



**GA Environment**

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## **KWAGGAFONTEIN LANDFILL DRAFT SCOPING REPORT**

DRAFT SCOPING REPORT AND A WASTE MANAGEMENT LICENCE APPLICATION  
PROCESS FOR THE PROPOSED LICENSING OF THE KWAGGAFONTEIN LANDFILL;  
THEMBISILE HANI LOCAL MUNICIPALITY, MPUMALANGA

**March 2016**

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**DRAFT SCOPING REPORT (DSR)**

*For*

**PROPOSED LICENSING OF THE KWAGGAFONTEIN LANDFILL; THEMBISILE HANI LOCAL  
MUNICIPALITY, MPUMALANGA PROVINCE**

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## PROJECT INFORMATION

**Title:** Scoping and Environmental Impact Assessment and a Waste Management Licence Application Process for the Proposed Licensing (Operation) of the Kwaggafontein Landfill; Thembisile Hani Local Municipality, Mpumalanga

**Competent Authority:** Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs

**Reference No.:** To be added once assigned

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I ***Hlengiwe Thusi*** (name of person representing EAP) of ***GA Environment (Pty) Ltd*** (name of company) declare that the information provided is correct and relevant to the activity/ project and that, the information was made available to interested and affected parties for their comments.

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**SIGNATURE OF EAP**

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**DRAFT SCOPING REPORT FOR THE PROPOSED LICENSING OF THE KWAGGAFONTEIN  
LANDFILL**

**DRAFT SCOPING REPORT**

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## LIST OF ABBREVIATIONS / ACRONYMS

DEA	Department of Environmental Affairs
DWA	Department of Water Affairs (currently Department of Water and Sanitation)
ECA	Environmental Conservation Act (Act 73 of 1989)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMPR	Environmental Management Programme Report
G	General Waste
GCB	General Communal Landfill
GSB	General Small Landfill
GMB	General Medium Landfill
GLB	General Large Landfill
IAPs	Interested and Affected Parties
IRD	Initial Rate of Deposition
IWMP	Integrated Waste Management Plan or Industry Waste Management Plan
KPI	Key Performance Indicators

## GLOSSARY OF TERMS

This section provides a catalogue of terms and definitions, which may be used in this report and, or other future waste management plans and documents. Where more than one definition for a term exists in the literature, additional definitions have been provided for clarity:

Term	Definition	Reference
<b>Audit</b>	A site inspection at which the condition of the site on that day is appraised in terms of a number of predetermined criteria.	Minimum Requirements (1998)
<b>Buffer Zones</b>	Buffer Zones are separations between the boundaries of registered landfill sites and residential developments. They may vary between 500m and 1000m in width, depending on the classification of the landfill. No residential development may take place within a proclaimed buffer zone. At the discretion of the local authority and the state departments, however, developments such as industrial development may be permitted.	Minimum Requirements (1998)
<b>Cell</b>	This is the basic landfill unit of compacted solid waste which, when completed at the end of each day, is entirely contained by cover material. The sides may be typically formed by 1,5m or 2,0m high soil or rubble berms, or sloped covered waste. Cell width is determined by the manoeuvring requirements of vehicles depositing waste at the working face.	Minimum Requirements (1998)
<b>Co-Disposal</b>	Co-disposal (General and Hazardous waste): The mixing and joint disposal of Hazardous (H) and General (G) waste in the same landfill. The co-disposal of general waste with hazardous waste as a means of facilitating disposal on a hazardous waste landfill is acceptable, whereas the co-disposal of any significant quantity of hazardous waste with general waste on a general waste landfill is unacceptable.	Minimum Requirements (1998)
<b>Co-Disposal</b>	Co-disposal: (Liquid with Dry waste): The mixing of high moisture content or liquid waste with dry waste. This affects the water balance and is an acceptable practice on a hazardous waste landfill site. This is only acceptable on a general waste landfill site when the liquid is not	Minimum Requirements (1998)

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
	hazardous and the site is equipped with leachate management measures.	
<b>Compliance Monitoring</b>	Monitoring done in compliance with permit conditions.	Minimum Requirements (1998)
<b>Cover</b>	The material used to cover waste. Cover material is usually soil, but may comprise builders' rubble, ash or other suitable material. Daily cover is usually 150mm thick, intermediate cover is usually 300mm thick and final cover or capping usually 500mm thick. Final cover may form part of a special capping design and, as is the case with intermediate cover, must be able to support vegetation.	Minimum Requirements (1998)
<b>Cradle-To-Cradle</b>	A philosophy and principle of industrial ecology involving the design of systems such that materials and waste products move in a cyclical process with zero wastage.	
<b>Cradle-To-Grave</b>	A policy of controlling of Hazardous Waste from its inception to its ultimate disposal.	Minimum Requirements (1998)
<b>Development Plan</b>	A plan indicating the phasing of the development of a landfill from the landfill preparation, through the operation (which is usually divided into areal phases), to the final closure, rehabilitation and end-use. The phasing, and hence the Development Plan, forms part of the design.	Minimum Requirements (1998)
<b>Disposal Site</b>	A site used for the accumulation of waste with the purpose of disposing or treatment of such waste.	ECA
<b>Duty Of Care</b>	This requires that any person who generates, transports, treats or disposes of waste must ensure that there is no unauthorised transfer or escape of waste from his control. Such a person must retain documentation describing both the waste and any related transactions. In this way, the person retains responsibility for the waste generated or handled.	Minimum Requirements

Term	Definition	Reference
<b>Eco-Toxicity</b>	Eco-toxicity is the potential to harm animals, plants, ecosystems or environmental processes.	Minimum Requirements (1998)
<b>End-Use Plan</b>	The purpose for which the area of the rehabilitated and closed landfill is used. This may be as a park, playing fields, or other suitable land-use.	Minimum Requirements (1998)
<b>Environment</b>	<p>the surroundings within which humans exist and that are made up of—</p> <p>(i) the land, water and atmosphere of the earth;</p> <p>(ii) micro-organisms, plant and animal life;</p> <p>(iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and</p> <p>(iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.</p>	NEMA
<b>Extended Producer Responsibility</b>	<p>Means measures that extend a person’s financial or physical responsibility for a product to the post-consumer stage of the product, and includes—</p> <p>(a) waste minimisation programmes;</p> <p>(b) financial arrangements for any fund that has been established to promote the reduction, re-use, recycling and recovery of waste;</p> <p>(c) awareness programmes to inform the public of the impacts of waste emanating from the product on health and the environment; and</p> <p>(d) any other measures to reduce the potential impact of the product on health and the environment.</p>	NEMWA (2008)

Term	Definition	Reference
<b>Fatal Flaw</b>	A factor or situation which prevents the development of an environmentally acceptable waste disposal facility, except as prohibitive cost.	Minimum Requirements (1998)
<b>General Waste</b>	Waste that does not pose an immediate threat to man or to the environment, i.e. household waste, builder's rubble, garden waste, dry industrial and commercial waste.	White Paper on IP&WM
<b>General Waste</b>	Waste that does not pose an immediate threat to man or the environment, i.e. household waste, builders' rubble, garden waste, and certain dry industrial and commercial waste. It may, however with decomposition, infiltration and percolation, produce leachate with an unacceptable pollution potential.	Minimum Requirements (1998)
<b>General Waste</b>	All urban waste that is produced within the jurisdiction of local authorities. It comprises rubble, garden, domestic, commercial and general industrial waste. It may also contain small quantities of hazardous substances dispersed within it such as batteries, insecticides and weed-killers discarded on domestic and commercial premises. General waste may be disposed of in a permitted landfill and may be equated to what is commonly referred to as domestic, solid waste and municipal waste, i.e. that which is normally managed by a local authority.	DWAF Waste Generation Baseline Studies
<b>General Waste</b>	Means 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; and  (d) inert waste.	NEMWA (2008)
<b>General Waste Landfill</b>	A landfill designed to accept only general waste. Depending on the Site Water Balance, it may or may not have a leachate management system.	Minimum Requirements (1998)

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
<b>Generator</b>	An industry or other party whose activities result in the production of waste. The responsibility for hazardous waste remains from cradle-to-grave with the generator of the waste and the generator is held liable for any damage that the waste may cause to humans or to the environment.	Minimum Requirements (1998)
<b>Guidelines</b>	While not requirements, guidelines are recommended actions, which represent good practice. They are not enforceable, but may form the basis for site specific permit conditions in which case they become mandatory.	Minimum Requirements (1998)
<b>Hazard</b>	A source of or exposure to danger.	NEMA
<b>Hazardous Waste</b>	Waste that may, by circumstances of use, quantity, concentration or inherent physical, chemical or infectious characteristics, cause ill-health or increase mortality in humans, fauna and flora, or adversely affect the environment when improperly treated, stored, transported or disposed of.	Minimum Requirements (1998)
<b>Hazardous Waste</b>	Waste, other than radioactive waste, which is legally defined as hazardous in the state in which it is generated, transported or disposed of. The definition is based on the chemical reactivity or toxic, explosive, corrosive or other characteristics, which cause, or are likely to cause, danger to health or to the environment, whether alone or when in contact with other waste.	Minimum Requirements (1998)
<b>Hazardous Waste</b>	Waste, including radioactive waste, which is legally defined as "hazardous" in the state in which it is generated. The definition is based on the chemical reactivity or toxic, explosive, corrosive or other characteristics which cause, or are likely to cause, danger to health or to the environment, whether by itself or when in contact with other waste.	White Paper on IP&WM
<b>Hazardous Waste</b>	Means any waste that contains organic or inorganic elements of compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that	NEMWA (2008)



Term	Definition	Reference
	waste, have a detrimental impact on health and the environment.	
<b>Incineration</b>	Incineration is both a form of treatment and a form of disposal. It is simply the controlled combustion of waste materials to a non-combustible residue or ash and exhaust gases, such as carbon dioxide and water.	Minimum Requirements (1998)
<b>Infectious Waste</b>	Any waste which is generated during the diagnosis, treatment or immunisation of humans or animals; in the research pertaining to this; in the manufacturing or testing of biological agents – including blood, blood products and contaminated blood products, cultures, pathological wastes, sharps, human and animal anatomical wastes and isolation wastes that contain or may contain infectious substances.	Minimum Requirements (1998)
<b>Interested And Affected Parties (IAPs)</b>	Interested and Affected Parties are those people who will be affected in some way by the Hazardous Waste disposal process. Residents or farmers, a whole residential community, or the public at large may represent them.	Minimum Requirements (1998)
<b>Landfill (V)</b>	To dispose of waste on land, whether by use of waste to fill in excavations or by creation of a landform above grade, where the term “fill” is used in the engineering sense.	Minimum Requirements (1998)
<b>Landfill (N)</b>	The waste body created by land filling. This may be above or below grade, or both.	Minimum Requirements (1998)
<b>Leachate</b>	An aqueous solution with a high pollution potential, arising when water is permitted to percolate through decomposing waste. It contained final and intermediate products of decomposition, various solutes and waste residues. It may also contain carcinogens and/or pathogens. Sporadic/Significant.	Minimum Requirements (1998)

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
<b>Litter</b>	Any object or matter discarded or left behind by the person in whose possession or control it was.	ECA
<b>Medical Waste or Health Care Waste</b>	Wastes emanating primarily from human and veterinary hospitals, clinics and surgeries, also from chemists and Sanitary Services. They may comprise, inter alia, sharps (used hypodermic needles and scalpel blades), malignant tissue, body parts, soiled bandages and liner, and spent or outdated medicines or drugs. They have the ability to affect and infect other living organics, and are considered hazardous.	Minimum Requirements (1998)
<b>Minimum Requirement</b>	A standard by means of which environmentally acceptable waste disposal practices can be distinguished from environmentally unacceptable waste disposal practices.	Minimum Requirements (1998)
<b>Monitoring</b>	The process of checking for changes in status or trends over time. This may be achieved by compiling successive audit or water quality analyses results.	Minimum Requirements (1998)
<b>Operating Plan</b>	A site-specific document which describes the way in which the landfill is operated. The Operating Plan commences at the level and detail of daily cell construction and continues through to the development and excavation sequence, access and drainage within a given phase of the Development Plan.	Minimum Requirements (1998)
<b>Permit</b>	The Permit issued by the Department of Water Affairs, & Forestry for the operation or closure of a landfill, in terms of Regulation 1549, promulgated under the Environment Conservation Act (Act 73 of 1989).	Minimum Requirements (1998)
<b>Pollution</b>	Any change in the environment caused by—  (i) substances;  (ii) radioactive or other waves; or  (iii) noise, odours, dust or heat,	NEMA

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
	emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or an organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystems, or on materials useful to people, or will have such an effect in the future.	
<b>Precautionary Principle</b>	Where a risk is unknown; the assumption of the worst-case situation and making provision for such a situation.	Minimum Requirements (1998)
<b>Recycle</b>	The use, re-use, or reclamation of material so that it re-enters the industrial process rather than becoming a waste.	Minimum Requirements (1998)
<b>Remediation</b>	The rectification of problems, caused by bad practices, through the implementation of remedial measures.	Minimum Requirements (1998)
<b>Responsible Person</b>	The Permit Holder or his legally appointed representative who takes responsibility for ensuring that all or some of the facets of any of the following are properly directed, guided and executed, in a professionally justifiable manner: Investigatory work, design, preparation, operation, closure and monitoring.	Minimum Requirements (1998)
<b>Standard</b>	A criteria/measure by which the accuracy or quality of others is judged or a model for imitation, or the degree of excellence required.	Minimum Requirements (1998)
<b>Toxic Waste</b>	A form of hazardous waste that causes death or serious injury, such as burns, respiratory diseases, cancer or genetic mutations.	White Paper on IP&WM
<b>Transporter</b>	A person, organisation, industry or enterprise engaged in or offering to engage in the transportation of waste.	Minimum Requirements (1998)

Term	Definition	Reference
<b>Treatment</b>	Treatment is used to remove, separate, concentrate or recover a hazardous or toxic component of a waste or to destroy or, at least, to reduce its toxicity in order to minimise its impact on the environment.	Minimum Requirements (1998)
<b>Waste</b>	Any matter, whether gaseous, liquid or solid or any combination thereof, which is from time to time designated by the Minister by notice in the Gazette as an undesirable or superfluous by-product, emission, residue or remainder of any process or activity (definition of 'waste' substituted by s. 1 (h) of Act 79 of 1992).	ECA
<b>Waste</b>	An undesirable or superfluous by-product, emission, or residue of any process or activity which has been discarded, accumulated or been stored for the purpose of discarding or processing. It may be gaseous, liquid or solid or any combination thereof and may originate from a residential, commercial or industrial area. This definition includes industrial waste water, sewage, radioactive substances, mining, metallurgical and power generation waste.	White Paper on IP&WM
<b>Waste</b>	Any matter, whether gaseous, liquid or solid or any combination thereof, originating from any residential, commercial or industrial area or agricultural area identified by the Minister of Environment Affairs as an undesirable or superfluous by-product, emission, residue or remainder of any process or activity.	DWAf Waste Generation Baseline Studies
<b>Waste</b>	Means 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;  (b) where the generator has no further use of for the purposes of production, reprocessing or consumption;  (c) that must be treated or disposed of; or  (d) that is identified as a waste by the Minister,	NEMWA (2008)

Term	Definition	Reference
	<p>but—</p> <p>(i) a by-product is not considered waste; and</p> <p>(ii) any portion of waste, once re-used, recycled and recovered, ceases to be waste.</p>	
<b>Waste Body</b>	<p>This refers to the body of waste (and cover) that is contained in the landfill. Because it is subject to decomposition, it has the potential to generate leachate and must therefore be adequately separated from the water regime.</p>	<p>Minimum Requirements (1998)</p>
<b>Waste Disposal Facility</b>	<p>Means any site or premise used for the accumulation of Waste with the purpose of disposing of that waste at that site or on that premise.</p>	<p>NEMWA (2008)</p>
<b>Waste Management Activity</b>	<p>Means any activity listed in Schedule 1 or published by notice in the <i>Gazette</i> under section 19 of the NEM Waste Act, and includes—</p> <p>(a) the importation and exportation of waste;</p> <p>(b) the generation of waste, including the undertaking of any activity or process that is likely to result in the generation of waste;</p> <p>(c) the accumulation and storage of waste;</p> <p>(d) the collection and handling of waste;</p> <p>(e) the reduction, re-use, recycling and recovery of waste;</p> <p>(f) the trading in waste;</p> <p>(g) the transportation of waste;</p> <p>(h) the transfer of waste;</p> <p>(i) the treatment of waste; and</p> <p>(j) the disposal of waste.</p>	<p>NEMWA (2008)</p>

<b>Term</b>	<b>Definition</b>	<b>Reference</b>
<b>Waste Management License</b>	Means a license issued in terms of section 49 of the NEM Waste Act (2008) for waste management activities listed under section 19 of the Act.	NEMWA (2008)
<b>Waste Management Facility</b>	All wastes or products stored on a temporary or permanent basis, that could impact on surface or groundwater quality, by leaching into or coming in contact with water, are referred to a “Waste Management Facilities”. See also the Waste Management Documents, “Minimum requirements for waste disposal sites” and “Minimum requirements for the handling and disposal of hazardous waste”.	Minimum Requirements (1998)
<b>Waste Management Services</b>	Means waste collection, treatment, recycling and disposal services.	NEMWA (2008)
<b>Waste Minimisation programme</b>	Means a programme that is intended to promote the reduced generation and disposal of waste.	NEMWA (2008)
<b>Waste Transfer Facility</b>	Means a facility that is used to accumulate and temporarily store waste before it is transported to a recycling, treatment or waste disposal facility.	NEMWA (2008)
<b>Waste Treatment Facility”</b>	Means any site that is used to accumulate waste for the Purpose of storage, recovery, treatment, reprocessing, recycling or sorting of that Waste.	NEMWA (2008)

## 1 INTRODUCTION

### 1.1 Background

The Department of Environmental Affairs (DEA) is assisting the Thembisile Hani Local Municipality to licence various waste facilities in the Mpumalanga Province. The Kwaggafontein landfill is one of the landfill sites that will require an operational licence from the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLEA thereafter). The DEA has thus appointed GA Environment (Pty) Ltd. as independent Environmental Consultants, to undertake the Scoping and Environmental Impact Assessment (EIA) process as part of the Waste Management Licence Application Processes. The Thembisile Hani Local Municipality proposes to formally license the existing Kwaggafontein landfill site for the disposal of waste from the community.

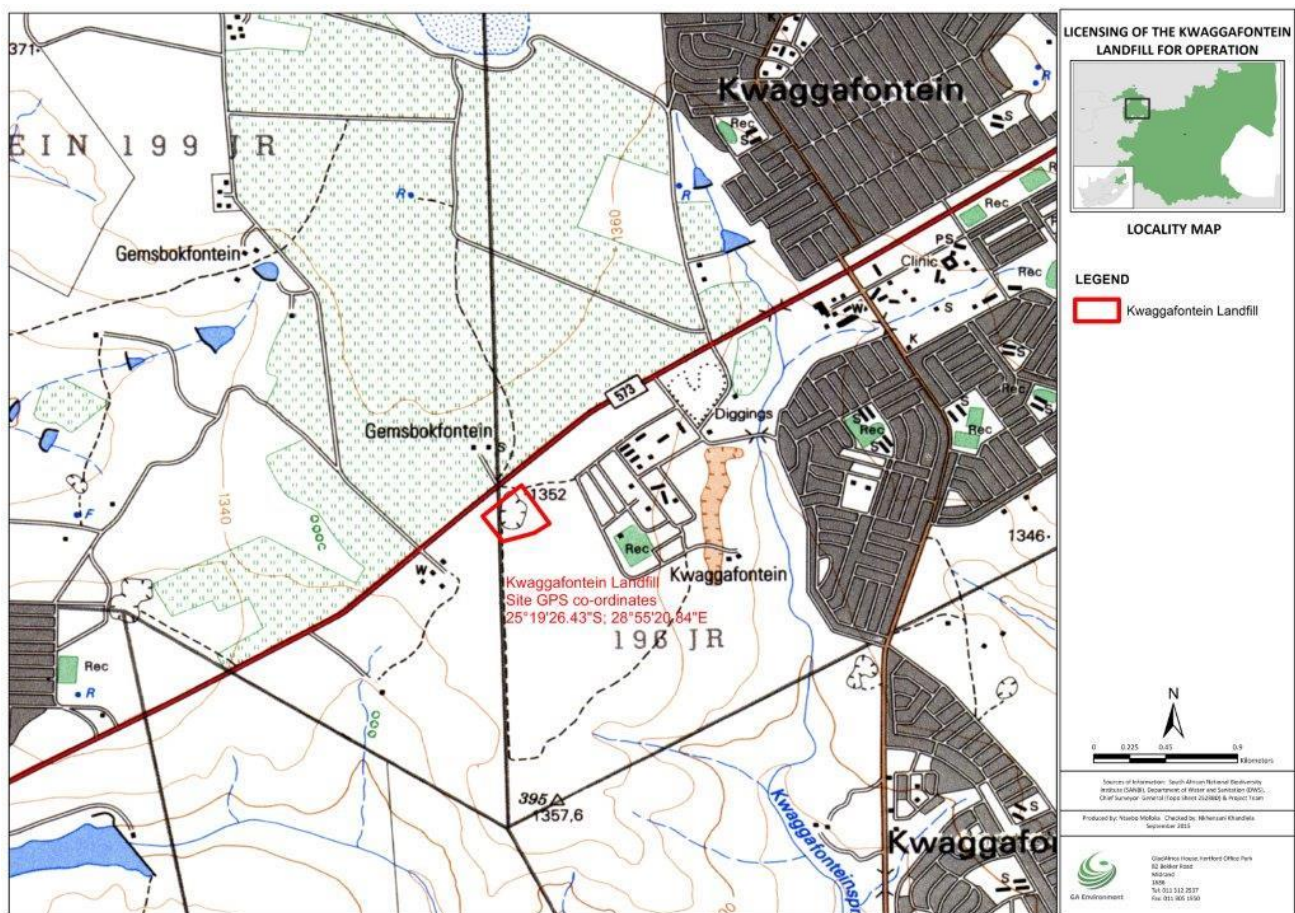
It must be noted that the Kwaggafontein landfill has been operating illegally/without a waste licence. It is not exactly known when the Kwaggafontein landfill commenced with the operation. It must be noted that the landfill has been operating illegally/without a waste licence. The Kwaggafontein landfill is currently operational and receiving general waste, mainly domestic waste. The Thembisile Hani Local Municipality is applying for a Waste Management Licence in order to legally operate the facility, and to ensure that the site adheres to the NEM: WA, 2008 requirements, and other key legislation. The Waste Management Licence will be issued by the DARLEA and the Waste licence Application will be undertaken by the Environmental Assessment Practitioner (GA Environment) for decision making purposes.

Some of the information provided in this document is based on the information received from Thembisile Hani Local Municipality and other documents related to this landfill site. The Kwaggafontein landfill was designed and commissioned prior to the establishment of the Minimum Requirements for Waste Disposal by Landfill (DWAF, 1998 2nd Edition) and the promulgation of the National Environmental Management Waste Act (NEMWA hereafter), 2008 (Act No. 59 of 2008). It must be noted that the registration and upgrading of the Kwaggafontein landfill has been made a priority in the Thembisile Hani Municipality Integrated Development Plan (2015/2016). The municipality currently has a number of illegal dumping sites because of the lack of resources to collect and dispose off waste efficiently. According to the IDP there are no adequate landfill site for waste disposal facilities. Currently there are two illegal dumping site that are not appropriate and not in compliance with the Environmental Management Act (Thembisile Hani Local Municipality IDP 2015/2016). It is anticipated that the initiative by the DEA to obtain licencing of the

Kwaggafontein landfill will assist the Thembisile Hani Municipality in accelerating the formalisation management of this landfill.

## 1.2. Location of the landfill

The Kwaggafontein landfill is located on Farm Kwaggafontein 216 JR. It is situated to the east of Kwaggafontein Township which falls within the boundaries of Thembisile Hani Local Municipality, Mpumalanga Province (refer to **Appendix A** and **Figure 1** below). It is situated to the east of Kwaggafontein Township along the R573 road (Moloto road) that also provides direct access to the site. The site co-ordinates are 25°19'26.43"S; 28°55'20.84"



**Figure 1: Locality map showing the location of the Kwaggafontein landfill site**

It must be mentioned that various Local Municipalities in the Mpumalanga are faced with challenges of illegally operating their landfills effectively due to the lack of financial resources. Due to the fact that local Municipalities in the Mpumalanga have encountered the financial challenges of not being able to effectively operate landfill sites, some of the waste sites, required key landfill infrastructure (an adequate



boundary fence, access gates, waste compacters and other machinery, security etc.) and currently these are lacking and inadequate.

### 1.3. Status Quo

The Kwaggafontein landfill is approximately 8.4 hectares and the landfill is currently used to actively dispose waste coming from Kwaggafontein and surrounding area. According to DWAF Minimum Requirements for Waste Disposal by Landfill (1988), landfill sites are classified according to the type and volume (volume = maximum amount of waste handled/treated/stored per day for which the facility was designed) of waste handled/treated/stored at the specific facility per day. Unfortunately there are no site records indicating the quantities of waste that the Kwaggafontein landfill may have received over the period it was used. There are also no record available for amount of waste that is reclaimed from the site, however, based on the fact that the waste site was used solely for disposal of domestic waste from the surrounding towns and farms, it is assumed that the site can be classified as a General waste class; C = Communal size; B- = no significant leachate (GCB-) as per DWAF landfill classification criteria.

The site climatic water balance classification is unknown as no calculation data is available from the Municipality. The Kwaggafontein area is a low rainfall area (it receives an average of about 42 mm per year), and low evaporation rate area and thus most likely a negative water balance. The site will most probably have classified as a non-leachate generating site.

The existing Kwaggafontein boundary fence was noted as inadequate and was vandalised at some points its non-existent. This means the landfill site is subdue to be accessed at any time with no control. This therefore is an indication of the inadequacy of the boundary fence. There is no access gates to the landfill site. Landfill infrastructure (ablution facility and buy back centre) was noted however upgrades of these infrastructures is required and other missing infrastructure (i.e. access gate, shelter, signage, fence etc.), related to waste disposal should be constructed. Although the Kwaggafontein site has no designated waste cells, to the centre of the site there is evidence of an active dump area where most of the waste is found (refer to **Figure 1.1**).

The landfill site is situated along the R573 road with acts as access to the site. The R573 is known as the famous Moloto road (famous for its endless accidents). It must be noted that the R573 is the Moloto corridor has been considered for future development. The location of this landfill site in close proximity to this R573 is of concern a. The upgrading of the landfill site should consider distancing the site from the R573 as there may be certain distance/locational requirements from the Mpumalanga Department of Transport and Roads. Neither covering nor compaction of waste was observed. Waste is generally heaped on site with no proper placement in waste disposal cells. Such issues contribute to ineffective use the site and problems of future securing future air space. Other problems such as excessive burning observed to

the western side of the Kwaggafontein landfill site (**Figure 1.2 and Figure 1.3**). Reclamation of waste by local communities was noted during the site visits. Although recycling is not formalised at this landfill site, the reclaimers organise and separate their waste into paper, plastic and glass material (refer to **Figure 1.4 to 1.6**). Such initiatives contribute towards generating local revenue. Other significant land uses to the western portion of the site is a cemetery (refer to **Figure 4.7**). Potential impacts on this cemetery have been taken into cognisance during this scoping phase and will be discussed in detail during the EIA phase. There is disposal of inert (rubble/construction) waste on site (**Figure 1.7**) as well as. Animal debris was observed during the site visit (refer to **Figure 1.8**). Issues ground water contamination odour, and visual nuisance are some of the issues causing environmental problems on site.



**Figure 1.1.** The active dump area is observed to the centre of the Kwaggafontein site as in this picture.



**Figure 1.2:** Excessive burning observed to the west of the Kwaggafontein landfill site



**Figure 1.3: Other excessive burning is observed on site towards the south of the Kwaggafontein landfill site**



**Figure 1.4: Paper (cardboard) recycling is observed within the degraded buy back centre of the Kwaggafontein landfill site**



**Figure 1.5: Glass recycling is observed outside the degraded buy back centre to the west of the Kwaggafontein landfill site**



**Figure 1.6: Plastic recycling is observed outside of the degraded buy back centre to the east**



**Figure 1.7: Evidence of inert (rubble/construction) waste dumped on site**



**Figure 1.8: An example decomposed waste from animal carcass**

This project therefore attempts to address the back log for services delivery with regards to the general waste management in the municipality. It is anticipated that the MECs together with the local municipality will be able to source funding following the licensing of this landfill. It must be noted that the Kwaggafontein landfill has not yet reached its full air space capacity, but only require effective management in line with the applicable legislation.

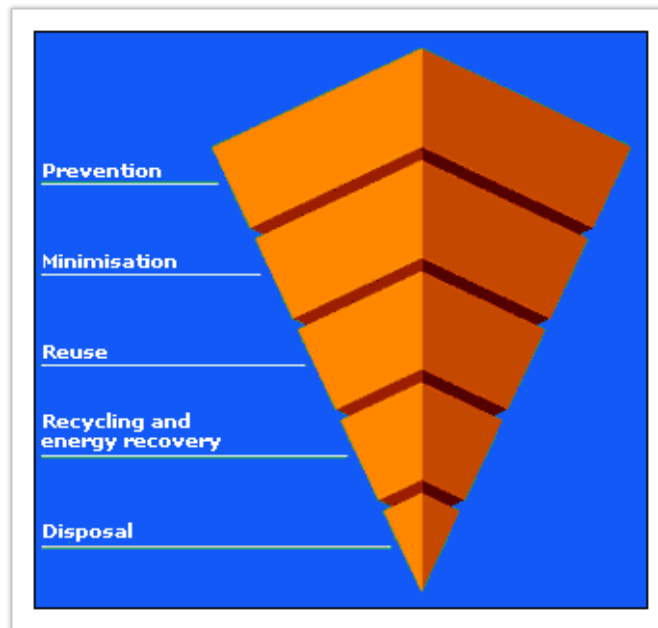
The proposed activities associated with the licensing of the Kwaggafontein landfill will also include the upgrade of existing infrastructure (i.e. access gate, boundary fence, etc.) required for landfills as these are inadequate. It is the intention of this project to operate the site in accordance with the National Norms and Standards for Disposal of Waste to the Landfill promulgated in August, 2013. The Licensing of the landfill will ensure that the Thembisile Hani Local Municipality adheres to the requirements of the NEM: WA and that the existing landfill site that the disposal of waste is undertaken in accordance with the environmental requirements. The licensing of the landfill will ensure that the final condition of the site is environmentally acceptable and that there will be no adverse long term effects on the surrounding areas.

The activities covered in this Scoping Report are limited to the operation of the Kwaggafontein landfill and will not include the other proposed waste disposal options that may be required by the Municipality.

#### **1.4 Solid Waste Disposal in Kwaggafontein**

According to the Thembisile Hani Municipality IDP (2015/2016), waste and environmental management is part of the municipality's Key Development Priority, Issue 10. It is the function of the Municipality to remove and dispose any household waste or other waste within its jurisdiction. Based on the IDP the Thembisile Hani Local Municipality intends to achieve this by setting objectives in terms of reducing infrastructure and service backlogs and further establish a high quality environment with the associated physical infrastructure. The municipality will also improve the quality of life of the community by providing them, with water supply, sanitation, roads as well as amenities such community halls and basic recreational facilities. It is anticipated based on these objectives that the municipality will be able to deliver basic services to all households and further improved infrastructure in a sustainable manner (Thembisile Hani Municipality IDP 2015/2016).

Waste management in South Africa follows the approach of the waste management hierarchy as outlined in the National Waste Management Strategy (NWMS) which was developed by the National Department of Environmental Affairs subsequently and the NEM: WA, 2008. It is important that the Thembisile Hani Local Municipality does not have a working/effective IWMP in order to address management issues. It is recommended that the municipality manage its waste in line with the waste hierarchy's principles. According to NWMS the waste management hierarchy consists of options for waste management during the lifecycle of waste, arranged in descending order of priority: waste avoidance and reduction, re-use and recycling, recovery, and treatment and disposal as the last resort as illustrated in **Figure 1.9** below:



**Figure 1.9** Waste Management Hierarchy

## 1.5 Applicable Waste Management Listed Activities Applied For

According to the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) as amended, the following Waste Management Listed Activities are thus applicable:

- **Category A, Activity 13:** The expansion of a waste management activity listed in Category A or B of this Schedule which does not trigger an additional waste management activity in terms of this Schedule.
- **Category B, Activity 8:** The disposal of inert waste to land in excess of 25 tons but not exceeding 25 000 tons, excluding the disposal of such waste for the purpose of levelling and building which has been authorised by or under legislation;
- **Category B, Activity 9:** The disposal of general waste to land covering an area in excess of 200m<sup>2</sup> and with a total capacity exceeding 25 000 tons;

In terms of the National Environmental Management Act, 1998 (NEMA), the EIA Regulations of 2014, Government Notices No R 982 and 984 of 2014, the proposed licencing of the landfill site and is regarded as a listed activity and therefore requires an environmental assessment prior to authorisation. In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation. In this case the competent authority is the Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA hereafter).

This scoping report was conducted in accordance with Section 24 of the NEMA. The Act requires that an EIA be undertaken in order to inform the authorisation process for a listed activity. Government Notice R. 984, published in terms of Chapter 5 of NEMA, defines the manner in which the EIA is to be undertaken. Guideline documents have been published by the Department of Environmental Affairs and these provide further guidance in implementing the EIA Regulations, 2014. This guideline document will be used as reference documents for the purpose of this EIA. The purpose of these Regulations is to regulate the procedure and criteria for the preparation, evaluation, submission, processing and consideration of, and decision on, applications for environmental authorizations.

## 1.6 Description of Proposed Activities

As mentioned, it is envisaged that the existing Kwaggafontein landfill footprint area will be required for the waste disposal site. A total of more than 200m<sup>2</sup> ha area will require authorisation to include the associated landfill infrastructure. The infrastructure associated with the waste disposal site will include:

- General waste cells designated for the disposal of waste;
- An adequate boundary fence;
- A lockable access gate;
- A waste sorting facility or area for recyclables; (if required) and
- Other infrastructure such as a guardhouse and ablution facilities (depending on the municipality budget and requirements).

Landfill associated infrastructures such as weighbridges, access roads are costly to install and expensive to maintain and it might be important to utilise the existing facilities rather than constructing new ones at the landfill site. Other requirements that have to be considered as part of the disposal facility will include facility design including site classification, site layout, access, hydrology and drainage design, containment, leachate management, leachate detection, monitoring systems and the rehabilitation plan in line with the Minimum Requirements for Waste Disposal by Landfill (DWAF, 1998). The exact design, footprint and sizes of the associated infrastructure will be confirmed during the EIA phase when the engineering design requirements are finalised. The scope of the waste disposal site, including details of all elements of the project (for the construction, operation and decommissioning phases) will be discussed in detail in the Environmental Impact Report that will be submitted during the EIA phase.

It is anticipated that the following activities must be undertaken to ensure that the continued operation of the Kwaggafontein landfill site is undertaken in an environmental sensitive manner:



- Implementation of erosion protection measures;
- Possible implementation of measures to restrict public access and prevent further illegal dumping;
- Control of alien vegetation; and
- Establishment of monitoring programme (to monitor erosion, subsidence, drainage, storm water management, ponding, fire and security).

Prior to the establishment of any landfill, it is required that the nature and quantities of the waste that will be deposited into the landfill be determined and the impacts that the land filling operation might have on the receiving environment be identified and assessed. The Department of Water Affairs and Forestry (DWAF) has developed a series of guidelines that serve as standards for managing waste and sets minimum requirements that an applicant wanting to permit a landfill will have to adhere to be in compliance with prevailing legislation. The Norms and Standards for disposal of waste to landfill issued in August 2013 must also be considered during the licencing of the Kwaggafontein landfill. The Engineering specifications report and the conceptual layout of the Kwaggafontein landfill will be included in the Environmental Impact Report that will be compiled following the approval of this Scoping Report by DARDLEA.

## 1.7 Scoping and EIA Requirements

The list of activities applied for in terms NEM: WA, 2008 Waste Management Activities have already been discussed in **Section 1.5**. These listed activities triggered by the proposed licencing of the Kwaggafontein must follow the required Environmental Impact Assessment process as described by NEMA Regulations as set out in Government Notice Regulations 982. Based on these Regulations, a Scoping and EIA process must be followed. The application has not been registered with the relevant Competent Authority, it is anticipated that application forms will be submitted to the Competent Authority during the review of this draft scoping report as per the 2014 NEMA Regulations application procedures.

## 1.8 The Scoping Phase

The Scoping and EIA process must be undertaken in accordance with the 2014 EIA Regulations No. 982. The main objectives of the Scoping Phase, in terms of the regulatory requirements stipulated in *Appendix 2* of the 2014 EIA Regulations, are to:

- a) identify the relevant policies and legislation relevant to the activity;
- b) motivate the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
- c) identify and confirm the preferred activity and technology alternative through an impact and risk assessment and ranking process;

- d) identify and confirm the preferred site, through a detailed site selection process, which includes an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified alternatives focusing on the geographical, physical, biological, social, economic, and cultural aspects of the environment;
- e) identify the key issues to be addressed in the assessment phase;
- f) agree on the level of assessment to be undertaken, including the methodology to be applied, the expertise required as well as the extent of further consultation to be undertaken to determine the impacts and risks the activity will impose on the preferred site through the life of the activity, including the nature, significance, consequence, extent, duration and probability of the impacts to inform the location of the development footprint within the preferred site; and
- g) identify suitable measures to avoid, manage or mitigate identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

### **1.8.1 The Scoping Report**

Once the scoping process is complete, a Scoping Report must be prepared detailing the scope of the EIA required for the proposed activities. This Scoping Report has been compiled in accordance with the requirements set out in *Appendix 2* of the 2014 EIA Regulations (GNR 982), which outlines the contents of a Scoping Report and provides the requirements necessary for undertaking the Public Participation Process.

#### **1.8.1.1 Structure of the Scoping Report**

This Scoping Report is divided into **9 Chapters**, the contents of which will be presented as follows in this report:

- **Chapter 1** introduces the background to the development proposal and profiles its proponents. Furthermore, this chapter provides an indication of the EIA process that will be followed as well as providing insights into the legislative requirements that have resulted in the need for this process.
- **Chapter 2** provides the legislative framework for the EIA process and the context of this development. The legislative framework includes national and provincial legislation as well as planning framework which will have to be considered in the EIA process, such as the SDF and IDP.
- **Chapter 3** is a detailed description of the adopted Scoping and Environmental Impact methodologies that will be implemented throughout the project.
- **Chapter 4** is a description of the receiving environment associated with the construction of the landfill.
- **Chapter 5** is a description and comparative assessment of the alternatives that were considered.
- **Chapter 6** details the various steps and processes that were followed in the public participation process. It also summarises key outcomes of the process.

- **Chapter 7** details the issues and potential identified, for the proposed construction of the landfill.
- **Chapter 8** provides a plan of study for the Environmental Impact Assessment.
- **Chapter 9** is the Conclusion and Recommendations, whereas **Chapter 10** is the outlined of the references that were used in this report.

### 1.8.1.2 Assumptions and Limitations

The following assumptions have been made in the undertaking of the scoping process:

- The licencing of the of the Kwaggafontein landfill is limited to the existing boundary of the landfill;
- The necessary guidelines and standards for waste management will be taken into account during the design of the landfill; and
- The scope of this Scoping Report is limited to the operation of the Kwaggafontein landfill and will not include the other proposed waste disposal options that may be required by the Municipality.

## 1.9 Application Details

The following section of the Scoping Report provides the particulars, including contact details, of the key stakeholders (applicant, Environmental Assessment Practitioner and the relevant, Competent Authority) associated with the project. These details are outlined in **Table 1** below.

**Table 1:** Details of the Applicant, Environmental Impact Practitioner and Competent Authority

Applicant	Environmental Impact Practitioner	Competent Authority
<p><b>Name: Mr O Nkosi</b> Thembisile Hani Local Municipality <b>Designation:</b> Environmental Management Official <b>Tel:</b> 013 986 9167 <b>Fax:</b> 053 531 0624 <b>Mobile no:</b> <b>Email:</b>NkosiO@thembisilehanilm.gov.za</p>	<p><b>Name: Ms Hlengiwe Thusi</b> GA Environment <b>Designation:</b> Environmental Assessment Practitioner (EAP) <b>Address:</b> GladAfrica House, Hertford Office Park, 90 Bekker Road, Midrand, 1686 <b>Tel:</b> 011 312 2537 <b>Fax:</b> 011 805 1950 <b>Email:</b>hlengiwet@gaenvironment.com</p>	<p><b>Name: Ms Gezepi Nyalunga</b> Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs <b>Designation:</b> Waste Licencing <b>Address:</b> Building 6, no.7 Government Boulevard, Riverside Park, Nelspruit, 1200 <b>Tel:</b> :013 766 6067 <b>Fax:</b> 013 766 8295 <b>Email:</b>ghnyalunga@mpg.gov.za</p>

Specific details, CV's and expertise of the team of EAPs who prepared this Scoping Report are indicated and are included as **Appendix C** to this report. This Scoping Report was prepared by Ms Hlengiwe Thusi. **Ms. Hlengiwe Thusi** is an Environmental Scientist and holds a BSc degree and is a registered member of the South African Council of Natural Scientists. She is an Environmental Scientist with 5 years of experience. Hlengiwe specialises in Integrated Environmental Management (IEM), Environmental Impact Assessments (EIAs). She has predominantly been involved in mixed development projects, road and transport infrastructure projects, wastewater treatment facilities and waste management projects.

## 2 LEGISLATIVE FRAMEWORK

This section of the Scoping Report discusses applicable legal provisions and the legal context for the Environmental Impact Assessment process. It provides a review of relevant legislation, regulations, policies and guidelines, which are applicable to (or have implications for) the proposed project. The contents of this report are based on a review of the information that was available at the time. The discussion in this chapter is by no means an exhaustive list of the legal obligations of the applicant in respect of environmental management for the Kwaggafontein landfill site.

### 2.1 National Legislation

#### 2.1.1 Constitution of the Republic of South Africa

The environmental right is mentioned in Chapter 2 of the Constitution of the Republic of South Africa (Act No. 108 of 1996). In terms of this provision: everyone has the right to an environment that is not harmful to his or her health or wellbeing. The State must therefore respect, protect, promote and fulfil the social, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities. Specifically as regards the environmental right, the Constitution states that: *"...everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation, and secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development"*.

The Constitution therefore recognises that the environment is a functional area of concurrent national and provincial legislative competence, and all spheres of government and all organs of state must cooperate with, consult and support one another if the State is to fulfil its constitutional mandate.

#### 2.1.2 National Environmental Management Act, 1998

The National Environmental Management Act, 1998 or NEMA (Act No. 107 of 1998) was promulgated to serve as the general framework within which environmental management and implementation plans must be formulated. It provides guidelines on how any organ of state must exercise any function when taking any decision in terms of the Act or any statutory provision concerning the protection of the environment. NEMA sets out the principles by reference to which a conciliator appointed under the Act must make recommendations. These principles guide the interpretation, administration and implementation of the Act, and any other specific laws concerned with the protection or management of the environment.

### 2.1.2.1 NEMA and cooperative governance in environmental management

As the main environmental management legislation in the country, NEMA provides the legal framework for integrating good environmental management into all development activities. The principles laid out in Section 2 of the Act are aimed at promoting certainty with regard to decision-making by organs of state on matters affecting the environment. These NEMA principles are meant to guide the exercise of functions affecting the environment by “all organs of state that may significantly affect the environment”. This implies that any statutory body, or state-owned enterprise, fulfilling a mandate having to do with the protection of the environment must carry out such a function in accordance with these principles. NEMA advocates for procedures and institutions to facilitate and promote cooperative government and intergovernmental relations.

#### 2 Key NEMA Principles

(2) Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

(3) Development must be socially, environmentally and economically sustainable.

NEMA also advocates and promotes public participation in environmental governance. One of the objectives of NEMA is to provide for institutions that will promote cooperative governance and procedures for co-ordinating environmental functions exercised by organs of state; to provide for certain aspects of the administration and enforcement of other environmental management laws; and to provide for matters connected therewith, such as detailed regulations for Environmental Impact Assessment to predict the impacts of a plan, proposal or policy.

Since its promulgation on 29 January 1999, there have been several amendments to the original act, with a view to strengthening the environmental management function and the general framework of laws concerning the environment.

### 2.1.2.2 National Environment Management Act, 1998 (Amendments)

The National Environmental Management Amendment Act No. 8 of 2004 [which came into effect from 7 January 2005] was a landmark amendment which sought to ensure greater enforcement of environmental laws. Other amendments to NEMA include:

- National Environmental Management Act No. 56 of 2002; and
- National Environmental Management Amendment Act No. 46 of 2003 [with effect from 1 May 2005].

NEMA Amendment Act, 2004 provides for co-operative environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that should promote cooperative governance and procedures for co-ordinating environmental functions exercised by various organs of state. It outlines the framework for integrating good environmental management into all development activities. Certain aspects of the administration and enforcement of other environmental management laws are also catered for in this act.

### **2.1.2.3 Specific Environmental Management Legislation**

The term “*Specific Environmental Management Legislation*” refers to a range of specific laws that have been formulated as regulations or subordinate legislation aimed at dealing with various aspects of environmental management in terms of NEMA and its provisions (Section 1 of Act No. 46 of 2003). Some specific Environmental Management Legislation is discussed in the following sections.

#### **a) Environmental Impact Assessment Application**

In terms of section 24(2) of NEMA, the Minister and or any MEC in concurrence with the Minister may identify activities which require authorisation or permission by law as these activities may significantly affect the environment. The act requires that in such cases the impacts must be considered, investigated and assessed prior to their implementation and reported to the organ of state charged by law with authorising, permitting, or otherwise allowing the implementation of an activity. The following sections discuss the regulations governing the environmental impact assessments.

#### **b) NEMA Environmental Impact Assessment Regulations**

Regulations for EIA in South Africa were first promulgated under the Environment Conservation Act, 1989 (ECA) (Act No. 73 of 1989). Those regulations took effect in September 1997 and several minor amendments followed in the early 2000s. Since then, two major reviews of EIA regulations have ushered in gradual reforms aimed at improving the efficiency of EIAs and resolving the administrative problems that soon became apparent with the implementation of the ECA regulations. The most recent of these regulations were promulgated in terms of Sections 24(5), 24M and 44 of NEMA, and are now referred to as the NEMA EIA Regulations, 2014 (Government Notice Nos. R982, R983, R984, R985 and R986, published in Government Gazette No. 38282 of 04 December 2014).

The Environmental Impact Assessment (EIA) for the proposed Kwaggafontein landfill is being undertaken in terms of the NEMA EIA Regulations, 2014, which came into effect on 04 December 2014. The NEMA EIA Regulations, 2014 were scrutinised to ensure that the required procedures were completed during the EIA.

A number of listed activities, which trigger the EIA process, are planned as part of the proposed Kwaggafontein landfill. The second schedule to the EIA Regulations (R982) deals with activities identified in terms of Section 24(2)(a) and (d) of NEMA, which may not commence without Environmental Authorisation from the competent authority and in respect of which the investigation, assessment and communication of potential impacts of activities must follow the EIA procedure as described in regulations 27 to 36 of the EIA Regulations, 2014. **Section 1.5** shows which activities have been applied for.

### **2.1.3 National Environmental Management: Waste Act, 2008**

A specific environmental management act was promulgated on 10 March 2009 to govern waste management activities. This Act aims to reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.

The National Environmental Management Waste Act (Act No. 59 of 2008) establishes institutional arrangements and planning matters; provides for national norms and standards for regulating the management of waste by all spheres of government; makes provision for specific waste management measures; establishes the procedures for the licensing and control of waste management activities; provides for the remediation of contaminated land; provides for the establishment of the national waste information system; and provides for compliance and enforcement of waste management activities.

The proposed development, being a waste disposal site, is expected to generate significant amounts of waste. Section 16(1) of the Waste Act states that “A holder of waste must, within the holder's power, take all reasonable measures to—

*“(a) avoid the generation of waste and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated;*

*(b) reduce, re-use, recycle and recover waste;*

*(c) where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner;*

*(d) manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts;*

*(e) prevent any employee or any person under his or her supervision from contravening this Act;*  
*and*

*(f) prevent the waste from being used for an unauthorised purpose.”*

Also, section 19(1) of the act gives the minister power to gazette certain activities as “listed waste management activities” for which either a Basic Assessment or an Environmental Impact Assessment must be carried out and an Environmental Authorisation and a Waste Management License issued, before such activities may be undertaken.

#### **2.1.3.1 Specific Waste Management Legislation**

The term “*Specific waste management legislation*” refers to a range of specific laws and guidelines that have been formulated with the aim of dealing with various aspects of waste management, and should be considered in conjunction with NEMWA. Some specific Environmental Management Legislation is discussed in the following sections.

- ***Minimum requirements for the handling, classification and disposal of hazardous waste***

The minimum requirements for handling, classification and disposal of hazardous waste guideline sets out the waste classification system, in which waste is placed in two classes i.e. general or hazardous. The classification of the waste is based on their inherent toxicological properties. Hazardous waste, however, is further subdivided based on the risks the waste poses. The requirements for pre-treatment and disposal of hazardous waste are appropriately set in accordance with the waste classification, and are provided for within the guideline document. Hazardous waste prevention and minimisation as well as the handling, transportation and storage is also briefly addressed. Co-disposal of sewage sludge as well as protocols for evaluating downstream uses of waste, sampling, risk-based modelling and risk assessment are included.

- ***NEMWA: National Norms and Standards for the Storage of Waste***

The National Norms and Standards for the Storage of Waste was promulgated in terms of the provision stipulated in the NEMWA, and came into effect on the 23 November 201, GN No. 926. The National Norms and Standards for the Storage of Waste aims to regulate both the storage of general and hazardous waste. The schedule provides standards for the location, construction and design as well as the operation of waste management facilities. Furthermore, the schedule provides the minimum requirements for the both above ground and underground waste storage facilities and containers.

#### **2.1.4 National Water Act, 1998**

The National Water Act, 1998 (Act No. 36 of 1998) aims to provide for management of the national water resources in order to achieve sustainable use of water for the benefit of all water users. This act requires that the quality of water resources is protected as well as the integrated management of water resources with the delegation of powers to institutions at the regional or catchment level. The purpose of the Act is



to ensure that the nation's water resources are protected, used, developed, conserved and managed in ways which take into account:

- Meeting basic human needs of present and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest; facilitation social and economic development;
- Providing for the growing demand for water use;
- Protecting aquatic and associated ecosystems and their biological diversity;
- Reducing and preventing pollution and degradation of water resources;
- Meeting international obligations;
- Promoting dam safety; and
- Managing floods and drought.

In pursuit of these objectives, Chapter 4 of the act regulates water use, while Section 21 lists eleven water use types that are regulated [Section 21 (a) – (k)]. Watercourses and wetlands are protected in terms of this section, as both are regarded as water resources. Should there be any wetlands located 500m or within the floodline, a Water Use License application will be undertaken in terms of the National Water Act, 1998.

### **2.1.5 National Heritage Resources Act, 1999**

The objective of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) is to introduce an integrated system for the management of national heritage resources. The identification, evaluation and assessment of any cultural heritage site, artefact or find in South Africa is required by this Act.

Section 38(1) of this Act states that: *"...any person who intends to undertake a development categorised as...any development or other activity which will change the character of a site-*

- (i) Exceeding 5 000 m<sup>2</sup> in extent; or*
- (ii) Involving three or more existing erven or subdivisions thereof; or*
- (iii) Involving three or more erven or divisions which have been consolidated within the past 5 years; or*
- (iv) The costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;*
- (v) The rezoning of a site exceeding 10 000m<sup>2</sup> in extent; or*

*(vi) Any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development”.*

Section 38(3) further states that the responsible heritage resources authority must specify the information to be provided in a report required in terms of subsection (2)(a).

The Act stipulates that cultural heritage resources may not be disturbed without authorisation from the relevant heritage authority. Section 34(1) of the Act states that “no person may alter or demolish any structure or part of a structure which is older than 60 years without a permit issued by the relevant provincial heritage resources authority...”

### **2.1.6 National Environmental Management: Protected Areas Act, 2003**

The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) provides for a range of protected areas: protected environments, special nature reserves and nature reserves.

South Africa has much valuable biodiversity outside of protected areas, but this is disappearing at an alarming rate. It has been recognised that in order to effectively conserve South Africa’s biodiversity, conservation efforts must focus outside of formerly protected reserves, considering 80% of the country’s most scarce and threatened habitats are privately owned. It is clearly not possible for government to purchase all the land identified as high priority in terms of habitat or threatened ecosystems to add it to our system of state-owned protected areas. This requires a new approach to conservation extension and a shift away from reactive extension (i.e. responding to problems and enforcing regulations and permitting procedures) to proactive extension (i.e. engaging with a landowner before a problem is created) where stewardship is encouraged. For these purposes, extension officers need to be better equipped with people skills relating to relationship building, conflict resolution, land negotiation, as well as hands-on knowledge, in the form of practical guidelines for managing natural ecosystems.

### **2.1.7 National Environmental Management: Biodiversity Act, 1993**

The object of the National Environmental Management: Biodiversity Act, 1993 (NEM:BA) is to provide for the management and conservation of South Africa’s biodiversity within the framework of NEMA; the protection of species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bio-prospecting involving indigenous biological resources; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith. The objectives of NEM: BA are:

- Within the framework of the National Environmental Management Act, to provide for:

- the management and conservation of biological diversity within the Republic and of the components of such biological diversity;
- the use of indigenous biological resources in a sustainable manner; and
- the fair and equitable sharing among stakeholders of benefits arising from bio-prospecting involving indigenous biological resources;
- To give effect to ratified international agreements relating to biodiversity which are binding on the Republic;
- To provide for co-operative governance in biodiversity management and conservation; and
- To provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act.

### **2.1.8 National Environmental Management: Air Quality Act, 2004**

The aim of The National Environmental Management: Air Quality Act, 2004 (NEM: AQA) is to:

- Protect and enhance air quality in the Republic;
- Prevent air pollution and ecological degradation and
- Secure ecologically sustainable development, while promoting justifiable economic and social development.

The NEM: AQA makes provision for the establishment of ambient air quality and emission standards at a national, provincial and local level.

### **2.1.9 Other National Legislation Concerning the Environment**

Various other laws regarding the protection of the environment that are relevant to this EIA include:

- Environment Conservation Act, 1989 (Act No. 73 of 1989) (as amended);
- Hazardous Substances Act, 1973 (Act No. 15 of 1973);
- Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983);
- Land Administration Act, 1995 (Act No. 2 of 1995);
- Water Services Act, 1997 (Act No. 108 of 1997);
- National Forests Act, 1998 (Act No. 84 of 1998); and
- Occupational Health and Safety Act, 1993 (Act 85 of 1993).

### 3 SCOPING PHASE METHODOLOGY

The NEMA Regulations 2014 identify three separate administrative processes for EIAs, depending on the nature of the activity. A Basic Assessment process (Listing Notice 1) is identified for those activities that have less of a possible detrimental impact to the environment. A Scoping and EIA process (Listing Notice 2) is necessary for those activities, which are identified as having more of a possible detrimental impact on the environment, whereas Listing Notice 3 relates to identified activities that would require environmental authorisation prior to the commencement of those activities in specific identified geographical areas only.

The Scoping and EIA process is required for this project as the proposed licencing of the landfill must in terms of NEM: WA, 2008, undergo this process.

#### 3.1 Registration of the Application with the Competent Authorities

A Waste Management License application form has been completed, but has not been submitted to the competent Authorities as yet. It must be noted that based on the EIA Procedures promulgated in December 2014, the submission of the application form can be undertaken following the completion of all scoping processes. It is our intention, based on these regulations, to submit the application form to the Competent Authorities following the review of this Draft Scoping Report. It is anticipated, based on our consultation with DEA and DARDLEA, that the application form will be submitted at least 14 days before the submission of the Final Scoping Report that has been subjected to public review. The Reference Number that will be issued will be included in the Final Scoping Report that will be submitted to the Competent Authority for review and consideration.

#### 3.2 Public Participation Process

A Public Participation Process (PPP) consistent with Chapter 6 of Government Notice R. 982 (Regulations 39 – 44) was undertaken for the proposed development. This included identification of Interested and Affected Parties (I&APs) and the compilation of an I&AP database (**Appendix D1**), the placement of site notices at visible and accessible locations on the 23 September 2015 close to the site, (**Appendix D2**) and a newspaper advertisement in the local newspaper (**Appendix D3**) in the Uthingo Mail page 7 on the 18 September 2015. Notification letters and Knock and Drop Registers (**Appendix D4**) have been distributed to the adjacent land owners on the 23 September 2015 – to date via e-mail. Notification Letters were distributed to I&APs during the PPP period. Comments and responses that were received during the scoping phase are reflected in the Comments and Response Report (**Appendix D5**). The public commenting period for this Scoping Report will be 30 days. All correspondence to and from I&APs are attached as **Appendix D6**. The purpose of the public review period is to identify any additional environmental issues and concerns for inclusion in the Scoping Report that the environmental practitioners and specialists may

not have identified. This Draft Scoping Report has been issued out for public review from **11 March – 15 April 2016** at public venues located in Kwaggafontein. Comments that will be received during the public review will be included in the Final Scoping Report that will be submitted to DARDLEA for review and authorisation.

### **3.3 Draft Scoping Report (DSR)**

This report represents the Draft Scoping Report for the project and documents the findings of the Scoping Phase. The report also documents the issues identified through the site visits, consultation with the Competent Authorities and other Stakeholders, the Public Participation Process (PPP) as well as through the professional input of the relevant specialists identified, the project engineers and the GA Environment team.

All public comment that will be received during the review of the Draft Scoping Report will be captured and responded to through a the Comments and Response Report attached in **Appendix D5** that will be submitted to DARDLEA. All I&APs registered on the I&AP database have been informed of the availability of the Draft Scoping Report for public review. I&APs will be given another opportunity to submit their comments during the Environmental Impact Assessment (EIA) Phase of the project.

Specialist studies relevant to the proposed project have been identified and specialist investigations will only be conducted during the EIA Phase, pending the approval of the Plan of Study for EIA by DARDLEA. Following the acceptance of the Scoping Report and Plan of Study for EIA, the specialists will then undertake their studies during the EIA phase of the application.

### **3.4 Review of the Draft Scoping Report by Competent Authorities**

DARDLEA as the competent authority for the listed activity must, within 43 days of receipt of the report, in writing, accept the report and Plan of Study for EIA if no amendments are required or shortcomings identified therein. Upon acceptance of the report, the Environmental Assessment Practitioner (EAP) may then proceed with the tasks contemplated in the Plan of Study for EIA.

The authority can also reject the Scoping Report for not following legislative procedure if any of the required steps were not undertaken. In terms of Regulation 22 (b) of Government Notice R. 982, the Scoping Report may be amended and resubmitted by the EAP should it be rejected. On receipt of the amended Scoping Report and Plan of Study for EIA, the competent authority will then reconsider the application. Should the Scoping Report be rejected, the amended Scoping Report will then be made available for public review and comment prior to submission to the Competent Authority.

The authority may also advise the EAP of matters that may hinder the success of the EIA application or matters that may prejudice the success of the application.

### **3.5 Environmental Impact Assessment Phase**

The EIA Phase commences after the competent authority accepts the Scoping Report and advises the EAP in terms of Regulation 23(1) (a) of Government Notice R. 982 to proceed with the tasks contemplated in the Plan of Study for EIA.

#### **3.5.1 Public Participation Process (PPP) for EIA Phase**

A PPP must be followed and documented and included in the Environmental Impact Report (EIR). The PPP must be undertaken in accordance with the Plan of Study for EIA. The database of I&APs compiled in the Scoping Phase will be updated throughout the EIA Phase. A summary of comments received from, and a summary of issues raised by the registered I&APs, the date of their receipt and responses of the EAP to those comments will be provided in an updated Comments and Response Report. All copies of any representations, objections and comments received will also be submitted to the competent authority together with the EIR.

#### **3.5.2 Specialist Studies**

The specialist studies indicated in the Plan of Study for EIA (refer to **Chapter 8**) will be undertaken during this Phase. These specialist studies will be documented and recommendations formulated by the specialists for the proposed development. The full impact of construction activities will be described in the EIR after the integration of the specialist study findings has occurred. Assumptions made and the specialist will explicitly state any uncertainties and gaps in knowledge. An indication will be provided by the specialist of the methodology used in determining the significance of potential environmental impacts.

#### **3.5.3 Environmental Impact Report**

The EIR will contain all information that is necessary for the competent authority to consider the application and to reach a decision. It will detail the process followed during the EIA Phase including details of the PPP and an assessment of each identified potentially significant impact. An Environmental Management Program (EMPr) for the mitigation of impacts will be provided within the EIR. The EMPr will attempt to mitigate the construction related impacts of the proposed upgrades. Appended to the EMPr will be Closure and Operational plans for the landfill site. These documents will be prepared in line with the guidance documents on best practice for Closure of Waste Management Facilities, some of which can be found in

the Minimum Requirements for Waste Management 2nd Editions, Department of Water Affairs and Forestry (1998).

#### **3.5.4 Issuing of the Waste Licence**

Following the review of the EIA Report, A Waste License is issued in terms of Section 49 of the National Environment Waste Management Act (2008) in the name of the applicant. If the activity is authorised, this authorisation will be a single Waste Licence covering all activities for which a Waste Management Licence was granted. It should be noted that a Waste Management License may provide that the licensed activity may not commence before specified conditions are complied with. The License may also include any other condition that the competent authority considers necessary for the protection of the environment.

#### **3.5.5 Appeal Period**

After a decision has been reached by DARDLEA, Chapter 2 of the National Appeal Regulations 2014 makes provision for any affected person to appeal against the decision. Within 20 days of being notified of the decision by the competent authority, the appellant must submit the appeal to the appeal administrator. An appeal panel may be appointed at the discretion of the delegated organ of state to handle the case and it would then submit its recommendations to that organ of state for a final decision on the appeal to be reached. GA Environment will communicate the decision of the Provincial Authority and the manner in which appeals should be submitted to the Minister and to all I&APs as soon as reasonably possible after the DARDLEA decision has been received.

## 4 DESCRIPTION OF THE AFFECTED ENVIRONMENT

This chapter serves to describe the environmental setting of the area identified whilst the environmental issues that were identified to be of significance are discussed in **Chapter 7** of this report. The chapter will also provide a description of the overall character and other sensitivities that were identified in the surrounding environment. The specialist ecological opinions compiled were also considered during the compilation of this section.

The current environment or footprint where the waste is currently disposed has been greatly impacted by landfill disposal activities. The following environmental issues relating to the licencing of the Kwaggafontein landfill site have been identified as being important and were investigated in the Scoping Phase. These issues will be further investigated in the EIA Phase of the project.

### 4.1 Climatic Conditions

The rainfall varies between 111 mm and 3 mm per annum. Kwaggafontein normally receives about 42 mm of rain per year, with most rainfall occurring mainly during summer. The chart below shows the average rainfall values for Kwaggafontein per month. It receives the lowest rainfall (3mm) in July and August and the highest (111 mm) in January. The monthly distribution of average daily maximum temperatures shows that the average midday temperatures for Kwaggafontein range from 19°C in June to 29°C in January. The region is the coldest during June when the mercury drops to 3°C on average during the night. Consult the chart below for an indication of the monthly variation of average minimum daily temperatures. **Figure 4.1** below is an indication of the rainfall and **Figure 4.2** indicates the temperature conditions in Kwaggafontein.



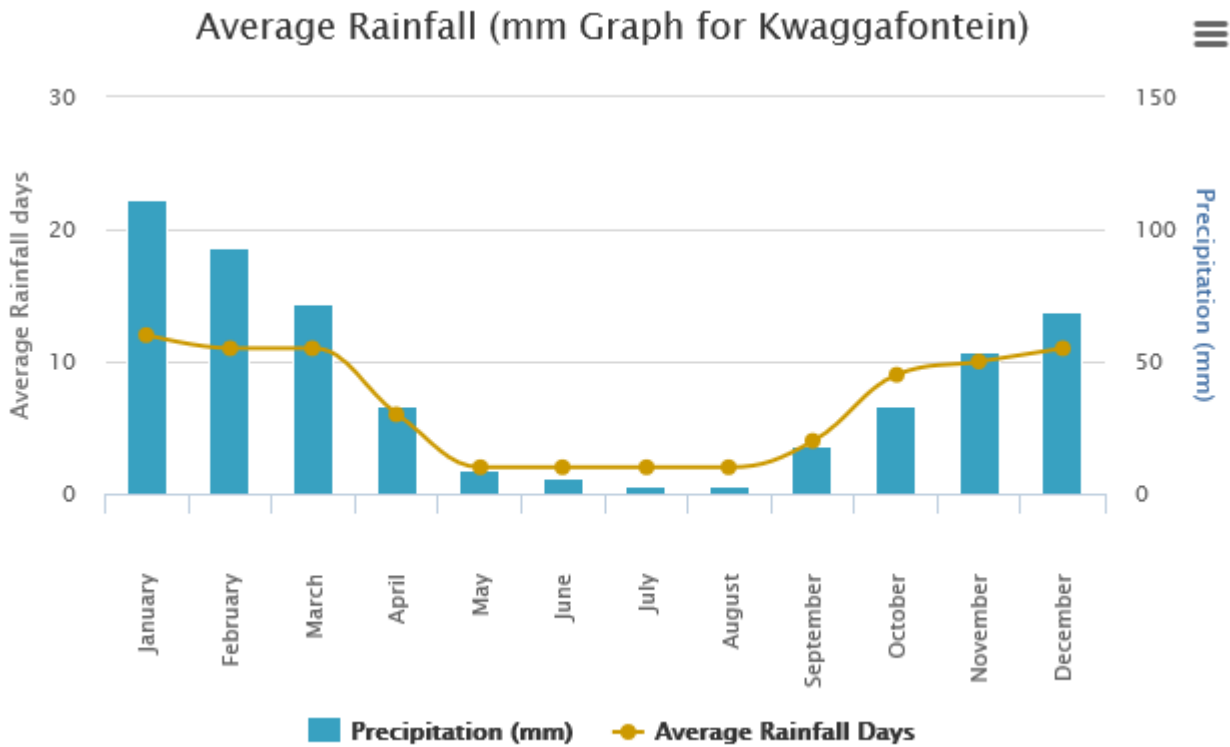


Figure 4.1: Climatic conditions for Kwaggafontein, 2000 - 2012 (source: [www.worldweatheronline.com](http://www.worldweatheronline.com) )

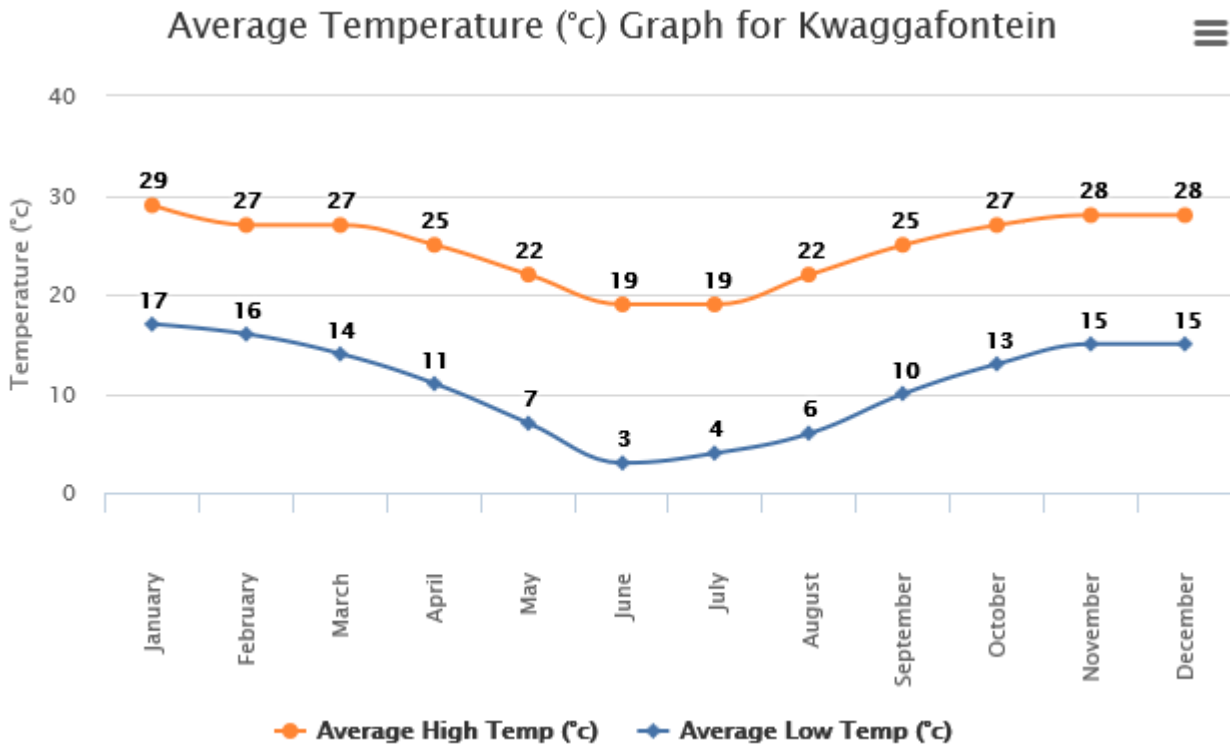


Figure 4.2: Temperature conditions for Kwaggafontein, 2000 - 2012 (source: [www.worldweatheronline.com](http://www.worldweatheronline.com) )

## 4.2 Land Uses and Land Cover

The Kwaggafontein landfill site is located between the Vlaaklaagte and Kwaggafontein. Both these townships are fairly large townships. The R573 provide the immediate (**Figure 4.5**) northern boundary of the site and access is gained directly from this road (Moloto road). Waste disposal dominantly characterised the site. A cemetery with several graves was observed during the site inspection on the western boundary of the site (**Figure 4.7**). The Eskom distribution powerlines are located along the R573 road on the north-western side of the site (**Figure 4.3**). Several servitudes (sewerage and water pipeline) (**Figure 4.4**) were noted on the southern boundary of the landfill site. As has already been discussed future land uses along the site are anticipated. The IDP proposes the Moloto Rail Corridor which will serve the two municipalities in the Nkangala District Municipality, namely Thembisile Hani and Dr. JS Moroka.



**Figure 4.3: The Eskom Distribution line bypasses the landfill site on the western boundary**



**Figure 4.4: Sewer and water pipeline servitude are seen in the surrounding area of the site**



**Figure 4.5: The R573 (Moloto Road) adjacent to the landfill site**

### **4.3 Soils, geology and terrain conditions**

According to the information provided in the Geotechnical report, the existing landfill site at Kwaggafontein is located on the Rashoop Granophyre Suite which forms the base of the Bushveld Complex Igneous intrusion. The site soils comprise generally deeply weathered (>3m) residual soils overlain by a layer of

sandy colluvium (**Figure 4.6**). A north-west south-east trending fault is indicated on the published map, just north of the site. The area is not underlain by dolomitic or other carbonaceous rocks prone to sinkhole or doline formation. The regional topography comprises generally flat terrain. No unstable natural slopes were noted at the landfill site.



**Figure 4.6: The sandy cover soils at Kwaggafontein landfill site**

The cover soils (to around 1.0m) are likely to be suitable as topsoil cover material and probably suitable as layer above the geo-membrane. The residual material may potentially be suited as clay material in the design for the base and cover of the landfill sites. The clayey material was not excavated or tested but a geotechnical investigation close to the site in a similar geological environment has yielded promising results.

#### **4.4 Ecology (flora and fauna)**

The site falls within the vegetation type Central Sandy Bushveld sensu Mucina and Rutherford (2006). This vegetation type is characterised by tall deciduous trees *Terminalia sericea* and *Burkea Afrikana* in deep sandy soils. Low rocky soils contain *Combretum* species and *Acacia*, *Ziziphus* and *Euclea* are found on flats and slopes. This vegetation unit is classified as 'Vulnerable' since very little of the area has been preserved, and is threatened by rural communities, alien vegetation and erosion (Mucina and Rutherford, 2006).

Plant species richness and density is likely to be affected by the roads and landfill activities on the site. The impacted nature of the site, together with the expanse of transformed vegetation surrounding the site lead

to the suggestion that the study site is not regionally ecologically important. It is not likely to be a refuge to sensitive plant species. The site was infested by alien vegetation to the south of the site. The surroundings of the site were however still in its natural form.



**Figure 4.7:** Examples of the type of vegetation (aliens) to the eastern boundary of the site



**Figure 4.8:** The type of grass lands and the weeds noted in the north-western portion of the site.

With regards to the fauna species it must be noted that landfill sites have the potential to attract and negatively affect fauna if any edible waste remains uncovered and available. Vertebrates of all sizes attracted to small animals as prey, or larger species to carcasses and other forms of offal/carrion/medical-veterinary waste are especially vulnerable, since such waste often contain dangerous medicines (e.g. diclofenac) or poisons (e.g. lead fragments or pesticides), that can incapacitate such Red-data vertebrate species as carnivores and primates, vultures and raptors, or herpetofauna. Workers on and visitors to sites should not enter surrounding habitats, be supplied with adequate ablution facilities, but be made aware of and avoid disturbing any threatened species that might visit the site.

#### 4.5 Drainage and Hydrological conditions

The region is characterised by flat expanse in which terrestrial vegetation growth is limited due to farming activities. No riparian or wetland habitat occurs in the immediate area, however drainage lines are visible 1.4km to the south and east of the site where vegetation growth is more pronounced. The Kwaggasfonteinspruit lies 1.1km to the east of the site and may be impacted by the landfill through wind dispersion of litter. It is unlikely that pollution from the landfill site will impact on regional hydrology.

#### 4.6 Socio economic conditions

Kwaggafontein is significantly large township with a population of 46, 935 people based on a 1% population growth using the census 2011 population of 45,104 (Statistics SA). The nearby township of Vlaaklaagte also has a sizable population estimated at about 12,589 people.

As mentioned in **Section 1.4**, the removal of solid waste remains the responsibility of the Thembisile Hani Local Municipality. In Kwaggafontein currently 75 000 households have access to refuse removal (Thembisile Hani Local Municipality IDP 2015/2016).

#### 4.7 Heritage and Cultural Features

A cemetery was identified as a significant cultural and heritage feature located within the boundaries of the site during a site visit undertaken by GA Environment (**Figure 4.7**). It is unknown how long has the cemetery has been in existence. These were found on the western boundary of the landfill site (**Figure 4.8**). It is the intention of this Scoping and EIA to engage the heritage specialist to assess the significance of this cemetery and provide a mitigation plan thereto. Please refer to section 8 for the proposed heritage impact and methodology. Should other unexpected / unknown features or artefacts of heritage value be exposed during excavation, those should be appropriately dealt with in environmental planning for the landfill.



**Figure 4.7: Cemetery noted within the Kwaggafontein landfill boundary**



**Figure 4.8: Aerial photograph showing cemetery to the western corner the Kwaggafontein landfill site (red arrow to the right)**

#### **4.8 Roads and Traffic Conditions**

The landfill site is easily accessible and is located conveniently between the Vlaaklaagte and Kwaggafontein townships. The R573 (Moloto road) forms the main access onto the site. This road is known for its business and high amount of traffic during the morning and afternoon peak hours. Public transport vehicles (such as Putco buses) use this road for transporting of commuters to and from work every day. Recently there are road upgrade to the west of the R573. This will contribute to the already existing traffic problems. Traffic levels on these access roads and residential areas are high and will likely cause noise impacts even during the upgrading and the operation phase of the project. Precautions should be taken with regards to the increase in traffic levels during the construction and the operational phase of the landfill site. As previously mentioned, the proposed Moloto rail corridor will bring a relief to the Kwaggafontein transport system once it is implemented. It must be noted the Mpumalanga Department of Public Works, Roads and Transport has been included as one of the interested and affected party in this project.

#### **4.9 Noise and Air Quality**

Effective waste disposal is essential to prevent the spread of disease in communities. It is thus imperative that the Thembisile Hani Municipality proceed with the licencing of the landfill site to be in line with the applicable legislative requirements. Beside the odour emanating from the decomposed waste and the waste that is burned on site, no significant air quality problems were identified. Odour problems were detected during the site visits. It must however be noted that the proposed landfill site will obviously have impacts on the current odour levels. No ambient air quality information is available for the area, although

there are no major emitters of air pollution in the area. Beside the loud noise from the vehicles using some of the local roads, the site is not regarded as noisy. It is anticipated that the licensing of the site as per the NEM: WA legislative requirements will improve the environmental quality of the site as the site is currently not managed as per the applicable legislative requirements.

#### **4.10 Visual and Aesthetic Features**

The Kwaggafontein landfill is in close proximity to the main road (R573 Moloto road) which is used by the local community every day. The site causes a visual nuisances due to the lack of management of the landfill site. It is anticipated that the construction activities will result in a visual nuisances, and are likely to emanate as part of the landfill upgrade. It highly unlikely that the licencing of the Kwaggafontein landfill will cause visual problems during the operation phase as the site will be operated in line with the NEMWA Act requirements. Installation of the appropriate landfill infrastructure (an adequate boundary fence, waste cells, ablution facility, etc.) will mitigate the current conditions of the site further.



## 5 ALTERNATIVES

In terms of the EIA Regulations published in Government Notice (GN) R982 of 2014, feasible and reasonable alternatives must be identified and considered within the Environmental Scoping phase (section 28 (1)(c)). According to GN R 982 of the EIA Regulations (2014), an alternative is defined as “...in relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to:

- (a) The property on which or location where it is proposed to undertake the activity;
- (b) The type of activity to be undertaken;
- (c) The design or layout of the activity;
- (d) The technology to be used in the activity;
- (e) The operational aspects of the activity; and
- (f) The option of not implementing the activity.”

In terms of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the EIA process.

The feasible alternatives identified for the proposed upgrade of the Kwaggafontein landfill were limited to various process alternatives. In terms of NEMA, the proponent is required to demonstrate that alternatives have been described and investigated in sufficient detail during the EIA process. The feasible alternatives identified for the proposed upgrade of the Kwaggafontein landfill were limited to various process alternatives.

For the purposes of this project, three alternatives (Closure and Rehabilitation, Landfill capping and End use plan) were considered. Impacts from the alternatives discussed above will collectively be assessed with the construction/operation impacts as the impacts are likely to be similar. These alternatives are summarised as follows:

### 5.1 The No-Go Option

The no-development alternative would entail continuing with the *status quo*, i.e. a situation where the Kwaggafontein landfill remains operational and un-rehabilitated. This could lead to major environmental liability, as the Municipality must eventually take responsibility for adequate closure and rehabilitation of the landfill in line with the legislative requirements. The *status quo* of the Kwaggafontein is currently

presenting a potential pollution risk to the surrounding environment and will not have the capacity to cater for the expected future growth if left to operate in the current state.

Moreover, the closure/operation of waste facilities is a listed activity in terms the National Environmental Management Waste Act, (Act No. 59 of 2008), Government Notice 921, Listed Activity, Category A (13) and Category B (8 & 9). Adopting the “No go alternative” is also against the DARDLEA ‘s Key Performance Areas to ensure that improved integrated waste management systems such as the legally permitted disposal facilities exist within each Municipality.

The need to license many of the unlicensed Waste Disposal in South Africa by the Minister of Environmental Affairs is regarded as one of key project towards a cleaner environment. Further delays in implementing the project will mean that the Thembisile Hani Local Municipality will continue to dispose waste on an unlicensed site thereby causing adverse environmental problems. This initiative will aid in achieving the Minister’s service delivery agreement Outcome 10 (Output 1 to 4) deliverable target/indicator that serves to ensure that environmental assets and natural resources are well protected and are continually enhanced. Further delays in implementing the project will mean that both the Thembisile Hani Local Municipality will continue to dispose waste on an unlicensed sites thereby causing adverse environmental problems.

It must also be note that the Kwaggafontein landfill site has recently received an internal audit finding regarding the current environmental management of the site. It is for such reasons that the definite need to formally license the Kwaggafontein landfill site to meet all applicable legislative requirements is crucial.

## **5.2 Proposed and Preferred Alternative (Licencing of the Kwaggafontein Landfill)**

The Kwaggafontein landfill is currently operating without a license and does not adhere to the NEM: WA. Licensing this landfill will adhere to the Minimum Requirements for Waste Disposal by Landfill, 2nd Edition (DWAF, 1998), and the National Norms and Standards for the disposal of waste to landfills promulgated in November 2013. The rationale behind the project serves to address the following issues:

- The need to license many unlicensed waste disposal facilities existing within each municipality is in line with the Minister of Environmental Affairs’ initiative towards attaining a cleaner environment;
- The licencing and the upgrade of the Kwaggafontein landfill is line with the Municipality IDP as it is understood that the licencing of the landfill will improve the management of the landfill;

- The current environmental problem will be eliminated such as visual nuisance, contamination of underground water and this will eliminate potential for litigation from organizations that are directly affected;
- The disposal of waste in Kwaggafontein will be in accordance with the legislative requirement and will thus improve efficiency in terms of the municipality waste disposal programme.

This is the preferred and only option for the proposed licensing of the Kwaggafontein landfill site. Three alternative designs that have been considered for the purposes of Scoping and EA are discussed in the sections that follow.

### **5.3 Alternative 1: - Closure and Rehabilitation of the Kwaggafontein Landfill**

The proposed closure and rehabilitation of the unlicensed landfill would ensure that the site is environmentally and publicly acceptable and that it complies with the Minimum Requirements for Waste Disposal by Landfill, 2nd Edition (DWAF, 1998), and the National Norms and Standards for the disposal of waste to landfills promulgated in August 2013. The closure and rehabilitation of the site would entail the following:

- Shaping and landscaping of the waste body;
- The construction of storm water management infrastructure;
- Capping of the waste body in accordance with the Minimum Requirements;
- Concrete palisade fencing;
- The maintenance of access roads;
- Vegetative cover of the final landform;
- The construction of the required end-use infrastructure (once finalised); and
- Post closure environmental monitoring where necessary.

Although the closure is viable, this is outweighed by the preferred alternative of licensing the existing site for operation. The following are the limitations that can occur should closure and rehabilitation option be considered:

- The closure and rehabilitation of the existing landfill site will result in a need to identify new land for the construction of the Kwaggafontein landfill;
- The use of new green field site will create a new environmental problem;
- Additional cumulative impacts .e.g. visual impacts and contamination of underground water resources

will occur from a new “greenfield site” and open space; keeping in mind that the Kwaggafontein area is dry area and the available water resources are limited and thus require management; and

- The closure will be against the Municipality’s IDP requirements and Minister of Environmental Affairs resolution as the Kwaggafontein landfill site has been identified for closure.

### 5.4 Alternative 2 - End Use Planning

An end-use plan shall guide what would be the most suitable land use for the area. The choice of type of end use is dependent on the urban or rural spatial planning of the area in which the landfill is situated. The tables below shows the end-use possibilities, categorized from low-graded re-use to high-graded end-use. The type of end-use can also related to the potential vulnerability, expressed in the average number of hours per day that people are spending at the location. The longer humans spend at or near the site, the higher the chance on potential exposure to any residual effects of the landfill site and the higher the potential vulnerability. **Table 5.1** shows the relation between vulnerability of the type of end-use and the environmental risk-levels of the landfill.

Quality of End Use	Type of End Use
Low Grade       High grade	Parking Area
	Industrial Area
	Commercial Area
	Natural Area
	Sports and Recreation
	Residential Area

**Table 5.1: Landfill End Use Matrix**

Landfill Type	Type of End-Use	
	Low Vulnerability	High Vulnerability

Low Risk <sup>1</sup>		
High Risk <sup>2</sup>		

It is obvious that in the green box situation redevelopment projects can be initiated and carried out without any problem. The red box represents the opposite situation. For example from a psychological point of view the end use of the landfill site for housing will not be feasible anyway and should in fact not be wanted. The yellow box situation many types of end-use are possible, but the feasibility will depend on the local situation.

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<sup>1</sup> Low risk site here mainly refer to communal sites and small sites

<sup>2</sup> High Risk sites in this case refer to Medium, Large and Hazardous landfill sites.

## 6 PUBLIC PARTICIPATION PROCESS

Section 24 of the Constitution of South Africa, 1996 aims to guarantee everyone's right to an environment that is not harmful to their health and well-being and to have the environment protected for present and future generations. The National Environmental Management Amendment Act, (No. 62 of 2009) enables the Minister to publish guidelines on various aspects of the Act. The Guidelines on Public Participation, which have been published but the Department of Environmental Affairs, informed the steps that were taken during the Public Participation Process for this Project.

The NEMA EIA Regulations, 2014 prescribes that the Environmental Impact Assessment process must undertake public participation in accordance with the Chapter 6 of the Regulations. The purpose of the Public Participation Process is to provide all potential and / or registered Interested and Affected Parties (I&APs), including the competent authority and any other stakeholder or organ of state, an opportunity to become involved in the EIA process and provide comments during the various phases of the project. Involvement by I&APs is critical, as it contributes to a better understanding of the proposed project among I&APs, raises important issues that need to be assessed and provides local insight that will enhance the EIA process.

This chapter of the report provides details on the Public Participation Process followed during the Scoping Phase of the EIA for the proposed licensing of the Kwaggafontein landfill site

### 6.1 Identification of Interested and Affected Parties

#### 6.1.1 Notification of I&APs

At the commencement of the project, written notices and notification letters were sent to the landowners and / or the current occupants of the properties surrounding Kwaggafontein landfill, as well as stakeholders and organs of state with a direct interest in the project. Since then, there has been ongoing distribution of these documents via email to I&APs that are identified as the project progresses. Copies of these letters, together with the details of the recipients are included in **Appendix D1**.

#### 6.1.2 Site Notices

In accordance with the NEMA EIA Regulations, 2014 a notice board detailing the proposed activity as well as the contact details of the EAP was placed on the landfill site; site and at various public and common places (municipality offices, local shops, along R573) on the **18 September 2015**. Proof of the placement of the site notices is included in **Appendix D2**.

### **6.1.3 Newspaper Advertisement**

An advertisement was placed on 18 September 2015 informing I&APs that the EIA process for the proposed licensing of the Kwaggafontein landfill to invite all I&APs to register and provide comment on the project. The advertisement appeared on page 7 of Uthingo Mail Newspaper. Proof of the placement of the newspaper advertisement is included in **Appendix D3**.

## **6.2 Draft Scoping Report (DSR)**

### **6.2.1 Placement of Draft Scoping Report for Public Comment**

This report serves as a copy of the Draft Scoping Report. The Draft Scoping Report will be placed for public comment at public places such the Police station, schools etc.; for the prescribed duration of 30 days from the 11 March – 15 April 2016. The placing of the Draft Scoping Report will allow for the public to be given adequate time to review the details of the project and provide, in writing, comments and concerns relating to the proposed licensing of the Kwaggafontein landfill site.

### **6.2.2 Public and Focus Group Meetings**

No public or focus group meetings have been held to date with I&APs concerning the licensing of the Kwaggafontein landfill site. The need of the public meeting will be determined following the nature of issues raised by the I&APs and other interested stakeholders after the end of the public review period. All registered I&APs will be notified in writing of the availability of the report for review by the public and the duration of the commenting period.

### **6.2.3 Interested and Affected Parties Register and Comments Database**

From the onset of the project a database of persons, organizations and organs of state identified as being affected parties or who registered as I&APs was opened and maintained. The I&APs register is continually updated during all phases of the Environmental Impact Assessment process. The I&APs register is included in **Appendix D4**.

A record of all comments received, together with a note of the responses given, will be also maintained. To date, no issues and concerns have been raised during the announcement phase of the project. It is a general understanding based on the verbal comments raised by I&AP during the distribution of the notices that the community support the project as they believe that licencing of the Kwaggafontein landfill will improve the current site conditions. Issues and concerns that may arise during the review of the DSR will be recorded and detailed in the Final Scoping Report.

## 7 DESCRIPTION OF ENVIRONMENTAL ISSUES AND IMPACTS

The scope of an environmental assessment is defined by the range of issues and alternatives it considers, and the approach towards the assessment that will follow (DEAT, 1992b). Scoping is a critical stage in the Integrated Environmental Management procedure, as it is an important tool for involving the public in the assessment process, and for structuring assessment studies (DEAT, 2002).

A Scoping Report must contain all the information that is necessary for a proper understanding of the nature of issues identified during the scoping phase of the project and must include a description of environmental issues and potential impacts, including cumulative impacts that have been identified. This chapter describes the environmental issues and impacts as identified during the scoping phase. Potential impacts identified and elaborated on in this chapter has been presented as follows:

- Theme 1: Impacts on the Biodiversity Environment; and
- Theme 2: Impacts on the Human Environment.

In both themes, an attempt has been made to outline potential impacts for all construction, operational and decommissioning phases of the projects. The impact assessment methodology / criteria that is attached as **Appendix E** has been applied in order to evaluate these potential impacts. These impacts will be assessed and presented in detail during the Impact Assessment Phase.

### 7.1 Issues and Impacts Identified During the Scoping Phase

The impacts that may result from the licensing and construction of the Kwaggafontein landfill as well as the No-Go alternative are detailed in **Table 7.1**. Direct, indirect and cumulative impacts have been considered from activities associated with the construction, operational and decommissioning phases of the proposed project.

It was evident during the preliminary investigation undertaken that the construction or the licencing of the Kwaggafontein landfill has a potential to pose various risks to the environment as well as to the neighbouring properties and residents in the surrounding area. Therefore, it is important that these possible risks are taken into account during the scoping phase and that mitigation measures to ameliorate impacts are provided during the EIA phase.

The potential impacts and key issues identified during the Scoping Phase as per the specialists investigations include:

- Loss of biodiversity (flora and fauna);
- Destruction of wetlands;
- Surface and ground water contamination;



- Soil Contamination;
- Increased noise levels;
- Atmospheric pollution and odours (Air Emissions);and
- Safety and security.

These potential impacts will be investigated in further detail by specialists during the EIA Phase. These impacts are briefly discussed and presented as follows:

### **7.1.1 Biophysical Environment**

#### **7.1.1.1 Loss of Biodiversity**

The proposed construction/upgrade of the landfill, if not well managed could result in the loss of plant habitats if the design requirements does not take into account sensitive environments within and around the landfill sites. It must be noted that the status of the flora and fauna within the Kwaggafontein landfill site has already been markedly transformed due to landfill activities, human and their associated activities. No sensitive floral and faunal species are likely to be affected by the normal construction activities required following the licencing of the landfill as the upgrading is restricted to the landfill site boundaries. Although areas cleared for new infrastructure might be invaded by alien vegetation, mitigation measures to address control and management of alien invasion problems will be provided in the EMPr. The impact of the development on the fauna and flora of the area is considered insignificant as there are no red data species since the waste disposal site is already disturbed. The potential impact on the flora in the area is considered to be of low significance without mitigation for normal construction and operational activities.

#### **7.1.1.2 Wetland Disturbance**

A potential threat to existing watercourses including wetlands in and around the Kwaggafontein landfill water quality may also arise from poor management of hazardous materials, stockpile management (erosion, siltation and sedimentation problems) etc. No wetlands or drainage lines are known to exist within the boundaries of Kwaggafontein landfill. The impacts on wetlands and surrounding watercourse will be insignificant. Mitigation measures to manage potential impacts on the ecological integrity of wetlands during the construction and operational phase of the project. An EMPr will be compiled during the EIA phase.

### **7.1.1.3 Surface and groundwater contamination**

Potential impact of pollutants from the landfill on the groundwater is anticipated. A specialist hydrological assessment will be undertaken to determine the potential impact of the landfill on groundwater, the associated risks to groundwater during the construction and operational phases of the project. Mitigation measures to prevent contamination of surface and ground water by various pollutants will be included in the EMP that will be provided during the EIA phase.

## **7.1.2 Human Environment**

### **7.1.2.1 Impact on land use**

The proposed development supports existing land use by making use of an existing waste disposal infrastructure currently owned by the Kwaggafontein town. The licencing of the Kwaggafontein also fits in with anticipated development plans for the area as the licencing is for the existing landfill sites. The confinement of the proposed upgrade within the boundaries of an existing waste disposal site limits the impact on land use and zoning as the licencing of the Kwaggafontein landfill is planned for long term use. The landfill site will not hamper existing surrounding land use and is unlikely to hamper any potential expansion of the surrounding areas thus the impact can be considered to be of low significance.

### **7.1.2.2 Local Economy (jobs)**

The proposed licencing of Kwaggafontein landfill forms part of the planning process, specifically for provision of waste disposal infrastructure to operate in line with the relevant Environmental legislative requirements, which will enable the Kwaggafontein town to secure funding for the construction of the landfill. The construction of the proposed landfill site is also likely to create direct and indirect job opportunities (temporary and permanent) for the local people. It is imperative that the contractors consider the use of labour intensive methods where necessary for the construction of some works of the landfill site. The impact is considered to be positive.

### **7.1.2.3 Heritage impacts**

Construction activities such as clearing, grading, excavation during the landfill upgrade could expose or damage features of heritage and cultural value beneath the surface. The cemetery which was identified on site should be demarcated as a "no go" area during the construction and the operational phase of the landfill. Mitigation measures to protect features of heritage value will be included in the EMP that will be compiled during the EIA phase.

#### **7.1.2.4 Roads and Traffic impacts**

The movement of construction vehicles, vehicles delivering construction material and the workforce to and from the site during the construction phase of the landfill can result in an increase in traffic congestion in local roads. This could potentially result in damage, wear and tear on neighbouring infrastructure. The area experiences high traffic volumes thus the impact is regarded as moderate. Increase in traffic volumes during construction will contribute to the generation of noise. It is unlikely however that this noise will be at a level higher than the existing ambient noise resulting from busy arterial roads. The noise impact is regarded to be of significance. Traffic impacts during the operational phase will emanate from vehicles coming in and out of site to dispose waste, the impact from these vehicles will be of low significance with mitigation.

#### **7.1.2.5 Air quality impacts**

Dust will be generated during construction/upgrade of the landfill. Other potential sources of air pollution would include exhaust fumes, and traffic on unpaved roads. The operational phase of the landfill is likely to result in the generation of landfill gases and pollutants that are classified as greenhouse gases including methane, carbon dioxide, and trace constituents of non methane organic compounds. These impacts can easily be mitigated by implementing measures that are included in the EMPr.

Key issues and general potential environmental impacts likely to be associated with the construction and operation of the waste disposal facility are summarised in **Table 7.1**. It should be noted that the impacts identified in these Tables overleaf are to be evaluated in the impact assessment phase of the project.

**Table 7.1: Potential Impacts associated to the proposed construction of the Kwaggafontein landfill**

Activity	Aspect	Nature of Impact	Description of Impact		Criteria					
Theme 1: Biophysical Environment				Extent	Duration	Intensity	Probability	Determination of Significance	Reversibility	Irreplaceable loss of Resources
<b>Construction Phase</b>										
Upgrading of the Kwaggafontein landfill	Loss of biodiversity	Negative	The upgrade of the Kwaggafontein landfill will result in the clearing of existing vegetation	Site	Medium Term	Medium	Probable	Medium	Short Term	Low
	Wetlands and aquatic impact	Negative	There are no drainage lines located in close proximity to the site	Regional	Long Term	Medium	Improbable	Low	Short Term	Low
	Surface and groundwater contamination	Negative	Hydrocarbon leakages from plant vehicles and poor management of sources of hydrocarbon leakages has a potential to pollute underground and surrounding resources.	Regional	Long Term	Medium	Probable	Medium	Short Term	Low
	Loss of faunal habitat	Negative	The upgrade of the Kwaggafontein landfill will result in	Local	Medium Term	Medium	Probable	Medium	Short Term	Low

Activity	Aspect	Nature of Impact	Description of Impact		Criteria					
Theme 1: Biophysical Environment				Extent	Duration	Intensity	Probability	Determinati on of Significance	Reversibility	Irreplaceable loss of Resources
			the clearing of vegetation associated with the faunal habitats. There were however no faunal species (exception of livestock) observed on the site during at least two visits.							
	Soil contamination	Negative	Contamination of surrounding soil resources through spillages and overflows emanating from the construction activities may result in the contamination of soil	Site	Short Term	Medium	Probable	Medium	Short Term	Medium
	Soil compaction	Negative	Compaction from landfill construction activity may emanate thereby causing erosion problems	Local	Medium Term	Medium	Probable	Medium	Short term	Medium

Activity	Aspect	Nature of Impact	Description of Impact		Criteria					
Theme 1: Biophysical Environment				Extent	Duration	Intensity	Probability	Determination of Significance	Reversibility	Irreplaceable loss of Resources
		The status of the biophysical environment within the Kwaggafontein landfill boundary site has already been markedly transformed. The potential impact on the biodiversity in the area is considered to be of low significance without mitigation during the landfill upgrade.								
Theme 2: Heritage Impacts & Cultural Issues										
Upgrading of Kwaggafontein landfill	Loss of heritage resources i.e. graves as a result of construction activities, such as excavating, blasting etc.	Negative	Destruction heritage resources due no fencing/ demarcation of heritage resources that are within the landfill site	Site	Short Term	Medium	Probable	Medium	Short Term	Medium
Operational Phase										
Upgrading of Kwaggafontein landfill	Groundwater contamination	Negative	The risk of landfill leachate contaminating surface and groundwater resources, thereby reducing the quality of groundwater in the area.	Regional	Medium Term	Moderate	Probable	Medium	Long Term	Medium
	Faunal disturbances	Negative	Introduction of a formal landfill is likely cause disturbances to the existing faunal	Local	Medium Term	Medium	Probable	Low	Short Term	Medium

Activity	Aspect	Nature of Impact	Description of Impact		Criteria					
Theme 1: Biophysical Environment				Extent	Duration	Intensity	Probability	Determination of Significance	Reversibility	Irreplaceable loss of Resources
			communities and may attract new species in the area.							
	Establishment of alien vegetation	Negative	The clearing of vegetation during landfill maintenance and site rehabilitation activities will enhance the establishment of alien species.	Site	Medium Term	Medium	Probable	Medium	Short Term	Medium
Theme 2: Heritage Impacts & Cultural Issues										
Upgrading of Kwaggafontein landfill	Preservation of heritage	Positive	Preservation of heritage resources in operational plan	Site	Short Term	Medium	Probable	Medium	Short Term	Medium
Decommissioning Phase										
Decommissioning of Kwaggafontein landfill	Alien species infestation	Negative	The decommissioning of the Kwaggafontein landfill may result in the encroachment of alien invasive species.	Site	Long Term	Medium	Probable	Medium	Short Term	Medium
	-Insufficient stormwater	Negative	Rehabilitation activities	Local	Long Term	Medium	Probable	Medium	Short Term	Medium

Activity	Aspect	Nature of Impact	Description of Impact		Criteria					
Theme 1: Biophysical Environment				Extent	Duration	Intensity	Probability	Determination of Significance	Reversibility	Irreplaceable loss of Resources
	control measures on site may result in soil erosion in areas that are not properly managed during the rehabilitation phase Contaminants may also be released from the waste body into the soil during the site rehabilitation		associated with the decommissioning of the Kwaggafontein landfill may result in the erosion of soil used for capping							
<p>The decommissioning phase will entail the closure of the landfill site, the covering of the waste body, re-capping, reshaping, and landscaping of the waste disposal area and ultimate rehabilitation of the landfill. It is anticipated that the Municipality will determine appropriate end use following the final rehabilitation of the site. The decommissioning phase will eliminate all environmental problems that occur as a result of landfill operations. It must also be noted that the closure and decommissioning of the landfill site is a listed activity that will require a separate EIA process and will be conducted as and when closure is required.</p>										

As has already discussed in **Chapter 5** of this DSR, these options highlighted in this will be evaluated as part of the EIA Phase. Further detailed information regarding the impacts of the alternatives considered will be provided during the EIA phase.



## 8 PLAN OF STUDY FOR THE ENVIRONMENTAL IMPACT ASSESSMENT

The proposed licensing of the Kwaggafontein landfill require an EIA in accordance with the NEMA EIA Regulations, 2014. The EIA follows the preparation of the Scoping Report with a purpose of identifying range of environmental impacts that are associated with the proposed development, alternatives and the focus of the EIA. This chapter will present the proposed approach to the EIA and will address all requirements as stipulated in **Appendix 2** of the NEMA EIA Regulations, 2014.

A key requirement within these regulations is the compilation of the Plan of Study for undertaking an Environmental Impact Assessment (Plan of Study hereafter). The aim of the EIA Phase is to address the significant issues highlighted in the Scoping Phase through specialist investigation and detailed assessment. The Plan of Study details the proposed approach to the Environmental Impact Assessment, which will be in line with the EIA Regulations (2014). The regulations stipulate that the Plan of Study for undertaking an environmental impact assessment process should include the following:

- i). A description of the alternatives to be considered and assessed within the preferred site; including the option of not proceeding with the activity;
- ii). a description of the aspects to be assessed as part of the environmental impact assessment process;
- iii). aspects to be assessed by specialists;
- iv). a description of the proposed method of assessing the environmental aspects, including a description of the proposed method of assessing the environmental aspects including aspects to be assessed by specialists;
- v). a description of the proposed method of assessing duration and significance;
- vi). an indication of the stages at which the competent authority will be consulted;
- vii). particulars of the public participation process that will be conducted during the environmental impact assessment process;
- viii). a description of the tasks that will be undertaken as part of the environmental impact assessment process; and
- ix). Identify suitable measures to avoid, reverse, mitigate, or manage identified impacts and to determine the extent of the residual risks that need to be managed and monitored.

### 8.1 Tasks to be undertaken during the EIA Phase

In order to adequately assess and provide sufficient responses to the issues raised during the Scoping Phase, it is intended that the EIA will focus on the following tasks:

- Reviewing the approval for the Scoping and Plan of Study for EIA including the relevant conditions of approval;
- Continued public participation;
- Conducting specialist investigations on all the significant issues identified and raised in the Scoping Process;
- Evaluate and summarise the findings of the specialist reports;
- Undertaking a detailed impact assessment process, assessing alternatives, and providing potential mitigation measures;
- Documenting the findings of the Impact Assessment into an Environmental Impact Report (EIR); and
- Compiling a framework Environmental Management Programme.

## **8.2 Specialist Studies**

Following the key issues that have been identified during the Scoping Phase, the following specialist studies have been identified as being necessary during the assessment phase:

### **8.2.1 Ecological Opinion**

If the need arises, an Ecological opinion to determine the impact of the surrounding ecological environment (flora, fauna and wetland) will be undertaken by Limosella Consulting (Pty) Limited. The Ecological opinion is aimed at informing the Waste Licencing Processes regarding the potential impact of the upgrade of landfill on the surrounding ecological environment. The terms of reference for the Ecological opinion study were as follows:

- Highlight sensitive environmental components including watercourses, conservation-worthy vegetation and fauna habitat; and
- Discuss potential impacts, mitigation and management procedures relevant to the protection of the conservation-worthy aspects of the site, and in the surrounding environment

### **8.2.2 Heritage Impact Assessment**

Based on the cemetery that was noted to be existing on the north western corner of the site, a Heritage Impact Assessment will therefore be undertaken during the EIA phase. The purpose of this study will be to provide a detailed Cultural, Heritage Specialist Report on the study area, which will outline the significance of the cemetery in relation to the proposed development.

The scope of work for a Heritage Impact Assessment for proposed development will include but not limited to the following:

- Identify possible archaeological, cultural and historic sites within the proposed landfill site;
- Evaluate the potential impacts of construction, operation and maintenance of the proposed development cultural and historic resources; and
- Recommend mitigation measures to ameliorate any negative impacts on areas of cultural importance.

### **8.2.3 Geotechnical and Geohydrological Investigations**

Landfills are known to have impact on the underground water systems due to the levels of surface water leachate generated from landfill site. It is therefore essential that the potential existing and future groundwater pollution and other potential threats to the local aquifer be determined as part of the assessment phase. GA Environment has appointed USK Environmental & Waste Engineering to undertake Geotechnical Engineering and Hydrogeological Risk Assessment for the Kwaggafontein landfill site. The terms of reference for the Geotechnical and Geohydrological study will cover the following:

- Evaluation of geotechnical and hydrogeological parameters of the sub base soil at the site;
- Review the geotechnical and hydrogeological requirements for the development of cells and associated infrastructure for a landfill at the site;
- Assess the requirements, and availability and suitability of cover material for the operations of the landfill;
- Assess the requirements, and availability and suitability of capping material for the closure of the landfill;
- Assess and evaluate the requirements, and risk issues for the landfill including, slope stability, and permeability of soil;
- Assess and evaluate the requirements for the landfill containment barrier system (geomembrane lining) in accordance with the current legal framework and make key recommendations in relation to the above site investigations;
- Identify geotechnical and hydrogeological risks associated with the site; and

- Develop a suit of site-specific recommendations for consideration during the engineering design of the proposed landfill site and associated infrastructure.

The Geohydrological Investigation will include a desktop study and a hydrocensus. The desktop study will focus on available literature on the geology and hydrogeology of the site, as well as data from databases of the DWS. During the hydrocensus, existing boreholes on neighbouring properties will be used (or, for instance within 1 km of the site) to gather information on the characteristics of the aquifer, as well as on the existing groundwater users that may be affected by the development. A groundwater impact assessment and potential impacts of the development will be identified, assessed and rated.

#### **8.2.4 Engineering Assessment and Designs**

USK Environmental & Waste Engineering has been appointed to provide the design work for the proposed development. The company will be involved throughout the EIA to advise on issues pertaining project planning and design in order to reduce the risk of unexpected costs and delays later in the EIA Phase. The scope of work for the design engineers will include the following:

- Assess the existing site against standard legislative requirements for landfill design and operations, and develop a suite of conceptual engineering recommendations, which must be considered as license conditions to ensure that the landfill site is designed; and operated within legal compliance;
- Assess and evaluate the requirements for the landfill containment barrier system (geomembrane lining) in accordance with the current legal framework and make key;
- Recommendations in relation to the above site investigations; and
- Develop a suite of site-specific recommendations for consideration during the engineering design of the proposed landfill site and associated infrastructure.

### **8.3 Impact Assessment Methodology**

In accordance with Government Notice R.982, promulgated in terms of Section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), the EAP is required to assess the significance of potential impacts in terms of the following criteria:

- Cumulative impacts;
- Nature of the impact;
- Extent of the impact;
- Intensity of the impact;

- Duration of the impact;
- Probability of the impact occurring;
- Non-reversibility of Impacts;
- Impact on irreplaceable resources; and
- Confidence level.

Activities within the framework of the proposed development and their respective construction and operational phases, give rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into three phases from which impacting activities can be identified, namely:

**Construction phase:**

This phase refers to all the pre-construction and construction related activities on site, until the contractor leaves the site.

**Operational phase:**

This includes all post construction activities, including the operation and maintenance of the proposed development

**Decommissioning Phase:**

This includes all activities associated with the closure and decommissioning of the proposed development, including any removal of infrastructure and rehabilitation that may need to occur.

The assessment of the impacts will be conducted according to a synthesis of criteria required by the integrated environmental management procedure. The methodology that will be used comprises of the following four steps:

- Step 1: Identification of positive and negative impacts of the project;
- Step 2: Identification of the significance rating of the impact before mitigation;
- Step 3: Identification of the mitigation measure and the mitigation efficiency; and
- Step 4; Identification of the significance rating of the impact after mitigation;

Activities that will be undertaken to give effect to the proposed development gives rise to certain impacts. For the purpose of assessing these impacts, the project has been divided into the following phases discussed in **Table 8.1**. For the purpose of this impact assessment, the phrase '*upgrading*' and '*construction*' will be used interchangeably as it is understood that although the Kwaggafontein landfill sites will be upgraded, activities such as the construction of waste cells, internal roads and other infrastructure to the '*licencing*' of the Kwaggafontein landfill will be undertaken.

**Table 8.1: Project phases in a development**

PHASES OF A PROJECT IN WHICH IMPACTS WILL OCCUR
<b>Status Quo</b>
The study area as it currently exists.
<b>Pre-construction phase (pre-closure and rehabilitation phase)</b>
All activities on site up to the start of construction, not including the transport of materials, but including the initial site preparations. This also includes the impacts that would be associated with planning.
<b>Construction phase (closure and rehabilitation phase)</b>
All the construction and construction-related activities on site, until the contractor leaves the site.
<b>Operational phase (post-closure and rehabilitation phase)</b>
All activities after construction, including the operation and maintenance of the proposed development.
The activities arising from each of the relevant phases have been included in the impacts assessment tables. The assessment endeavours to identify activities that would require environmental management actions to mitigate the impacts arising from them.  The criteria against which the activities were assessed are given in the next section.

#### 8.4 Assessment Criteria

The assessment of the impacts has been conducted according to a synthesis of criteria required by the guideline documents to the EIA regulations (2006) and integrated environmental management series published by the Department of Environmental Affairs and Tourism (DEAT) currently Department of Environmental Affairs (DEA). In addition to this, it is a requirement of the National Environmental Management Act (NEMA) 2014 Regulations, Appendices 1 and 2 that an Impact and Risk Assessment process be undertaken for Basic Assessments and Environmental Impact Reporting. The Assessment Criteria is based on the following:

- Nature of Impact ,
- Extent;
- Duration;
- Intensity;
- Probability;
- Determination of significance; and

- Reversibility of impact.

Each of these are explained in **Table 8.2** below:

**Table 8.2: Assessment Criteria used in rating impacts of a project**

ASSESSMENT CRITERIA	
<b>Nature of Impact</b>	
	This is an appraisal of the type of effect the proposed activity would have on the affected environmental component. The description should include what is being affected, and how.
<b>b) Extent</b>	
	The physical and spatial size of the impact. This is classified as: <ul style="list-style-type: none"> <li><b>i) Site</b> The impact could affect the whole, or a measurable portion of the site.</li> <li><b>ii) Local</b> The impacted area extends only as far as the activity, e.g. a footprint of the specific activity</li> <li><b>iii) Regional</b> The impact could affect areas such as neighbouring farms, transport corridors and the adjoining towns.</li> </ul>
<b>c) Duration</b>	
	The lifetime of the impact; this is measured in the context of the lifetime of the proposed project. <ul style="list-style-type: none"> <li><b>• Short term</b> The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than any of the phases.</li> <li><b>ii) Medium term</b> The impact will last up to the end of the phases, thereafter it will be entirely negated.</li> <li><b>iii) Long term</b> The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter.</li> <li><b>iv) Permanent</b> The only class of impact which will be non-transitory. Mitigation either by man or natural processes will not occur in such a way or in such a time span that the impact can be considered transient.</li> </ul>
<b>d) Intensity</b>	
	Is the impact destructive or benign? Does it destroy the impacted environment, alter its functioning, or slightly alter it? These are rated as: <ul style="list-style-type: none"> <li><b>i) Low</b></li> </ul>

The impact alters the affected environment in such a way that the natural processes or functions are not affected.

**ii) Medium (Moderate)**

The affected environment is altered, but function and process continue, albeit in a modified way.

**iii) High**

Function or process of the affected environment is disturbed to the extent where it temporarily or permanently ceases. This will be a relative evaluation within the context of all the activities and the other impacts within the framework of the project.

**e) Probability**

This describes the likelihood of the impacts actually occurring. The impact may occur for any length time during the life cycle of the activity, and not at any given time. The classes are rated as follows:

**i) Improbable**

The possibility of the impact occurring is very low, due either to the circumstances, design or experience.

**ii) Probable**

There is a possibility that the impact will occur to the extent that provisions must be made.

**iii) Highly probable**

It is most likely that the impacts will occur at some or other stage of the development. Plans must be drawn up before the undertaking of the activity.

**iv) Definite**

The impact will take place regardless of any prevention plans, and mitigation actions or contingency plans are relied on to contain the effect.

**f) Determination of significance**

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The classes are rated as follows:

**i) No significance**

The impact is not substantial and does not require any mitigation.

**ii) Low**

The impact is of little importance, but may require limited mitigation.

**iii) Medium (Moderate)**

The impact is of importance and therefore considered to have a negative impact. Mitigation is required to reduce the negative impacts to acceptable levels.



**iv) High**

The impact is of great importance. Failure to mitigate, with the objective of reducing the impact to acceptable levels, could render the entire development option or entire project proposal unacceptable.

**g) Reversibility of impact**

Natural or human aided intervention:

**(i) Irreversible**

The impact will be permanent.

**(ii) Short term**

The impact is reversible within two years after construction.

**(iii) Long term**

The impact is reversible within 2 to 10 years after construction.

**f) The degree to which the impact can cause irreplaceable loss of resources****(i) Low**

The impact result in the loss of resources but the natural, cultural and social processes/functions are not affected.

**(ii) Medium**

The loss of resources occur but natural cultural and social processes continue, albeit in a modified manner.

**(iii) High**

The impact result in irreplaceable loss of resource.

## 8.5 Environmental Impact Report

On completion of the Environmental Impact Assessment, the EAP will compile an Environmental Impact Report (EIR) for the competent authority's consideration and decision-making. The main purpose of this report is to gather and synthesise environmental information and evaluate the overall environmental impacts associated with the development, to consider mitigation measures and alternative options, and make recommendations in choosing the best development alternative. The EIR will also provide details on the steps taken to respond to the issues identified in the scoping phase and indicate the manner in which these issues have either been responded to or addressed.

Furthermore, a draft Environmental Management Programme (EMPr) will be compiled during the course of the EIA and will be submitted for approval as part of the final EIR. The EMPr provides guidelines to the project proponent and the technical team on how best to implement the mitigation measures and management recommendations outlined in the EIR during the construction and operational phase.

## 8.6 Closure and Rehabilitation Plan

As part of the Scoping and EIA Report and Waste Licence Application requirements for the Closure of the Kwaggafontein Landfill Site, a closure plan for the site must be compiled to support the application. The Closure and Rehabilitation report will be compiled in consultation with the USK Consulting (Pty) Ltd. as the company was responsible for providing the conceptual layout design for the site.

The Closure and Rehabilitation report is intended to serve a guide for the formal closure and end use planning for the proposed closure of the Kwaggafontein landfill site. The closure and end use plan are intended to be implemented along with the rehabilitation of the site. This report is thus intended to:

- Serve a guide for the formal closure and rehabilitation planning for the Kwaggafontein Landfill Site.
- Used as a framework document, which shall guide the development of more detailed specifications for the implementation of engineering scope of works for the closure and rehabilitation of the Kwaggafontein Landfill Site.
- Form part of the Environmental Management Plan for the Closure of the Kwaggafontein Landfill site.
- Guide the Thembisile Hani Local Municipality to make Financial Provisions for the closure and rehabilitation for the sites.

The closure report will be prepared in line with the guidance documents on best practice for Closure of Waste Management Facilities, some of which can be found in the Minimum Requirements for Waste Management 2nd Editions, Department of Water Affairs and Forestry (1998), and is intended to ensure compliance with legal and other requirements within the context of Environmental Management Systems

and Planning.

The objective of the closure plan is to steer the use of the site during its lifetime toward a desirable end use state that minimizes environmental risk, social risk, and financial or economic risk. The closure plan takes all closure requirements into account. The landfill closure plan aims to specify the implementation of requirements for closure of the landfill and would typically include details of rehabilitation measures. The closure report also seeks to specify details of management, inspection, monitoring and maintenance of the site after it is closed. It is however important to bear in mind that this plan is a retrospective Closure Plan as the Kwaggafontein Landfill site was never opened formally and not designed as a dumpsite or landfill.

## **8.7 Operational plan**

This manual will serve as a guidance document for the personnel working at the Kwaggafontein Landfill Site to aid them in proper landfill operations. It also serves as a guide for operations supervisory personnel and sets forth contingency plans for special problems and situations that may arise. This document will further provide a framework for developing the operations guidance manual or plan and shall be developed along a site is developed through its various stages.

This Operation Environmental Management Plan will be designed to be useful both as a field reference document and as a training manual. Every employee working on the Site is expected to be familiar with its use and location at the site. The manual will be divided into two sections: the General Overview; and Standard Operating Procedures. The General Overview contains basic knowledge regarding personnel responsibilities, safety practices, weighbridge operations, and the overall operations of the landfill.

## **8.8 Public Participation process**

Public participation during the EIA phase will continue similarly to the process undertaken for the Scoping Phase. The key tasks that will form part of the public participation process in the EIA phase include:

- Continued identification of I&APs;
- Placement of the Draft EIR for public comment;
- Continued consultation within key stakeholders and I&APs; and
- Continued recording of issues and responses.

### **8.8.1. I&AP Database**

The database of interested and affected parties will be updated and expanded to include any I&APs who become interested or request to be included in the process and will act as a record of the communication/

involvement process. All I&AP information (including contact details), together with dates and details of consultations and a record of all issues raised is recorded within a comprehensive database of I&APs.

### **8.8.2. Public Review of the Draft EIR**

The Draft EIR will be made available for public viewing for a period of 30 days. The information regarding the availability of the Draft EIR i.e. the dates of release and the respective venues, will be communicated to all I&APs. Furthermore, in terms of the EIA regulations, the availability of the Draft EIR will be advertised within the local newspapers. The primary aim advertising will be to ensure that the widest group of I&APs possible are informed of the project.

### **8.8.3. Public Meetings**

Should comments received during this period warrant an information-sharing meeting, and then this will be scheduled and held accordingly.

### **8.8.4. Issues and Responses Report**

The comments/queries raised by I&APs will be responded to and included in the issues and Response Report of the Final EIR.

## **8.9 Authority Liaison**

Consultation with National DEA and the Provincial authorities (DARDLEA) will be on-going and will continue from the communications established during the Scoping Phase of the project. Due to the nature of the project, the Department of Water Affairs will be actively engaged throughout each phase of the project. In addition, a Water Use Licence Application will be submitted as part of this EIA process. If any additional permits or requirements are identified at any time during the EIA process, the relevant competent authority will be notified and be provided with the opportunity to form part of the EIA process.

## 9 CONCLUSIONS

The proposed Licencing of the Kwaggafontein Landfill Site is expected to improve the current site condition which has created a visual and other environmental nuisances over the years. The proposed licencing will serve as an upgrade of the current landfill and is a strategic response to address legislative requirements associated with landfill operations. The Kwaggafontein landfill is currently an illegal operation as it is not in compliance with the Minimum Requirements for disposal of waste to landfill and other Environmental requirements.

Based on the summary of environmental observations noted during the Scoping phase, it is a conclusion of this Draft Scoping Report that the proposed upgrade of the Kwaggafontein landfill will have low impacts on the bio-physical environment, all of which can be fully mitigated and managed, and where possible prevented. The landfill activities on the site are not likely to negatively affect local ecological functions noted during the scoping phase. There are no water features within and around the landfill site. The EIA phase will attempt to provide detailed mitigation measures for all issues identified in this Scoping Phase.

Although activities related to the upgrade and operation of the landfill site may have a potentially adverse impacts of a low to medium significance on surface and ground water pollution, air quality and the quality of soil (erosion and degradation), these impacts are envisaged to be immediate to the site and can easily be mitigated with the application of recommended mitigation measures.

## 10 REFERENCES

1. Department of Environmental Affairs and Tourism (DEAT), 1992. Integrated Environmental Management Series.
2. Department of Environmental Affairs and Tourism (DEAT), 2002. Scoping, Integrated Environmental Management Series 2, Pretoria.
3. Department of Water Affairs (DWA), 2012. 2012 Green Drop Progress Report.
4. Department of Water Affairs (DWA), 2013. South African Wastewater Services Incentive-based Regulation: Green Drop Requirements 2013.
5. Department of Environmental Affairs (DEA), 2011. National Waste Management Strategy, Pretoria