GA Environment

ENVIRONMENTAL MANAGEMENT PROGRAMME

DRAFT BASIC ASSESSMENT FOR THE PROPOSED DECOMMISSIONING (CLOSURE) OF THE UMZIMKHULU LANDFILL, UMZIMKHULU LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE

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ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR

BASIC ASSESSMENT FOR THE PROPOSED DECOMMISSIONING (CLOSURE) OF THE UMZIMKHULU LANDFILL, UMZIMKHULU LOCAL MUNICIPALITY, KWAZULU NATAL PROVINCE

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PROJECT DETAILS

Title	:	Basic Assessment and a Waste Management Licence Application Process for the Proposed Decommissioning of uMzimkhulu Local Municipality, Kwazulu Natal Province
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Applicant	:	uMzimkhulu Local Municipality
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ABBREVIATIONS

DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
ECA	Environmental Conservation Act (Act 73 of 1989
EDTEA	KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPR	Environmental Management Programme
G	General Waste
GCB	General Communal Landfill
GSB	General Small Landfill
GMB	General Medium Landfill
GLB	General Large Landfill
H	Hazardous Waste
HDPE	High-Density Polyethylene
I&APs	Interested and Affected Parties
IRD	Initial Rate of Deposition
IWMP	Integrated Waste Management Plan or Industry Waste Management Plan
KPI	Key Performance Indicators
DEA	Department of Environmental Affairs
DWA	Department of Water Affairs
ECA	Environmental Conservation Act (Act 73 of 1989
EDTEA	KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan

DEFINITIONS

Aspect - Element of an organisation's activities, products or services that can interact with the environment.

Auditing - A systematic, documented, periodic and objective evaluation of how well the Environmental Management Programme (EMPr) is being implemented and is performing with the aim of helping to safeguard the environment by facilitating management control which would include meeting regulatory requirements. Results of the audit help the organisation to improve its environmental policies and management systems, while keeping track of their compliance with the Environmental Authorization.

Contamination - Polluting or making something impure. The presence of a minor and unwanted constituent, contaminant or impurity in a material or natural environment.

Corrective (or remedial) action - Response required in addressing an environmental problem that is in conflict with the requirements of the EMPr. The need for corrective action may be determined through monitoring, audits or management review.

Degradation - The lowering of the quality of the environment through human activities, e.g. river degradation, soil degradation.

Decommission – A general term for a formal process to remove something from an active status with specific reference to infrastructure or equipment.

Proponent– Entity which applies for environmental approval and is ultimately accountable for compliance to conditions stipulated in the EA (Environmental Authorisation) and EMPr

Environment - The surroundings within which humans exist and that are made up of land, water and atmosphere of the earth, micro-organisms, plant and animal life: or any part or combination of the two and the interrelationships among them, the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Impact Assessment (EIA) - An Environmental Impact Assessment (EIA) refers to the process of identifying, predicting and assessing the potential positive and negative social, economic and biophysical impacts of a proposed development. The EIA includes an evaluation of alternatives; recommendations for appropriate management actions for minimising or avoiding negative impacts and for enhancing positive impacts; as well as proposed monitoring measures.

Environmental policy – A statement of intent and principles in relation to overall environmental performance, providing a framework for the setting of objectives and targets.

Habitat - A habitat is an ecological or environmental area that is inhabited by a particular species of animal, plant, or other type of organism. It is the natural environment in which an organism lives, or the physical environment that surrounds a species population.

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, space, magnitude and intensity.

Indigenous species - Flora and Fauna species that are naturally found in an area.

Infrastructure - The network of facilities and services that are needed for economic activities, e.g. roads, electricity, water, sewerage, etc.

Mitigation - Measures designed to avoid, educe or remedy adverse impacts. Actions that limit, stop or reverse the magnitude and/or rate of long-term effect on the environment.

Natural environment - Encompasses all living and non-living things occurring naturally on Earth or some region thereof. It is an environment that encompasses the interaction of all living species. Climate, weather, and natural resources that affect human survival and economic activity.

Policy - A set of aims, guidelines and procedures to help you make decisions and manage an organisation or structure. Policies are based on people or an organisation's values and goals.

Process - Development usually happens through a process - a number of planned steps or stages.

Recycling - A process where waste is reclaimed for further use, which process involves the separation of waste from a waste stream for further use and the processing of that separated material as a product or raw material. Collecting, cleaning and re-using materials.

Rehabilitation'*, as defined by the United States National Research* **Council (1974)**, implies that the disturbed land will be returned to state and productivity level in accordance with an approved land use plan, ensuring that the system a stable ecological state; that it does not contribute to further environmental deterioration and is consistent with the surrounding aesthetic values (Wali, 1992).

Resources - Parts of our natural environment that we use and protect, e.g. land, forests, water, wildlife, and minerals.

Stormwater management – Strategies implemented to control the surface flow of stormwater such that erosion, sedimentation and pollution of surface and ground water resources in the immediate and surrounding environments are mitigated. This is specifically important during the construction and Operation phases of a project.

Waste Management – Classifying, recycling, treatment and disposal of waste generated during construction and operational activities. Generation, prevention, characterization, monitoring, treatment, handling, reuse and residual disposition of solid wastes.

1. INTRODUCTION AND BACKGROUND

1.1 Introduction

GA Environment (Pty) Ltd are independent environmental managers and impact assessors, that have been appointed by Department of Environmental Affairs, to compile and submit an Environmental Management Programme (EMPr) in order to comply with the National Environmental Management Act, 1998 (Act No. 107 of 1998) [NEMA] for the Proposed Decommissioning of uMzimkhulu Local Municipality, Kwazulu Natal Province.

The EMPr is in support of a Basic Assessment Application being undertaken by GA Environment for the above mentioned activity as per the requirements of section 19 of the National Environmental Regulations 2014, as amended.

It must be noted that a closure plan **(Appendix H)** has been compiled in terms of section 19 (5) of the Environmental Regulations 2014, in support of the application as the proposed activity relates to decommissioning of Infrastructure.

It must also be noted that, the word 'decommissioning' and 'construction' will be used interchangeably as it is understood that although the site will be decommissioned, construction activities such as excavation, backfilling and levelling related to the 'decommissioning'/ 'closure' will be undertaken.

This EMPR document has thus been compiled in accordance with the Integrated Environmental Management (IEM) philosophy which aims to achieve a desirable balance between conservation and development (DEAT, 1992). IEM is a key instrument of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended. NEMA promotes the use integrated environmental management for activities that may have a significant effect on the environment. IEM prescribes a methodology for ensuring that environmental management principles are fully integrated into all the stages of the development process. NEMA advocates the use of several environmental management tools that are appropriate for the various levels of decision-making. One such tool is an EMPr.

The amended NEMA EIA Regulations, 2014 regulate the procedures and criteria for the submission and consideration of the EMPr including its content.

1.2 Site Location

The uMzimkhulu landfill occupies an area of approximately 43 000m² (±4 Ha) and is located on Erf 152 uMzimkhulu within the uMzimkhulu Local Municipality located which is part of the Harry Gwala District Municipality. The landfill is approximately 5km west of the uMzimkhulu CBD and direct access to the site can be gained from the surfaced P601 Road to Franklin. The site is located about 500m south of a tributary of the Mvubukazi River and approximately 300m west of Mankofu village. The site centre co-ordinates are 30°15'44.90"S; 29° 54' 17.00"E.

The location of the site is indicated in **Figure 1** and attached as **Appendix A** of this report.

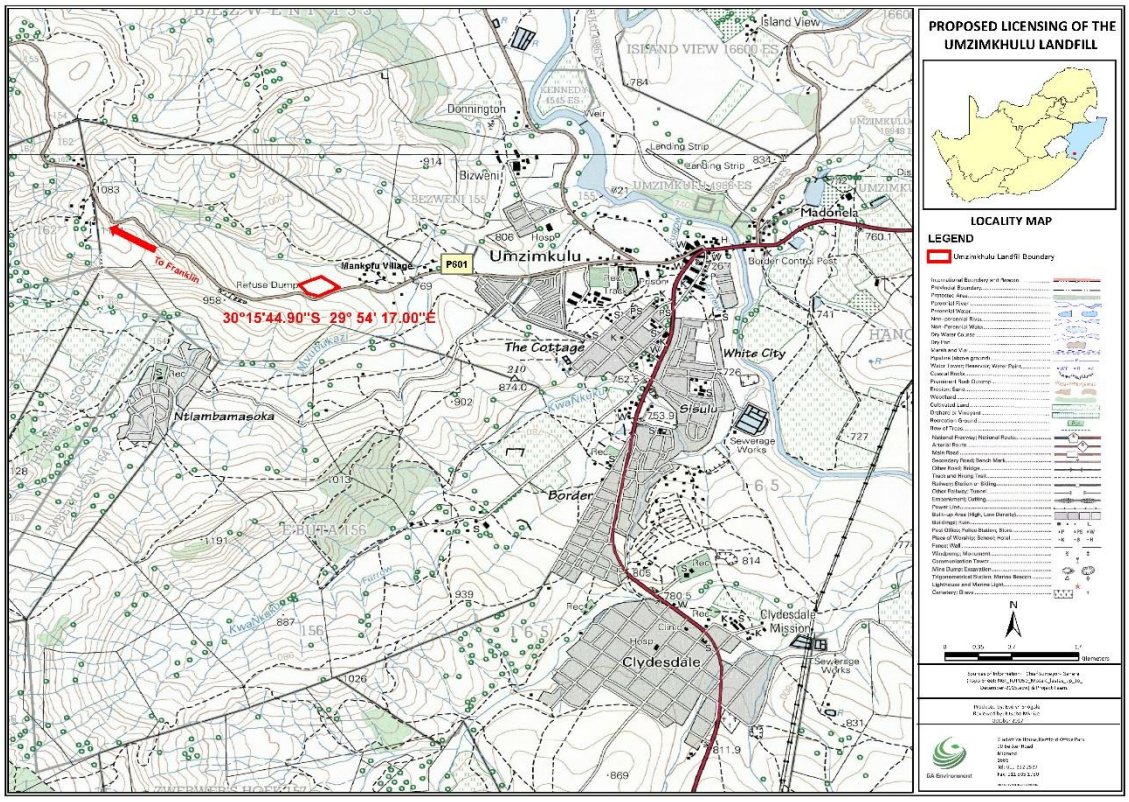

Figure 1: Locality Map of the uMzimkhulu Landfill

1.3 Details of Environmental Assessment Practitioner

This Environmental Management Program was compiled by:

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Mr Nyaladzi Nleya is an Environmental Scientist and holds B.Sc. (Applied Environmental Sciences). He is an Environmental Scientist with 8 years of experience. Nyaladzi specialises in Environmental Impact

Assessments (EIAs), Waste license Applications and has been a project scientist for various EIA's in Northern Cape, North West, Mpumalanga and Gauteng provinces of South Africa. Nyaladzi is currently a Project Manager and Environmental Scientist at GA Environment (Pty) Ltd.

1.4 Scope of the Environmental Management Programme (EMPR)

The EMPr serves to provide corrective measures needed during the decommissioning of the uMzimkhulu Landfill. The activities that are anticipated to occur during decommissioning and rehabilitation of the site are outlined in this EMPr along with the general management of impacts from these activities. The specifications outlined in this EMPr are thus applicable to all activities undertaken by the Applicant as well as appointed Contractors and all persons involved in the execution of the works including sub-Contractors, the workforce, suppliers and volunteers for the duration of construction, operation and future maintenance.

1.4.1 Planning for the Decommissioning Activities

A brief decommissioning framework must be developed during the planning phase of the project in order to outline all the necessary steps that must be fulfilled in order to successfully decommission the site without impacting on Human Health and the Environment. Meetings including the entire project team must determine the requirements for decommissioning and must be summarised in a framework. The project team must determine relevant and reasonable techniques for the safe and efficient capping and closure of the landfill.

The site layout and design must be considered for all recommendations including safety procedures that must be observed during this process. An Emergency Preparedness Plan must also be provided and must cover the following aspects:

- Hazard identification;
- Prevention measures;
- Emergency planning;
- Emergency response; and
- Remedial action.

The type of waste that will be produced from the decommissioning activities must be clearly identified and characterised to allow for proper planning and to further determine the need for Waste Storage requirements.

An Environmental Risk Assessment and Waste Characterisation exercise must be undertaken prior to any Shaping capping and landscaping of the waste body. In addition, a Waste Management Plan must be compiled to ensure that all unused capping material and other waste is stored and disposed of in accordance with the Norms and Standards for Storage of Waste.

In order to respond to some of the information required above, it would be necessary to carry out a waste stream analysis and waste characterisation study for all waste to be generated during the decommissioning phase.

1.4.2 Waste Characterisation

The proposed activities associated with the decommissioning of the existing facility will typically include the following:

- Shaping and landscaping of the waste body;
- The construction of stormwater and leachate management infrastructure;
- Capping of the waste body;
- Vegetative cover of the final landform;
- The construction of the required end-use infrastructure; and
- Post closure environmental monitoring where necessary.

The waste that is expected from the decommissioning will include waste such as

- Excess capping material
- Building rubble from existing infrastructure;
- Concrete waste.

The legal framework for the Norms and Standards for waste disposal, storage and handling aim to prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development through the sustainable use of natural resources. For this reason, uMzimkhulu Local Municipality as the project proponent is responsible for ensuring that the proposed decommissioning activities are managed in a safe and environmentally responsible manner.

1.5 Environmental Management Programme (EMPr)

1.5.1 Purpose of the EMPr

The purpose of the EMPr as a stand-alone document is to prescribe environmental management methods for the prevention, avoidance or minimization of adverse environmental impacts and for the improvement of the positive environmental benefits of a development. An EMPr can be based on the National Environmental Management Act (Act No. 107 of 1998, (NEMA)(as amended), and also confers a 'Duty of Care principle' (as per section 28 of NEMA) on those who cause, have caused or may in future cause pollution or degradation of the environment, as per of Section 28(1) of NEMA.

1.5.2 Objectives of the EMPr

The objectives for this EMPr include to:

- Provide an outline of the legal requirements;
- Ensure compliance with regulatory authority stipulations and guidelines which may be local, provincial or national;
- Identify decommissioning activities that might have detrimental impacts on the environment;
- Establish a method of monitoring and auditing environmental management practices during all phases of development;

- Outline mitigation measures and environmental specifications which are required to be implemented for all phases of the proposed development;
- Detail specific actions deemed necessary to assist in mitigating the environmental impact of the project;
- Specify time frames within which the measures contemplated in the EMPr must be implemented, where appropriate;
- Identify effective implementation of construction waste management within the proposed demarcated construction area, and
- To assign roles and responsibilities to parties involved regarding the implementation of this EMPr.

1.5.3 EMPr as a live cycle

An EMPr is a continuous improvement document that can be amended should the need for this arise. The below cycle is to be implemented for identifying the need to improve an EMPr and see the success of it in the proposed development. The live cycle presented in *Figure 1* includes four phases; the plan-phase, Do-phase, Check-phase and the Act-phase.

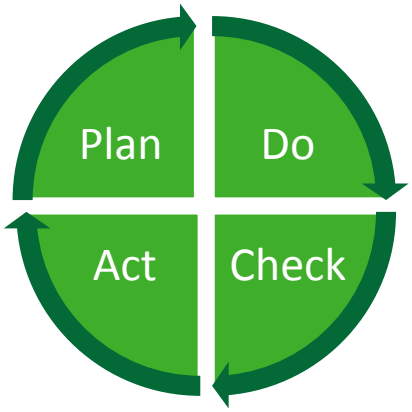

Figure 1: EMPr live cycle

a) Plan phase

This is the initial phase which involves the consideration of the applicable legislation and the nature of the receiving environment. It is during this stage, the targeted environmental management objectives are determined. All the environmental performance indicators will be identified to monitor the environmental performance of the proposed decommissioning activity. Achieving the objectives depends on compliance with this EMPr and the legislative requirements that reinforce it.

b) Do phase

This stage is about what has to be done where both the scope and objectives of the EMPr must be considered and not limited to the roles of the project team. An ECO, for example, must be appointed to conduct audits on compliance to relevant environmental legislation and any other ECO responsibilities according to the prepared EMPr.

c) Check-phase

A checklist has been developed by an ECO for assessing and monitoring impacts to measure environmental management performance. Monthly environmental monitoring audits will be conducted to ensure the proactive management of environmental issues, which is not limited to regular communication with Environmental Officer on site.

d) Act-phase

All the findings of the environmental monitoring audit will be documented and be addressed with the Environmental Liason Officer (ELO). The provided mitigation measures will also be implemented to improve environmental performances and reduce impacts. The findings of the audit can also be used to update the EMPr where required. As mentioned above, EMPr is a continuous improvement project specific document which is dynamic and it can be updated when need arises.

It is the requirement of the Environmental Compliance Audit process that risks to the environment are identified and these possible risks should be taken into account during the planning and construction phase of the development. These risks are presented in this Environmental Management Programme (EMPr). The implementation of this EMPr, through the appointed Contractor, remains the responsibility of the applicant.

The NEMA EIA Regulations, 2014 and as amended in 2017 regulate the procedures and criteria for the submission and consideration of the EMPr including its content. *It must be noted that the EMPR is a living document that can be amended should the need for this arise. The amendment must however be undertaken according to Chapter 5 of the EIA Regulations.* It must be noted that the amended NEMA EIA Regulations, 2014 (Sections 34-37) (which were applicable during the compilation of this EMPr) introduce a defined process with regard the amendment of the EMPr. The first amendment applies to the amendment of the EMPr as a result of Audit findings whereas the second amendment pertains to an amendment of a specific impact management actions of an EMPr. The third amendment gives opportunity to the holder of the EA to amend the EMPr and also requires the involvement of the CA and the undertaking of PPP. It is important that the Proponent and the Contractor follow these defined processes during the implementation phase as deviating from this process is regarded as a non- conformance.

1.6 National and Provincial Acts and Guidelines

It is understood that any activity, during its construction/decommissioning phase, is a dynamic activity within a dynamic environment. The Applicant, Engineer, Contractor and sub-Contractor must therefore be aware that certain activities conducted during construction and operation phase may require further licensing or environmental approval, e.g. bulk fuel storage, waste disposal, etc. The Contractor must consult the Safety Officer and ECO on a regular basis in this regard. The common list of legislative references contained herein is by no means exhaustive, but is applicable to the general principals of this document.

- National Environmental Management Act, 1998 (Act No. 107 of 1998)
- National Environmental Management: Waste Act (Act No. 59 of 2008)

- National Environmental Management: Protected Areas Act, 2004 (Act No.31 of 2004)
- Fencing Act, 1963 (Act No. 31 of 1963)
- National Building Regulations and Standards Act, 1977 (Act No. 103 of 1977) (SABS 0400)
- National Heritage Resources Act, 1999 (Act No. 25 of 1999)
- National Road Traffic Act, 1996 (Act No. 93 of 1996)
- National Veld and Forest Fires Act, (Act No. 101 of 1998)
- National Water Act, 1998 (Act No. 36 of 1998)
- Occupational Health and Safety Act, 1993 (Act No. 85 of 1993)
- Road Transportation Act, 1977 (Act No. 74 of 1977)

This EMPr has been compiled as per the requirements of the amended NEMA EIA Regulations 2014 and in terms of Section 24N of the National Environmental Management Act (Act No. 107 of 1998).

1.6.1 General guidelines

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

- The prevention of any site degradation due to non-compliance, administrative or financial problems, and inactivity during the construction phase, illegal activities, delays caused by archaeological finds etc. are ultimately the responsibility of the applicant / Proponent as per Section 28 of NEMA, 1998 (as amended) which discusses 'Duty of Care and remediation of environmental change'.
- The study area must be clearly defined and surveyed according to the project authorisation.
- All workforce members and other construction personnel are not to go beyond the defined footprint.
- The Contractors must adhere to agreed and approved access points.
- Damage to private or public property such as fences, gates and other infrastructure may occur at any time. All damages are to be repaired immediately.
- Relevant landowners, businesses must be informed of the starting date of construction, as well as the phases in which the construction shall take place.
- The Contractor must adhere to all conditions of Contract including this EMPr.
- All private and public manmade structures near the project site must be protected against damage at all times and any damage must be rectified immediately.
- Proper site management and regular monitoring of site works should take place.
- Proper documentation and record keeping of all complaints and actions taken must be kept at the site office.
- A positive attitude towards Environmental Management by all site personnel must be motivated through regular and effective awareness and training sessions.
- An ESO, on behalf of the Contractor, should be appointed to implement this EMPr. The ECO and not the Contractor or his / her ESO is to deal with any landowner related matters.
- Environmental Audits should be carried out during construction on a monthly basis.

- Social issues in terms of safety for human life, on employees should be encouraged. All construction areas and activities should be cordoned off and no casual access be gained, where deep trenches or open electrical infrastructure are to be exposed.

1.7 Tasks and Responsibilities

In order to ensure the sound development and effective implementation of the EMPr, it is necessary to identify and define the responsibilities and authority of the various persons and organisations that will be involved in the project. The following key roles will need to be provided for during the implementation of the EMPr:

- Authorities;
- Proponent/Applicant;
- Consulting Engineers (CE);
- Engineers Representative (ER) / Resident Engineer (RE);
- Environmental Control Officer (ECO);
- Project Manager (PM);
- Contractors (C);
- Environmental Assessment Practitioner (EAP);

These roles and line of communication has been incorporated in the section that follow:

1.7.1 Role players and Responsibility matrix

In order for the EMPr to be successfully implemented, all the role players involved in the project need to co-operate. An example of declaration of understanding between various parties working on site regarding the requirements of the EMPr must be produced (Refer to **Appendix 1**). For this, role players must clearly understand their roles and responsibilities, they must be professional and they must form respectful and transparent relationships, and maintain open lines of communication.

[Pre–EA] Potential role players or project teams will include the Authorities, Other Authority (OA), Proponent / Proponent – (Proponent), Consulting Engineers (CE), Engineers Representative (ER), Environmental Site Officer (ESO), Environmental Control Officer (ECO), Project Manager (PM), Contractors, Environmental Assessment Practitioner (EAP). Furthermore, the surrounding landowners, I&APs and the relevant environmental and project specialists are also important role players.

[Post-EA] These role players or the project team will consist of the Authorities, Other Authority, Proponent / Proponent, Consulting Engineers (CE), Engineers Representative (ER), Environmental Officers (EO), Environmental Control Officer (ECO), Project Manager (PM), Contractors, Environmental Assessment Practitioner (EAP). Furthermore landowners, I&APs and the relevant environmental and project specialists are also important role players.

The functions and responsibilities of these role players are outlined in **Table 1.**

Table 1: Functions and Responsibilities of the Project Team

KEY	FUNCTION	RESPONSIBILITY
D	uMzimkhulu Local Municipality (ULM)	ULM is ultimately accountable for ensuring compliance with the EMPr. The ECO must be contracted by the Proponent as an independent appointment to objectively monitor implementation of relevant environmental legislation, and the EMPr for the project. ULM is further responsible for providing and giving the mandate to enable the ECO to perform their responsibilities. ULM must also ensure that the ECO is integrated as part of the project team.
CE	Consulting Engineer	A Consulting engineer must be contracted by the proponent to design and specify the project engineering aspects. Generally, the engineer runs the works contract. The CE may also fulfil the role of PM on the proponent's behalf (See PM). The RE will also be required to be familiar with the EMPr specifications.
PM	Project Manager	The Project manager has overall responsibility for managing the project, Contractors, and consultants and for ensuring that the environmental management requirements are met. The CE may also act as the PM. All decisions regarding environmental procedures must be approved by the PM. The PM has the authority to stop any construction activity in contravention of the EMPr in accordance with an agreed warning procedure.
ER	Engineer's Representative	The consulting engineer's representative onsite which is called Resident Engineer on this site. They have the power / mandate to issue site instructions and in some instances, variation orders to the Contractor,

ECO	Environmental Control Officer	ULM must appoint an independent ECO to objectively monitor the implementation of relevant environmental legislations and this EMPr for the project. The ECO must be onsite prior to any site establishment and must endeavour to form an integral part of the project team. The ECO should be proactive and have access to specialist expertise as and when required, these include botanists/ ecologists etc. The ECO must conduct audits on compliance to relevant environmental legislation and the EMPr for the project. The size and sensitivity of the development, based on the EIA, will determine the frequency at which the ECO will be required to conduct audits. The ECO must liaise the relevant authorities and the project team. The ECO must communicate and inform the Proponent and CE of any changes to environmental conditions as required by relevant authoritative bodies. The ECO must ensure that the registration and updating of all relevant EMPr documentation is carried out. The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices. The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible. The ECO must convey the contents of this EMPr to the Contractor site team and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all Contractors and their
C	Contractor	The Principal Contractor is responsible for implementation and compliance with the requirements of the EMPr and conditions of the EA's, contract and relevant environmental legislation. The Contractor must ensure that all sub-Contractors have a copy of and are fully aware of the content and requirements of this EMPr. The Contractor is required, where specified, to provide Method Statements setting out how the management actions contained in this EMPr will be implemented.

ESO	Environmental Site Officer	The ESO is employed by the Contractor as his / her environmental representative to monitor, review and verify compliance with the EMPr by the Contractor. In this case the SHE Officer for the site also act as an ESO. This is not an independent appointment; rather the ESO must be a respected member of the Contractor's management team. The ESO must be onsite one week prior to the commencement of construction. The ESO must ensure that he / she is involved at all phases of the construction (from site clearance to rehabilitation).
A	Lead Authority	The Department of Environmental Affairs (DEA) are the lead authority that will ultimately issue the Environmental Authorisation. DEA are responsible for ensuring that the monitoring of this EMPr and other authorisation documentation is carried out; this will be achieved by
OA	Other Authority / ies	Other authorities are those that may be involved in the approval process of this EMPr. Their involvement may include reviewing EMPr to ensure the accuracy of the information relevant to their specific mandate. Other authorities include South African Heritage Resources Agency (SAHRIS), review or implementation of this EMPr.
EAP	Environmental Assessment Practitioner	The definition of an EAP in section 1 of NEMA is "the individual responsible for the planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management plans or any other appropriate environmental instruments introduced through regulations". In this case GA Environment is the EAP for the proposed development.
EO	Environmental Officer	The EO is employed by the Proponent. The EO must ensure daily toolbox talks include alerting the workforce to particular environmental concerns associated with the tasks for that day or the area / habitat in which they are working. The EO and not the Contractor or his / her ESO is to deal with any landowner related matters.

1.7.2 Awareness Training

The ECO is responsible for ensuring everyone on site receives environmental awareness which will not only clearly define what the environment is, but also give specifics about the local environment. The training must also outline the requirements of the EMPr as a management tool for the protection of the environment. Refresher courses must be conducted as and when required. The EO must ensure that toolbox talks include alerting the workforce to particular environmental concerns associated with

the tasks for the day or the area / habitat in which they are working for a specific duration, etc. Awareness posters and a hand outs must be provided to create awareness throughout the site.

1.7.3 Contractor Environmental Method Statements

Method Statements are written submissions to the Engineer by the Contractor, in collaboration with the ESO and ECO, in response to a request by the EO and or Engineer. The Method Statements set out the equipment, materials, labour, method etc. that the Contractor proposes using to carry out an activity, identified by the EO and / or Engineer. The Method Statements contain the appropriate detail such that the EO and Engineer are able to assess whether the Contractor's proposal is in accordance with the requirements of the EMPr. The Contractor must sign each Method Statement along with the EO and Engineer to formalise the approved Method Statement. An example of a template that can be used to record all applicable Method Statements by the Contractor is attached as **Appendix 2**.

All Method Statements, including those which may be required as ad-hoc or emergency construction method statements, must be submitted to the Engineer for approval prior to the commencement of the activities at the proposed development site.

Any changes to the method of works must be reflected by amendments to the original approved Method Statement. Any changes in this regard must be approved by the EO and Engineer on the understanding that such changes are environmentally acceptable and in line with the requirements of this EMPr.

The pro-forma Method Statements attached must be used and method statements for the following activities must be submitted to the EO, ECO and Engineer for approval before Operation commences:

- Solid waste management;
- Stormwater Management;
- Crew camps and construction lay-down areas;
- Workshop and maintenance areas;
- Cement and concrete batching;
- Dust control;
- Emergency spills procedures;
- Diesel tanks and refuelling procedures;
- Sourcing, excavating, transporting and dumping of fill, spoil material and waste;
- Erosion control;
- Safety onsite (SHEQ requirements)
- Topsoil management;
- Fire.

1.8 Site Documentation

The following is list of documentation that should be held onsite and made available to the ECO and / or the Proponent (Approving Authority): -

- Site daily diary / instruction book / incident reports;
- Records of all remediation / rehabilitation activities;
- Copies of EO reports (management and monitoring);
- This EMPr;
- A Complaints register;
- Method statements signed by the Contractor;
- The project Closure Plan.

Any other documents that are approved by the EMPr must also be included in the list above.

1.8.1 Pro forma documentation

a) *Prior to the commencement of Construction activities*

The following attached pro forma documentation should be filled out and is binding to the EMPr and project contract and includes, but is not limited to the following:

- Declaration of understanding by the Proponent;
- Declaration of understanding by the Engineer;
- Declaration of understanding by the Contractor;
- Method statements;
- ECO / Engineer approval for method statements; and
- Access negotiations and physical access plan based on the Master Plan of the study area, if available.

b) *During construction activities*

The following attached pro-forma documentation is to be filled out and maintained. These are binding to the EMPr and project contract. They include, but are not limited to, the following:

- Method Statements;
- ECO / Engineer approval for method statements;
- Environmental incidents; and
- Records of all remediation / rehabilitation activities.

2. DECOMMISSIONING PHASE EMPR – IMPLEMENTATION

The point of departure for this EMPr is to ensure a pro-active rather than re-active approach to environmental performance by addressing potential problems before they occur. This will limit corrective measures needed during the construction phase of the project. Therefore, the purpose of this EMPr is to provide management measures that must be implemented by Proponents, Engineers and Contractors alike to ensure that the potential impacts of the construction and its associated impacts are minimised. It must also be ensured that the EMPr is maintained and upheld as a dynamic document i.e. a living document, in order for the project team to add or improve on issues that might be considered left out or not relevant to the project. The EMPr should be used for all phases of the project.

The tables outlined in this report form the core mitigation measures appropriate to the pre-decommissioning and decommissioning phase. The tables present the objectives to be achieved and the management actions that need to be implemented in order to mitigate the negative impacts and enhance the benefits of the project. Associated responsibilities, criteria / targets and timeframes are clearly specified.

2.1 Pre-Decommissioning phase

This section of this EMPr, refers to the period of time leading up to and prior to commencement of construction activities, and is included to ensure pro-active environmental management measures with the goal of identifying avoidable environmental damage at the onset and sustain optimal environmental performance throughout the construction phase. Most impacts will occur during the construction phase and must be mitigated through the contingency plans identified in the pre-construction phase.

The bulk of environmental impacts will have immediate effect during the *'construction'* phase. If the site is monitored on a continual basis during the construction phase, it is possible to identify these impacts as they occur. These impacts will then be mitigated through the measures outlined in this section, together with a commitment to sound environmental management from the project team.

2.2 Decommissioning phase (Construction and rehabilitation phase)

The "*construction/decommissioning*" section refers to all construction and its operation-related activities that will occur until all the waste body of the landfill is capped and all ancillary infrastructure installed. This "construction" section is divided into three functional areas, namely "materials"; "plant"; and "construction". Each of these functional areas within the EMPr contains specific mitigation requirements and requested Contractor method statements stipulated where required.

2.3 Structure and Contents of Tables

The table consists of seven parts which are included as key requirements of EMPr as defined in the amended NEMA EIA Regulations 2014. These sections are described below as follows:

- **Phase of development –** This section will identify either pre-construction (planning) or actual Decommissioning activities.
- **Impact / issue -** This section will identify the issue being addressed, e.g. Materials, site demarcation, heritage, etc.

- **Mitigation Measure -** This column will include all the necessary mitigation measures for each impact / issue'.
- **Impact Management outcomes -** This column will indicate and detail the consequence of each mitigation measure applied.
- **Impact Management actions -** This column will indicate what evidence is to be used as an indication to whether or not the 'Management objectives' have been implemented and hence achieved.
- **Frequency of action -** Provides time guidelines for the 'Responsible party' by which he / she is to action or manage the required mitigation.
- **Responsible Party –** Provides the details of the responsible team member which should account on the activities highlighted in column 1 to 4.

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	GENERAL PLANNING (A)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE PARTY
A1 Project contract and programme i. The EMPR shall be required as part of the NEMA process thereby making it part of the enquiry document to make recommendations and constraints, as set out in this document, enforceable under the general conditions of contract. ii. A copy of this EMPr shall be available onsite. The Contractor must ensure that all the personnel onsite, sub-Contractors and their team, suppliers, are familiar with and understand the specifications contained in this EMPr.	• Contingencies for minimising negative impacts anticipated to occur during the decommissioning • Ensure environmental awareness and formalise environmental responsibilities and implementation	• Contract records • Signed declaration pro forms by Contractor • Mitigation measures to be complied with	Once-off	• Proponent • ECO • Contractor
A2 Appointments and duties of project team i. Before construction activities commence, role players must have a clear indication of to their role in the implementation of this EMPr ii. Subcontractor(s) contracts with the principal Contractor must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMPr. iii. Transparency of the process and ensuring that the relevant stakeholders are in agreement.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • Engaging with the relevant stakeholders on issues pertinent to finalization of expropriation process	• Contract records • Signed declaration pro forms • Appointment of role-players • Accepted finalized agreements between stakeholders. Property owners fairly compensated.	Once-off	• Proponent • ECO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	GENERAL PLANNING (A)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE PARTY
A3 Method statements i. As required in 1.7.3, certain method statements must be provided by the Contractor. All activities which require method statements, paeticularly in the handling of waste may only commence once the method statements have been approved by the engineer and or ECO. ii. Where applicable, the Contractor shall provide job-specific training on an ad-hoc basis when workers are engaged in activities which require method statements.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Approved method statements and relevant pro forma documents • Regular Review of the Method statements in line with current activity • Training records	As and when required and need be.	• ECO • Contractor
A4 Site demarcation and development i. The surveys for the overall project area and construction footprint as approved in the approved Engineering plans must be completed and clearly demarcated and fenced (where practical) before the Contractors set up their crew camps or begin construction. ii. "No-go" areas such as areas of species of conservation importance and sensitive natural areas, identified during the planning process must be clearly demarcated (e.g. warning tape) prior to the commencement of construction activities. iii. The site activities and sequencing of the construction activities should be regulated by relevant legislature, regulations, and standards	• Contingencies for minimising negative impacts anticipated to occur during the construction phase • Adherence to the EMPr and legislative requirements	• Demarcated area's • Filled in section of this document • EMPr adhered to	As and when required	• ECO • Contractor
A5 Emergencies, non-compliance and communication i. The Contractor must provide method statements on the protocols to be followed, and contingencies to be put in place for the following potential incidents before construction may begin: Contamination of the natural water resources from spills; contamination of soils from spills; soil erosion, Safety (Casual Access) and Stormwater Management.	• Contingencies for minimising negative impacts anticipated to occur during the construction phase	• Method statements	As and when required	• ECO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING			
Impact / issue	GENERAL PLANNING (A)			
MITIGATION MEASURE	**IMPACT MANAGEMENT ACTIONS**	**IMPACT MANAGEMENT OUTCOMES**	**FREQUENCY OF ACTION / MONITORING**	**RESPONSIBLE PARTY**
ii. The Contractor understands that failure to adhere to the requirements of the EMPr 'Tolerances', over and above the costs incurred for any remediation required as result of the specific non-compliance, shall be followed.				
A6 Permits and Permissions i. The Contractor shall ensure that all pertinent permits, certificates and permissions have been obtained prior to any activities commencing on site and ensure that they are strictly enforced / adhered to. ii. The Contractor shall maintain a database of all pertinent permits and permissions required for the contract as a whole and for critical activities for the duration of the contract.	• Adherence to the EMPr and legislative requirements	• Compliance with legislation and EMPr requirements	Prior to Construction	• Proponent • Contractor
A7 Existing Services and Infrastructure i. The Contractor shall ensure that existing services (e.g. Fencing, roads, pipelines, power lines and telephone services) are not damaged or disrupted unless required by the contract and with the permission of the RE. ii. The Contractor shall be responsible for the repair and reinstatement of any existing infrastructure that is damaged or services which are interrupted. iii. Such repair or reinstatement will be to the Contractor's cost and shall receive top priority over all other activities. iv. A time limit for the repairs may be stipulated by the RE in consultation with the Contractor.	• Avoiding impact on surrounding services and infrastructure	• Infrastructural impacts • Services impacts	Daily	• Proponent • ECO • ESO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	GENERAL PLANNING (A)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE PARTY
A8 Environmental Awareness Training The Contractor shall ensure that all site personnel have a basic level of environmental awareness training. Topics covered should include; i. What is meant by "Environment" ii. Why the environment needs to be protected and conserved iii. The impacts of unsecured waste and leachate on the surrounding environment iv. How construction activities can impact on the environment v. What can be done to mitigate against such impacts vi. Awareness of emergency and spills response provisions vii. Social responsibility during construction of the sub-transmission lines e.g. being considerate to local residents viii. It is the Contractor's responsibility to provide the site foreman with environmental training and to ensure that the foreman has sufficient understanding to pass this information onto the construction staff. ix. Training should be provided to the staff members in the use of the appropriate fire-fighting equipment. Translators are to be used where necessary. x. Use should be made of environmental awareness posters on site. xi. The need for a "clean site" policy also needs to be explained to the workers. xii. Staff operating equipment (such as excavators, loaders, etc.) shall be adequately trained and sensitised to any potential hazards associated with their tasks. xiii. The Contractor must monitor the performance of construction workers to ensure that the points relayed during their introduction have been properly understood and are being followed.	• Raise awareness of importance of Environmental protection	• Environmental Management • Reduce and manage potential Environmental impacts	Daily	• Proponent • ECO • ESO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	Materials (B)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE
B1 Stockpiles and Capping Material i. All stockpiled material must be easily accessible without any environmental damage. ii. All waste body capping material must be adequately protected and may only be placed within demarcated areas which must be approved by the ECO. iii. Stormwater runoff from any stockpile sites and other related areas must be directed into the stormwater system with the necessary pollution prevention measures such as silt traps. iv. Stockpiles are to be stabilised if signs of erosion are visible. v. Soils from different horizons must be stockpiled so that topsoil stockpiles do not get contaminated by sub-soil material. vi. Topsoil stockpiles must be monitored for invasive vegetation growth. Contractors must remediate as and when required in consultation with the ECO. vii. No plant, workforce or any construction related activities may be allowed onto topsoil stockpiles. viii. Topsoil stockpiles must be clearly demarcated as no-go areas. ix. Stockpiles should not be higher than 2.5 meters to avoid compaction, while the slopes of the stockpiles should not be steeper than 1 vertical to 1.5 meters horizontally.	• Minimise scaring of the soil surface and land features • Minimise disturbance and loss of soil • Minimise construction footprint • Containment of invasive plant growth should be encouraged • Minimise contamination of stormwater run-off will be encouraged	• No visible erosion scars once construction is completed	Daily	• ECO • ESO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	Materials (B)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE
B2 Oil and chemicals i. The Contractor must provide method statements for the "handling & storage of oils and chemicals" and "emergency spills procedures". ii. These substances must be confined to specific and secured areas within the Contractor's construction site, and in a way that does not pose a danger of pollution even during times of high rainfall. These areas must be imperviously bunded with adequate containment (at least 1.5 times the volume of the fuel) for potential spills or leaks. iii. Drip trays (minimum of 10 cm deep) must be placed under all vehicles that stand for more than 24 hours. Vehicles suspected of leaking must not be left unattended, drip trays must be utilised to prevent environmental harm. iv. The surface area of the drip trays will be dependent on the vehicle and must be large enough to catch any hydrocarbons that may leak from the vehicle while standing. v. The depth of the drip tray must be determined considering the total amount / volume of oil in the vehicle. The drip tray must be able to contain the volume of oil in the vehicle. vi. Spill kits must be available onsite and in all vehicles that transport hydrocarbons for dispensing to other vehicles on the construction site. Spill kits must be made up of material / product that is in line with environmental best practice (SUNSORB is a recommended product that is environmentally friendly. vii. All spilled hazardous substances must be contained in impermeable containers for removal to a licensed hazardous waste site, (this includes contaminated soils, and drenched spill kit material).	• Prevention of pollution of the environment • Minimise chances of transgression of the acts controlling pollution	• No pollution of the environment • No litigation due to transgression of pollution control acts • Method statements as set out by the Contractor adhered to.	Daily	• ECO • ESO • Contractor

Phase of development	PRE-CONSTRUCTION/DECOMMISSIONING
Impact / issue	Materials (B)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION / MONITORING	RESPONSIBLE
B3 Cement And Concrete i. The Contractors must provide and maintain a method statement for "cement and concrete batching". The method statement must provide information on proposed storage, washing & disposal of cement, packaging, tools and plant. ii. Cleaning of cement mixing and handling equipment must be done using proper cleaning trays. iii. All empty containers must be stored in a dedicated area and later removed from the site for appropriate disposal at a licensed facility. iv. Any spillage that may occur must be investigated and immediate remedial action must be taken. v. The visible remains of concrete, either solid, or from washings, must be physically removed immediately and disposed of as waste to a registered landfill site. vi. Cement batching areas must be located in consultation with the ER, ESO or ECO to ensure residues are contained and that the proposed location does not fall within sensitive areas.	• Minimise the possibility of cement residue entering into the surrounding environment • Minimise pollution of soil, surface and groundwater resources	• No evidence of contaminated soil on the construction site • Method statement	Monitored daily	• ECO • ESO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Facility(C)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
C1 Construction Site i. The Contractors must provide and maintain a method statement for "Crew camps, eating areas, construction lay down areas and other areas of the site". ii. Dedicated wash areas must be provided and maintained in good working order. iii. The construction site must be monitored for dust fallout and dust suppression applied as required. This may include the laying of gravel. iv. The Contractor must provide labourers plastic bags to clean up the construction site on a daily basis. These areas must then be inspected by the Contractor or his / her ESO to ensure compliance with this requirement. v. The Contractor is responsible for cleaning the construction site of all structures, equipment, residual litter and building materials at the end of the construction period. vi. Erection of the construction site should be encouraged in already disturbed areas onsite	• Minimise water pollution • Minimise dust fallout in the immediate surroundings • Minimise unwarranted environmental damage outside the footprint • Maintain a clean and healthy working environment • Crew camp activities should be in line with the Occupational Health and Safety (OHS) regulations	• No signs of water or soil pollution (surface- and groundwater resources) • No complaints received from the surrounding landowners / I&AP's • No visible signs of litter at the crew camps • Method statements adhered to	Monitor daily	• ECO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Facility(C)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
C2 Eating Areas For Construction Workers i. The Contractors must provide and maintain a method statement for "construction site and construction lay down areas". ii. The Contractor must, in conjunction with the ECO, designate restricted eating areas for eating during normal working hours. Adequate closed refuse bins must be provided and cleaned on a daily basis. iii. No fires shall to be lit outside of a facility designed to contain fires. The adequacy and positioning of these structures must be determined in consultation with the ECO. iv. The feeding, or leaving of food, for stray or other animals in the area is strictly prohibited. v. Informal traders must not be allowed to congregate on pavements or outside the construction site. However, at the Contractor's discretion, facilities can be made available within the designated eating area. vi. Litter (even if originating outside the camp) and concrete bags, etc. must be picked up daily and put into suitably closed bins to prevent pollution.	• Control potential influx of vermin and flies and rats • Neat work place and hygienic environment • Minimise negative social impacts to the employees.	• No visual sign of vermin, flies and rats • No complaints from I&APs and the landowner / client	Once off, monitor daily	• ECO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Facility(C)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
C3 Toilets And Ablution Facilities i. The Contractor is responsible for providing all sanitary arrangements for his and the sub-Contractors team. A minimum of one chemical toilet must be provided per 12 workers of the appointed contactor. ii. Sanitary arrangements must be to the satisfaction of the ECO and the OHS official Toilets must be of the chemical type. The Contractor must keep the toilets in a clean, neat and hygienic condition. The Contractor must supply toilet paper at all toilets at all times. Toilet paper dispensers must be provided in all toilets. iii. Toilets provided by the Contractor must be easily accessible to ensure they are utilised. All toilets will be located within the construction site. Should toilets be needed elsewhere, their location must first be approved by the ECO. iv. The Contractor (who must use reputable toilet-servicing company) must be responsible for the cleaning, maintenance and servicing of the toilets. The Contractor (using reputable toilet-servicing company) must ensure that all toilets are cleaned and emptied before the builders' or other public holidays. v. Toilets out onsite must be secured to the ground and have a sufficient locking mechanism operational at all times.	• Ensure proper sanitation is achieved which will encourage the workforce to utilise toilets provided and not the surrounding habitat or the bush • Minimise potential of diseases onsite and influence the health of the employees • Minimise potential to pollute soils, water resources and natural habitats	• Workforce use toilets provided and not the bush • No complaints received from I&APs as well as members of the workforce • No visible or measurable signs pollution of the environment (soils, ground and surface water)	As and when required	• Contractor
C4 Waste Management i. Waste on site should be compacted, capped and the soil profile reintroduced according to best practise guidelines, with the final layer comprising of a good quality topsoil of at least 30cm deep. ii. The Contractors must provide and maintain a method statement for "solid waste management". The method statement must provide information on proposed licensed facility to be utilised or recycling agent and details of proposed record keeping for auditing purposes. iii. Any illegal dumping of concrete waste removed from the existing infrastructure must not be tolerated, this action will result in a fine and if	• Sustainable management of waste by recycling • Minimise litigation and complaints by I&APs • Control potential influx of vermin and flies thereby minimising the potential of diseases and pests onsite and the surrounding environment	• Disposal of concrete and refuse in an appropriate manner with no rubble and refuse lying onsite • Ensuring the site is neat and tidy • No complaints are received from surrounding residents, businesses and road users	Continuous throughout the construction phase of the project	• ECO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION				
Impact / issue	Facility(C)				
MITIGATION MEASURE		IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
required further legal action will be taken. This aspect must be closely monitored and reported on; proof of legal dumping must be able to be produced on request. iv. Bins must be clearly marked for ease of management. v. All refuse bins must have a lid secured so that animals cannot gain access. vi. Sufficient closed containers must be strategically located around the construction site to handle the amount of litter, wastes, rubbish, debris, and builder's wastes generated on the site. vii. Subcontractors(s) must contain a clause to the effect that the disposal of all construction-generated refuse / waste to an officially approved dumping site is the responsibility of the subcontractor in question and that the subcontractors are bound to the management activities stipulated in this EMPr. Proof of this undertaking must be issued to the ECO. viii. All solid and chemical wastes that are generated must be removed and disposed of at a licensed waste disposal site. The Contractor is to provide proof of such to the ECO. ix. A waste disposal management plan should be encouraged. x. Chemical containers and packaging brought onto the site must be removed for disposal at a suitable and licenced site. xi. A skip, with a cover, must be used to contain refuse from construction i.e. bins, rubble and other construction material.		• Minimise potential to pollute soils, water resources and natural habitats • Adherence to the waste disposal management plan	• Sufficient containers available onsite for disposal of domestic and construction related impacts • No visible or measurable signs of pollution of the environment (soils, ground and surface water) • Method statement adhered to and waste disposed of in accordance with the waste disposal management plan		

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Facility(C)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
C5 Dust i. The Contractors must provide and maintain a method statement for "dust control". The method statement must provide information on the proposed source of water to be utilised and the details of the licenses acquired. ii. The construction site must be watered during excavation and reshaping of the waste body. iii. Dust production must be controlled by regular watering of roads and works area, should the need arise. **NB:** Concrete dust is toxic and damages soil properties, therefore watering to prevent dust spread must not be done where concrete dust has fallen or it will infiltrate into the soil. Concrete bags must not be allowed to blow around the site. iv. In addition to the standard dust suppression measures and where these measures are not sufficient, main access roads and construction site must be surfaced with a temporary surface such as gravel to assist with dust suppression. v. All vehicles transporting material that can be blown off (e.g. soil, rubble, etc.) must be covered with a tarpaulin, and speed limits of 40 km/h must be adhered to. vi. Excessive dust conditions must be reported to the ECO. vii. All forms of dust pollution must be managed in terms of the NEM: AQA and its amendments.	• Reduce dust fall out at construction site • Minimise loss of valuable soil material	• No visible signs of dust around the Contractor's camp • No complaints from I&APs • No incidences reported to ECO • No visible evidence of dust contamination on the surrounding environment • Method statement adhered to	Monitor daily	• ECO • Contractor
C6 Workshop Equipment, Maintenance And Storage i. The Contractors must provide and maintain a method statement for "workshop maintenance and cleaning of plant". ii. All maintenance and washing of vehicles and equipment must take place in the workshop area that is equipped with a bund wall and grease trap oil separator. During servicing of vehicles or equipment, a suitable drip tray must be used to prevent spills onto the soil, especially where emergency repairs are done outside the workshop area. Leaking equipment must be repaired immediately	• Prevent pollution of the environment • Minimise chance of transgression of the acts controlling pollution • Disposal of hazardous substances in an appropriate manner	• No pollution of the environment • No litigation due to transgression of pollution control acts • Method statement adhered to	Monitor daily	• ECO • ER • EO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION				
Impact / issue	Facility(C)				
MITIGATION MEASURE		IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
or be removed from site to facilitate repair. All potentially hazardous and non-degradable waste must be collected and removed to a registered waste site. iii. Workshop areas must be monitored for oil and fuel spills and such spills must be cleaned and remediated to the satisfaction of the EO or ER. Cleaning and remediation must be done with products that are in line with best environmental practice i.e. SUNSORB iv. A method statement is required from the Contractor, tendering for the project to show procedures for dealing with possible emergencies that can occur, such as fire and accidental leaks and spillage. v. The Contractor must be in possession of an emergency spill kit that is complete and available at all times onsite. The Contractor must ensure that senior and other relevant members of the workforce are trained in dealing with spills by using emergency spill kits. vi. The following must be applied • All contaminated soil shall be removed and disposed of as hazardous waste at a registered facility or placed in containers to be taken to one central point where bio-remediation can be done. • All spills of hazardous substances must be reported to the ECO. • The Contractor must comply with the regulations of the OHS					
C7 Noise i. All construction vehicles must be in a good working order to reduce possible noise pollution. ii. Construction and the use of construction machinery should be limited between 06h00 and 18h00 on weekdays only. Work hours during the construction phase must be strictly enforced unless permission is given iii. No construction should occur during weekends, unless the adjacent residents have been notified in writing at least three days in advance. iv. Noise reduction is essential and Contractors must endeavour to limit unnecessary noise, especially loud talking, shouting or whistling, radios, sirens or hooters, motor revving, etc. The use of silent compressors is a specific requirement.		• Maintain noise levels below "disturbing" as defined in the National Noise Regulations • Minimise the nuisance factor of the development	• No complaints from surrounding landowners or I&AP's	As and when required	• ECO • Contractor

Phase of development	DECOMISSIONING AND REHABILITATION				
Impact / issue	Facility(C)				
MITIGATION MEASURE		IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
v. Noisy activities must take place only during working hours. The ECO must inform all I&APs in writing 24 hours prior to any planned activities that will be unusually noisy or any other activities that could reasonably have an impact on the surrounding environment, road users and neighbouring land owners. These activities could include, but are not limited to, piling, use of pneumatic jack-hammers and compressors, bulk demolitions, etc. vi. The Contractor must ensure that noise levels remain within acceptable limits and that labourers have equipment such as ear plugs to be used during the undertaking of activities with high levels of noise vii. Maintenance of equipment and operational procedures: Proper design and maintenance of silencers on diesel-powered equipment					

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Site Activities (D)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
D1 Fires i. The Contractors must provide and maintain a method statement for "fires", clearly indicating where and for what fires will be utilised as well as details on the fuel to be utilised. ii. Fires will only be allowed in facilities especially constructed for this purpose within the fenced Contractor's construction site should there be one. Wood, charcoal or anthracite are the only fuels permitted to be used for fires. The Contractor must provide sufficient wood (fuel) for this purpose. iii. Fires within the designated areas must be small in scale so as to prevent excessive smoke being released into the air. iv. No wood is to be collected, chopped or felled for fires from private or public property as well as from no-go or sensitive areas within the site and any surrounding natural vegetation.	• Minimise risk of veld fires and loss of natural habitat • Maintain safety on site and the community in general	• No veld fires started by the Contractor' s workforce • No claims from landowners for damages due to veld fires • Method statement adhered to	Monitor daily	• ECO • EO • Contractor
D2 Erosion i. To reduce the loss of material by erosion, the Contractor must ensure that disturbance onsite is kept to a minimum. The Contractor is responsible for rehabilitating all eroded areas in such a way that the erosion potential is minimised after construction has been completed. ii. Soil erosion must be minimised during the reshaping of the waste body. iii. The cleared area covering the waste body should be reseeded, with an indigenous seed mixture, such as Mayford's Biomosone Sour Bushveld Reclamation Mixture, at a density of 24kg/ha to prevent erosion and ensure adequate vegetation cover.	• Minimise erosion damage • Minimise impeding the natural flow of water • Minimise scarring of the soil surface and land features • Minimise disturbance and loss of topsoil • Re-growth of disturbed areas.	• No erosion scars • No loss of topsoil • No interference with the natural flow of water • The footprint has not exceeded the agreed boundaries • All damaged areas successfully rehabilitated by the landscaper	As and when required	ECO

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Site Activities (D)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
D3 Fauna i. As the landfill site falls within an IBA, it is possible for threatened bird species, such as Sagittarius serpentarius (Secretary Bird), Gyps coprotheres (Cape Vulture), Polemaetus bellicosus (Martial Eagle) and Circus ranivorus (African Marsh Harrier) (Birdlife South Africa, 2016) to temporarily reside within the uMzimkhulu landfill site ii. All activities onsite must comply with the regulations of the Animal Protection Act, 1962 (Act No. 71 of 1962) [APA]. iii. The extent of the construction site must be demarcated and no vegetation is to be removed outside of this zone. iv. All construction workers must be informed that the intentional killing of any animal is not permitted as faunal species are a benefit to society. Poaching is illegal and it must be a condition of employment that any employee caught poaching will be dismissed. Employees must be trained on how to deal with fauna species as intentional killing will not be tolerated. In the case of a problem animal e.g. a large snake a specialist must be called in to safely relocate the animal. v. All construction activities must be limited to daylight hours vi. Minimisation of disturbance of trees and construction footprint	• Minimise disturbance to animals • Minimise interruption of breeding patterns of birds • Minimise destruction of habitat and impacts on the riparian habitat • No casual access of workers and the general community	• No complaints from any I&AP • No litigation concerning applicable animal protection acts	Monitor daily	• Contractor • ECO • Faunal Specialist

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Site Activities (D)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
D4 Flora i. The uMzimkhulu landfill site is situated within the Moist Coast Hinterland Grassland vegetation type. ii. Demarcate all areas of conservation concern identified by the Ecological Assessment as NO GO Areas before commencement of decommissioning (dismantling activities). iii. Retain as much of the existing vegetation as possible to act as a visual screen. This can be phased out and replaced by new vegetation as the construction progresses but it's important to retain it for as long as possible. iv. Clearing of vegetation should be minimal within the footprint for the waste body. v. Locally indigenous plants must be used in the landscaping of the site. Should this not be viable exotic plants may be utilized, however these plants may not exhibit the ability to be classified as problem plants spreading uncontrollably. Plants that are proclaimed as problem plants or noxious weeds must be excluded from the landscaping plan and these must be removed immediately. vi. No open fires shall be allowed onsite under any circumstances, fires will only be permitted in adequate facility within the construction site, Forest Act, 1984 (Act No. 122 of 1984) [AFA]. vii. Construction workers may not remove flora and neither may anyone collect seed from the plants without permission from local authority.	• Minimal disturbance to vegetation where such vegetation does not interfere with construction • Prevent litigation concerning removal of vegetation • Minimise scarring of the soil surface and land features • Minimise disturbance and loss of topsoil • Minimise risk of veld fires • Removal of alien plant species to encourage indigenous plant growth • Remove only vegetation where essential for construction and do not allow any disturbance to adjoining natural cover.	• No litigation due to removal of vegetation without necessary permission • No visible erosion scars once construction is completed • The footprint has not exceeded the agreed boundaries • All damaged areas and banks successfully rehabilitated • No veld fires started by Contractors work force • No claims from landowners for damages due to veldt fires • Plants that are found during clearing should be planted into landscaped gardens.	As and when required	• Contractor • ECO • Ecological Specialist (where applicable)

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Site Activities (D)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
D5 Alien Vegetation i. Prevent the spread and infiltration of alien plants by conducting patrols and immediate removal of alien plants as identified in the Ecological Assessment (Appendix F1); ii. Alien vegetation should be removed from the study area and an alien control plan should be encouraged in line in with NEMBA legislation after sourcing advice from Biodiversity Specialist iii. Attention must be given to newly re-shaped/ recapped areas, and any other areas disturbed during closure operations which may be vulnerable to infestation by invasive and alien plant species. iv. Monitoring programme be implemented to enforce continual eradication of alien and invasive plant species v. Control and manage the removal of vegetation vi. Vegetation removal to be undertaken in consultation with the ECO	• Prevent spread of aliens	• Absence of alien species	• Based on advice from the Biodiversity Specialist	• Contractor • ECO
D6 Heritage Resources i. The developer must adhere to all recommendations by the heritage authority (AMAFA). ii. Any graves, archaeological and palaeontological matters must be addressed with AMAFA iii. The construction team should be made aware of the possible occurrence of Heritage Resources as part of the induction by the ECO. The induction must be undertaken prior to the commencement of construction activities on the site; iv. Ensure compliance with relevant legislation and recommendations from SAHRA under Section 36 and 38 of NHRA v. If any heritage resources, including graves or human remains, are encountered they must be reported to SAHRA and the South African Police Services (SAPS) immediately. vi. No heritage feature can be removed, destroyed and/or interfered with on site without the permission of an accredited archaeologist; and	• Avoid damage and loss of heritage resources.	• Knowledge of the construction team on the manner in which heritage resource, where encountered should be handled • Limited or no damage to heritage resources	Ongoing	• Contractor • ECO • Heritage Specialist

Phase of development	DECOMISSIONING AND REHABILITATION
Impact / issue	Site Activities (D)

MITIGATION MEASURE	IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
vii. If at any stage the site is disturbed a qualified archaeologist must be contracted to evaluate the damage and make recommendations on the appropriate mitigation measures.				
D7 No-Go / Sensitive Areas i. All construction activities must remain within the boundaries of the development area, as demarcated at the start of construction. ii. The construction footprint must be kept to a minimum, must be clearly demarcated (e.g. warning tape) prior to the commencement of construction activities thus reducing the infringement of the development on surrounding habitats. iii. Demarcate all sensitive sites including those to be used for open spaces i.e. soil compaction, etc. iv. Toolbox talks can be used to indicate where the sensitive sites are.	• Reduce loss of fauna and flora habitat	• Containment of footprint	Monitor daily	• Contractor • ECO • EO
D8 Access Routes / Points v. Any authorised clearing for access roads must be done under the supervision of the ECO. vi. Any damaged or degradation will be investigated and fines issued, the affected areas must be immediately rehabilitated. vii. Access roads for earthmoving-equipment must be clearly designated and be positioned as close as possible to the proposed development site. No driving off from the marked roads is permitted and designated parking areas must be identified and demarcated with applicable signage. viii. Access Control is needed for areas to be proclaimed as the conservancy. Sensitive areas should be fenced off. Protection of construction staff.	• Minimise loss of topsoil and enhancement of erosion • Minimise fauna and flora displacement by destruction of natural habitats	• No erosion on access roads after completion of construction • No loss of topsoil due to runoff water on access roads	As required, monitor daily	• Contractor • ECO

Phase of development	DECOMISSIONING AND REHABILITATION				
Impact / issue	Site Activities (D)				
MITIGATION MEASURE		IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE
i. Access Control is needed for prevention of unauthorised access for non-construction staff.					

Phase of development	DECOMISSIONING AND REHABILITATION				
Impact / issue	Site Activities (D)				
MITIGATION MEASURE		IMPACT MANAGEMENT ACTIONS	IMPACT MANAGEMENT OUTCOMES	FREQUENCY OF ACTION	RESPONSIBLE PARTY/PARTIES
D9 Health And Safety Impacts i. Signs in appropriate local languages must be erected on site to warn people entering the sites of the potential risks ii. The site and excavations must be fenced off and demarcated using danger tape to ensure that no animals or residents enter the area. iii. Safety clothes and equipment must be worn at all times. iv. The Safety Officer on site should put any other measures in place to ensure that health and safety of all persons entering the site either legally or illegally is not compromised v. No fires should be allowed at or around the construction site.		• To ensure the safety of humans and animals	• Community knowledge about the importance of safety on the site	Ongoing	Contractor

3. MONITORING PHASE EMPR

Prior to decommissioning and rehabilitation activities, a monitoring programme shall be developed and submitted to the Environmental Compliance and Enforcement unit of EDTEA for approval, as a part of the Final EMPr. The programme is to cover proposed monitoring during **and after** the closure of the site and shall include the following:

- Verification that any waste, wastewater or other pollutants generated as a result of decommissioning are appropriately managed, in accordance with the detailed requirements set out in the Final EMPr;
- A rehabilitation, management and monitoring plan should be implemented with specific focus on storm water management, and alien invasive species control.
- The use of Sustainable Drainage Systems (SUDs) to manage stormwater is considered critical in order to prevent significant impacts on the hydrological functioning and water quality of the watercourse situated to the north of the uMzimkhulu landfill site. In this regard, it is highly recommended that a suitably qualified engineer be consulted with regards to the use of SUDs. Examples of these, which may be applicable to this development, include rainwater harvesting, soakaways, and bio-retention facilities or attenuation ponds.
- Alien vegetation should be removed, and monitored regularly (at least twice a year), within the decommissioned area, as well as the surrounding area (within at least a 100m buffer), to prevent the spread of alien invasive species. This should be conducted for a period of at least 3 years post decommissioning. Specific mention is made of Category 1b species in line with the NEMBA Alien and Invasive Species Regulations (2016)
- Verification that all de-contaminated sites if any are free of residual pollution after decommissioning;
- Verification that capping material of the waste body is secure;
- Verification that acceptable cover has been achieved in areas where natural vegetation is being re-established; and
- ‘Acceptable cover’ means re-establishment of similar indigenous grassland communities over the disturbed areas at a density similar to surrounding undisturbed areas, non-eroding and free of invasive alien plant

APPENDIX 1: EXAMPLE OF DECLARATION OF UNDERSTANDING BY THE PROPONENT/ENGINEER/CONTRACTOR

I, _____

Representing _____

Declare that I have read and understood the contents of the Environmental Management Programme (EMPr) for:

Contract _____

I also declare that I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications for the aforementioned Contract.

Signed: _____

Place: _____

Date: _____

Witness 1: _____

Witness 2: _____

APPENDIX 2: EXAMPLE OF METHOD STATEMENT: SOLID WASTE MANAGEMENT

METHOD STATEMENT Solid Waste Management

CONTRACT:…… **DATE**:…….

WHAT WORK IS TO BE UNDERTAKEN? [give a brief description of the works to be undertaken on site that will generate waste (hazardous and non-hazardous wastes)]: * Note: please attach extra pages if more space is required.

***Insert additional pages as required**

WHERE ARE THE WORKS TO BE UNDERTAKEN? (where possible, provide an annotated plan and a full description of the extent of the works): * Note: please attach extra pages if more space is required

***Insert additional pages as required**

APPENDIX: EXAMPLE OF INCIDENT AND ENVIRONMENTAL LOG

INCIDENT AND ENVIRONMENTAL LOG

ENVIRONMENTAL INCIDENT LOG				
Date	**Environmental Condition**	**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**

4. BIBLIOGRAPHY

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4) Lochner, P (2005).Guideline for Environmental Management Plans. CSIR Report No ENV-S-C 2005-053 H. Republic of South Africa, Provincial Government of the Western Cape, Department of Environmental Affairs & Development Planning, Cape Town.
5) Republic of South Africa (1998) National Environmental Management Act (Act No. 107 of 1998) (NEMA).