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PROPOSED CONSTRUCTION OF MAVELA SORTSFIELD

ENVIRONMENTAL MANAGEMENT PROGRAMME

Submitted to : Department of Economic Development, Tourism and Environmental Affairs

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Contents

GLOSSARY USED

Contractor

Persons/organisations contracted by the developer to carry out parts of the work for the planner development.

Environment

The environment is defined in terms of the National Environment Management Act, No. 107 of 1998, as the surroundings within which humans exist and that are made up of –the land, water and atmosphere of the earth, micro-organisms, plants and animal life; and any part or combination of the latter and any interrelationships among and between them; and the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Assessment Practitioner

An independent consultant that has been appointed by a developer to compile an Environmental Management Programme and to undertake audits. An individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environment

Environmental Control Officer (ECO)

An independent individual nominated by the developer to act on behalf of a the developer in matters concerning the day-to-day implementation of the EMPr, and for liaison with the DEDTEA, Municipality, EKZNW and DWA and the public and owners or managers of properties affected by construction.

Environmental Impact

This is the degree of change whether desirable or undesirable in an environment resulting from the interaction of the activity. The impact can either be direct or indirect of the construction activity.

Environmental Management Programme (EMPr)

The EMPr is a detailed plan for the implementation of the mitigation measures to minimise negative environmental impacts during the project life-cycle. The EMPr contributes to the

preparation of the contract documentation by developing clauses to which the Contractor must adhere to for the protection of the environment. A short- and long-term environmental management document for the project.

Environmental Site Officer (ESO)

During the construction phase an Environmental Site Officer must be appointed for ensuring the day-to-day implementation of the environmental management requirements for the construction phase on behalf of the contractor. An ESO does not need to be independent as their responsibility is not that of auditing compliance of the EMPr or EA but rather to insure the actual implementation of the EMPr and EA.

General Waste

Waste that does not pose an immediate hazard or threat to health or to the environment, and includes:-

a) Domestic waste; b) building and demolition waste; c) business waste; d) inert waste.

Hazardous Substances

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.

Incident

An event that will have a direct or indirect effect on surface water, groundwater and the associated fauna and flora.

Project life - Cycle

This is the phase of the project from the planning phase, construction phase, to when the project is complete and the site is rehabilitated and handed over.

Proponent/ Developer

The Proponent, Inkosi Langalibalele Local Municipality is responsible for overlooking the development and maintenance of new water supply and storage systems.

Rehabilitation

Rehabilitation is defined as the return of a disturbed area to a state which approximates the state (where possible) which it was before disruption. Rehabilitation for the purposes of this

specification is aimed at post - reinstatement re-vegetation of a disturbed area and the insurance of a stable land surface.

Re - vegetation should aim to accelerate the natural succession processes so that the plant community develops in the desired way, i.e. promote rapid vegetation establishment.

Waste

Any substance whether or not that substance can be reduced, re – used, recycled and recovered, a) that is surplus, unwanted, rejected, discarded, abandoned or disposed of which: b) the generator, has no further use of for the purpose of production; c) that must be treated or disposed of; or d) that is identified as a waste by the Minister by notice in the Gazette and includes waste generated by the mining , medical or other sector, but;- i) a by-product is not considered waste; ii) any portion of waste, once re-used, recycled and recovered ceases to be waste.

ABBREVIATIONS

C	Contractor
DEDTEA	Department of Economic Development, Tourism and Environmental Affairs
DEV	Developer
DAFF	Department of Agriculture Forestry and Fisheries
DWEA	Department of Water and Environmental Affairs
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
ECA	Environmental Conservation Act No. 73 of 1989
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EKZNW	Ezemvelo Kwazulu-Natal Wildlife
EMPr	Environmental Management Programme
ESO	Environmental Site Officer
I&AP's	Interested and affected Parties
IEM	Integrated Environmental Management

MSDS	Material Safety Data Sheets
NEMA	National Environmental Management Act No. 107 of 1998
OHSA	Occupational Health and Safety Act No. Act 85 of 1993
PM	Project Manager
PPE	Personal Protective Equipment

1. INTRODUCTION

The Inkosi Langalibalele Local Municipality is proposing the construction of a sports field. The project entails the construction of Mavela Sports field. The project entails the construction of new 110mX75m grassed soccer field with structural steel grand stands, 37m x 19m combo court, 12m x 3m cricket nets, Clear Vu fence around the whole sports facility with one vehicular gate and one pedestrian gate, change rooms(220m^2) and new irrigation system.

The project is located within KwaDlamini Tribal Authority some 34km west of Escourt Town in KZN Province. This is in Ward 12 of Inkosi Langalibalele Local Municipality.

The project geographical position is: 29^0 09' 38.69" S; 29^0 38' 01.52" E. The surrounding area also comprises of rural homesteads where by most of the activities practiced are livestock and agricultural farming for family sustenance.

Inkosi Langalibalele Local Municipality has appointed Kujenga Trading as the independent environmental company, to carry out the applicable environmental procedures towards obtaining the environmental authorization required for the proposed project. The proposed development is identified as an activity that may have negative impacts on the environment. This document will define environmental measures and procedures to prevent, minimize and mitigate adverse impacts and to ensure compliance with applicable environmental standards during the abstraction works. This document aims to be a guideline document for construction, operation and decommission activities associated with the construction of Mavela sports field.

1.1. PURPOSE

In accordance with the Integrated Environmental Management Guidelines published by the Department of Environmental Affairs & Tourism (DEAT) in 1992, the purpose of an Environmental Management Programme (EMPr) is "to describe how negative environmental impacts will be managed, rehabilitated or monitored and how positive impacts will be maximized". In view of potential impacts of the project an environmental management programme has been compiled. The effective implementation of this plan will ensure that all environmental impacts are avoided or minimized. All possible engineering options were assessed during the designing and planning phase and the chosen route was considered as being technically feasible.

The objectives of the EMPr are to:

- Provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site.
- Ensure that the construction and operational phases of the project continues within the principles of Integrated Environmental Management.
- Encouraging minimum disturbance of all-natural environment.
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project.
- Comply with all applicable laws, regulations, standards and guidelines for the protection of the environment.
- Ensure that the safety recommendations are complied with.

1.2. STATUS OF THIS DOCUMENT

The provision of this construction EMPr are binding on the contractor during the construction period and Defects Liability period of the contract. These specifications shall be read in conjunction with all the documents that comprise the contract documents for this contract. In

the event that any conflict occurs between the terms of the construction EMPr and the Project Specification or the EA, the terms of the construction EMPr shall stand.

1.3. The Environmental Assessment Practitioner (EAP):

According to the regulations, it is necessary for the applicant to appoint an independent EAP who will adhere to the environmental stipulations and complete the applicable environmental process on behalf of the applicant. In this case, Kujenga Trading are independent environmental assessment practitioners who have been appointed by Ilisu Consultants and Contractors on behalf of Inkosi Langalibalele Local Municipality as independent Environmental Assessment Practitioners to plan and manage the environmental impact assessments of the proposed project according to the National Environmental Management Act No. 107 of 1998.

Business name of EAP:	Kujenga Trading		
Contact Person	Mr Msawenkosi Dladla		
Physical address:	64 Paige Place, 2 Portsmouth Road, Pinetown		
Postal code:	3610	Cell	082 099 1538
Telephone:	079 962 1987	Fax	086 439 6322
E-mail:	Dladlam2010@gmail.com		

1.4. PROJECT MANAGER

Mr. Thokoza Bhulose is the Project Manager (PM) from Ilisu Consultants and Contractors and project managers for the proposed development and will be the overall responsible person during the project life - cycle.

The PM will visit the site on a regular basis for the duration of the project. The PM will see to the implementation of the measures specified by this EMPr. The PM will whenever required communicate instructions to all relevant role players on site and ensure that they are conversant and comply with all relevant measures contained by the EMPr.

It will be required that the PM accepts the guidelines provided by the environmental consultant involved.

Project Managers	Ilisu Consultants and Contractors		
Contact Person	Mr. T. Bhulose		
Address:	16 Davidson Road South, Pinetown PO Box 493, New Germany		
Postal code	3620	Cell:	082 4814954
	(031)701 1000	Fax:	086 622 6983
E-mail:	ilisu@ilisu.co.za		

2. PROJECT DESCRIPTION

The project entails the construction of Mavela Sports field. The project entails the construction of new 110mX75m grassed soccer field with structural steel grand stands, 37m x 19m combo court, 12m x 3m cricket nets, Clear Vu fence around the whole sports facility with one vehicular gate and one pedestrian gate, change rooms(220m2) and new irrigation system.

The project is located within KwaDlamini Tribal Authority some 34km west of Escourt Town in KZN Province. This is in Ward 12 of Inkosi Langalibalele Local Municipality.

3. LEGAL ENFORCEABILITY OF AN EMP AND COMPLIANCE

Laws applicable to the protection of the environment in terms of Environmental Management include but are not restricted to; are:

National Environmental Management Act, Act 107 of 1998

Environmental Planning Act, Act No. 88 of 1967

Conservation of Agricultural Resources Act, No 43 of 1983

National Water Act, Act 36 of 1998

Water Services Act No. 108 of 1997

Occupational Health and Safety Act, No. 85 of 1993

Atmospheric Pollution Prevention Act, No.45 of 1965

Animals Protection Act, Act No. 71 of 1962

National Forest Act of 1998

Forest Act, no 122 of 1984

Forest and Veld Conservation Act, Act No. 13 of 1941

National Veld. Forest and Fire Act, Act No. 101 of 1998

Hazardous Substances Act, No. 15 of 1973

Land Survey Act, No 9 of 1921

Minerals Act, No. 50 of 1991

National Parks Act, No. 57 of 1976

National Resources Development Act, Act No. 51 of 1947

Provincial and local Governance Ordinances and Bylaws

An Environmental Control Officer (ECO) must be appointed to monitor the implementation of the EMPr, by conducting and compiling environmental compliance reports and present them at monthly progress meetings. These reports will also be forwarded to the Inkosi Langalibalele Municipality and the Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) for review and enforcement in case of non-compliance.

The Contractor appointed for the construction of this project will be responsible for ensuring the compliance with the provisions contained within the EMPr, as well as the compliance of any Sub - Contractors appointed thereof, and must be held accountable in terms of this document.

In terms of the Environmental Conservation Act and 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.***

Non - compliance with, or any deviations from the conditions set out in the EMPr constitute a failure in compliance. In the case of Non-compliance with the EMPr the Contractor or Proponent would have on or during compliance monitoring is found/ caused:

When the Contractor fails to comply with corrective instructions from the ECO within a specified period,

Evidence of non-compliance with the EMPr, Municipal bylaws within boundaries of the site, site extensions and access roads has been observed,

Environmental damages are as a result of negligence, and

The failure to respond to complaints from Interested and Affected Parties (I&AP's).

The Contractor must act immediately when such a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice.

Complaints received regarding activities on the construction site pertaining to the environment must be recorded in a dedicated register and the response noted with the date and action taken. This record must be submitted with the monthly reports and any avoidable non-compliance with the above - mentioned measures must be considered sufficient ground for the imposition of a penalty. The value of the penalty must not be less than the payment that would have been due to the Contractor for the day's production of the relevant item of work that gave cause for the infringement.

The imposition of such a penalty must not preclude the relevant Provincial or National Authority from applying an additional penalty in accordance with its statutory powers. 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 must be reported to the relevant authority for them to deal with the transgression, as it deems fit.

Application of a penalty clause to the Contractor will apply for incidents of non-compliance. The penalty imposed will be per incident and will be deducted from the Contractor's monthly payment certificate. Unless stated otherwise in the project specification, the penalties imposed per incident or violation will be:

- Failure to demarcate working areas R4,000
- Working outside of the demarcated area R4,000
- Failure to strip topsoil with intact vegetation (where applicable) R4,000
- Failure to stockpile topsoil correctly R4,000

- Failure to stockpile materials in designated areas R2,000
- Failure to provide adequate sanitation for labourers R2,000
- Failure to erect temporary fences/shade cloth R2,000
- Failure to provide adequate waste disposal facilities and services R4,000
- Nuisance to neighbours by Construction staff R2,000
- Failure to control stormwater run-off R4,000
- Failure to rehabilitate disturbed areas within the specified time-frame R4,000
- Any contravention of the requirements of DEDTEA R4,000
- Any other contravention of project specific specification R2,000
- Any other contravention of particular environmental specification R2,000

Such fines will be paid to the Proponent and will be used in rehabilitation/remediation and or landscaping of the development.

The EMPr must be presented to the Contractor before the commencement of activities on site and the contents defined. **A copy of the EMPr must be kept on site during the refurbishment period as it is binding to all Contractors operating on site and the proponent.**

PUBLIC INVOLVEMENT

Both the community and adjacent land owner must be notified of the proposed development. A presentation of proposed activities and the projected project program and the existence of an EMPr must be presented to the Land owner.

The line of communication between the Contractor and the Land owners must be defined before the Contractor proceeds with the construction. A register of public concerns complains and suggestions must be kept on site at all times for the ECO to review during monthly compliance monitoring sessions and must be presented at monthly project team meeting.

1. CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	PRIORITY/ TIMING
Preliminary Activities and Management of Construction Phase			
Legislation, Permits and Agreements	In all instances, Site Owner, Developer, Service Providers, Contractors and Project Managers must remain in compliance with relevant local and national legislation. Particular attention must be paid to the requirements of the following national legislation • National Environmental Management Act No. 107 of 1998 • National Water Act ,No. 36 of 1998 • Water Services Act, No. 108 of 1997 • National Forest Act of 1998 • Occupational Health and Safety Act, No 85 of 1993 • Relevant regulations as promulgated under the Standards Act, No 30 of 1982 • Conservation of Agricultural Resources Act, No 43 of 1983 **A Copy of the EMPr must be kept on site at all times during the construction period.**	Applicant	Prior to, during and after construction

Environmental Education and Awareness	• The principle Contractor must appoint a senior staff member directly involved in the site construction activities as the **Environmental Site Officer (ESO)**. • Ensure that all site personnel have a basic level of environmental awareness training. It is the Contractor's responsibility to provide the site foreman with no less than 1 hour's environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff. • All employees must undergo the necessary safety training and wear the necessary protective clothing. • Prior to the commencement of construction, all staff need to know what possible archaeological of historical objects of value may look like, and to notify the Engineer/Contractor if such an item be uncovered. • The need for a 'clean site' policy needs to be explained to the construction workers.	Contractor/ ESO/ ECO	Prior to and during construction
Final Payment	**Payment of the final invoice to Contractor must not be made until a final inspection by the ECO is made and it has been confirmed that the work has been completed in accordance with the scope of work and this EMPr.**	PM/ECO/Contractor	After construction
Review	The ECO and ESO must consult and review implementation progress and discuss and resolve inter alia environmental concerns, non-compliance (including environmental incidents) and any I&AP issues raised.	ECO / ESO	During construction
Site Establishment			
Construction Camp	• Choice of site for the Contractor's camp requires the ECO and Engineers permission and must take into account location of local residents, existing land uses, including flood zones and unstable zones. • If the Contractor chooses to locate the camp site on private land, prior permission from both the Engineer and the landowner must be obtained. • The camp must be properly fenced off and secured. • The Contractor must attend to the drainage of the camp site to avoid standing water and/or sheet erosion.	Engineer/ ECO/ Contractor	During site establishment

Access to site	• Access route must be clearly defined with white stakes/painted rocks and disturbance outside these areas is not permitted. • Construction signs must be placed at the beginning of the project indicating who is constructing the proposed project. • Minimum disruption of access for local residents must be achieved and must have consent of the Engineer. • No trees/shrubs/groundcover may be removed or vegetation stripped without the prior permission of the Engineer/ECO.	Contractor	Prior to construction
Construction site boundaries	• The site boundaries of the project area within which the Contractor must operate must be agreed upon with ECO and the Engineer prior to the start of the site operations. The Contractor must demarcate these areas at the very start of the project. • Areas outside of these boundaries must be deemed as no go areas.	ECO/ Contractor	Prior to construction and during site establishment
No-Go Areas	• All sensitive areas that have been identified must be marked as no-go areas. • No Stockpiling, dumping or storing of equipment or waste will be done within areas zoned as no-go areas as well as riparian areas.	Engineer/ ECO/ Contractor	Prior to construction and during construction
Equipment and Secured Storage Areas			
Equipment & Storage Areas	• Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected. • Material Safety Data Sheets (MSDSs) must be readily available on site for all chemicals and hazardous substances to be used on site. Where possible the available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes. • Choice of location for equipment and storage areas must take into account prevailing winds, distances to adjacent land uses, general on – site topography and water erosion potential of the soil. • Fire prevention facilities must be present at all storage facilities. • The storage area must be securely fenced and all hazardous substances such as fuel, oils, chemicals, etc., must be stored therein. Drip trays, a thin concrete slab or a facility with PVC lining, must be installed in such storage areas with a view to prevent soil and water pollution.	Contractor/ ECO	On going

General & Hazardous Substances and Materials	• All material must be stored at the site camp and taken to construction sites when required. Only limited storage of materials may be allowed at the construction site. • Staff dealing with these materials / substances must be aware of their potential impacts and follow the appropriate safety measures. The Contractor must ensure that its staff is made aware of the health risks associated with any hazardous substances used and has been provided with the appropriate protective clothing/equipment in case of spillages or accidents and have received the necessary training. • Storage areas must be secure so as to minimize the risk of crime. They must also be safe from access by children and animals. • Proper storage facilities for the storage of oils, paints, grease, fuels, chemicals and any hazardous materials to be used must be provided to prevent the migration of spillage into the ground and groundwater regime around the temporary storage area(s). These pollution prevention measures for storage must include a bund wall high enough to contain at least 110% of any stored volume. The Contractor must submit a method statement to the Engineer for approval.	Contractor/ ECO	On going
Source of Materials	• The Contractor must prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, etc.), and submit these to the Engineer for approval prior to commencement of any work. • Where possible, a signed document from the supplier of natural materials must be obtained confirming that they have been obtained in a sustainable manner and in compliance with relevant legislation.	Contractor/ Engineer	During construction
Waste Management			

Ablution Facilities	• Temporary chemical toilets must be provided by a company approved by the Applicant. These toilets must be made available to all staff, and must be no closer than 50 m from any water course. • One chemical toilet per 15 workers must be stationed on site, within easy walking distance of the workers, with toilet/s to be serviced at least once a week by a registered company. Toilet paper must be supplied, and the toilet/s and area around them is to be kept hygienically clean at all times. • Such facilities must comply with local authority regulations and their use must be strictly enforced. • These facilities must be placed on an impermeable surface to ensure that the ground surface/soil is not contaminated in any way. Care must be taken to avoid contamination of soils and water, pollution and nuisance to adjoining areas. **The construction of long drop toilets is forbidden.**	Contractor/ ESO	Prior to construction

Provision for camp waste disposal	• Bins and/or skips must be provided at convenient intervals for disposal of waste within the construction camp. • Individual skips for different types of waste (e.g. 'household' type refuse, building rubble, etc.) must be provided. The refuge must be stored in separated receptacles for various types of waste and workers must be encouraged to use them as per designated type of waste. • Proposed method of waste handling, storage and disposal must be confirmed and agreed upon in conjunction with the ECO, Engineer and Contractor. General waste produced on site includes: • Office waste (e.g. food, waste, paper, plastic); • Operational waste (clean steel, wood, glass); and • General domestic waste (food, cardboards, paper, bottles, tins). • Hazardous waste produced on site includes: • Oil and other lubricants, diesel, paints, solvent; • Containers that contained chemicals, oils or greases; and • Equipment, steel, other material (rags), soils, gravel and water contaminated by hazardous substances (oil, fuel, grease, chemicals or bitumen). • All waste and excessive material must be removed from the site and disposed of at the nearest landfill site and waybills kept for proof of disposal. • Construction rubble must be disposed of in pre-agreed, demarcated spoil dumps that have been approved by the Engineer. • Hazardous waste disposal must be carried out by an approved waste Contractor and waybills kept for proof of disposal. **The excavation and use of rubbish pits on site is forbidden and the burning of waste is forbidden.**	Contractor/ ESO	During construction
Conservation of the Natural Environment			

Flora and Fauna	• No vegetation may be cleared without the prior permission from the ECO. Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas. • The ECO must be given a chance to mark vegetation that is to be conserved before the Contractor begins clearing the site. As work progresses the Contractor is to check that vegetation clearing has the prior permission of the Engineer and ECO	Contractor/ ESO	During construction
Flora and fauna	• Care must be taken to conserve existing plant and animal life on and surrounding the site. Disturbance to birds, animals and reptiles and their habitats must be minimised wherever possible. • Immediate re-vegetation of stripped areas and removal of aliens by weeding must take place. This significantly reduces the amount of time and money spent on alien plant management during rehabilitation. • Alien plant encroachment is particularly damaging to natural habitats and is often associated with disturbance to the soil during construction activities. Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.	Contractor/ ESO/ ECO	During construction

Topsoil and Stockpile Management	• Top soil is to be stripped to a depth of 150 mm and conserved to be utilised for the rehabilitation of the site. • Topsoil and subsoil must be stockpiled separately, and replaced according to correct profile – i.e. topsoil replaced last. • Stockpiles are to be no more than 2m high and must be protected from wind and water erosion and be kept in a weed free condition. • Topsoil stripped from the construction camp and other construction areas must be stockpiled away from any potential disturbances. All earthworks must be vegetated as soon after completion of construction as is practically possible with locally sourced indigenous vegetation. • If stockpiles are exposed to windy conditions or heavy rains, they must be covered either by vegetation or cloth, depending on the duration of the project. • Material stockpiles or stacks, such as pipes must be stable and well secured to avoid collapse and possible injury to site workers / local residents. • Stockpiles must not be situated such that they obstruct natural water pathways. • All stockpiles must be clearly demarcated.	Contractor/ Engineer/ ESO	During construction

Soil Erosion	• Wind screening and storm water control must be undertaken to prevent soil loss from the site. • Erosion control measures must be implemented during both the construction and operation phases in areas sensitive to erosion such as near water supply points, edges of slopes etc. • Procedures that are in place to conserve topsoil during the construction phase of the project are to be applied to the site set up phase. • **The width of the construction footprint/Right-of-Way (ROW) corridor within the rural residential must be minimised as far as possible. The running track must be as narrow as possible (approximately the width of the excavator within safety limits).** • **The ROW must be demarcated and fenced off during the site setup phase with snow fencing. The snow fencing must be kept taught at all times.** • **The demarcated ROW must be approved by the ECO prior to construction commencing.** The following measures need to form part of the management of the site: • Placing of hessian sheets on bare cleared sloping areas. • To reinforce points of confined discharge with reno-mattresses aimed at absorbing the impact of flow and spreading confined flows before discharge into the receiving environment. • Monitoring storm water exit points for any blockages and clearing them if found. • Fill in and re-vegetate eroded areas and monitoring from placing of top soil to full revegetation phase. • Starting revegetation as soon as a practically possible to avoid soil erosion and alien plant proliferation.	Engineer/ Contractor/ ECO	During construction
Geology	• Excavations must done by hand as far as possible. Light machinery must be used in case of areas where demolition will be of concrete structures. • Where required, provision must be made to accommodate or avoid collapsing settlement or structures must be founded below the collapsible horizon.	Engineer/ Contractor/ ECO	During construction

Air Pollution	• Dust generating activities and the use of materials that easily become airborne must cease during windy conditions • Areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust. • Vehicles and machinery are to be kept in good working order and to meet the manufacturer's specifications for safety, fuel consumption, etc. • If excessive emissions are observed, the Contractor is to have the equipment seen to as soon as possible.	Engineer/ Contractor/ ECO	During construction
Storm water and Water Quality Management			
Storm water	• To prevent storm water damage, the increase in storm water run - off resulting from the construction activities must be estimated prior to construction and a storm water management plan must include specification for temporary storm water drainage structures. • Temporary cut-off drains and berms may be required to capture storm water and promote infiltration during construction. • The storm water drainage system must not be contaminated by other waste sources and must therefore be separated from other waste water drainage systems. • Drainage must be controlled to ensure that runoff from the site will not culminate in off-site pollution or cause water damage to properties further down from the site	Engineer/ Contractor/ ECO	During construction
Hydrology and surface run-off	• No construction activities must be allowed within the 1:50 year flood lines. • If necessary these flood lines must be clearly demarcated on the layout plans and physically on site (where appropriate). • No construction activities must be allowed within the 10m buffer of the drainage lines, without prior approval. If necessary these buffer areas must be clearly demarcated on the layout plans and physically on site (where appropriate). The incorrect handling, storage, transport and disposal of substances and materials, and polluted run-off can have serious negative effects on groundwater quality. Soil erosion and sediment is also detrimental to water quality. Other sources of pollution include polluted run-off from vehicle washing and wind dispersal of dry materials into rivers and water courses, which have detrimental effects on water quality.	Contractor/ ECO/ ESO	During construction

Water Quality	• The Contractor must compile a list of emergency contact numbers including those of the Department of Water Affairs and the ECO to refer to in order to deal with spillages and contamination of land and aquatic environments. • Storage areas that contain hazardous substances must be bunded with an approved impermeable liner. • All polluted run-off must be collected on site and disposed of by a licensed treatment company. • Under no circumstances can the existing stand pipes be used for water maintenance of construction, the Contractor must provide the construction team with portable water. • Dewatering of vessels, tanks etc. must take place in a controlled manner by transferring water using a connecting pipe into a water tanker for transportation to a registered waste water treatment site depending on the water quality.	Contractor/ ECO/ ESO	During construction
Spills Contingency Plan	A comprehensive spills contingency plan must be put in place so as to ensure that proper steps are followed with regards to the spills. The spills must be managed by the following procedure: • Stop the source of the spill • Contain the spill • If significant spill must be reported to the DWA and other relevant authorities. • Remove the spilled product for treatment or authorised disposal. • Determine if there is any soil, groundwater or other environmental impacts • Remedial action must be taken in consultation with DWA and other regulatory authorities • The incident must be documented.	Contractor/ ECO/ ESO	During construction

Concrete/Cement	• Ready mix concrete must be used where possible and no vehicles transporting concrete, asphalt or any other contaminating products to the site may be washed on site. • Concrete/Cement mixing must be restricted to hardened surfaces and mixing mats within the construction zone. It must take place on plastic liners where proper mats cannot be acquired to avoid contamination of soil. • Cleaning of cement mixing and handling equipment must only be done using proper cleaning trays. • All access cement and concrete are to be contained on the construction site prior to disposal off site in a suitable landfill and waybills kept for proof of disposal.	Contractor/ ECO/ ESO	During construction
General Environmental Conduct			
Cultural and artefact's	If any heritage artefacts are exposed during excavation the following must be done: • All construction work in that area must cease immediately and the Environmental Control Officer must be notified as soon as possible; • All discoveries must be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. • Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken; • Under no circumstances must any artefacts be removed, destroyed or interfered with by anyone on the site. Contractors and workers must be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or paleontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).	Contractor/ ECO	During construction

Record Keeping	• The ECO/ Engineer will continuously monitor the Contractor's adherence to the approved EMPr, and must issue to the Contractor a notice of non-compliance whenever transgressions are observed. • The ECO/ Engineer must document the nature and magnitude of the non-conformance in a designated register, the action taken to discontinue the noncompliance, the action taken to mitigate its effects and the results of the actions. The non-compliance must be documented and reported and captured in a monthly report. • The Engineer is the primary responsible person with authority over the secondary responsible roles, duties and tasks of the ECO and the Contractor. • All monitoring conducted by the ECO must be recorded in writing and handed to the Engineer.	Engineer/ Contractor/ ECO	During construction
Public and Workforce Safety (General)	• Information boards erected on and/ or around the site shall comply with the applicable Local Authority By-Law for the control of outdoor advertising or in the absence of local legislative controls must comply with the South African Manual for Outdoor Advertising Control (SAMOAC). • Construction activities must be undertaken according to working hours stipulated by the Applicant i.e. during daylight hours only. • An **Occupational Health and Safety Officer** must be appointed who will continuously monitor safety conditions during construction activities. • All members of the construction workforce working on the sites must be provided with the appropriate high visibility clothing to ensure that they can be distinguished from the general public and be seen by motorists. This clothing must be utilised at all times.	Applicant/ Engineer/ Contractor/ ECO	Prior to and during construction

2. POST CONSTRUCTION PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	PRIORITY/ TIMING
Management of Post Construction Phase			

Site Camp	• All structures comprising the construction camp are to be removed from site. • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these 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. • The Contractor must arrange the cancellation of all temporary services.	Contractor/ ESO	Prior to, during and after construction
Access Roads	All roads used by construction vehicles must be rehabilitated, at least to their original condition, by the Contractor	Contractor/ Engineer	Post construction
Vegetation	• All areas that have been disturbed by construction activities (including the construction camp area) must be cleared of alien vegetation. • Alien plants must be treated according to the species type using guidelines set out in the Invasive Alien Plants in KwaZulu-Natal Management and Control Wildlife Handbook by WESSA-KZN. • Open areas/exposed soils that are not developed are to be promptly re-vegetated. • All vegetation that has been cleared during construction phase is to be removed from site or used as much as per the re-vegetation specifications (except for seeding alien vegetation). **The Contractor is to water and maintain all planted vegetation until the end of the defects liability period and is to submit a method statement regarding this to the Engineer.**	Contractor/ ESO/ ECO	Post construction and rehabilitation
Materials	• All residual stockpiles must be removed to spoil or spread on site as directed by the Engineer. • All leftover building materials must be removed from the site. All construction rubble must be removed from the site and disposed of at a licensed waste disposal site in terms of Section 20 of ECA (Act No. 73 of 1989). The Contractor responsible for the removal of rubble/waste must supply a certificate indicating safe disposal of such rubble at a permitted waste disposal site.	Contractor/ ESO/ ECO	Post construction and rehabilitation

Landscaping	• All disturbed areas or areas, which have been engineered for the purpose of the development, must be rehabilitated with indigenous vegetation, which must be sourced from surrounding areas where possible. This will aid in preventing erosion within the site. • All plant material must be obtained either from nurseries; from a phased "Search and Rescue" operation on the site prior to clearing; or, from an area in close proximity to, and of the same veld type as, the site, as indicated by the Engineer/ ECO. Living plant material obtained from the site must include whole plants, cuttings (propagation material), bulbs, corms, runners, rhizomes, grass sods, restio sods, etc.	PM/ECO/Contractor	After construction
Landscaping	• No plants or plants with exposed roots must be subjected to prolonged exposure to drying winds and sun, or subjected to water logging or force-feeding at any time after purchase. • The Contractor must ensure that the plants are in a good condition and free from plant diseases and pests. The Contractor must immediately remove plants containing any diseases and/ or pests from the Site. • All plants supplied by the Contractor must be healthy, well formed, and well rooted. Roots must not show any evidence of having been restricted or deformed at any time, unless these were plants rescued from natural habitats for replanting. • The potting materials used must be weed free. There must be sufficient topsoil around each plant to prevent desiccation of the root system. Where plants are stored on Site prior to planting they must be maintained to ensure that the root systems remain moist. All indigenous plants that have been removed from a site prior to clearing, must be identified and labelled and returned to the same habitat, aspect and, where possible, position from which they were removed. Where possible, GPS co-ordinates must inform final placement of these plants.	PM/ECO/Contractor	Post construction and Rehabilitation

Rehabilitation	• Rehabilitation must be done in accordance to the Rehabilitation Plan that will be drawn once the final route has been authorised. • The Contractor must repair any damage that the construction works has caused to neighbouring properties. • Surfaces are to be checked for waste products from activities such as concreting or asphalting and cleared in a manner approved by the Engineer. • Rehabilitation must be executed in such a manner that surface run-off will not cause erosion of disturbed areas during and following rehabilitation. • All surfaces hardened due to construction activities are to be ripped and imported material thereon removed. • All rubble is to be removed from the site to an approved disposal site as approved by the Engineer. Burying of rubble on site is prohibited	PM/ECO/Contractor	Post construction and Rehabilitation
Rehabilitation	• Contractor is to check that all storm water channels and watercourses are free from building rubble, spoil materials and waste materials. • The Contractors' camp sites must be rehabilitated to its pre-establishment condition or agreed alternative. **Final payment and the certificate of completion must not be processed until rehabilitation has been concluded to the satisfaction of the ECO and Engineer.**	PM/ECO/Contractor	Post construction and Rehabilitation
Monitoring and Maintenance Programmes	• Any erosion scars found on site during monitoring and maintenance inspections must be rehabilitated immediately. Once rehabilitated the affected areas must be monitored for an appropriate amount of time to ensure no further erosion risks. • Inkosi Langalibalele Municipality must ensure appropriate maintenance of infrastructure. • A meeting is to be held on site between the Project Manager, 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 Project Manager and Engineer. A representative of DEDTEA must be present at the final meeting or when the site is handed over on completion of construction.	Engineer/ECO/Contractor	Post construction and Rehabilitation

3. OPERATIONAL PHASE ENVIRONMENTAL MANAGEMENT PROGRAMME

ENVIRONMENTAL ASPECT	ENVIRONMENTAL MEASURES AND ACTION PLANS	RESPONSIBILITY	PRIORITY/ TIMING
Management of Operational Phase			
Vegetation / Landscape Management	All rehabilitated areas will need to be maintained and re-seeded with local indigenous vegetation where necessary on a regular basis. This would need to be undertaken by the Inkosi Langalibalele Local Municipality	Inkosi Langalibalele Local Municipality	Post construction and rehabilitation
Noise Control	There is not expected to be a great deal of noise resulting from the development. Noise would be emitted by vehicles during the construction and operational phases however this would be within the acceptable limits.	Inkosi Langalibalele Local Municipality	Post construction and rehabilitation
Traffic / Transport	Appropriate signage and road markings are to be installed to bring attention to the access. A 30km/-speed restriction is the recommended. Speed restriction would be adhered to along the road to protect people working within the area	Inkosi Langalibalele Local Municipality	Post construction and rehabilitation
Storm Water Management	The storm water management system for the development needs to be maintained and monitored on a regular basis as directed by the engineer.	Inkosi Langalibalele Local Municipality	After construction

4. DECOMMISSIONING PHASE

The objective of providing guidelines during the decommissioning phase is to prevent structures from being left to deteriorate and look unsightly. It is imperative that non - functional structures be removed as soon as possible, and that the site is rehabilitated as soon as possible. If non - functional structures are not needed anymore, and not removed, it must be maintained that they will be used to prevent the environmental degradation of the site.