PROJECT NAME:

PROPOSED WAREHOUSES AND ASSOCAITED INFRASTRUCTURE WITHIN THE EAST LONDON INDUSTRIAL DEVELOPMENT ZONE, EASTERN CAPE PROVINCE

REPORT TITLE:

DRAFT ENVIRONMETAL MANAGEMENT PROGRAMME

NEAS NUMBER: TEMP/EIA/2026/ECP/0000016

DEDEAT REFERENCE NO: EC/7/A/LN1, LN3/M/26-36

DATE: 29 OCTOBER 2026

ENVIRONMENTAL ASSESSMENT PRACTITIONER:
ABANTU ENVIRONMENTAL SERVICES (PTY) LTD

ABANTU ENVIRONMENTAL SERVICES

APPLICANT:
EAST LONDON INDUSTRIAL DEVELOPMENT ZONE

east london idz
business streamlined

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DATE	July 2026	August - September 2026	October 2026

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TERMS AND DEFINITIONS

TERMS	DEFINITION
AUDIT	Regular inspection and verification of Construction activities for implementation of the approved EMP
CONSTRUCTION ACTIVITY	A Construction activity is any action taken by the contractor, his subcontractors, suppliers or personnel during the Construction process.
CONTRACTOR	Construction companies are appointed on behalf of the client to undertake the Construction activities, as well as their subcontractors and suppliers.
DEFF	Department of Environment, Fisheries and Forestry.
DEVELOPMENT SITE	Boundary and extent of development works and infrastructure.
EMPR	Environnemental Management Programme Report. The EMPR for the project sets out general instructions that will be included in a contract document for the Construction phase of the project. The EMPR will ensure the Construction activities are conducted and managed in an environmentally sound and responsible manner.
EMP	Environmental Management Plan.
ENVIRONMENT	The environment means the surroundings within which humans exist and that could be made up of water, air, soil, sand, plants and animals.
ENVIRONMENTAL ASPECT	An environmental aspect is any component of a contractor's Construction activity that is likely to interact with and on the environment.
EAP	Environmental Assessment Practitioner.
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 CONTROL OFFICER	A qualified person nominated by the appointed contractor and/or client who will ensure the day-to-day implementation of the EMP by contractors during Construction and operation of the project.
ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)	A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive environmental impacts and limiting or preventing negative environmental impacts are implemented during the life-cycle of the project. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

TERMS	DEFINITION
GENERAL WASTE	Domestic waste, commercial waste, non-hazardous industrial waste and builders rubble e.g. paper, plastics, food, tins, wood, etc.
HAZARDOUS WASTE	It is any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment.
HERITAGE RESOURCES	This means any place or object of cultural significance, including all human-made phenomena and intangible products that are the result of the human mind. Natural, technological or industrial features may also be part of heritage resources, as places that have made an outstanding contribution to the cultures, traditions and lifestyles of the people or groups of people of South Africa
HERITAGE	That which is inherited and forms part of the National Estate (historical places, objects, fossils as defined by the National Heritage Resources Act, 1999 (Act No. 25 of 1999).
IEM	Integrated Environmental Management.
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.
NEMA	National Environmental Management Act.
NEMAQA	National Environmental Management Air Quality Act
REHABILITATION	Rehabilitation is defined as the return of a disturbed area, feature or structure to a state that approximates to the state (where possible) that it was prior disruption, or to an improved state.
PALAEONTOLOGY	Any fossilised remains or fossil trace of animals or plants which lived in the geological past, other than fossil fuels or fossiliferous rock intended for industrial use, and any site which contains such fossilised remains or trace.
POLLUTION	The National Environmental Management Act, 1998 (Act No. 107 of 1998) defined pollution to mean any change in the environment caused by – substances; radioactive or other waves; or noise, odours, dust or heat emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.
PROJECT/SITE MANAGER	A person who represents the client and is responsible for enforcing the technical and contractual requirements of the project.

TERMS	DEFINITION
SAHRA	South African Heritage Resource Agency
SOLID WASTE	All solid waste, including Construction debris, chemical waste, excess cement/concrete, wrapping material, timber, tins and cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).
TOPSOIL	The layer of soil covering the earth which provides a sustainable environment for the germination of seeds, allows water penetration, and is a source of micro-organisms and plant nutrients.
WASTE	**:** Waste means any substance, whether or not that substance can be reduced, re-used, recycled and recovered • that is surplus, unwanted, rejected, discarded, abandoned or disposed of; • which the generator has no further use of for the purposes of production; • that must be treated or disposed of; or • that is identified as a waste by the relevant Minister by notice in the Gazette, and includes waste generated by the mining, medical or other sector, but— • a by-product is not considered waste; and • any portion of waste, once re-used, recycled and recovered, ceases to be waste.
WASTE DISPOSAL FACILITY	Waste disposal facility means 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.
WATER POLLUTION	The National Water Act, 1998 (Act No. 36 of 1998 defined water pollution to be the direct or indirect alteration of the physical, chemical or biological properties of a water resource so as to make it – less fit for any beneficial purpose for which it may reasonably be expected to be used; or harmful or potentially harmful to the welfare, health or safety of human beings; to any aquatic or non-aquatic organisms; to the resource quality; or to property.
WATERCOURSE	A natural channel or depression in which water flows regularly or intermittently in which water flows regularly or intermittently. Or a wetland, lake or dam into which, or from which, water flows; and 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 (Act No. 36 of 1998).
WUL	Water Use License.

APPLICANT DETIALS

Details of the applicant are presented in **Table 1** below.

Table 1: Applicant details

Applicant	East London Industrial Development Zone (Pty) Ltd
Contact Person on behalf of Applicant	Vernon Moonieya
Physical Address	Lower Chester Road, Sunnyridge, East London, 5201
Postal Address	Lower Chester Road, Sunnyridge, East London, 5201
Telephone	043 702 8217
Email Address	vernon@elidz.co.za

ENVIRONMENTAL ASSESSMENT PRACTITIONER

Abantu Environmental Services (Pty) Ltd is an independent environmental consultancy appointed to undertake the required Basic Assessment Process for the proposed project. Refer to **Table 2** below for EAP's details.

As per the requirements of the NEMA Regulations and in terms of Regulation 14 of Section 24H Registration Authority Regulations, 2016, as amended, the details and expertise levels of the EAP who prepared the report are provided in **Table 2** below.

Table 2: Environmental Assessment Practitioner details

Contact Details	
Consultant	Abantu Environmental Services (Pty) Ltd
EAP	Sive Mlamla
SACNASP Registration	118495 – Environmental Sciences
EAPASA Registration	2022/5204
Cell	078 207 8278
Postal Address	41 Avon Place Overbaakens Gqeberha, 6070
Fax	086 685 9536
Email	info@abantuenvironmental.co.za
Website	Website: www.abantuenvironmental.co.za

Expertise of the Lead EAP are entailed in

Table *3*.

Table 3: Lead EAP Profile

Environmental Assessment Practitioner:	Mr Sive Mlamla
Expertise:	Sive Mlamla is an environmental scientist with 11 years of experience in scientific research, lecturing and environmental consulting. His key expertise includes environmental impact assessments, environmental compliance auditing, waste planning, proposal & business development, project management, strategic planning, research design & execution, remote sensing & GIS applications for land use/cover change mapping and fluvial geomorphology. **Qualifications** • M.Sc. Geography (Catchment Hydrology) • B.Sc. Honours Environmental Geography • B.Sc. Environmental Sciences (Botany and Geography) **Professional registrations:** • Registered Professional Natural Scientist (Pr.Sci.Nat) - Reg. No. 118495 – SACNASP • Registered Environmental Assessment Practitioner (Reg. EAP (EAPASA)) - Reg. No. 2022/5204 **Training:** • Practical Implementation of Environmental Auditing and Monitoring (2025) • WET-Health Tool & WET-EcoServices for Level 1B and Level 2 assessment (2025) • WET-Health Tool for Level 1A assessment (2025) • Environmental Impact Assessments (2025) • Introduction to Synthetic Aperture Radar and Applications (2024) • Earth Observation Data Analysis with Google Earth Engine (2023) • People Management Skills (2017) • Biodiversity spatial data management, acquisition, and analysis (2018) • Water Use Licence Applications via e-WULAAS (2020) • Remote Sensing (land use/cover classification) and SWAT hydrologic modelling (2017) **Registrations and memberships:** • Member of the South African Wetlands Society Reg. No. S9BPP477 • Member of the Southern African Association of Geomorphologists • Institute of Waste Management of Southern Africa (IWMSA) Reg No. 40120001

As per the requirements of the NEMA Regulations and Regulation 14(6) in the S24H Registration Authority Regulations, 2016, as amended, details of the Candidate EAP who assisted in the compilation of the report under the supervision of the EAP are provided in

Table *4* below.

Table 4: Candidate Environmental Assessment Practitioner details

Candidate Environmental Assessment Practitioner:	Ms Zimkita Dalasile
Expertise:	Junior Environmental Scientist with 4 years' experience in environmental consulting and scientific research. My expertise includes scientific report writing, data analysis, monitoring and conducting environmental compliance audits. **Qualifications** • MSc. Environmental Management with Ecological Water Requirements • Postgraduate Diploma Integrated Water Resource Management • BSc. Environmental and Water Science **Professional registration:** • Candidate Environmental Assessment Practitioner (Cand. EAP (EAPASA)) - Reg. No. 2025/20366 • Candidate Natural Scientist (Cand.Sci.Nat.) - Reg. No. 132501 – SACNASP **Training:** • Introduction Environmental Impact Assessments (2024)

1. INTRODUCTION

1.1 PROJECT LOCATION AND DESCRIPTION

The East London Industrial Development Zone (ELIDZ) is proposed the construction of multiple warehouses, and the associated infrastructure, with summarised footprints as follows;

Erf number	Extent (m^2)	Warehouse footprint (ha)
Site 1		
60932	20622.47	2.06
60933	20622.32	2.06
60934	20622.17	2.06
Site 2		
60859	20415.40	2.04
60861	21983.25	2.20
60863	22839.16	2.28
60865	26362.58	2.64
Site 3		
60847	40861.38	4.09
Total	194328.73	19.42

Development key components;

- Warehouse building
- Office Area:
- Refuse Area
- Hardstand Area
- Roadways And Parking
- Ablution facilities

Civil / Infrastructure services will tie into the existing municipal services within the ELIDZ.



Figure 1. Typical warehouse layout.

TYPICAL HARDSTAND LAYOUT

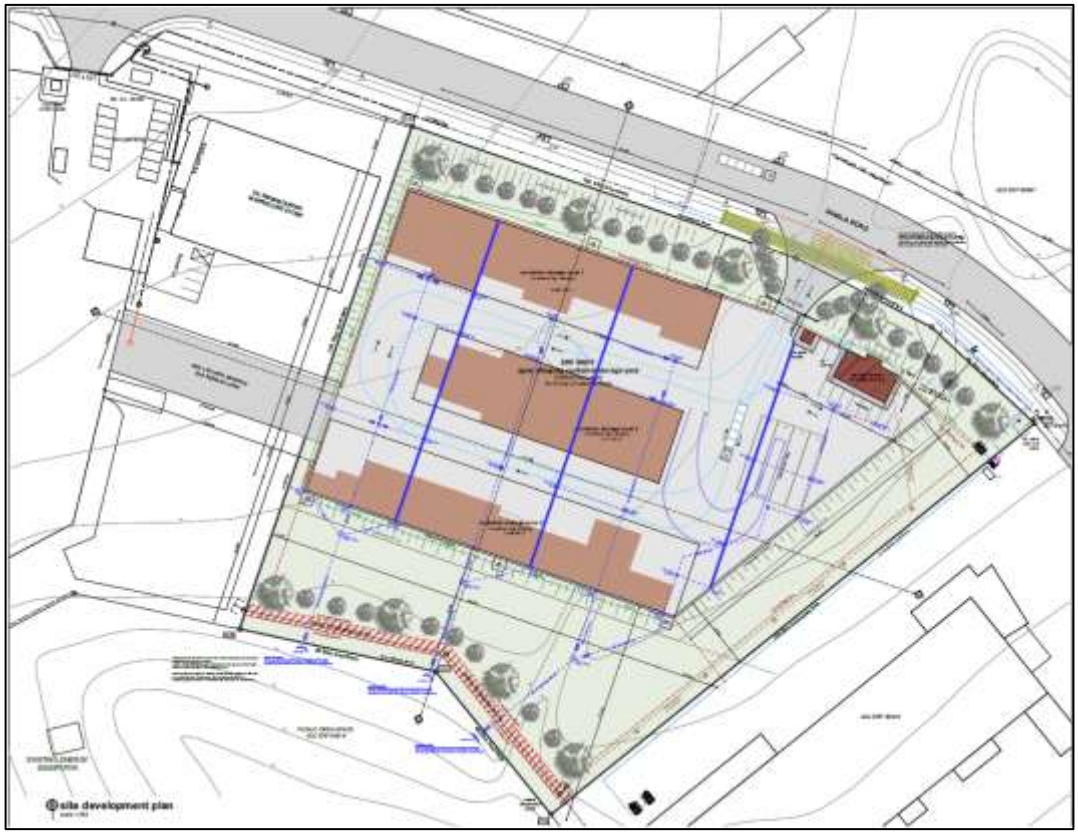


Figure 2. Typical hardstand layout.

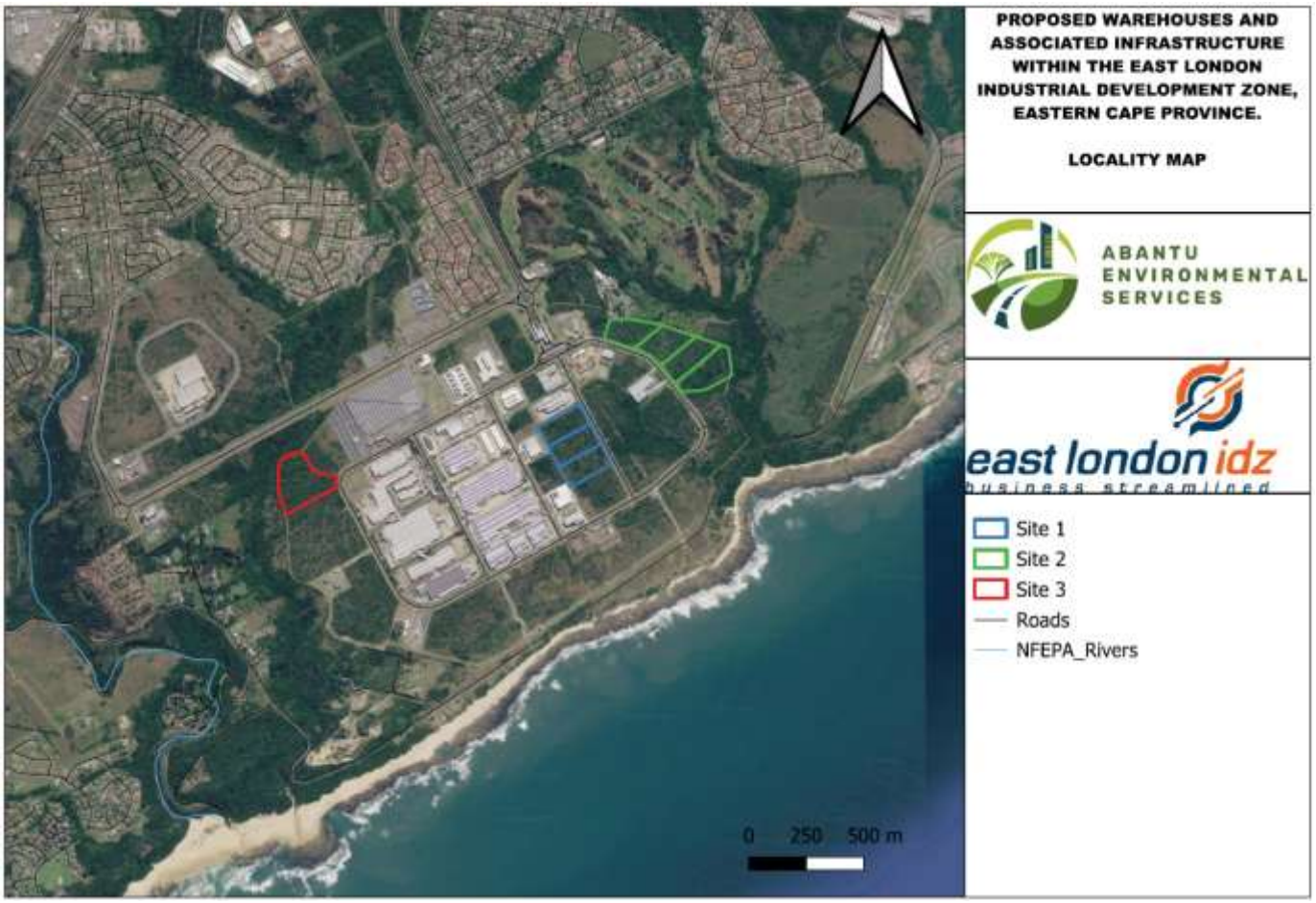


Figure 3. Locality map of the proposed development area.

1.2 ENVIRONMENTAL APPROVALS, LICENSES AND PERMITS

There were no Environmental approvals previously applied for the proposed development. However, the property has a number of EA in place for other activities (**Table 5**).

Table 5. A review of authorisation within the SEZ

Ref	Competent Authority	Holder	Date of issue	Development	Extent
EL IDZ	DEAE&T (now DEDEAT)	ELIDZ	03 May 2001	**Change in land use** From unzoned, agricultural and public open space to Use Zone 8 – General Industrial with a portion zoned to Roadways of the areas Designated as Phase 1A and Phase 1B	**Entire IDZ**
EL/141	DEAE&T (now DEDEAT)	ELIDZ	06 January 2006	**Validity Extension for change in land use EA**	**Entire IDZ**

Ref	Competent Authority	Holder	Date of issue	Development	Extent
				Validity was extended to 06 January 2007	
462/TP	DEAE&T (now DEDEAT)		19 July 2006	**Rezoning of various erven in the ELIDZ** Approved the application for the IDZ in terms of Land Use Planning Ordinance	**Entire IDZ**
AR/7/F/1(e), 1(p)/2/09	DEDEA (now DEDEAT)	ELIDZ	26 March 2010	Marine aquaculture zone	**34.5 Hectares**
EC/7/A/LN1/ LN2/M/22-25	DEDEAT	ELIDZ (BCM)	10 July 2024	Construction of West Bank harbour arterial road within the Buffalo City Municipality	

1.3 STRUCTURE OF THE EMPR

For the holistic approach to the management of environmental impacts during the construction and operation of the proposed school, this EMPr sets out the methods by which proper environmental controls are to be implemented by the Contractor and all other parties involved.

Layout of the EMPr

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

Table 6. Development phases and their descriptions

Phases	Description
Planning and Design	This section will provide guidelines on Planning and Design activities such as complying to relevant legal environmental and social authorisations; site establishment and security; public safety; environmental induction and training and awareness; site access and health and safety.
Construction	This section will provide guidelines on the construction methods and considerations. 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.
Rehabilitation	This section of the EMPr provides management principles for the rehabilitation phase of the Development. This will include best practice, procedures and responsibilities as required for various associated activities.
Operation	This section will provide guideline on the practice and responsibility as required for various activities during operation.

1.4 RECEIVING ENVIRONMENT

1.4.1 CLIMATE

The climate within the ELIDZ area is typically mild, characterized as warm temperate and humid. Temperature variations in East London are relatively limited, largely due to the moderating effect of the warm Agulhas current along the coastline. The region experiences a summer rainfall pattern, with the highest rainfall occurring between September and January. On average, East London receives approximately 530mm of rainfall annually, with mean maximum temperatures around 24°C and average minimum temperatures of about 14°C.

1.4.2 TOPOGRAPHY & HYDROLOGY

The area features moderately undulating terrain, with steeper slopes around elevated rocky ridges formed by diabase dykes and sills. The site approximately ranges from 0-152m AMSL. The ELIDZ is located within quaternary catchment R40A, which is within the Mzimvubu-Tsitsikamma Water Management Area. Two short and non-perennial rivers flow through the ELIDZ (Ngqenga river and Mvubukazi river), and the Hickmans River runs beyond the south-western boundary of the ELIDZ along Zone 1. According to the Ecosystem Threat Status, both the river and Hickmans river are considered Least Threatened. According to the ELIDZ EMF sensitivity analysis, all watercourses and aquatic features within the area are no-go areas, denoting that no development is allowed, should be avoided, unless authorised.

1.4.3 GEOLOGY & SOILS

The geology of the development area is dominated by the Middleton formations of the Adelaide Subgroup (Beaufort Group, Karoo Supergroup) and is intruded by dolerite dykes and sills. This geology influences the development of predominantly loamy soils with notable variability, including dolerite clays, grey sandy loams, intra-zonal soils, and soils associated with drainage lines, generally reflecting moderate to high nutrient content.

1.4.4 BIODIVERSITY

ELIDZ supports a complex ecological mosaic comprising nine distinct plant community types and six habitat types falling under the three major vegetation types.

1.4.5 SITE SENSITIVITY

The proposed area falls under Ecological Support Area 1. The site has low to moderate sensitivity due to existing disturbance and limited ecological value, with no highly sensitive features present.

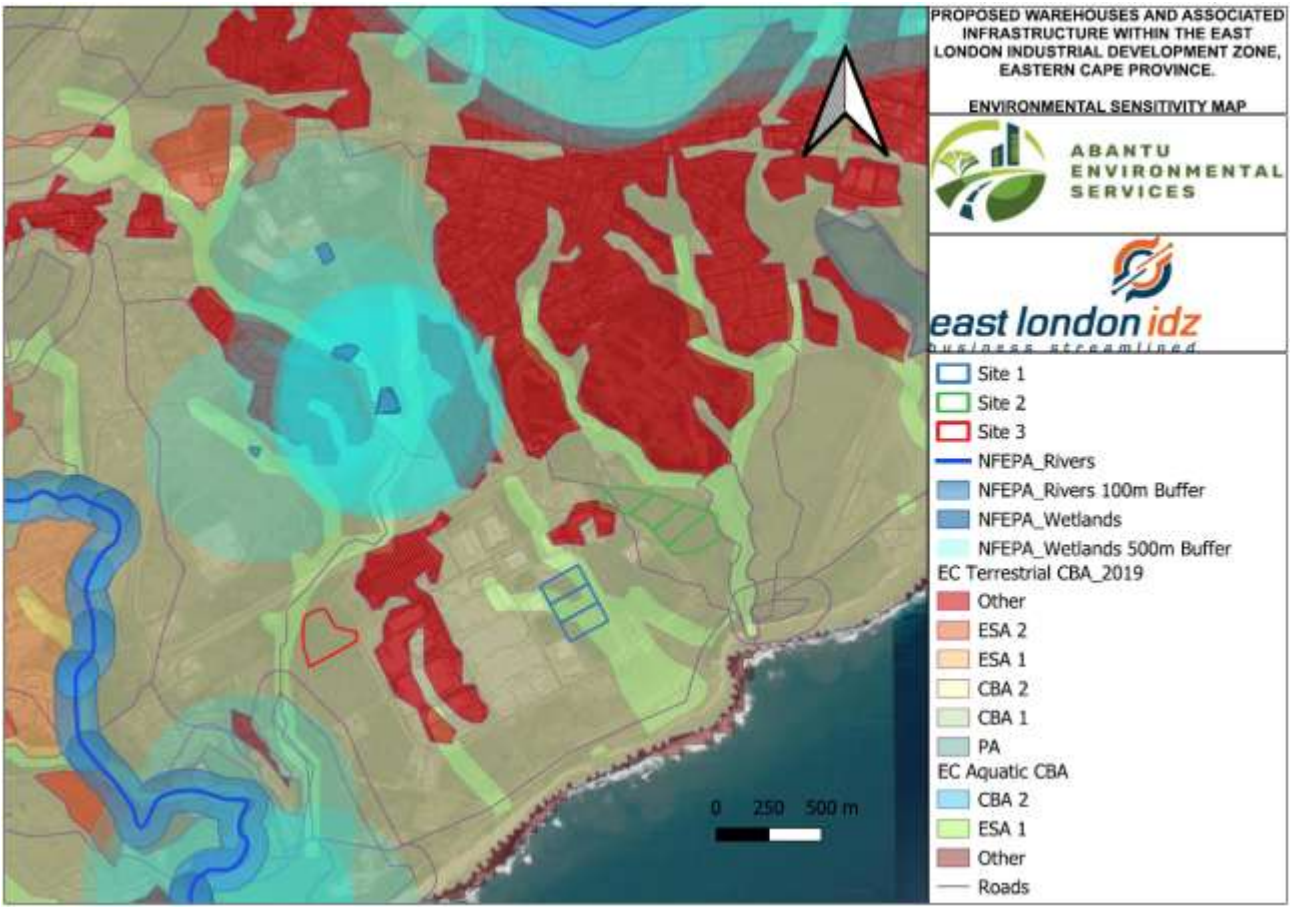


Figure 4. Environmental sensitivity map of the development area.

2. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The EMPr forms part of the contractual obligations to which all contractors/employees involved in construction, maintenance, or decommissioning work must be committed. It serves as a guideline and baseline information document for the construction and operations of the proposed project and aims to comply with section 24N of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as well as the Environmental Impact Assessment Regulations, 2014 as amended.

This section outlines the environmental management guideline measures as encompassed in **Appendix 4** of the EIA Regulations as amended that will be undertaken to avoid or minimize impacts on the environment throughout all phases of the proposed development.

The content of the EMPr prepared in terms of the Regulations is outlined in **Table 7** below. The relevant sections of the EMPr in which the requirements are addressed, is also outlined.

Table 7. Alignment to Amended NEMA 2014 EIA Regulations, Appendix 4 of GNR 326 of 2017

Prescribed content of an EMPr	Reference in the EMPr
1. (1) An EMPr must comply with section 24N of the Act and include- (a) details of – (i) the EAP who prepared the EMPr. (ii) the expertise of that EAP to prepare an EMPr, including curriculum vitae.	Before Section 1
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section 1.3
(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 1, Figure 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. (iii) construction activities. (iv) rehabilitation of the environment after construction and where applicable post closure. (v) where relevant, operation activities.	Section 5, 6, 7 & Section 8
(f) A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (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 and practices. (iii) Comply with any applicable provisions of the Act regarding closure, where applicable. (iv) Comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable.	Section 5, 6, 7 & Section 8
(g) The method of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 5, 6, 7 & Section 8
(h) The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f).	Section 5, 6, 7 & Section 8
(i) An indication of the persons who will be responsible for the implementation of the impact management actions.	Section 9
(j) The time periods within which the impact management actions contemplated in paragraph (f) must be implemented.	Section 5, 6, 7 & Section 8
(k) The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f).	Section 10
(l) A program for reporting on compliance, taking into account the requirements as prescribed by the Regulations.	Section 10
(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. (ii) Risks must be dealt with in order to avoid pollution or the degradation of the environment.	Section 9.2 & Section 10
(n) Any specific information that may be required by the competent authority.	Not applicable
1. (2) Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	Not applicable

The main objectives of this EMPr are therefore to:

- Outline environmental management measures related to project activities and provide project contractors with guidelines for carrying out Construction activities in such a way as to minimize environmental impacts;
- Be used as a foundation for the specific environmental management instructions contained in Construction contract documents, where compliance will be a contractual obligation for contractor(s);
- Be used as an educational tool, for orientation and training of project personnel and contractors;
- 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 in order to minimize the extent of environmental impacts, and to manage environmental impacts associated with the proposed project; and
- To prevent long-term or permanent environmental degradation.

2.1 ENVIRONMENTAL CODE OF CONDUCT

One of the objectives of the EMPr is to ensure that all the workforce, contractors, sub-contractors, and construction staff understand environmental issues and potential impacts on-site activities. This environmental code of conduct provides the basic rules that must be strictly adhered to.

It is the responsibility of the Site Environmental Officer, the Environmental Officer and ECO (as appointed) to ensure that each contractor, sub-contractor, and workforce understand and adhere to the Code of Conduct.

All persons are obliged to keep to the rules of this code of conduct. Ignorance, negligence, recklessness, or a general lack of commitment resulting in environmental degradation or pollution must not be tolerated.

Environmental Rules

- Do not waste electricity, water, or consumables;
- Only use authorised accesses;
- Do not litter;
- Dispose solid waste to the correct waste containers provided;
- Prevent pollution;

- Use the toilet facilities provided;
- Do not dispose contaminated wastewater to the storm water or the environment;
- Immediately report any spillage from containers, plant, or vehicles;
- Do not burn or bury any waste in the sand;
- Do not trespass onto private properties;
- Strictly leave all animals alone. Never tease, catch, or set devices to trap or kill any animal;
- Never damage or remove any trees, shrubs, or branches unless it forms part of working instructions;
- Do not deface, draw, or cut lettering or any other markings on trees, rocks or buildings in the area;
- Know the firefighting procedure and locations of firefighting equipment; and
- Know the environmental incident procedures.

2.2 CONTRACTUAL OBLIGATION

This EMPr must be included in all tender and contract documentation associated with the development. Note that notwithstanding the Companies Act, 2008 (Act No. 71 of 2008), or the Close Corporations Act, 1984 (Act No. 69 of 1984), the directors of a company or members of a close corporation are jointly and severally liable for any negative impact on the environment, whether advertently or inadvertently caused by the company or close corporation which they represent, including damage, degradation or pollution.

3. MANAGEMENT AND MONITORING PROCEDURE

3.1 ORGANIZATIONAL STRUCTURE AND RESPONSIBILITY

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

Formal responsibilities are necessary to ensure that key procedures are executed. Specific responsibilities of the Project Proponent, Project Manager, Site Manager/Engineer, Contractor/Operator and Environmental Control Officer are as detailed below.

ELIDZ/Project Manager shall:

- Be fully acquainted with the EMPr for the project;
- Ensure that the Project Engineer and the Contractor are aware of all specifications, legal constraints, standards, and procedures pertaining to the project specifically with regard to the environment;
- Ensure that all stipulations within the EMPr are communicated and adhered to by the Project Engineer and the Contractor
- Monitor the implementation of the EMPr throughout the project by means of regular site visits and meetings; and
- Order the removal of any person(s) and/or equipment in contravention of the specifications of the EMPr.

The Project Engineer shall:

- Be fully conversant with the EMPr;
- Ensure compliance with the EMPr;
- Have overall responsibility for the implementation of the EMPr;
- Liaise with the Project Manager and Contractor on matters concerning the environment;
- Prevent actions that will harm or may cause harm to the environment, and take steps to prevent pollution of the site;
- Implement remedial measures in the event of pollution incidents or environmental impacts;
- Monitor and verify that environmental impacts are kept to a minimum;
- Review and approve construction methods where necessary; and
- Order the removal of any person(s) and/or equipment in contravention of the specifications of the EMPr.

The Contractor shall:

- Be fully conversant with the EMPr;
- Ensure compliance with the EMPr;
- Ensure that all the environmental specifications contained within this EMPr are adhered to at the site;
- Regularly liaise with the Site Manager on matters relating to the environment; and
- Confine activities to the demarcated construction site.

The above responsibilities listed for the Contractor will also apply to any appointed sub-consultants.

The Environmental Control Officer (ECO) shall:

- Be fully conversant with the EMPr;
- Be fully conversant with all environmental legislation and ensure compliance;
- Ensure that all the environmental specifications contained within this EMPr are adhered to at the site;
- Regularly liaise with the Site Manager on matters relating to the environment; and
- Compile monthly reports as to the progress of the construction phases and report to all parties involved (Site Manager, Project Proponent).

3.2 ENVIRONMENTAL AWARENESS TRAINING

Training and environmental awareness is an integral part of a complete EMPr. The overall aim of the training will be to ensure that all site staff is informed of their relevant requirements and obligations pertaining to the relevant authorizations, licences, permits and the approved EMPr and protection of the environment. Environmental awareness training courses should be run for all personnel on site. Two types of courses should be run, one for the Contractor's and Subcontractor's management and one for all site staff and labourers. Courses shall be run in the morning during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register on completion that clearly indicates participant’s names, a copy of which shall be handed to the ECO.

- The size of each session shall be limited to 30 people. The Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto site. A Method Statement with respect to the organization of these courses shall be submitted.
- Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the sentiments of the EMPr to all personnel and Subcontractors involved with the Works.

4.2.1 Training Course for Management and Foremen

- The environmental awareness training course for management shall include all management staff and foremen. The course, which will be presented by the ECO, will be of approximately one-hour duration.
- The initial course shall be undertaken not less than 7 days prior to commencement of work on site. Subsequent courses shall be held as and when required.

4.2.2 Training Course for Site Staff and Labour

- The environmental awareness training course for site staff and labour shall be presented by the Contractor's SHE Officer from material provided by the ECO unless otherwise required by the Project Specification. The course will be approximately one-hour long.
- The course shall be run not more than 7 days after commencement of work on site with sufficient sessions to accommodate all available personnel. Subsequent courses shall be held as and when required.

4.2.3 Construction Personnel Information Posters

- The Contractor shall erect and maintain information posters for the information of his employees depicting actions to be taken to ensure compliance with the EMPr. Construction personnel information posters shall be laminated and erected in all eating areas, workshops, and site offices. The Contractor shall ensure that the construction personnel information posters are not damaged in any way and shall replace them if any part becomes illegible.
- Examples of these posters will be supplied to the Contractor by the ECO in electronic format.

4.2.4 The Environmental Awareness Training Programme

The environmental awareness training programme should include:

- The induction of all construction and operation staff;
- Signing by all persons, an acknowledgement of receiving and understanding the induction;
- Identification of environmental risks and job specific training on addressing these risks; and training on the implementation of emergency procedures (where necessary).

4.2.5 Topics Covered by the Environmental Awareness Programme

Various topics to be entailed by environmental awareness programmes include by not limited to:

- What is meant by "Environment"?
- Why does the environment need to be protected and conserved?

- How can construction activities impact on the environment?
- What can be done to mitigate against such impacts?
- Awareness of emergency and spills response provisions.

4. LEGISLATIONS AND GUIDELINES

All the applicable environmental standards contained within the environmental legislation will be adhered to. Below are applicable legislations and guidelines for the proposed development and have been identified as applicable:

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

The Constitution of the Republic of South Africa, 1996 provides that, everyone has a right to an environment that is not harmful to their health or well-being. It further provides that, the environment should be protected for future generations through the implementation of the reasonable legislative and other measures that prevent pollution and ecological degradation.

National Environmental Management Act, 1998 (Act No.107 of 1998) as amended.

The National Environmental Management Act, 1998 (Act No.107 of 1998) (NEMA) is a 'principles based Act' and is an overarching statute regulating various aspects of natural resources use, integrated environmental management and pollution control. The Act provides for the right to an environment that is not harmful to the health and wellbeing of the South African people; sustainable development, environmental protection, equitable distribution of natural resources; and the formulation of environmental management frameworks. Its definition of the environment includes the land and water of the earth, microorganisms, plant and animal life or a combination of those things, and the inter relationships among them. The Act aims to provide for cooperative environmental governance by establishing principles for decision making on matters affecting the environment, institutions that will promote co-operative governance, and procedures for coordinating environmental functions exercised by organs of state. Section 24 Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment.

Environmental Impact Assessment Regulation, 2014 as Amended

The Environmental Impact Assessment (EIA) Regulations promulgated under NEMA in 2014 provide a list of activities which are subject to an Environmental Authorisation (EA) process prior to construction or implementation. In accordance with the 2014 EIA Regulations, (as amended) an EIA process is required owing to the applicability of the activities listed in Table 2. According to the NEMA Regulations these activities may not commence without environmental authorization from the competent authority which requires the

investigation, assessment and statement of potential impact of activities and must follow the procedure as described in the EIA Regulations.

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

The National Environmental Management: Biodiversity Act (NEM:BA) makes provisions for achieving the objectives of the United Nation's Convention on Biological Diversity, to which South Africa is a signatory. The Bill promotes management, conservation and sustainable use of indigenous biological resources, and provides for:

- the management and conservation of biological diversity;
- the use of indigenous biological resources in a sustainable manner; and
- the fair and equitable sharing of benefits arising from commercialization through bio-prospecting of traditional uses and knowledge of generic resources.

The Bill gives effect to international agreements relating to biodiversity which are binding on the Republic and provides for co-operative governance in biodiversity management and conservation and provides for a National Biodiversity Institute to assist in achieving the above objectives. The Act gives wide powers to the National Biodiversity Institute to inter alia protect flora and fauna in appropriate enclosures, the collection of information, undertaking and promotion of research on indigenous biodiversity and the sustainable use of indigenous biological resources, the prevention, control or eradication of listed invasive species, biodiversity planning and other functions. This act lists all critically endangered, vulnerable and protected species. The potential occurrence of any such species will be investigated in the BA process.

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

In terms of chapter 3 section 12-20, water resources are to be protected, used, developed, conserved, managed and controlled. This Act recognizes that water is a scarce resource; it is a natural resource that belongs to all of South Africa's people. The National Department of Water and Sanitation is responsible for the nation's water resource and also the Minister of Department of Water and Sanitation ensures that the water resource is "protected, used, developed, conserved, managed and controlled" through the implementation of this Act (National Water Act 36 of 1998).

This Act makes provisions for the protection of surface water and groundwater resources and their sustainable management for the prevention and remediation of the effects of pollution, and for the control of

emergency occurrences. Section 21 of the National Water Act (NWA) lists water uses for which a Water Use Licence will be required.

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

The main objective of the Air Quality Act (NEMAQA) is the protection of the environment and human health in a sustainable (economic, social and ecological) development framework, through reasonable measures of air pollution control.

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

The Occupational Health and Safety Act make provisions in regulations Section 8 for the general duties of employers to their employees. The act provides for the health and safety of people at work utilising machinery and the protection of others against health and safety risks associated with activities on site/work. General Administrative Regulations (2003) describe the administration of the various OHS Regulations, including the designation of health and safety committees, the reporting and recording of incidents and occupational diseases. This Act is applicable to all contractors during the planning, construction and operational phases of the project.

To provide for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery; the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.

Hazardous Substance Act (No 15 of 1973).

Provides for the definition, classification, use, operation, modification, disposal or dumping of hazardous substances.

National Environmental Management: Waste Act, 2008 (Act No.59 of 2008).

During construction waste will be produced, in either liquid, solid and/or hazardous state, and this waste will be required to be adequately and appropriately disposed of. There are several Regulations or Acts that are applicable to the proposed development in terms of waste management. To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development; to provide for institutional arrangements and planning matters; to provide for national norms and standards for regulating the management of waste by all spheres of government; to provide for specific waste management

measures; to provide for the licensing and control of waste management activities; to provide for the remediation of contaminated land; to provide for the national waste information system; to provide for compliance and enforcement; and to provide for matters connected therewith.

This EMPr process also takes consideration the following legislation

- South African National Standard SANS 10103:2008 (The Measurement and Rating of Environmental Noise with Respect to Annoyance and Speech Communication).
- National Noise Control Regulations (1998).

5. PLANNING, DESIGN AND PRE-CONSTRUCTION PHASE

This section of the EMPr provides management principles and mitigation measures for the pre-construction phase of the project. The environmental actions, procedures, and responsibilities as required during the pre-construction phase are specified below.

Table 8. Impacts and Mitigation Measures in Planning and Design Phase

	IMPACTS/ ASPECTS	RECOMMENDED MITICATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
	Direct Impact			
1.	Legal and environmental compliance	• Ensure all applicable environmental authorisations and permits obtained for the development. • Environmental Control Officer (ECO) to be appointed to monitor compliance with authorisations and permits conditions. • All health and safety permits and certification to be in place. • Environmental files to be compiled prior to commencement of clearance activities. • Methods statement to be compiled for all works with environmental aspects and impacts, for approval of the ECO.	• ELIDZ	• Once-off • Ongoing
2.	Site establishment	• Site camps and laydown areas should be located outside the 100m buffer of watercourses • Develop a site establishment method statement • The Contractor must prepare a Construction Site Plan prior to establishing on-site. This plan must indicate: • The boundaries of the site that encompass all construction-related activities. • Vehicle and pedestrian access points and routes • Laydown area/s, offices, stockpile areas, etc. • Construction site to be selected by the contractor in conjunction with the developer, consulting engineer and the ECO.	• ELIDZ • Contractor	• Once-off • Ongoing
3.	Inadequate environmental planning	• The site 3 area encroaching into the 100m regulated water area should be a no-go / no development area, falling under the area allocated as open space • Ensure alignment with the ELIDZ EMF environmental sensitivities and land use guidelines.	• ELIDZ • Contractor	• Ongoing

	IMPACTS/ ASPECTS	RECOMMENDED MITICATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
	Direct Impact			
		• Avoid highly sensitive areas where possible. • Clearly demarcate development footprint prior clearing.		
4.	Stormwater	• Maintain natural drainage patterns. • Avoid clearing within watercourse and buffer areas.	• Contractor	• Ongoing

6. CONSTRUCTION PHASE

This section of the EMPr provides management principles and mitigation measures for the construction phase of the project. Environmental actions, procedures, and responsibilities 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 Manager and Environmental Control Officer.

Table 9. Impact and Mitigation Measures in Construction Phase

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
	Direct impact			
1.	Legal and environmental non-compliance	• ECO to be appointed to audit environmental compliance with conditions in the EMPr and other permits and authorisations.	• ELIDZ	• Ongoing
2.	Site establishment and security	• Construction site to be selected by the contractor in conjunction with the Holder • The site to be clearly and firmly demarcated using appropriate methods. • No-go areas to be clearly and firmly barricaded using appropriate techniques. • Necessary health and safety as well as road construction signage to be installed	• Contractor	• Once-off • As required • Ongoing
3.	Damage to existing civil services, infrastructure and properties	• Ensure that all existing services and infrastructure are known, mapped, and marked to prevent potential damage. • Maintain complaints and incident registers on site throughout the project duration.	• Contractor	• Once-off • As required • Ongoing

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
4.	Environmental awareness and training	• Undergo environmental induction for all staff and foremen prior to commencement of work on site. • A training programme to be presented by ECO on possible environmental risks that may result from construction activities and how to deal with these (including a reporting structure) must be made available prior to construction commencing. • Undergo internal health and safety and environmental training (induction) to cover all identified project impacts and linked activities.	• Contractor	• Once-off • As required
5.	Poor waste management	• Provision of waste bins for general and hazardous waste. • Waste bins should be marked accordingly and have waterproof lids. • Littering and dumping are prohibited. • Development of a waste disposal register to serve as proof of safe disposal of waste generated from site activities. • Promote recycling activities through provision of waste bins for recyclables which may be dominant waste types. • Ablutions to be kept clean with necessary needs and must be regularly serviced by a certified service provider and manifests be kept on site.	• Contractor	• Ongoing • As required
6.	Vegetation clearing and habitat loss	• All areas must be surveyed by a qualified floral and faunal specialist prior to commencement of vegetation clearing. • A plant search and rescue must be undertaken prior to commencement of construction activities. • Minimize vegetation clearance and confine to the infrastructural footprint. • Implement systematics and incremental rehabilitation. • Regular monitoring of implementation of this plan for the rehabilitation of disturbed areas must be conducted throughout the duration of the construction phase.	• Contractor	• As required
7.	Disturbance of fauna and loss of habitats.	• A suitably qualified individual is to carry out a faunal “search and rescue”, which fauna are to be relocated to a suitably protected area prior commencement of vegetation clearing. Should any injured fauna be found, they are to be taken to be examined by a veterinarian and if deemed suitable for rehabilitation, such are to be taken to a suitable faunal rehabilitation centre, in consultation with the department’s biodiversity unit. Any species protected in terms of the Cape Nature and	• ELIDZ • Contractor	• As required • Ongoing

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		Environmental Ordinance (Ordinance 19 of 1974) which need to be removed or relocated require the necessary permits to be obtained from DEDEAT. • Any fauna or avi-fauna on site is to remain undisturbed as far as possible and shall not be trapped/killed or otherwise caught by any contractor or individuals carrying out any clearing or construction work. • No termite mounds should be intentionally destroyed. Any lizards, geckos, agamids, monitors or snakes encountered should be allowed to escape to a suitable habitat away from the disturbance. • The construction must be completed as quickly as possible - no fauna species may be killed. • Any bird nests that are found during the construction period must be reported to the Environmental Control Officer (ECO). • Site access should be controlled and no unauthorized persons should be allowed onto the site. • Any fauna directly threatened by the associated activities should be removed to a safe location by a suitably qualified specialist. • The collection/trapping, hunting, or poisoning of any animals at the site is strictly forbidden. Signs must be put up to enforce this. Personnel should not be allowed to wander off demarcated areas. • Fires must not be allowed on site. • All hazardous materials should be stored in an appropriate manner to prevent contamination of the site. Any accidental chemical, fuel, and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill. • Schedule activities and operations during the least sensitive periods, to avoid migration, nesting, and breeding seasons. • Use environmentally friendly chemical products wherever possible.		
8.	**Loss of SCC**	• A plant search and rescue to be conducted by a suitably qualified botanical specialist prior to commencement of any vegetation clearing for each progressive stage of clearing for construction, for any protected species and species of special concern that may be affected by the development as well as other indigenous plant	•	•

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		specimens which can be relocated. Such specimens are to be relocated and appropriately transplanted, where applicable and practical to the open space and forest patch conservation area. • Any protected species which need to be removed or relocated require the necessary permits to be obtained from DEDEAT for those species protected under the Cape Nature and Environmental Ordinance (Ordinance 19 of 1974). The relevant permits are to be obtained from the department of Forestry, Fisheries and the Environment for any species protected under the National Forest Act (Act 84 of 1998). • No plant species, whether native or exotic, should be brought into, or removed from, the development site, to prevent the spread of exotic or invasive species or the illegal collection of plants. • No plants may be translocated or otherwise uprooted or disturbed for rehabilitation or other purposes without express permission from the Contractor's EO or without the relevant permits. • Clearing of vegetation should be minimized and avoided where possible. • Areas of indigenous vegetation, even secondary communities outside of the direct project footprint, should under no circumstances be fragmented or disturbed further. • Immediately rehabilitate all areas outside of the development site that were disturbed and implement mitigation measures to prevent associated impacts from re-occurring. • All temporary structures used during the construction phase must be removed upon project completion. • No storage of vehicles or equipment will be allowed outside of the designated project areas. • All vehicles, if present on site, must remain on demarcated roads and no unnecessary driving in the veld outside these areas are allowed. • Areas that are denuded during construction must be re-vegetated with indigenous vegetation to prevent erosion. This will also reduce the likelihood of encroachment by IAPs.		

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• After construction and/operation, rehabilitate any damaged areas to have an acceptable vegetation cover according to rehabilitation recommendations as provided within a site-specific Rehabilitation Plan compiled by a suitably qualified botanist. • Revegetation should occur naturally where topsoils were not severely altered.		
9.	Material stockpiling and dust pollution	• Stockpiles of excavated earth must not exceed 2 m height and should be covered to avoid wind induced erosion. • Implement dust suppression measures as required. • Vehicle speed should be kept at a minimal reduce dust pollution. • Fines haulage and delivery plants to be covered to prevent dust pollution. • Excavations and other clearing activities must only take place during agreed working times and permitted weather conditions to avoid drifting of sand and dust into neighboring areas.	• Contractor	• As required
10.	Hazardous material storage and handling	• Material storage and handling and hazardous material storage area to comply with all relevant environmental and health and safety requirements. • Methods Safety Datasheets for all hazardous material to be kept on site. • Cement and concrete must only be mixed in designated areas and on an impermeable surface	• Contractor	• Ongoing • As required
11.	Noise pollution	• Ensure that construction vehicles and working machinery are serviced and are in good condition to reduce their noise levels. • Construction activities should be maintained during the normal working hours (08h00-17h00). • Pedestrians and motorists should be accommodated through appropriate traffic warning signs and measures. • Where works are to be carried outside the normal working hours, the affected adjacent residents must be informed, and such be undertaken within the shortest time possible	• Contractor	• Ongoing • As required
12.	Stormwater management	• Natural (storm water) runoff must be diverted away from the construction area.	• Contractor	• Ongoing • As required

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• The construction site must be managed with silt traps or erosion berms in order to prevent pollution on surface water or groundwater, due to suspended solids, silt or chemical pollutants • Minimise disturbance and clearing of vegetation • The site must be continuously monitored for erosion. • Appropriate erosion reducing methods must be implemented if required. • Prevent sediment-laden runoff from leaving the site. • Avoid clearing during heavy rainfall periods where possible. • Minimize the number of disturbed areas; only disturb the absolute minimum number of areas required for the project. All other areas should be left undisturbed. • Any signs of erosion resulting from the project activities must be rectified immediately and monitored thereafter to ensure that they do not re-occur. • Any activity occurring on or near steep slopes will require that adequate slope protection is provided. • All denuded areas resulting from the development should be re-vegetated, post-construction, with locally occurring native plant species to bind the soil and limit erosion potential. • Roads and other disturbed areas within the study area should be regularly monitored for erosion problems, and problem areas should receive follow-up monitoring to assess remediation success. • Existing access routes and walking paths must be made use of wherever possible. • Silt/sediment traps/barriers should be used where there is a danger of topsoil or material stockpiles eroding and entering downstream drainage lines and/or other sensitive areas. These sediment/silt barriers should be regularly maintained and cleared so as to ensure effective drainage of the areas • The construction of any stabilisation features must be undertaken to prevent erosion, where deemed necessary. • If any soil becomes disturbed, then it must be stabilized until revegetation can take place. This can be done either temporarily or permanently and can include methods such as using layers of either sterile mulch (that will not drastically alter soil conditions), blankets, wood binders, geo-textiles (such as geojute netting), artificial		

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		turf blankets, mats, or fibre rolls, depending on availability and how appropriate the measures are for the project. • Runoff water on exposed areas should be controlled, for example with use of sediment traps, articulated concrete blocks, riprap, or geotextiles. • Retain all wetlands, natural forest thickets, and riparian corridors as green/open-space zones in accordance with the layout plan. • Enforce no-go buffers around wetlands, primarily to protect the breeding habitat of the African Marsh Harrier (Circus ranivorus), which is confirmed on site. This same buffer will also provide adequate protection for any occasional foraging or visiting individuals of the Grey Crowned Crane (Balearica regulorum), a TOPS-listed species. • The wetland area and buffer should be considered as a "No-Go" zone for any new developments or activities and no disturbance, vegetation clearing, earthworks, or high-noise construction activities may occur at any time. Only approved activities allowed with the buffer and wetland area are vegetation management activities such as woody encroachment and invasive alien plant control or controlled grazing. • Where development occurs near the buffer edge, such activities should be scheduled outside the main avifaunal breeding season (September – May). • Conduct ECO/EO pre-construction walk-throughs prior to the start of each new development phase to confirm the absence of nests, burrows, or sensitive fauna within and adjacent to construction areas. • Any signs of erosion resulting from the project activities must be rectified immediately and monitored thereafter to ensure that they do not re-occur. • All denuded areas resulting from the development should be re-vegetated, post-construction, with locally occurring native species, to bind the soil and limit erosion potential. • Roads and other disturbed areas within the development site should be regularly monitored for erosion problems, and problem areas should receive follow-up monitoring to assess the success of the remediation. • Appropriate stormwater management measures must be implemented to manage surface runoff from the sites.		

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
13.	Contamination of surface and groundwater from hazardous substances	• Construction plant should be well serviced and in good condition. • Drip trays should be provided for stationary and overnight parked plant. • Concrete batching should be done on impermeable surfaces not directly onto soil substrate. • Hazardous material spillages must be cleaned up immediately with the contaminated substrate and be disposed of to a registered landfill site	• Contractor	• Ongoing • As required
14.	Proliferation of invasive alien vegetation	• Regular and ad-hoc alien vegetation removal. • Construction site maintenance to include vegetation control and removal of alien invasive vegetation from the land and other surrounding areas • Develop and implement an Alien Vegetation Management Plan to mitigate the establishment and spread of undesirable alien plant species during construction and operations. • Site must be continuously monitored and managed for alien vegetation growth. • Any alien invasive species which colonises disturbed ground must be systematically removed and destroyed prior to it attaining the seed formation stage. • Removal must occur through appropriate methods such as hand pulling, application of chemicals, cutting, etc. in accordance with the NEMBA: Alien Invasive Species Regulations. • I&APs, wherever present, must be removed from the site as per NEM:BA requirements. • Regular monitoring for alien plants at the site should occur and could be conducted simultaneously with erosion monitoring. • When alien plants are detected, these should be controlled and cleared using the recommended control measures for each species to ensure that the problem is not exacerbated or does not re-occur and increase to problematic levels. • Clearing methods should aim to keep disturbance to a minimum and must be undertaken in accordance with relevant guidelines. • Any area that is cleared of IAPs must receive regular follow-up treatments (preferably at least three follow-ups) to ensure that populations do no re-establish after such initial clearing efforts.	• ELIDZ • Contractor	• As required

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• Any chemicals/herbicides used during clearing efforts must strictly be used only in accordance with the manufactures guidelines. • Under no circumstances should unqualified persons be allowed to conduct IAPs clearing using chemicals/herbicides without supervision from a suitably qualified pest control officer. Such a qualified pest control officer must be present on site at all times during IAPs clearing. • No planting or importing of any alien species to the site for landscaping, rehabilitation, or any other purpose should be allowed.		
15.	Water consumption	• Water for all construction activities should be sourced from a bona fide source. • Access to clean drinking water shall be provided to employees and visitors. • If water is stored on site, drinking water and multi-purpose water storage facilities shall be clearly distinguished and designated. • Water conservation measures must be adopted into the building design. • Rainwater tanks should be considered.	• Contractor	• Ongoing • As required
16.	Energy consumption and emissions	• During the construction phase, the contractors are advised to consider the use of generators.	• Contractor	• Ongoing • As required
17.	Palaeontological and heritage resource disturbance	• Recommendations of the specialists for cultural, heritage and archaeological impact assessment as well as Palaeontological resource assessment should be implemented fully during the course of the project. • The stripping of the expansive soil for firmer aggregates and foundation preparation of the rank flooring and drainage construction must be done with precision and careful observation of any possible fossils. • Should fossil remains be discovered during the detailed geological inspection, the ECO responsible for the developments would be alerted immediately. • Such discovery must be protected so that a professional palaeontologist will make appropriate mitigation. • If a new paleontological resource is discovered, it is the jurisdiction of the SAHRA to recover and store such resources. Hence, further exploration must be conducted by a professional palaeontologist.	• Contractor	• As required

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• Demarcate a 20m no-go development buffer with a fence or permanent construction barricade. Redesign placement of service roads and other infrastructure to avoid the burial site and the no-go buffer. • Monitor the 20m no-go development buffer in order to detect potential impact on the site at the earliest opportunity. • Monitoring of ground and vegetation clearance of the area of the Project area by a knowledgeable ECO or Heritage Specialist during the Preconstruction Phase, since shell middens are known to occur within the ELIDZ. • If shell middens or any accidental finds are made all activities in the vicinity of the of the find must cease immediately and a 20m no-go buffer zone must be implemented. • The ECPHRA must be notified immediately of the find and a heritage specialist appointed to investigate the nature of the find. • Given the subsurface nature of archaeological material, general monitoring of the development progress by an informed ECO is recommended for all stages of the project. Should any subsurface palaeontological, archaeological or historical material, or burials be exposed during construction activities, all activities should be suspended, and the archaeological specialist should be notified immediately.		
18.	Traffic disruption-	• Pedestrians and motorists should be accommodated through appropriate traffic warning signs and measures. • Speed should be kept at a minimum next to the construction site.	• Contractor	• Ongoing
19.	Employment and business opportunities-	• Employment of local labour and contracting of SMMEs.	• Contractor	• Ongoing • As required

7. REHABILITATION PHASE

Post construction obligations, also application during works, of the project are outlined in the subsequent table to ensure that contractor leaves site in an acceptable condition with minimal environmental impacts.

Table 10. Impact and Mitigation Measures in Rehabilitation Phase

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
1.	Inadequate environmental compliance	• All rehabilitation activities must comply with the approved EMPr and conditions of the Environmental Authorization.	• Contractor	• Ongoing
2.	Poor site de-establishment	• All construction camps to be left clean, free of litter and any other foreign objects and material relating to construction activities.	• Contractor	• Once-off
3.	Inadequate re-vegetation of disturbed areas	• All disturbed areas must be re-vegetated as soon as practicable after construction. • Indigenous, locally occurring plant species must be used. • Topsoil must be replaced and protected during re-vegetation. • Irrigation or temporary protection measures must be provided where required to ensure successful establishment. • Disturbed areas should be rehabilitated and revegetated with similar indigenous vegetation once construction has been completed.	• Contractor	• Ongoing
4.	Visual and landscape degradation	• Implement landscaping and rehabilitation in accordance with an approved landscaping plan. • Shape and contour disturbed areas to blend with surrounding landforms. • Remove temporary structures and restore natural visual character where feasible.	• Contractor	• Ongoing
5.	Downslope and downstream stormwater-channel sedimentation	• Appropriate erosion control and slope stabilization measures should be implemented. • Re-vegetation of disturbed and exposed areas with indigenous vegetation. • Stabilise exposed areas. • Monitor for erosion and implement corrective measures.	• Contractor	• Ongoing

	IMPACTS/ ASPECTS	RECOMMENDED MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• Silt/sediment traps/barriers should be used where there is a danger of topsoil or material stockpiles eroding and entering any downstream drainage lines and other sensitive areas. • These sediment/silt barriers should be regularly maintained and cleared so as to ensure effective drainage of the areas.		
8.	Increased prevalence invasive alien vegetation	• Maintenance of the receiving areas should include alien vegetation control and eradication. • Ongoing monitoring and removal of alien vegetation • Regular monitoring for alien plants at the site should occur and could be conducted simultaneously with erosion monitoring. • When alien plants are detected, these should be controlled and cleared using the recommended control measures for each species to ensure that the problem is not exacerbated or does not re-occur and increase to problematic levels. • A suitable weed management strategy must be implemented in the construction and operational phases and can be included in the EMPr. Note that it is a legal requirement that any Category 1a, 1b, and Category 2 invasive species be controlled in accordance with NEM:BA A&IS Regulations.	• Contractor	• Once off

8. OPERATIONAL PHASE

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

Table 11. Impact and Mitigation Measures in Operational Phase

	IMPACTS/ ASPECTS	MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
1.	Legal and environmental non-compliance	• All relevant legislation and policy must be consulted, and the proponent must ensure that the project is compliant with such legislation and policy. The operational conditions outlined in the EA must be adhered to.	• ELIDZ	• Regularly
2.	Safety and security	• Implement controlled access points, using security systems or personnel to regulate entry. • Develop an Emergency Response Plan.	• ELIDZ	• Regularly
3.	Social and economic benefits	• Developer to prioritize local skilled and unskilled labour for the operation. • Local contractors should be prioritized for all procurement. • Prioritize local staff and service providers for day-to-day operations.	• ELIDZ	• Regularly
4.	Sanitation and hygiene	• Maintain sanitation facilities in good and hygienic conditions. • Regular inspection of faults, leaks, and upgrades requirements. • Any leaks and failures of the sewer system must be fixed immediately	• ELIDZ	• Regularly
5.	Freshwater consumption	• Water-wise practices should be considered, such as the use of rainwater for non-portable water requirements. • Leak monitoring and detection repairs be implemented.	• ELIDZ	• Regularly
6.	Solid waste generation	• Compilation of a waste management plan, amongst other things to consider: • Provision of waste bins for general and hazardous waste	• ELIDZ	• Regularly

EMPR: PROPOSED WAREHOUSES AND ASSOCIATED INFRASTRUCTURE WITHIN THE ELIDZ

	IMPACTS/ ASPECTS	MITIGATION MEASURES	RESPONSIBLE PARTY	FREQUENCY OF ACTION
		• Promote recycling activities through provision of waste bins for recyclables which may be dominant waste types such as metal, plastics, etc.		
7.	Energy consumption	• Consider use of alternative energy sources such as solar panels placed on the infrastructure roofs to power the facility.	• ELIDZ	• Regularly
8.	Greening	• Maintain acceptable levels of greenness to offset certain climate impacts.	• ELIDZ	• Regularly
9.	Stormwater management	• Stormwater management infrastructure must be properly maintained and monitored.	• ELIDZ	• Regularly

9. ROLES AND RESPONSIBILITIES

9.1 PROJECT COORDINATOR

The Project Coordinator is responsible for overall management of the project and the implementation of the EMPr. The following tasks fall within his / her responsibilities:

- Be familiar with the recommendations and mitigation measures of this EMPr, and implement these measures;
- Monitor site activities on a daily basis for compliance;
- Conduct internal audits of the construction site against the EMPr;
- Confine the construction site to the demarcated areas; and
- Rectify transgressions through the implementation of corrective action.

9.2 ENVIRONMENTAL CONTROL OFFICER

The Developer must appoint a suitable qualified Environmental Officer that will be responsible for ensuring compliance to the EMPr. The Environmental Control Officer on site will conduct regular site visits to ensure the success of the EMPr.

The Environmental Control Officer will:

- Do regular site visits to be able to compile site inspection reports for the inclusion in the EMPr as an addendum if necessary.
- Report compliance and non-compliance to the competent authority.
- Know the contents and implications of the environmental report and monitor the implementation of the findings using the EMPr.
- Act as a guide, advisor and consultant to the contractor and client on environment issues during construction. This will be achieved by continuous auditing of the project, identification of problem areas and provisioning of action plans to avoid costly stoppages and /or environmental damage.
- Ensure that people can report incidents and recommend corrective action when required for aspects of non-compliance within the EMPr
- Upgrade the EMPr as necessary and inform the relevant parties of the changes.

9.3 CONTRACTOR

The construction contractor is responsible for submitting reports on implementation of the environmental plan as described by the project proponent and authorities. The contractor must always ensure compliance with the EMPr during construction activities and maintain an environmental register which keeps a record of all environmental incidents that occur such as

- Public involvement / complaints;
- Health and safety incidents;
- Incidents involving Hazardous materials stored on site; and
- Non-compliance incidents.

10. IMPLEMENTATION OF ENVIRONMENTAL MANAGEMENT PROGRAMME

A copy of the EMPr must be kept on site at all times during the construction period. The EMPr will be binding on all contractors operating on the site and must be included within the Contractual Clauses. The monitoring programme must be implemented for the duration of the construction and operation of the sport facility. This programme should include:

- Establishing a baseline of pre-construction site conditions validated with photographic evidence.
- Monthly audits will be conducted by an independent ECO for the construction phase to ensure compliance with the conditions stipulated in this EMPr and, where necessary, make recommendations for corrective action. These audits can be conducted randomly and do not require prior arrangement with the Project Coordinator.
- Compilation of an audit report with a rating of compliance with the EMPr. The ECO must keep a photographic record of the demarcated site and construction area. The Contractor must be held liable for all unnecessary damage to the environment. A register must be kept of all complaints from the community. All complaints must be handled immediately to ensure timeous rectification by the responsible party.

10.1 ENVIRONMENTAL AUDITS AND MONITORING

The construction contractor will submit reports on implementation of the environmental plan as described by the project proponent and authorities. An environmental audit will be conducted prior to the development and construction activities. This environmental audit will ensure that:

- Mitigation measures are implemented as prescribed in the Environmental Management Programme;
- The relevant authorities are kept informed about progress with the project and that they are given assurance that the project is implemented and managed as prescribed in the EMPr.
- Periodic inspections and/or audits are performed.
- Compliance to the conditions of the EMPr is adhered to and a report compiled.
- Reviews of conformance against policies and procedures stated in this document are performed.
- Supervisors in all work areas will conduct performance and compliance reviews, using the EMPr as guideline to ensure compliance.
- Inspections will occur monthly (or as required).

10.2 RECORD KEEPING

Documents to be maintained by the designated representative/ site agent are to include:

- Training records.
- Inspection records.
- Records of non-compliance and corrective action.
- Records of all complaints, concerns or issues and corrective action.
- Environmental Management Programme.
- All incidents reports.

All records will be kept for up to a year after the completion of the project or in accordance with other legal requirements as they apply.

10.3 EMPR UPDATES

The EMPr will be subject to on-going review throughout the course of the project to ensure its continued suitability, adequacy, and effectiveness. This review may include but will not be limited to monitoring and measuring information, performance data, assessment and audit results and other relevant information and data.

10.4 NON-COMPLIANCE

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

Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define how the environment is managed. Failure to redress the cause must be reported to the competent authority 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 and site extensions;
- 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 within a specific time.

It is recommended that the Contractors institute penalties for the following less serious violations and any others determined during work, as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Persistent or unrepaired 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.
- Possession or use of intoxicating substances on site.
- Any vehicles being driven more than designated speed limits.
- Removal and/or damage to fauna, flora, cultural or heritage objects on site.
- Urination and defecation anywhere except at designated facilities.

10.5 INCIDENT REPORTING AND REMEDY

If a leakage or spillage of hazardous substances occurs on site, the local emergency services must be immediately notified of the incident. The following information must be provided:

- the location;
- the nature of the load;
- the extent of the impact; and
- the status at the site of the accident itself (i.e., whether further leakage is still taking place, whether the vehicle or the load is on fire).

Written records must be kept on the corrective and remedial measures decided upon and the progress achieved therewith over time. Such progress reporting is important for monitoring and auditing purposes. The written reports may be used for training purposes to prevent similar future occurrences.

10.6 PENALTIES

Where environmental damage is caused or a pollution incident, and/or failure to comply with any of the environmental specifications contained in the EMPr, the Developer and/or the Contractor will be liable. The following violations, and any others determined during work, should be penalised:

- Hazardous chemical/oil spill and/or dumping in non-approved sites.

- Damage to sensitive environments.
- Damage to cultural and historical sites
- Unauthorised removal/damage to indigenous trees and other vegetation, particularly in identified sensitive areas.
- Uncontrolled/unmanaged erosion.
- Unauthorised blasting activities (if applicable).
- Pollution of water sources.
- Unnecessary removal or damage to trees.

11. SUMMARY OF RECOMMENDATIONS AND CONCLUSION

The proposed development will have minimal environmental impacts which are manageable through good engineering practices and following all environmental recommendations prescribed. Although all foreseeable actions and potential mitigations or management actions are contained in this document, the EMPr should be considered as a day-to-day management document. The EMPr thus sets out the environmental standards that are required to minimize the negative impacts and maximize the positive benefits of the local communities. An EMPr is a “live document” and its continuous review and correct management will definitely result to the successful construction of the proposed development.

The contractor is to be made aware of the potential cost and timing implications needed to fulfill the implementation of the EMPr, thus adequately costing for these.

Annexure 1: Rehabilitation Schedule and Guideline

Where applicable, the rehabilitation schedule and procedure to be adhered to is as follows (this methodology should be updated during the construction phase):

Table 12. Rehabilitation schedule and guideline

Step	Method	Equipment
1	Remove all construction material from the area where construction has been completed	To be undertaken by hand.
2	The ground should be sloped so as to attain a natural slope and to attain a natural water flow, if it has been altered during construction (the natural slope should be altered as little as possible during construction).	To be undertaken by hand.
3	Topsoil that has been stockpiled during construction must be applied to the area to undergo rehabilitation. The depth of the topsoil layer to be applied depends on the natural depth of topsoil in the area, and the amount of topsoil that may have been lost during construction.	Topsoil must be applied from the topsoil stockpiled during construction
4	The area should be mulched to improve water retention, and brushwood applied to act as a soil stabiliser. Mulch and brushwood must be applied more heavily in areas which are presently well-wooded (or as directed by the ECO).	The mulch used should be woodchip, obtained commercially or from trees removed during site clearance. The brushwood is obtained from the bushes and trees removed during site clearance.
5	The planting of locally indigenous species should be undertaken, with local species endemic to the area.	The plant species to be used during the rehabilitation process should be endemic to the area surrounding the substation installation.
6	The species which has been planted should be regularly watered after planting. Watering should ensure that no erosion of the topsoil takes place.	A hosepipe must be available on site.
7	Plant species which are not well established after a period of 2 months after planting should be re-planted. If necessary, another dressing of topsoil should be applied prior to planting.	As above
8	Slope stabilisation measures may be necessary in areas where vegetation has not been able to establish and there is an erosion risk. The measures implemented depend on the situation, and can be varied as necessary. The ECO will direct the Contractor as required.	Various slope stabilisation measures are available and vary in effectiveness according to the situation including • Onion bags • Soil saver (jute/hessian) blankets • Logs/bark held in place with pegs

Annexure 2: Proposed Fines and Penalty Structure

Table 13. Proposed fines and penalty structure

Typical incidents incurring penalties	Value
Failure to secure construction site from public access	R5,000
Failure to demarcate working areas and servitudes and/or maintain fences and/or demarcation tape.	R1,000
Failure to stockpile topsoil correctly (per incident)	R2,000
Failure to stockpile materials in designated areas (per incident)	R500
Discharging effluent and/or polluted storm water onto the ground or into surface water (per incident)	R2,000
Failure to provide adequate sanitation, waste disposal facilities or services (per incident)	R1,000
Failure to demarcate construction area boundaries before commencing construction clearance and other activities (per incident)	R5,000
Venturing into or undertaking construction related activities within no-go areas, without formal written approval from the ECO (per incident)	R5,000
No induction regarding environmental matters and site housekeeping practices (per employee)	R2,000
Stockpile of soils and materials outside demarcated areas (per incident)	R1,000
Inappropriate mixing of cement/concrete and poor management of concrete slurry (per incident)	R2,000
Burning of waste on site (including cement bags) (per incident)	R 2,000
Untidiness and litter at camp (per incident)	R200
Unauthorised removal of indigenous trees, medicinal or other plants (per incident)	R2,000
Damaging/killing animals/birds (per incident)	R 1,500
Failure to erect temporary fences as required (per incident)	R2,000
Failure to reinstate disturbed areas within the specified timeframe (per incident)	R2,000
Fire – costs of runaway fires will be borne by the Contractor, should he/she be proven responsible for such fires (per incident)	R25,000
Failure to provide adequate equipment for emergency situations (per incident)	R5,000
Defacing, painting or damaging natural or heritage features (per incident) – mandatory removal of employee from site	R5,000
Damaging cultural, historical and/or archaeological sites of importance (per incident) – mandatory removal of employee from site	R5,000
Failure to maintain basic safety measures on site	R1,000
Failure to carry out required community liaison, damage to property etc., without prior negotiation and/or compensation and other social infringements (per incident)	R1,000
Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refuelling (per incident)	R2,000
Failure to provide drip trays and/or empty them frequently (per incident)	R500
Inappropriate use of bins and poor waste management on site (per incident)	R500
Inappropriate off-site disposal of waste from site (per incident)	R10,000
Deliberate lighting of illegal fires on site (per incident)	R1,000
The eating of meals on site outside the defined eating area. Individual not making use of the site ablution facilities (per incident)	R200
Inappropriate use of adjacent watercourses and water bodies – such as for unapproved water abstraction, washing of vehicles, wastewater disposal and use by employees for washing (per incident)	R1000
Any person, vehicle, item of plant, or anything related to the Contractor's operations causing a public nuisance (per incident)	R500
Construction vehicles not adhering to speed limits (per incident)	R200
Failure to maintain and register incidents in the incident register (per incident)	R1,000
Failure to remove all temporary features and leftovers from the construction site and works areas upon completion of the works (per incident)	R50,000
Any contravention with a Method Statement (per incident)	R5,000
Repeated contravention of the specifications or failure to comply with instructions (per incident)	R5,000

Annexure 3: Issues to be addressed by and where appropriate shown on the Environmental Management Site Plan

Table 14. Issues addressed on the EMP Site Plan

Issue	Nature / Description
Sequence of events	Description of the nature of the process required. Briefly describe the sequence of events that will take place from the time that the contractor moves onto site to the time when the site is handed over to the Project Proponent
Health and safety	Potential risks and hazards and precautions that will be taken Cooking area, hazardous materials site, first aid kit, fuel store, security issues, fire management, and public safety.
On site toilets	How many required for the particular development? Are there existing ablution facilities that can be used? If not, how many toilets need to be brought to site and how long are the toilets required on site? Location of toilets (Site Plan)
Workforce	Number of onsite workers Training of workforce in terms of environmental awareness Management of workforce, particularly sub-contractors
Transport and traffic	Transport required for site workers Routes to be used by construction vehicles Demarcate location of traffic turning circle and parking areas (Site Plan)
Infrastructure and associated equipment	Nature and extent of infrastructure needed for construction Indicate on site plan
Material storage (e.g. sand needed to build wall)	Approximation of quantity to be excavated Where to be stockpiled (Site Plan) How long to be stockpiled Area required for stockpile
Earthworks/cleaning	Volume of material to be excavated/cleaned Duration of operations Where stocks to be kept on site (Site Plan) How long to be kept on site Where, when and how to be disposed of Recycling and/or re-use of materials
Equipment needed for construction activities	Area required for material and equipment storage Duration of works Nature of equipment and necessary materials
Drinking water	Quantity required Duration of period in which required Source of water Location of potable water (Site Plan)
Cooking and rest areas	Area required Equipment required e.g. gas stoves, matches etc. Shelter Location – indicate on site plan
Existing structures	Indication of location of any structures that need to be removed and/or protected
Life of project	Working hours Time frame Phasing of work areas
Construction site	Work area required Location of construction site and work area (Site Plan) Demarcation of no-go areas
Environmentally sensitive areas and possible environmental risks associated with construction activities	A plan of environmentally sensitive areas must be drawn up and made available to contractors. This will include the riverine corridor and pan demarcated in the field survey. A training programme on possible environmental risks that may result from construction activities and how to deal with these (including a reporting structure) must be made available prior to construction commencing.
Waste management	Litter drums - number, type, size, location (Site Plan) Closest registered waste disposal site (Location map) Waste management plan Recycling / material re-use options

Annexure 4: General Code of Conduct for Contractors

Contractors shall ensure that all sub-contractors, employees, suppliers, agents, etc., are fully aware of the environmental issues detailed in the Construction Environmental Management Programme.

Contractors must Investigate and comply with all existing regulations and laws/ bylaws unless the Relevant Authority grants specific written authority waiving compliance with any legislation.

Contractor's, *inter alia*¸ commit to the following code of conduct:

- Implementing, documenting, reviewing and complying with environmental specifications, permits and management plans as well as relevant environmental legislation, regulations and standards.
- Ensuring the communication and training of all personnel through induction and appropriate environmental training.
- Reducing and, where possible, eliminating and preventing any harmful effects to the environment and societal milieu
- Liaising openly with, and reporting publicly to, all interested and affected parties on environmental matters.

Annexure 5: Environmental Incident Register

Table 15. Environmental incident register

ENVIRONMENTAL INCIDENT REGISTER				
Date	**Environmental incident**	**Comments** *(Include any possible explanations for current condition and possible responsible parties. Include photographs, records etc. if available)*	**Corrective Action Taken** (*Give details and attach documentation as far as possible)*	**Signature**

Annexure 6: Environmental Complaints Register

Table 16. Environmental complaints register

ENVIRONMENTAL COMPLAINTS REGISTER				
Date	**Environmental Complaint**	**Name of Complainee** (*Name of complained and method which complaint was received)*	**Corrective Action Taken** (*Give details and attach documentation as far as possible)*	**Signature**

12. REFERENCES

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