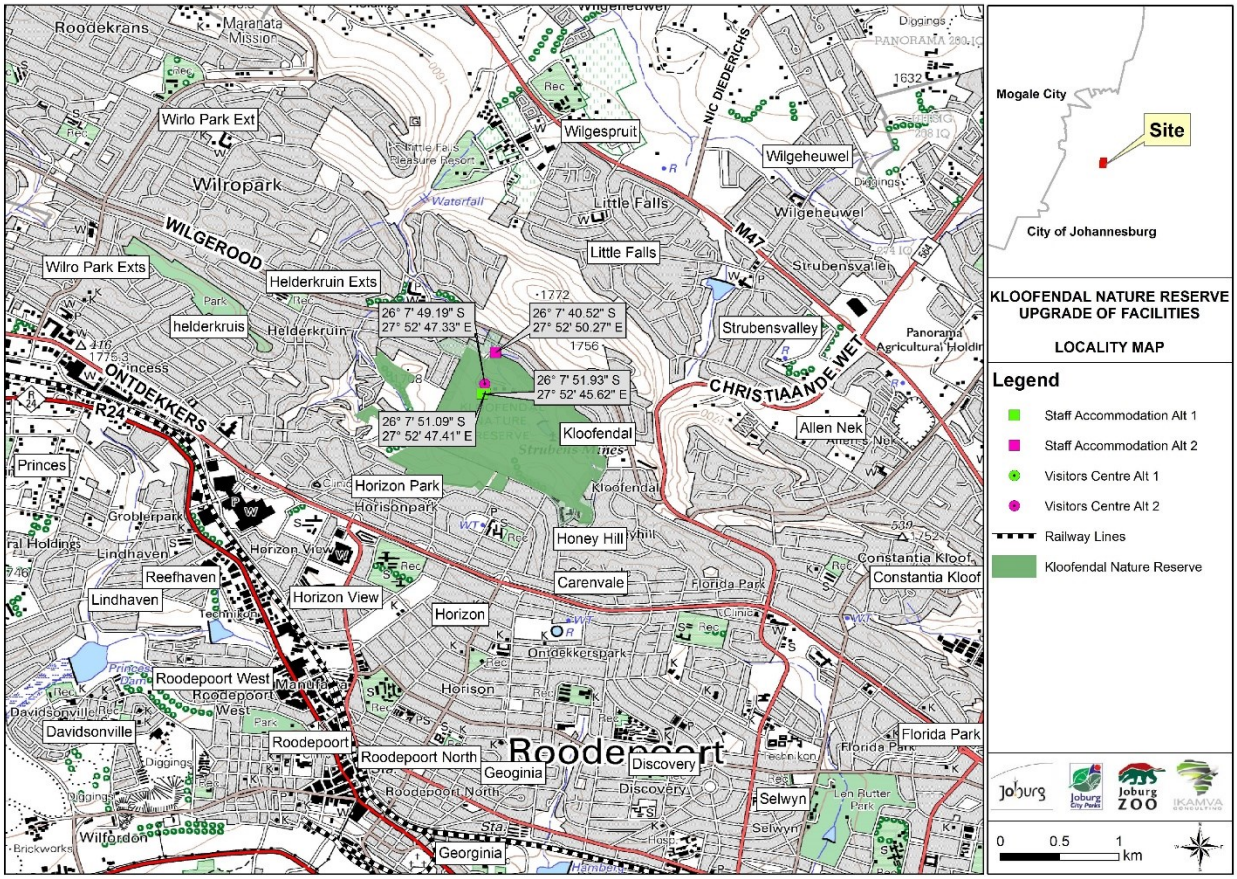

Figure 1: Site Locality

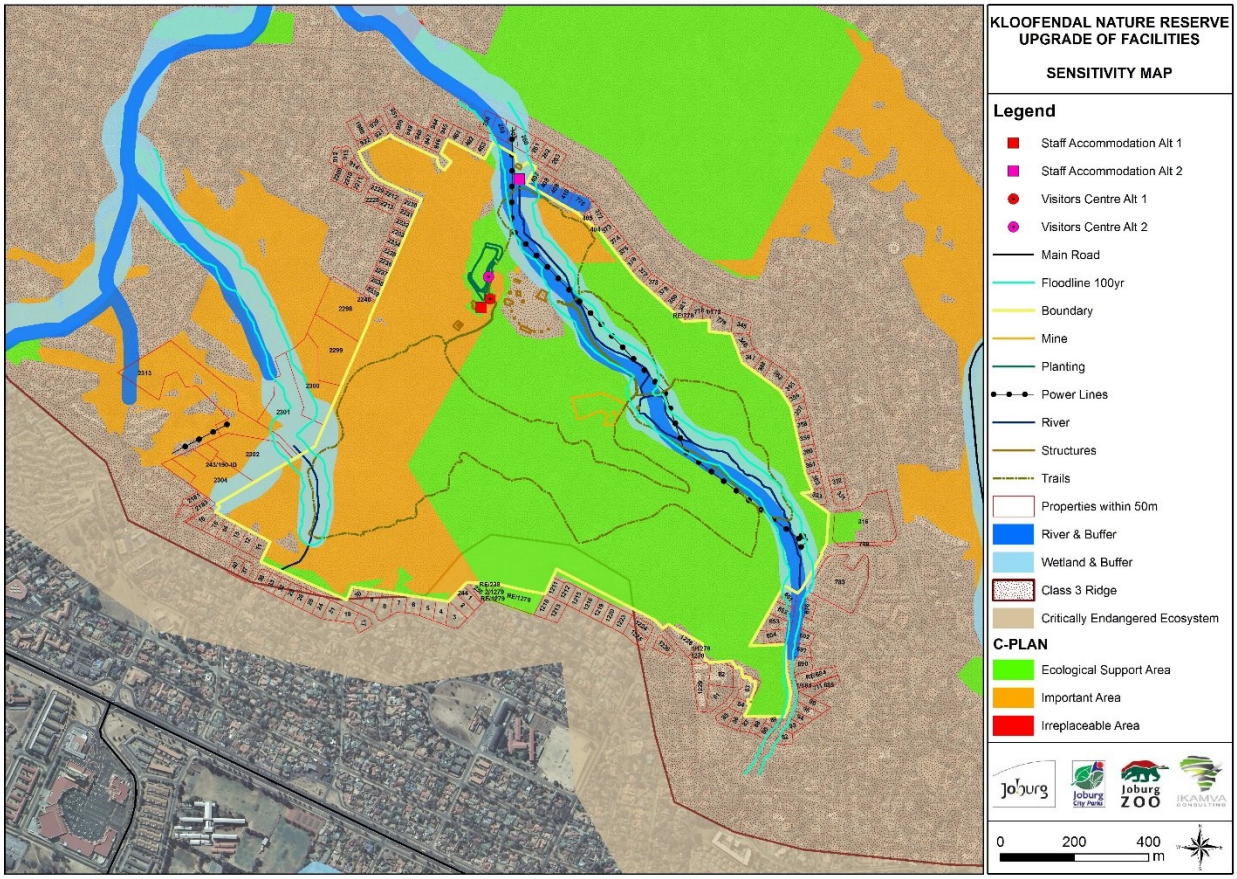

Figure 2: Sensitivity Map, including adjacent properties erfs

4 SCOPE OF THE EMPr

In order to ensure a holistic approach to the management of environmental impacts during the construction and operation of the Reception/ Visitor's Centre and Staff Quarters, this EMPr sets out the methods by which proper environmental controls are to be implemented by the project team. The EMPr is a dynamic document subject to influences and changes and are informed by variations to the provisions of the project specification.

4.1 Layout of the EMPr

The EMPr is divided into three phases of development. Each phase has specific issues unique to that period of the construction and operation of the development and associated infrastructure. The impacts are identified and given a brief description. The three phases of the development are identified as follows:

4.1.1 Planning and Design Phase

This section of the EMPr provides management principles for the planning and design phase of the project. Environmental actions, procedures and responsibilities as required from the Applicant during the planning and design phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Coordinator and Environmental Control Officer.

4.1.2 Construction Phase

This section of the EMPr provides management principles for the construction phase of the project. Environmental actions, procedures and responsibilities as required during the construction phase are specified. These specifications will form part of the contract documentation and therefore the Contractor will be required to comply with these specifications to the satisfactory of the Project Coordinator and Environmental Control Officer.

4.1.3 Operational and Maintenance Phase

This section of the EMPr provides management principles for the operation and maintenance phase of the project. Environmental actions, procedures and responsibilities as required during the operation and maintenance phase are specified.

4.1.4 Closure and Post Closure Phase

The Reception/ Visitor's Centre and Staff Quarters are expected to be a permanent structure which will be maintained as part of the Maintenance Plan for Kloofendal Nature Reserve.

5 ROLES AND RESPONSIBILITIES

It is a requirement of the EIA Regulations that an EMPr must include an identification of the persons who will be responsible for the implementation of the measures contemplated in this report. In order to ensure that the prescribed mitigation, rehabilitation and monitoring measures are effectively and efficiently implemented in all the relevant stages of the development, it is important to assign certain responsibilities to the specific managers thereof. The success of the implementation of the aims of this EMPr will not only depend on whether appropriate mitigation and rehabilitation measures have been correctly identified, but also on the level of commitment of all the responsible individuals to implement the recommendations which are proposed in this document.

5.1 The Applicant - Johannesburg City Parks and Zoo

As the project applicant, JCPZ, is ultimately responsible for ensuring compliance with the environmental specification and upholding environmental commitment to 100% compliance with all National, Provincial and local legislation that relates to management of this environment.

The applicant's Principal Agent/ Project Manager must:

- Ensure the EMPr is in the tender documentation issued to prospective contractors;
- Appoint appropriately qualified contractors to co-ordinate, supervise and expedite different tasks;
- Ensure that all third parties who carry out all or part of the Applicant's obligations under the Contract comply with the requirements of this EMPr;
- Be responsible for obtaining any further environmental permits which are required for the design, construction and operation of the development;

- Ensure that all elements of the work undertaken are properly and competently directed, guided and executed at appointed stages of the project.
- Ensure the adherence to statutory safety, health and environment standards and ensuring the construction activities comply with the EMPr.
- Take overall responsibility and accountability for the site during the construction phase.
- Manage the contractor's compliance and ensure documentation management.
- Ensure that the requirements as set out in this EMPr and by the relevant Authorities are adhered to and implemented;
- Appoint an independent ECO to monitor implementation of the EMPr;
- Assist the ECO in making decisions and finding solutions to environmental problems that may arise during the construction phase;
- Review and approve construction method statements with input from the ECO;
- Issue of penalties for transgressions (including those of Environmental Specifications).

5.2 The Contractor

The Contractor is responsible for the overall execution of the activities envisioned in the construction phase including the implementation and compliance with recommendations and conditions of the EMPr. The successful Contractor shall:

- Be responsible for the overall implementation of the EMPr in accordance with the requirements of the contract;
- Ensure that all of its sub-contractors, employees, suppliers or agents etc. are fully aware of the environmental requirements detailed in the Environmental Specifications of this EMPr.
- 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;
- Liaise closely with the Implementing Agent to ensure that the works on site are conducted in an environmentally sensitive manner;
- Inform the Implementing Agent, as well as the ECO, should environmental issues on site arise, e.g. dumping, pollution, littering and damage to vegetation; and
- Carry out instructions issued by the Engineer that are required to fulfill his/her compliance with the EMPr.

The Contractor must therefore ensure compliance with the EMPr at all times during construction activities and maintain an environmental register which keeps a record of all environmental incidents which occur on the site during construction development. These incidents may include:

- Public involvement / complaints
- Health and safety incidents

- Incidents involving Hazardous materials stored on site
- Non-compliance incidents

The Contractor is also responsible for the implementation of corrective actions issued by the ECO and Project Coordinator within a reasonable or agreed period of time.

5.3 Environmental Control Officer (ECO)

For the purposes of implementing the conditions contained herein, an Environmental Control Officer (ECO) shall be responsible for the contract. The ECO shall be the responsible for ensuring that the provisions of the EMPr as well as the all the permits/ licenses are complied with during the construction period. The ECO's duties in this regard will include, *inter alia*, the following:

- Ensuring that all the environmental authorisations and permits required in terms of the applicable legislation have been obtained prior to construction commencing.
- Monitoring and verifying that the EMPr, permits and Contract are adhered to at all times and taking action if specifications are not followed.
- Monitoring and verifying that environmental impacts are kept to a minimum.
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel on site.
- Ordering, via the Implementing Agent, the removal of, or issuing of spot fines for person/s and/or equipment not complying with the specifications of the EMPr and/or environmental authorisation.
- Checking the register of complaints kept on site and ensuring that the correct actions are/were taken in response to these complaints.
- Checking that the required actions are/were undertaken to mitigate the impacts resulting from non-compliance.
- Conducting monthly environmental compliance audits in respect of the activities undertaken relating to the project. The monthly audit reports will be submitted to the Implementing Agent and the Contractor.
- Recommending additional environmental protection measures, should this be necessary.
- Providing report back on any environmental issues at site meetings.

5.4 Competent Authority

The authorities in this project are the Gauteng Department of Agriculture and Rural Development (GDARD) for environmental related matters, and the Department of Water & Sanitation (DWS) for water use licensing. The authorities are responsible for ensuring that the conditions of their respective authorisations are complied with, and that the monitoring of the EMPr and other authorisation documentations is carried out. This will be achieved by reviewing audit reports submitted by the ECO and conducting regular or random site visits.

6 COMPLIANCE WITH THE EMPr

A copy of the EMPr must be kept on site at all times during the construction period. The EMPr will be binding on the main contractor and sub-contractors operating on the site and must be included within the Contractual Clauses.

It should be noted that in terms of the National Environmental Management Act No 107 of 1998 (Section 28) those responsible for environmental damage must pay the repair costs both to the environment and human health and the preventative measures to reduce or prevent further pollution and/or environmental damage (The 'polluter pays' principle).

6.1 Non-Compliance

The Contractor shall act immediately when a notice of non-compliance is received and take corrective action. Public complaints received regarding activities on the construction site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any public complaints.

Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed. Failure to redress the cause shall be reported to the relevant authority (GDARD) for them to deal with the transgression, as it deems fit.

The Contractor is deemed not to have complied with the EMPr if, *inter alia*:

- There is evidence of contravention of the EMPr specifications within the boundaries of the construction site;
- There is contravention of the EMPr specifications which relate to activities outside the boundaries of the construction site.
- Environmental damage ensues due to negligence;
- Construction activities take place outside the defined boundaries of the site; and/or the Contractor fails to comply with corrective or other instructions issued by the Implementing Agent within a specific time period.

6.2 Penalties

Where environmental damage or a pollution incident is caused, and/or failure to comply with any of the environmental specifications contained in the EMPr, the contractor will be liable to pay a penalty fine.

The following violations, and any others determined during the course of work, should be penalised:

- Littering on site.

- Lighting of illegal fires on site.
- Persistent or un-repaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas.
- Excess dust or excess noise emanating from site.
- Any vehicles being driven in excess of designated speed limits.
- Dumping in non-approved sites.
- Unauthorised removal/damage to indigenous vegetation.
- Uncontrolled/unmanaged erosion.
- Pollution of water sources.

7 ENVIRONMENTAL SPECIFICATIONS: PRE- CONSTRUCTION, CONSTRUCTION AND OPERATION PHASES

This Chapter of the EMPr outlines the environmental specifications which are required to be implemented for the construction and operation phases of the project. The Environmental Specifications comprise clauses that are generally applicable to the undertaking of civil engineering works in areas where it is necessary to impose pro-active controls regarding the extent to which the construction activities impact on the environment.

The responsibility of implementing the EMPr lies with the proponent or the delegated person. The project management team has the responsibility of monitoring the contractor's compliance with all the project specifications. Specific to the EMPr, the ECO will have the responsibility of monitoring the compliance with environmental management specifications.

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
1. Pre-Construction Phase					
1.1.	Compliance with relevant legislation and policy	All relevant legislation and policy must be consulted and the proponent must ensure that the project is compliant with such legislation and policy.	Before construction commencement		
		The relevant legislation and policies must include but not restricted to the following: NEMA, NWA, Local and District Spatial Development Frameworks, Gauteng Conservation Plan (C-Plan), and Local Municipal by-laws.			
1.2.	Authorisations/Permits/ Licenses	An Environmental Authorisation must be obtained prior to construction commencement.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		A water use license must be obtained from GDARD prior to construction commencement.			
1.3.	General	The EMPr must be made a binding part of the contract.			
		The Proponent must appoint an ECO to oversee the environmental aspects of the project prior to the commencement of construction.			
		Employment of local labour, from the surrounding communities and the implementation of training is to be instituted during the time period of the contract.			
		A Community Liaison Officer (CLO) should be appointed by the contractor. This person should provide a bridge between the local community, their community councilors and the consultant and contractor. It is recommended that the CLO should be a member of the community affected by the contract.			
1.4.	Landscape Development Plan	A landscape development plan must be compiled taking into account recommendations regarding flora, fauna and the riparian zone. This plan must indicate how clearing, earthworks and rehabilitation are going to progress across the site in a phased manner.			
1.5.	Storm water	A storm water management plan must be prepared for regular implementation and monitoring. Strom water outlets must be designed to have silt and litter traps.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
2. Construction Phase					
2.1.	Permits and Licenses	A copy of the EMPr, environmental authorization and water use license must be kept in the file on site and made available to any official of the Department on request.	Continuously		
		These documents must be used as a point of reference throughout the project phase.			
		Any substantial changes to the EMPr shall be submitted to GDARD for acceptance before such changes may be effected.	When necessary		
2.2.	Land use	The contractor shall not use the land forming the Site of, or connected with, the Works for any purpose whatsoever other than for the proper carrying out of the Works under the contract and shall place any camps that may be required for himself and his employees only on sites approved by the ECO and Consulting Engineer.	Continuously		
2.3.	Site Establishment	To eliminate vegetation destruction, the construction camp/s must be placed in an area that is already disturbed and not sensitive.	Once-Off		
		Before construction can begin, the contractor shall submit to the Project Manager for approval a site layout plan detailing plans of the exact location, extent and construction details of these facilities and the impact mitigation measures the contractor proposes to put in place. In particular, this plan must include: - – Access routes including entry and exit points.	Once Off, to be amended when necessary		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		– All material and equipment storage areas (including storage areas for hazardous substance such as fuel and chemicals). – Construction offices and other structures – Security requirements (including temporary and permanent fencing, and lighting) and accommodation areas for security staff. – The locality as well as the layout of the temporary waste storage facilities for litter, kitchen refuse, sewage and workshop-derived effluents. – Storm water control measures. – Provision of potable water and temporary ablution facilities.			
		Detailed, electronic colour photographs shall be taken of the proposed site before any clearing may commence. These records are to be kept by the Project Manager for consultation during rehabilitation of the site.	Once –Off		
		All servitudes and existing services must be verified prior to establishment.	Once- Off		
		Throughout the period of construction, the Contractor shall restrict all activities to within the designated areas on the approved construction layout plan. Any relaxation or modification of the construction layout plan is to be approved by the Project Manager.	Continuously		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
2.4.	Ablutions	Adequate ablutions should be supplied for workers within the OHS regulations (i.e. 1 toilet per 30 workers, 1 shower per 15 workers). Such facilities shall be maintained in a clean and hygienic condition. Their use shall be strictly enforced.	On-Going		
		Safe and effective sewage treatment will require one of the following sewage handling methods: dry composting toilets such as "enviro-loos", or portable chemical toilets which are supplied and maintained by the contractor.	On-Going		
		Chemical toilets should be emptied regularly. Weekly servicing of the chemical toilets needs to be undertaken and service records are to be kept in the environmental file.	On-Going		
		Toilets and latrines should be placed within easy access of the workforce, to ensure that the surrounding environment is not used for this purpose.	On-Going		
		Toilets should be anchored.			
		Placement of toilets should avoid the possibility of the area surrounding the toilet becoming flooded.			
2.5.	Administration	An environmental management file shall be opened and maintained on site. The file must always be up-to-date with the following documentation: • Copy of Environmental Authorisation • Copy of Water Use license • Copy of EMPr	On-Going		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		• Copy of Approved Layout • Monthly Environmental Audits Reports • Spill Contingency Plan • Complaints Register • Incidents Register • Correspondences with ECO • Correspondence with I&APs/stakeholders/surrounding areas • Proof of Waste Disposal • Proof of chemical toilet cleaning • Approved method statements			
2.6.	Topsoil Removal and Stockpiling	Topsoil All topsoil stockpiles shall be maintained throughout the contract period in a weed-free condition. Weeds appearing on the stockpiled topsoil shall be removed by hand. The topsoil stockpiles shall be stored, shaped and sited in such a way that they do not interfere with the flow of water such that damming or erosion is caused, or itself be eroded through the action of water.	On-Going		
		Soils contaminated with hazardous substances shall be disposed of at a licensed hazardous waste disposal site.	On-Going		
		The Contractor shall be held responsible for the replacement, at his own cost, for any unnecessary loss of topsoil due to failure to work according to the approved progress plan.	On-Going		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Subsoil The subsoil is the layer of soil immediately beneath the topsoil. This layer of soil shall be removed to a depth instructed by the Engineer, and stored separately from the topsoil if not used for construction purposes. During rehabilitation, this subsoil shall be replaced in the excavation in the original order it was removed	On-Going		
2.7.	Water (surface and groundwater)	Minimise the extent of cleared ground and hardened surfaces.	On-going		
		Highlight all prohibited activities (e.g. Mixing of concrete in wetland areas littering, using the wetland as an ablution development) to workers through training and notices.			
		The use of pesticides or herbicides on site should be avoided.			
		Do not clear any riparian vegetation for the development. This is the vegetation occurring within the delineated wetland boundaries. Additionally wherever possible avoid the disturbance to vegetation within the prescribed wetland buffer zones.			
2.8.	Hazardous Substances	Potentially hazardous materials must be properly stored in a dry, secure environment, with concrete or sealed flooring.			
		Hazardous substances are stored in the construction camp under lock and key.			
		Chemical storage areas must be protected by bunded areas of a volume equal to 110% of the volume of the container storing the substance.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimize pollution risk and reduced bunding capacity.			
		Any oils, fuels and spilled substance shall be removed and recycled or disposed of at a licensed waste disposal facility able to accommodate such waste. Proof of waste disposal must be kept in the environmental file.			
		Mixing/ decanting of all chemicals and hazardous materials shall take place on a tray or impermeable surface.			
		Contaminated water storage facilities are not allowed to overflow and appropriate protection from rain and flooding shall be implemented.			
		In the event of a spillage/ incident that cannot be contained and which poses a potential threat to the local environment, the following Departments must be informed of the incident within 24 hours and in accordance with Section 30 of the National Environmental Management Act, Act 107 of 1998: – Department of Water and Sanitation – Gauteng Department of Agriculture and Rural Development – The local Fire Department; and – Any other mandated authority.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Any soil contaminated during construction must be removed, stored in sealed container and disposed thereof at a licensed facility. Proof of safe disposal must be kept in the environmental file.			
		Ensure that used oils/lubricants are not disposed of on/near the site, but at a permitted landfill and that contractor purchasing these materials understands the liability under which they must operate.			
2.9.	Cement and Concrete Mixing	No concrete mixing activities shall occur directly on the ground. Mixing trays shall be used at all mixing and supply points.			
		All wastewater and runoff from concrete mixing areas shall be strictly controlled, and cement contaminated water shall be collected, stored and disposed of at a site approved by the ECO.			
		Unused cement bags are to be stored so as not to be affected by rain or runoff events. Used bags shall be disposed of in the appropriate manner as approved by the ECO.			
		All visible remains of excess concrete shall be physically removed on completion of concrete pour section and disposed of. All excess aggregate shall also be removed.			
2.10.	Solid Waste	General Waste			
		Weatherproof and scavenger proof bins shall be provided at the working area and emptied when full or at least once a week, whichever comes first.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		No waste from construction or otherwise, may be disposed of on site. All waste generated on site, must be removed from the site and disposed of at a licensed waste disposal site.			
		Solid waste shall be stored in a designated central area within the project area in covered, tip proof metal drums for later collection and disposal. As far as possible, general waste (including paper, glass, plastics, aluminium, etc.) shall be sorted for recycling.			
		No waste shall be burned anywhere else on the site, including at the approved solid waste disposal site.			
		No littering by construction workers must be allowed. During the construction period, the site shall be maintained in a neat and tidy condition and must be kept free of litter. Fines shall be implemented for persons found littering			
		Measures shall be taken to reduce the potential for litter and negligent behaviour with regard to the disposal of all refuse.			
		General waste shall be disposed of at the registered municipal solid waste disposal site least once a week.			
		Hazardous waste			
		Hazardous waste (contaminated soil, etc.) shall be stored in secondary containers which are properly labelled.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Used oil, lubricants and cleaning materials from the maintenance of vehicles and machinery should be collected in a holding tank and returned to the supplier or oil recycling centre or removed from site for disposal at approved waste disposal sites for hazardous materials			
		Safe disposal certificates to be obtained for all hazardous wastes leaving the site.			
		Hazardous waste shall not be stored or stockpiled in any area other than that designated on the construction site layout.			
		Any contaminated soil should be removed and replaced.			
		Bund made of plastic material, covered with sand, or any impervious material shall be used around hazardous waste storage facility.			
2.11.	Noise	It must be ensured that noise levels are kept to a minimum during the construction phase. All machinery and equipment to be utilised on the site should be fitted with mufflers and must be maintained in good working order to minimise noise levels.			
		Noisy construction work should be completed in as short a time frame as possible in order to limit the longevity of these impacts			
		Noise levels during construction must be kept within acceptable limits. All noise and sounds generated must adhere to SABS 0103 specifications for maximum allowable noise levels for residential areas.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Measures must be implemented at the site to minimize the potential impacts by informing surrounding land users of unusually noisy activities such as blasting.			
		No pure tone sirens or hooters may be utilised except where required in emergencies.			
		Should the contractor want to work at night or weekends, surrounding residents/businesses must be adequately informed			
2.12.	Dust and Odors	Dust generating construction activities must be avoided during strong winds.	On-Going		
		Management (including storage, transport, handling and disposal) of hazardous substances that have the potential to become airborne during construction must be carefully controlled and managed			
		Suitable dust suppression measures must be implemented if dust levels rise above acceptable levels. Water or commercial dust suppressants can be used.			
		Sand and crushed stone stockpiles must be kept covered or have suitable dust palliative applied such as water or commercial dust suppressants.			
		Burning of waste on site or adjacent is forbidden.			
2.13.		Clearing activities must only be undertaken during agreed working times and permitted weather conditions. If heavy rains are expected, clearing	On-going		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
	Soil Erosion and Sedimentation	activities should be put on hold. In this regard, the contractor must be aware of weather forecasts.			
		Measures must be implemented such that erosion is minimized during construction and after construction. These measures may include: – The suitable use of sand bags or Hessian sheets – The prompt rehabilitation of exposed soil areas with indigenous vegetation to ensure that soil is protected from the elements; – The removal of vegetation only as it becomes necessary for work to proceed; therefore, the full length of the works shall not be stripped of vegetation prior to the commencing of other activities.			
		Re-vegetation of the site and areas outside of the site should be undertaken immediately after the completion of an activity in that area.			
		If re-vegetation of exposed surfaces cannot be established immediately due to phasing issues, rows of straw, hay or cut bundles of vegetation should be dug into the soil in contours and/or sand bags or silt fences must be established along the contours at regular intervals to slow runoff and capture eroded soil.			
		Effort must be made to ensure that the storm water system including pipes, drains, headwall and Reno-mattresses are not silted up during the construction phase.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		After every rainfall event, the contractor must check the site for erosion damage and rehabilitate this damage immediately. Erosion rills and gulleys must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until grass has re-colonised the rehabilitated area.			
2.14.	Fauna Management	Feeding, trapping, poisoning, injuring or killing of animals is strictly forbidden. Animals found on site should be removed to a natural area at least 500 metres from the site.	On- Going		
		Any animal killed as a result of trapping or hunting or found in the possession of an employee of the Contractor will result in that employee being removed from site for the duration of the Contract and actions taken against that particular person.			
		All areas outside the access routes and the working area are to be treated as 'No Go' zones.			
		Open excavations should be fenced off at the end of each day to protect domestic and wild animals from getting injured.			
		The use of pesticides must be avoided wherever possible.			
2.15.	Indigenous Flora	The natural vegetation encountered on the site is to be conserved and left as intact as possible.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Re-vegetation of disturbed areas must be undertaken with site indigenous species and in accordance with the instructions issued by the ECO.			
		Only vegetation directly affected by the works and such others as may be indicated by the ECO in writing may be cleared.			
		The Contractor shall ensure that machinery and vehicles shall not be driven on any area other than the identified access roads. Areas outside the impact zone are to be designated as sensitive and therefore no access to these areas by construction contractors or equipment will be permitted.			
		Vegetation may only be cleared within demarcated work area and only when it is necessary;			
		Re-vegetate exposed areas with a suitable grass seed mix of indigenous species upon completion of construction activities.			
		Topsoil and subsoil must be stored separately.			
		The prepared soils along the construction site must be re vegetated via hand broadcasting and plugs by a professional. In addition, any rescued indigenous plants must also be replanted within the construction footprint.			
		All protected and culturally important species should be marked; where possible, permits should be obtained before removal.	Once-off		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
2.16.	Alien Invasive Vegetation	Patches of alien invasive vegetation that colonise parts of the site or its surroundings must be removed immediately. This must be done for the duration of the construction phase.	On-Going		
		Alien plant infestations must be controlled during and after construction. This will involve frequent mechanical removals with the correct disposal procedures for each species;	Continuous		
		The transportation of soils or other substrates infested with alien species should be strictly controlled, particularly during the removal of any vegetation or soil during construction;	During construction phase		
		Manual / mechanical removal is preferred to chemical control;	Continuous		
		All construction vehicles and equipment, as well as construction material should be free of plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction areas. This should be verified by the ECO;	During construction phase		
2.17.	Fire	Basic fire-fighting equipment must be available on site, within easy access and is to the satisfaction of the Health & Safety Officer. Fire extinguishers and fire beaters should be made available on site at all times.	On-Going		
		Fire equipment shall be serviced timeously.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		A staff member must be designated as a Fire Officer who shall be responsible for ensuring immediate and appropriate action in the event of a fire.			
		All site personnel must be made aware of the procedure to be followed in the event of a fire.			
2.18.	Heritage Resources	Construction personnel should be informed before construction starts about possible heritage or cultural resources they could encounter and the procedures to follow when encountering these materials.	Once-off		
2.19.		If a heritage resource (e.g. human remains, archaeological or palaeontological artefact) is discovered during construction the following will apply: – Work at the point of the discovery is to cease immediately; – The point of discovery is to be clearly demarcated to prevent unauthorized removing or damage to the resource; – The South African Heritage Resources Agency (SAHRA) is to be informed immediately or within 24 hours of the discovery; – A professional heritage specialist will be consulted to assess the significance of the find and to apply for the necessary permits from SAHRA for the rescue and/or destruction of these fossils. Work shall not recommence until such time as guidance from SAHRA has been received.	During digging or excavation activities		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
2.20.	Health and Safety	General Health, Safety and Security • Ample signage including 'no smoking' zones, safe eating areas, etc. must be installed at the working areas. • Human contact with wild animals will be avoided wherever possible. Only people with the necessary expertise may be allowed to get into contact with wild animals. • All construction personnel should always wear protective clothing when entering the working area. Protective clothing should as a minimum include safety boots, gloves, helmet and overalls. • Protective clothing must be uniform (i.e. workers issued overalls with company name/logo, etc.) so as to distinguish between construction workers and trespassers. • Construction work must adhere to all requirements of the Occupational Health and Safety Act (Act 56 of 2004).	On-Going		
2.21.	Social Impacts	A Complaints Register must be kept at the site office. This must be in a duplicate format, with numbered pages. The stakeholders need to be made aware of the register and the methods of communication available to them.	On-going		
		The Contractor needs to appoint a staff member to act as a Community Liaison Officer for formal consultation with stakeholders in order to handle questions and explain the construction process and what it will entail. This register is to be tabled during monthly site meetings. Any			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		queries or complaints that arise need to be handled by following a set protocol.			
		The disruption and safety of access for the local residents must be minimized at all costs.			
		The Contractor is to inform the neighbours in writing of disruptive or noisy activities such as blasting or drilling at least 24 hours beforehand.			
		It is important that the Contractor's activities and movement of staff are restricted to the designated construction area.			
		Information boards shall be erected and maintained in the position, quantity, design and dimensions specified. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Engineer.	On-going		
		Employment: Without compromising construction and operation activities and schedules, all unskilled labour should be sourced from the local community. Those successful in obtaining employment should be provided with the appropriate skills development and training.	On-going		
3. Post- Construction					
3.1.	Construction Camp	All structures comprising the construction camp are to be removed from site.	On completion of construction		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		The area that previously housed the construction camp is to be checked for spills and the spills must be cleaned up.			
		All hardened surfaces within the construction camp area must be ripped, all imported materials removed, and the area must be top-soiled and re-vegetated if appropriate.			
3.2.	Pollution Control Structures	Excavate all areas of contaminated substrate (e.g. from sumps used to capture contaminated runoff from concrete / cement mixing areas), transfer the contaminated substrate to an appropriate disposal site and treat the affected areas with appropriate ameliorants.	On completion of construction		
		Remove all plastic linings used for pollution control and transfer to an appropriate disposal site.			
		Break up all concrete structures that have been created (e.g. working and parking surfaces) and remove concrete waste to an appropriate disposal site.			
3.3.	Waste	Remove all leftover construction materials from the storage area and construction site and either sell, auction, donate to the local community or transfer to the Contractor's base. If leftover materials are donated to the local community, it is the Contractor's responsibility to ensure that the materials are used appropriately, and do not cause harm to the environment.	On completion of construction		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
3.4.	Alien Invasive Vegetation	Existing and newly established alien vegetation must be removed from the entire property and replaced, where necessary, with suitable indigenous / endemic grass species.	On-Going		
		Any proclaimed weed or alien species that germinates during the contract period shall be cleared by hand before flowering.			
		There must be no planting of alien plants (e.g. Black wattle, Syringa, Eucalyptus and Pampas grass) anywhere within the Nature Reserve;	Continuous		
3.5.	Rehabilitation	The guiding principle for rehabilitation is to restore the disturbed areas to at least the same (but preferably better) level of ecological functioning as they were before the disturbance.	On completion of construction		
		All damaged areas shall be rehabilitated upon completion of the contract. Rehabilitation must take place in a phased approach as soon as possible.			
		The necessary drainage works and anti-erosion measures must be implemented and maintained.			
		Disturbed areas must be landscaped (i.e. profiled so that they blend in with the existing topography) and re-vegetated with indigenous vegetation. Grass seeds or sods may be considered where the indigenous grass may initially provide insufficient cover to prevent erosion.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Re-vegetation of the disturbed areas is aimed at approximating as near as possible the natural vegetative conditions prevailing prior to construction or disturbance.			
		Rehabilitation process must make use of species indigenous and endemic to the area. Seeds from surrounding seed banks can be used for re-seeding.			
		The site must be checked for erosion damage and rehabilitation must be undertaken immediately. Erosion rills and gulleys must be filled-in with appropriate material and silt fences or fascine work must be established along the gulley for additional protection until grass has re-colonised the rehabilitated area.			
		The contractor must undertake any maintenance that may be required as a result of erosion control measures not functioning correctly, and where vegetation has not taken to reseed these areas to prevent further environmental degradation.			
		A meeting is to be held on site between the Engineer, ECO and the Contractor to approve all remediation activities and to ensure that the site has been restored to a condition approved by the Engineer. A representative of GDARD may be present at the final meeting or when the site is handed over on completion of construction.	On completion of construction		
		A vegetation rehabilitation plan should be implemented. Grassland can be removed as sods and stored within transformed vegetation – remove alien invasive vegetation prior to storing grassland sods in transformed			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		areas. The sods must preferably be removed during the winter months and be replanted by latest springtime. The sods should not be stacked on top of each other. Once construction is completed, these sods should be used to rehabilitate the disturbed areas from where they have been removed. In the absence of timely rainfall, the sods should be watered well after planting and at least twice more over the next 2 weeks.			
3.6.	Re-vegetation	All areas of bare soil must be re-vegetated and rehabilitated using top soil and indigenous grass seeds /plugs.	On Completion of construction		
		Re-vegetated areas may need to be watered to ensure plant growth and development.			
		The site should be contoured to ensure free flow of runoff and to prevent ponding of water.			
		A Horticultural Landscaper should be employed to assist with the rehabilitation process, in particular where subsequent planting of protected species is required.			
4. Operational Phase					
4.1.	Maintenance and Management of infrastructure and Services	All constructed elements of the project should be checked and maintained, to ensure they are in working order.	Continuously		
		The ablution facilities must be properly maintained and always be in good working order.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		A Plan for portable toilets, water carting, etc. should be available for events such as non-availability of water.			
4.2.	Storm water Management	Storm water system should be inspected and managed throughout the year. Waste and disposal structures should be maintained and emptied regularly.	Continuously		
		All drainage structures must be regularly cleared of organic and inorganic debris.			
4.3.	Health and Safety	Community awareness programmes and posters should be implemented in order to educate the community and workers about healthy living.	Continuously		
		Outside lighting used for security must be yellow lights where possible to reduce impacts on the important pollinators.			
		No fluorescent or mercury lighting to be used.			
		Security personnel should always be visible.			
		The local youth should be educated to empower them for a better future.			
		Traffic calming measures such as speed humps and road signs should be introduced at the streets that give access to the site.			
4.4.	Flora	The areas around the watercourses must be left intact for conservation purposes and be regarded as No-Go areas.	Continuously		
		A buffer zone of at least 32 metres around the natural areas should be created.			

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		The facility users should be educated and empowered on the benefits of keeping vegetation intact.			
4.5.	Fauna	The site fence must be maintained to deter animals from entering.	Continuously		
		The facility should be allowed to be a refuge for all wild animals and no harming of animals should be allowed.			
		Maintain notice boards on trees and regarding the fauna found on the site and how to deal with fauna encounters.			
4.6.	Alien Invasive Vegetation	As part of the indigenous vegetation management programme, alien invasive vegetation must be removed immediately after being discovered and before flowering.	Continuously		
		Rehabilitation or maintenance of the site with non-indigenous vegetation (including grass, shrubs and trees) must be discouraged.			
4.7.	Noise	Site visitors/users must be made aware of the City of Joburg's By-Laws on noise and nuisances	Continuously		
		Noisy activities for local events (e.g. music shows) should have permission from the municipality and the local community			
		The operation of the canteen must be restricted to the open hours of the Nature Reserve.	Continuously		
		All noise should be restricted after dark.	Continuously		
4.8.	Solid waste	A sufficient number of waste colour coded and labeled bins must be placed at strategic points around the site.	Continuously		

Nr	IMPACT	MITIGATION MEASURES	FREQUENCY	COMPLIANT	
				YES	NO
		Visitors must be educated on putting waste into separate bins on a continuous basis.			
		Waste separation into different categories must be practiced on site.			
		Notices that discourage littering and other non-compliances should be placed at all strategic areas.			
		The bins must be serviced and not be allowed to overfill.			
		All waste that cannot be re-used, recycled or composted, etc. must be disposed of at the municipal landfill site. Proof of disposal must be filed.			

8 AMENDMENTS TO THE EMPR

The EMPr is a living document. Any major issues not covered in the EMPr as submitted must be addressed as an addendum to the EMPr, submitted for approval prior to implementation.

ANNEXURE A

PROFOMA: PROTECTION OF THE ENVIRONMENT

To be signed by Contractor

Employer :……..

Contract Number:……..

Contract Title :……

PROTECTION OF THE ENVIRONMENT

The contractor will not be given the right to access the site until this form has been signed.

I……..…as Contractor, record as follows:

1. I, the undersigned, do hereby declare that I am aware of the increasing requirement by society that construction activities shall be carried out with due regard to their impact on the environment.
2. In view of this requirement by society and a corresponding requirement by the Employer with regard to this contract, I will, in addition to complying with the letter of the terms of the contract dealing with protection of the environment, also take into consideration the spirit of such requirements and will, in selecting the appropriate employees, plant, materials, and methods of construction, in so far as I have the choice , include the analysis not only the technical and economic (both financial and with regard to time) aspects but also the impact on the environment of the options. In this regard, I recognize and accept the need to abide by the 'precautionary principle' which aims to ensure the protection of the environment by the adoption of the most environmentally friendly construction approach in the face of uncertainty with regard to the environmental implications of construction.
3. I acknowledge and accept the right of ……..……..…to deduct, should they so wish, from any amounts due to me, such amounts (herein referred to as fines) as the Project Manager and Environmental Control Officer shall certify as being warranted in view of my failure to comply with terms of the Contract dealing with protection of the environment subject to the following;
   3.1. The Project Manager and Environmental Control Officer, in determining the amount of such fine, shall take into account, inter alia, the nature of the offence, the seriousness of the impact on the environment, the degree of prior compliance/non-compliance, the extent of the Contractor's overall compliance with environmental protection requirements, and in particular, the extent to which

he/she considers it necessary to impose a sanction in order to eliminate/reduce future occurrences.

3.2. The Project Manager shall, with respect to any fine imposed, provide me with a written statement giving details of the offence, the facts on which the Resident Engineer and Environmental Officer has based his assessment and the terms of the Contract (by reference to specific clause) which has been contravened.

SIGNED……..

Contractor

DATE:……

ANNEXURE B: ENVIRONMENTAL INCIDENT REGISTER

DATE:	File Ref:
NAME:	Copy to:
EXACT LOCATION OF INCIDENT:	

SECTION 1: DESCRIPTION OF INCIDENT

SECTION 2: REMEDIAL ACTION REQUIRED

Remedial Action Due Date:……
Confirmation of Implementation: Name: …….. Date:……..

SECTION 3: RELEVANT DOCUMENTATION

SECTION 4: SIGNATURES

Engineer: Name:…… Date:……
Environmental Control Officer: Name: …… Date:……

SECTION 5: DRAWING/SKETCH

Note: please attach extra pages if more space is required

APPENDIX C: COMPLAINTS REGISTER

Date	Complainant's Name	Contact Details	Nature of Complaint	Corrective Action	Completed Action Date