



**BASIC ASSESSMENT REPORT IN SUPPORT OF THE PROPOSED KENDAL POWER STATION  
CONTINUOUS ASH DISPOSAL FACILITY AND ASSOCIATED INFRASTRUCTURE (LOW-  
PRESSURE SYSTEM (LPS) PIPELINE; 11kV POWERLINE) IN MPUMALANGA PROVINCE.**

**AUGUST 2022**



<b>TITLE:</b>	<b>THE PROPOSED KENDAL POWER STATION CONTINUOUS ASH DISPOSAL FACILITY AND ASSOCIATED INFRASTRUCTURE (LOW-PRESSURE SYSTEM (LPS) PIPELINE; 11kV POWERLINE) IN MPUMALANGA PROVINCE</b>
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Date: August 2022

**Indemnity**

This report is based on survey and assessment techniques which are limited by time and budgetary constraints relevant to the type and level of investigation undertaken. The findings, results, observations, conclusions, and recommendations given in this report are based on the author's best scientific and professional knowledge as well as information available at the time of the study. Therefore, the author reserves the right to modify aspects of the report, including the recommendations, when new information may become available from ongoing research or further work in this field, or about this investigation.

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## EXECUTIVE SUMMARY

Sazi Environmental Consulting cc was appointed by Eskom Holdings SOC Limited to undertake a basic assessment with an objective to obtain an Environmental Authorisation and Water Use Licence in support of the proposed construction of a Low-Pressure System (LPS) pipeline and the 11kV powerline in Mpumalanga Province.

The project scope that is covered in this Basic Assessment report includes the following proposed activities:

- Abstraction of water for construction and for dust suppression from the existing farm dam, newly constructed clean water dams (dams 2,3 and 4), the anticipation of silt traps adjacent the existing farm dam and clean water dam (dam 2). Storing water at silt traps.
- Storage of Water containing waste at farm dam.
- Removing of water from the construction trenches to allow continuation of the works
- Installation of a Low-Pressure System (LPS) pipeline
- Construction of the 11kV powerline

Eskom Kendal Power Station was granted with an Integrated Environmental Authorisation; dated 28 July 2015 and Water Use License; dated 08 August 2017 for the continuous Ash Disposal Facility (ADF) project. The authorised project components included the following:

- Continuation of the existing ADF in the north-westerly direction.
- Increase the storage capacity of the existing Emergency-dump.
- Construction of Pollution Control Dams, Clean Water Dams and Storm Water Management infrastructure.
- Diversion of a natural stream to accommodate the Continuous ADF footprint.
- Remedial works to an existing in-stream farm dam within Eskom's property boundary, to address the mixing of flow from the final voids of the adjacent mining operations. The dam does not form part of Eskom's Water Management System. It was established that the Project WUL and Integrated Environmental Authorisation has however, omitted some critical water uses and environmental authorisations that are needed for the execution of the project therefore, the purpose of this current application is to obtain environmental approval for support services of the above-mentioned authorized facilities which entails using water in the dams for construction, dust suppression, connecting the dam facilities with a pipe network and installing a powerline for the pump station to operate.

This Basic Assessment Report has assessed all the environmental impacts associated with the proposed development phases of the proposed project. This report has been compiled in accordance with the requirements of the EIA Regulations and it includes details of the activity description; site; area and property description; the public participation process, the impact assessment; and the recommendations of the Environmental Assessment Practitioner.

*In accordance with the requirements of the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) and associated regulations, the Applicant is applying for Environmental Authorization (EA) from the Department of Forestry, Fisheries and Environmental (DFFE) for the proposed project through the undertaking of a Basic Assessment process as prescribed in GN R. 326 of the Environmental Impact Assessment (EIA) Regulations of 2017. In addition, the Proponent is also applying for a water use license from the Department of Water and Sanitation as published in terms of Sections 39 and 40 of the National Water Act, 1998 (Act 36 of 1998) for Water Uses identified in terms of section 21 of the National Water Act, 1998.*

The public participation process was conducted in line with the NEMA requirements; engagement through consultation with relevant authorities and interested and affected parties from the community by a form of: public meetings/ focus group meetings, site notices, newspaper advertisement which is published to inform the public about the Basic Assessment (BA) process and availability of the BAR.

Available specialist studies include the following:

- Biodiversity Assessment,
- Traffic Impact Assessment,
- Surface water Assessment,
- Heritage Impact Assessment,
- Geohydrological Assessment,
- Wetland Assessment, and
- Geotechnical Assessment.

The proposed ancillary activities that are aimed at supporting the licensed CADF are all contained within the already licenced facilities. The specialist studies and impact assessments that were conducted for the licenced activities all contain some aspects of the proposed activities as they are all within the same locations. For this reason, the draft Basic Assessment

concludes that the proposed development will have a minimal impact on the natural environment.

With the adoption of the mitigation measures and recommendations included in this report and that of the specialists, and the dedicated implementation of the Environmental Management Programme, it is believed that the significant environmental aspects and impact associated with this project can be suitably mitigated. It can therefore be concluded that there are no fatal flaws associated with the project and that authorization can be issued, based on the findings of the specialists and the impact assessment, through compliance with the identified environmental management provisions.

The Basic Assessment Report (BAR) has been drafted in accordance with the Environmental Impact Assessment Regulations (2017) and adheres to the requirements contained in Appendix 1 of GNR 326 of 07<sup>th</sup> April 2017; as noted in Table 1 below.

Table 1: Content of the Basic Assessment Report (2017; EIA Regulations)

2017 EIA Regulations	Description of EIA Regulations Requirements for EIA Reports	Location in the EIR
Appendix 1, Section 3(1) (a)	details of— (iii) the EAP who prepared the report; and (iv) the expertise of the EAP, including a curriculum vitae;	Section 1.1 and 1.1.2
Appendix 1, Section 3(1) (b)	the location of the <u>development footprint</u> of the activity on the <u>approved site as contemplated in the accepted scoping report</u> , including: (i) the 21 digit Surveyor General code of each cadastral land parcel; (ii) where available, the physical address and farm name; and (iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Section 2.1
Appendix 1, Section 3(1) (c)	a plan which locates the proposed activity or activities applied for as well as the associated structures and infrastructure at an appropriate scale, or, if it is— (i) a linear activity, a description, and coordinates of the corridor in which the proposed activity or activities is to be undertaken; (ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	Appendix A
Appendix 1,	description of the scope of the proposed activity, including—	Section 4.2

Section 3(1) (d)	(i) all listed and specified activities triggered and being applied for; and (ii) a description of the activities to be undertaken including associated structures and infrastructure;	
Appendix 1, Section 3(1) (e)	a description of the policy and legislative context within which the development is proposed including— (i) an identification of all legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks, and instruments that are applicable to this activity and have been considered in the preparation of the report; and (ii) how the proposed activity complies with and responds to the legislation and policy context, plans, guidelines, tools frameworks, and instruments;	Section 4
Appendix 1, Section 3(1) (f)	motivation for the need and desirability for the proposed development including the need and desirability of the activity in the context of the preferred location;	Section 5
Appendix 1, Section 3(1) (g)	motivation for the preferred site, activity, and technology alternative;	Section 6.2
Appendix 1, Section 3(1) (h)	a full description of the process followed to reach the proposed preferred alternative within the site, including: (i) details of all the alternatives considered; (ii) details of the public participation process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs; (iii) a summary of the issues raised by interested and affected parties, and an indication of the manner in which the issues were incorporated, or the reasons for not including them; (iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage, and cultural aspects; (v) the impacts and risks identified for each alternative, including nature, significance, consequence, extent, duration, and probability of the impacts, including the degree to which these impacts— (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed, or mitigated; (vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration, and probability of	Section 7

	<p>potential environmental impacts and risks associated with the alternatives;</p> <p>(vii) positive and negative impacts that the proposed activity and alternatives will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage, and cultural aspects;</p> <p>(viii) the possible mitigation measures that could be applied and level of residual risk;</p> <p>(ix) the outcome of the site selection matrix;</p> <p>(x) if no alternatives, including alternative locations for the activity, were investigated, the motivation for not considering such; and</p> <p>(xi) a concluding statement indicating the preferred alternatives, including preferred location of the activity;</p>	
Appendix 1, Section 3(1) (i)	<p>a full description of the process undertaken to identify, assess and rank the impacts the activity will impose on the preferred location through the life of the activity, including—</p> <p>(i) a description of all environmental issues and risks that were identified during the environmental impact assessment process; and</p> <p>(ii) an assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;</p>	Section 9
Appendix 1, Section 3(1) (j)	<p>an assessment of each identified potentially significant impact and risk, including—</p> <p>(i) cumulative impacts;</p> <p>(ii) the nature, significance, and consequences of the impact and risk;</p> <p>(iii) the extent and duration of the impact and risk;</p> <p>(iv) the probability of the impact and risk occurring;</p> <p>(v) the degree to which the impact and risk can be reversed;</p> <p>(vi) the degree to which the impact and risk may cause irreplaceable loss of resources; and</p> <p>(vii) the degree to which the impact and risk can be mitigated;</p>	Section 9
Appendix 1, Section 3(1) (k)	<p>where applicable, a summary of the findings and impact management measures identified in any specialist report complying with Appendix 6 to these Regulations and an indication as to how these findings and recommendations have been included in the final report;</p>	Section 8
Appendix 1, Section 3(1) (l)	<p>an environmental impact statement which contains—</p>	Section `10



	<p>(i) a summary of the key findings of the environmental impact assessment;</p> <p>(ii) a map at an appropriate scale that superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and</p> <p>(iii) a summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;</p>	
Appendix 1, Section 3(1) (m)	based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed <b>(impact management objectives, and the)</b> impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorization;	Section 10
Appendix 1, Section 3(1) (n)	any aspects which were conditional to the findings of the assessment either by the EAP or specialist which are to be included as conditions of authorization;	Section 9
Appendix 1, Section 3(1) (o)	a description of any assumptions, uncertainties, and gaps in knowledge that relate to the assessment and mitigation measures proposed;	Section 12
Appendix 1, Section 3(1) (p)	a reasoned opinion as to whether the proposed activity should or should not be authorized, and if the opinion is that it should be authorized, any conditions that should be made in respect of that authorization;	Section 11
Appendix 1, Section 3(1) (q)	where the proposed activity does not include operational aspects, the period for which the environmental authorization is required, the date on which the activity will be concluded, and the post-construction monitoring requirements finalized;	Section 12
Appendix 1, Section 3(1) (r)	<p>an undertaking under oath or affirmation by the EAP in relation to:</p> <p>(i) the correctness of the information provided in the reports;</p> <p>(ii) the inclusion of comments and inputs from stakeholders and I&amp;APs;</p> <p>(iii) the inclusion of inputs and recommendations from the specialist reports where relevant; and</p> <p>(iv) any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made by interested or affected parties;</p>	N/A
Appendix 1, Section 3(1) (s)	where applicable, details of any financial provision(s) for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Appendix I1

Appendix 1, Section 3(1) (t)	any specific information that may be required by the competent authority; and	N/A
Appendix 1, Section 3(1) (u)	any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

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## LIST OF TERMS AND ABBREVIATIONS

BAR	Basic Assessment Report
BID	Background Information Document
DEA	Department of Environmental Affairs
DFFE	Department of Forestry, Fisheries and Environment
DARDLEA	Mpumalanga Department: Agriculture, Rural Development, Land and Environmental Affairs
EA	Environmental Authorization
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
Ecological Importance	An expression of the importance of an environmental resource for the maintenance of biological diversity and ecological functioning on local and wider scales.
Ecological Sensitivity	A system's ability to resist disturbance and its capability to recover from disturbance once it has occurred
GA	General Authorization
GIS	Geographical Information Systems
GPS	Global Positioning System
IDP	Integrated Development Plan
NDP	National Development Plan
NFEPA	National Freshwater Ecosystem Priority Areas
NWA	National Water Act
PSDF	Provincial Spatial Development Framework
SDF	Spatial Development Framework
Watercourse	(a) river or spring; (b) a natural channel in which water flows regularly or intermittently; (c) a wetland, lake or dam into which, or from which, water flows; and (d) any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse, and a reference to a watercourse includes, where relevant, its bed and banks.

## **1 INTRODUCTION**

Sazi Environmental Consulting cc was appointed by Eskom Holdings SOC Limited to undertake a basic assessment with an objective to obtain an Environmental Authorisation which follows the National Environmental Management Act, 1998 (Act No. 107 of 1998); Environmental Impact Assessment Regulations (2017); with the National Department of Forestry, Fisheries and Environment (DFFE). The Proponent is also applying for a Water Use License from the Department of Water and Sanitation (DWS) as published in terms of Sections 39 and 40 of the National Water Act, 1998 (Act 36 of 1998) for Water Uses identified in terms of section 21 of the National Water Act, 1998 in support of the proposed construction of a Low-Pressure System (LPS) pipeline, authorised dams and the 11kV powerline in Mpumalanga.

## **2 DETAILS AND EXPERTISE OF ENVIRONMENTAL ASSESSMENT PRACTITIONER**

*According to Appendix 1 Section 3(1) (a) of the EIA Regulations (2014), “A basic assessment report must.... include) details of – i. The EAP who prepared the report; and ii. The expertise of the EAP, including curriculum vitae” In fulfilment of the above-mentioned legislative requirement, as well as Section 13 of the EIA Regulations (2014), which states that, “an EAP.... must have expertise in conducting environmental impact assessments or undertaking specialist work as required, including knowledge of the Act, these Regulations and any guidelines that have relevance to the proposed activity”, provided below are the details of the Environmental Assessment Practitioner (EAP) who prepared this Basic Assessment Report, as well as the expertise of the individual members of the study team.*

### **2.1 SAZI ENVIRONMENTAL CONSULTING CC COMPANY PROFILE**

SAZI Environmental Consulting (SAZI) is a specialist environmental consulting company that was established to provide holistic environmental services to public and private sector clients. The company is 100% black female-owned with level 1 B-BBEE status.

SAZI Environmental Consulting (SAZI) specializes in aquatic assessments, wetland delineations, Floodline assessment, and stormwater management plans, Ecological Assessments, environmental authorizations (Environmental Impact Assessments and Basic Assessments), scoping reports, waste license applications and audits, water use license applications, and audits, environmental management system development environmental

compliance auditing, integrated water, and waste management plans, surface hydrology, surface, and groundwater monitoring, remediation of contaminated land and water resources, catchment assessments and management plans, land rehabilitation and land management services.

## 2.2 DETAILS OF THE EAP

The details of the EAP have been outlined in Table 2 below.

Table 2: EAP's details

Specialist	Zamandaba Sibiyi
Qualifications	BSc Geography and Hydrology
Affiliation	South African Council for Natural Scientific Professions (SACNASP, Cand.Nat. Sci. (Reg no. 121380): Environmental Science.
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### 3 PROJECT OVERVIEW

#### 3.1 PROJECT LOCATION

The proposed Kendal Power Station Continuous Ash Disposal Facility and associated infrastructure) is situated within Ogies town. The site is boarded by R555 and R545 and located on the farm Schoongezicht 218 IR and Leeuwfontein 219 under eMalahleni Local Municipality, Nkangala District Municipality, Mpumalanga. Figure 1 demonstrates the location of the proposed development site.

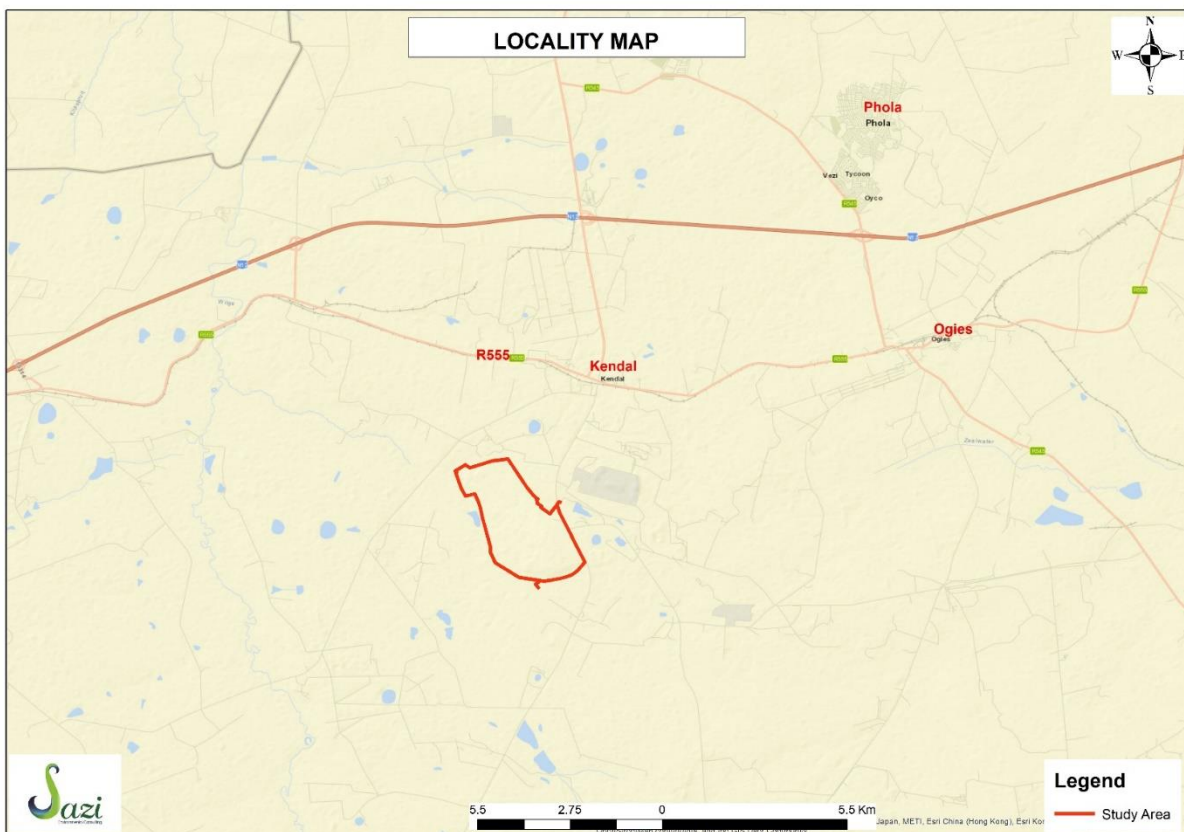


Figure 1: Locality map for the proposed development site

The 21-digit Surveyor General (SG) code for each cadastral land parcel, as well as property details through which the proposed development will take place, has been presented below; Table 3.

Table 3: Property Description

<b>Province</b>	Mpumalanga
<b>Municipality</b>	eMalahleni Local Municipality
<b>Ward Number (s)</b>	30

<b>Farm Name and Number</b>	Schoongezicht 218 and Leeuwfontein 219
<b>21-digit SG Code</b>	T0IR00000000021800000 and T0IR00000000021900000
<b>Proposed site Coordinates</b>	26° 5'6.98"S 28°55'51.59"E
<b>Land use Zoning</b>	Industrial

### 3.2 PROJECT DESCRIPTION

An Integrated Environmental Authorisation (IEA) for the Kendal Continuous Ash Disposal Facility (ADF) project was received on 28 July 2015 from the Department of Forestry, Fishers and Environment (DFFE). The Water Use Licence (WUL) for the Kendal Continuous ADF project was received on 8 August 2015 from the Department of Water and Sanitation (DWS). The Project WUL and Integrated Environmental Authorisation have, however, omitted some critical water uses and environmental authorizations that are needed for the execution of the project. The following activities are proposed to support the functioning of the ash dam, and may require an Environmental Authorisation and Water Use Licence, prior to implementation:

- Water from some of the facilities on site will be taken and used for dust suppression and for construction activities. The facilities for these uses include the farm dam, clean water dam, and dirty water dam.
- Some water will be stored in silt traps in order to capture runoff rainwater and prevent release into the natural watercourse, while the construction of the dams have not yet been completed, together with reticulation system structures.
- A farm dam wall on site was raised by the owner of the property and this caused the water in the dam to mix with dirty water from the adjacent mine void. The Kendal Power Station now intends to lower the farm dam wall to ensure that the dirty water does not mix with the clean water from the farm dam. During the lowering of the farm dam wall, water will be required to be released temporarily into a natural watercourse, once authorised.
- During construction, it is anticipated that water seeping from underground and rainwater runoff will need to be removed from the construction trenches. This will be done by pumping the water out of the trenches and discharge water into the natural environment for the continuation of the works. If the water displays any physical contamination, it will be used for dust suppression in dirty areas. If the water displays no physical contamination, it will be used for dust suppression in clean areas. If the above is not implemented, the water will be released to the environment after silt trap control measures implemented.

- A Low-Pressure System pipeline will be constructed to form a connection network between the dams that ensures efficient use of water on site for dust suppression and irrigation. A water balance has been established to support the system. The LPS pipeline has been designed in a such a way that clean water will be separated from the dirty water. Furthermore, the LPS is vital for the functionality of the ADF and it will prevent the over spilling of the Pollution Control Dam.

There is an existing Environmental Authorisation and a Water Use Licence for all the facilities mentioned above including: Ash dam facility, PCD, clean water dams, and farm dam. The current application is for support services to these facilities, including: using water for dust suppression, connecting the dam facilities with a pipe network and installing a powerline.

### **3.2.1 Project Components**

The Low-Pressure System consists of five dams of which two are Pollution Control Dams the remaining three are Clean Water Dams (CWD). Each dam is comprised of two compartments, each compartment has an intake structure that allows the pumps to draw suction. Individually, the dams have a dedicated pump to supply water to the sprinkler network located at the ash dump. The water from the clean water dams will be used for irrigation for the rehabilitated areas or dust suppression of clean areas and the water from the pollution control dams will be used for dust suppression in areas more susceptible to ash mobilization. The pumps' discharge lines connect to a ring main (355mm), the proposed pipeline, which has isolated take offs every after 300 meters. From the take off a removable 100 mm rising piping can be attached which in turn supplies a lateral piping connected to 38 flexible hoses complete with sprinklers.

Three 11/0.42 kV Type B mini substations, supplied by the 11 kV overhead powerline, shall supply power to the five 400 V ac MCC switchboards located at each of the five pump stations. The mini substations shall be connected in a ring configuration using an 11 kV overhead line and XLPE cable combination. The 400 V ac MCC switchboard shall supply the dust suppression irrigation pump motor and additional equipment for the pump station which includes: a sump pump motor, control valve, C&I equipment, UPS and small power and lighting.

## 4 DESCRIPTION OF THE BASELINE ENVIRONMENT

### 4.1 BIOPHYSICAL AND BIOLOGICAL ENVIRONMENT

#### ❖ Climate:

Strongly seasonal summer-rainfall, warm-temperate region, with very dry winters. MAP is 654 mm, ranging between 570 mm and 730 mm, slightly lower in the western regions. The coefficient of variation of MAP is 28% in the west and 26–27% in the east and varies only slightly from 25% to 29% across the unit. The incidence of frost is higher in the west (30–40 days) than in the east (10–35 days). Figure 2 below shows the climate diagram for Gm 11 Rand Highveld Grassland (Mucina and Rutherford, 2006).

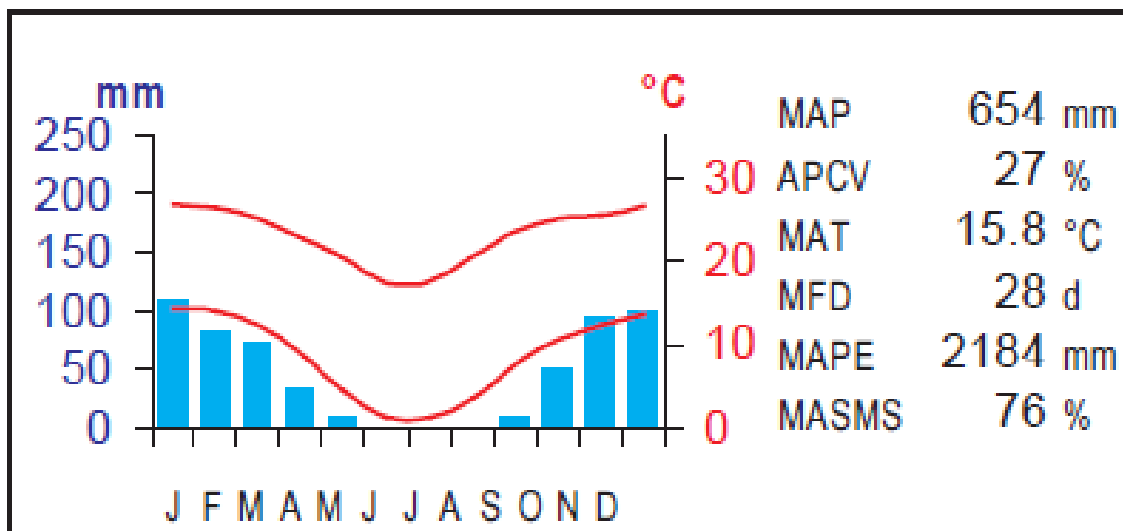


Figure 2: Gm 11 Rand Highveld Grassland Climatic Diagram

#### ❖ Topography, Geology, and Soils

The study area consists mainly of Shale, Arenite, and Coal of the Vryheid Formation, Ecca Group, and the Karoo Supergroup. The area also consists of a network of dolerite sills, sheets, and dykes, mainly intrusive into the Karoo Supergroup. The Karoo Supergroup sediments were deposited in valleys and basins that existed in the pre-Karoo topography in the region. The Karoo Supergroup rocks overlie unconformably the older Waterberg Group and Transvaal Supergroup rocks (Johnson et al. 2009).

The Vryheid Formation was formed when glacial and fluvio-glacial sediments were deposited in shallow marine to fluvial-deltaic environments approximately 280 Ma ago. In places, coal seams are associated with these fluvial valley deposits. The coal seams formed in peat

swamps which originated on alluvial plains or more rarely in back swamps (Johnson, et al., 2009).

### ❖ Rivers and Wetlands (Hydrology)

The proposed development site falls within quaternary catchment B20E. The study area is located within the Olifants River Catchment (Primary Catchment B); more specifically along the watershed of quaternary catchments B20E. B20E quaternary catchment is drained by the Wilge River. The Wilge river is the main river that runs through the catchment with two tributaries running directly adjacent to the proposed development activities. The proposed development is within a 500metre radius of a watercourse. Figure 3 below shows the site's water resource map.

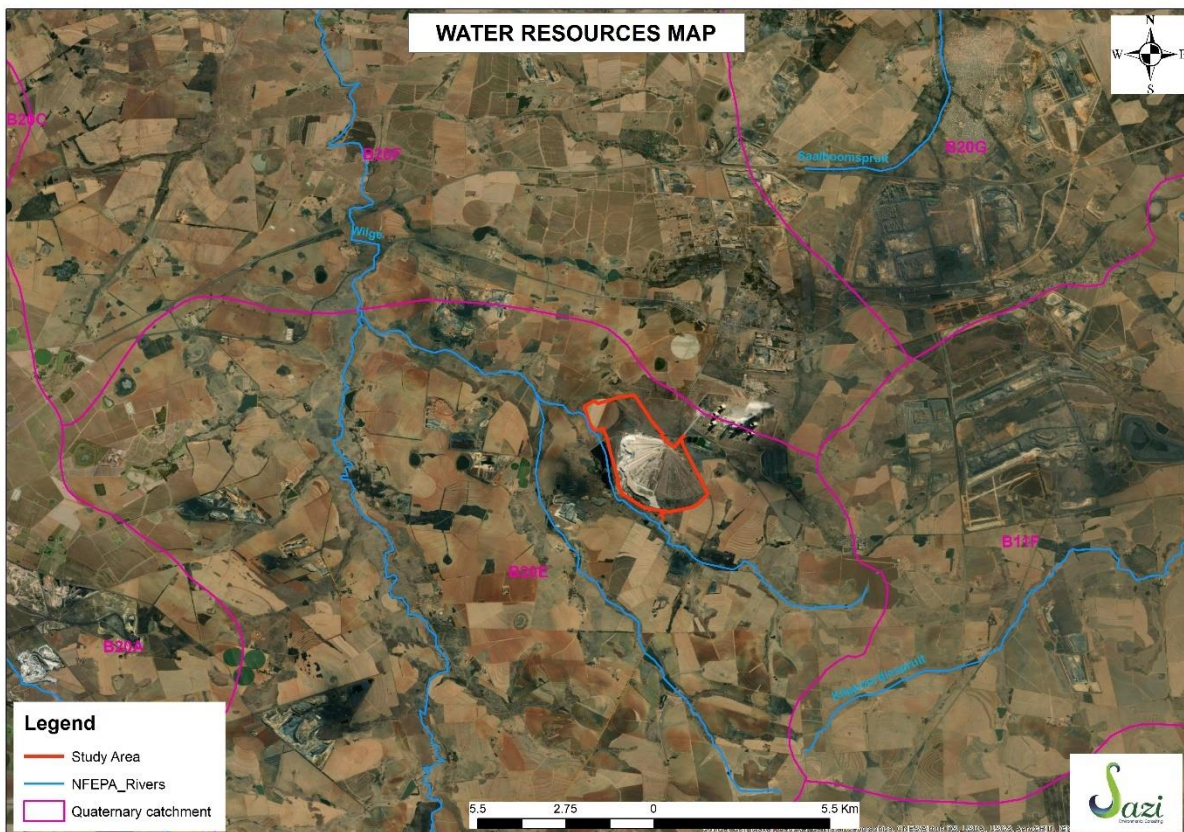


Figure 3: Development site water resource map

Based on the current outputs of the NFEPA project (Nel et al., 2011), there are several NFEPA wetlands or wetland clusters located within the study area and several kilometers from the study area's catchment (Figure 4). The National Freshwater Ecosystem Priority Areas, more specifically, the NFEPA project aims to:

- Identify Freshwater Ecosystem Priority Areas (hereafter referred to as “FEPAs”) to meet national biodiversity goals for freshwater ecosystems; and
- Develop a basis for enabling effective implementation of measures to protect FEPAs, including free-flowing rivers.

The first aim uses systematic biodiversity planning to identify priorities for conserving South Africa’s freshwater biodiversity, within the context of equitable social and economic development. The second aim comprises a national and sub-national component. The national component aims to align DWS and DEA policy mechanisms and tools for managing and conserving freshwater ecosystems. The sub-national component aims to use three case study areas to demonstrate how NFEPA products should be applied to influence land and water resource decision-making processes at a sub-national level (Driver et al., 2011). The project further aims to maximize synergies and alignment with other national-level initiatives such as the National Biodiversity Assessment (NBA) and the Cross-Sector Policy Objectives for Inland Water Conservation.

Based on the NFEPA data observed below (figure 4) there are several wetlands in the proposed development site.

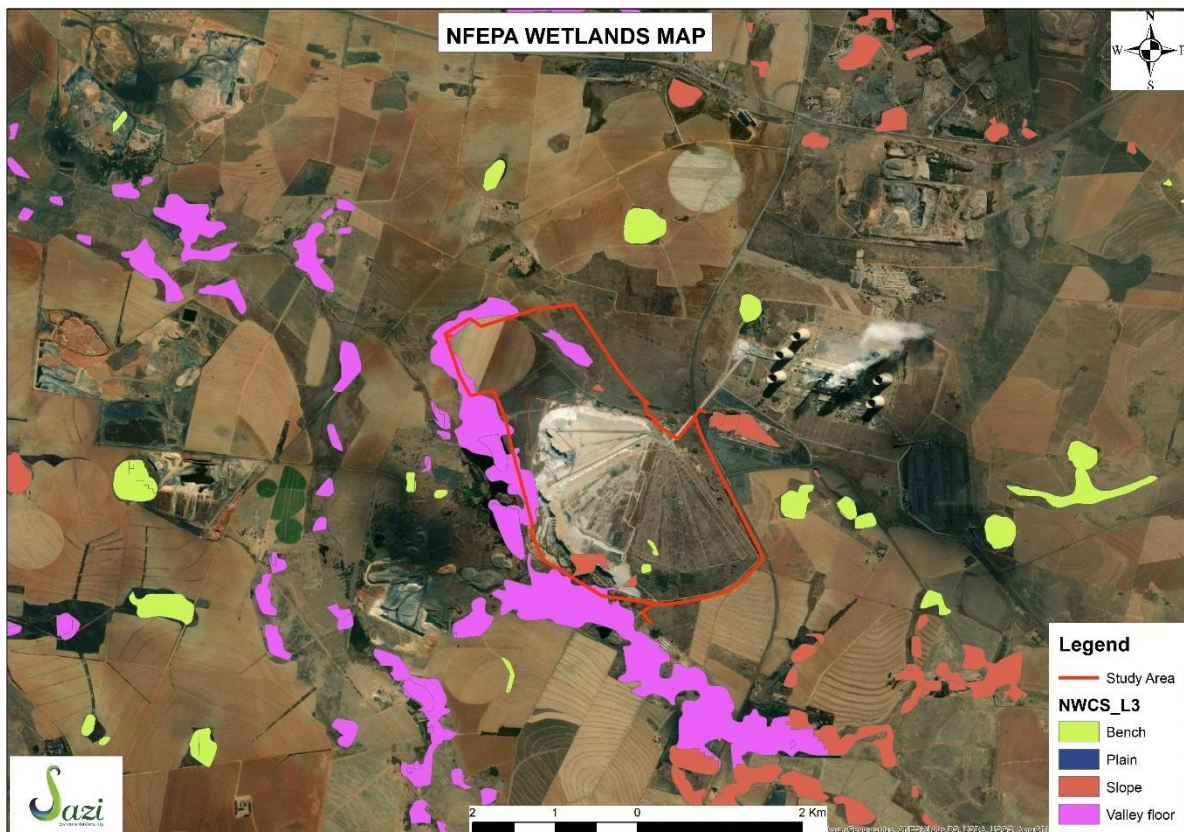


Figure 4: NFEPA map for the proposed development site

❖ **Current Land use**

The study area is highly dominated by agricultural farms, mines, other industry and households

#### ❖ **Vegetation**

The study area is located in the Rand Highveld Grassland (Gm 11) vegetation type on the border with the Eastern Highveld Grasslands in the grassland biome (Mucina & Rutherford, 2006). The vegetation type occurs on a highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains. The vegetation is species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes. There is a high diversity of herbs. Rocky hills and ridges carry sparse (savannoid) woodlands accompanied by a rich suite of shrubs. Poorly conserved, only small patches protected. Almost half has been transformed mostly by cultivation, plantations, urbanization, or dam-building. Figure 5 below shows the study area vegetation type distribution.

**Important taxa found in the Rand Highveld Grassland (Gm 11) includes the following:**

#### **Graminoids**

*Ctenium concinnum (d)*, *Cynodon dactylon (d)*, *Digitaria monodactyla (d)*, *Diheteropogon amplectens (d)*, *Eragrostis chloromelas (d)*, *Heteropogon contortus (d)*, *Loudetia simplex (d)*, *Monocymbium ceresiiforme (d)*, *Panicum natalense (d)*, *Schizachyrium sanguineum (d)*, *Setaria sphacelata (d)*, *Themeda triandra (d)*, *Trachypogon spicatus (d)*, *Tristachya biseriata (d)*, *T. rehmannii (d)*, *Andropogon schirensis*, *Aristida aequiglumis*, *A. congesta*, *A. junciformis subsp. galpinii*, *Bewisia biflora*, *Brachiaria nigropedata*, *B. serrata*, *Bufbostylis burchellii*, *Cymbopogon caesius*, *Digitaria tricholaenoides*, *Elionurus muticus*, *Eragrostis capensis*, *E. curvula*, *E. gummiflua*, *E. plana*, *E. racemosa*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *M. repens subsp. repens*, *Microchloa caffra*, *Setaria nigrirostris*, *Sporobolus pectinatus*, *Trichoneura gran-diglumis*, *Urelytrum agropyroides*.

#### **Herbs**

*Acanthospermum australe (d)*, *Justicia anagalloides (d)*, *Pollichia campestris (d)*, *Acalypha angustata*, *Chamaecrista mimosoides*, *Dicoma anomala*, *Helichrysum caespititium*, *H. nudifolium var. nudifolium*, *H. rugulosum*, *Ipomoea crassipes*, *Kohautia amatymbica*, *Lactuca inermis*, *Macledium zeyheri subsp. argyrophyllum*, *Nidorella hottentotica*, *Oldenlandia herbacea*, *Rothea hirsuta*, *Selago densiflora*, *Senecio coronatus*, *Sonchus dregeanus*, *Vernonia oligo-cephala*, *Xerophyta retinervis*.

#### **Geophytic herbs**

*Boophone disticha*, *Cheilanthes hirta*, *Haemanthus humilis subsp. humilis*, *Hypoxis rigidula var. pilosissima*, *Ledebouria ovatifolia*, *Oxalis corniculata*.

### Succulent Herbs

*Aloe greatheadii* var. *davyana*.

### Low Shrubs

*Anthospermum rigidum* subsp. *pumilum*, *Indigofera comasa*, *Rhus magalismsontana*, *Stoebe plumose*.

### succulent shrub

*Lopholaena coriifolia* (d);

### geoxylic suffrutex

*Elephantorrhiza elephantine*.

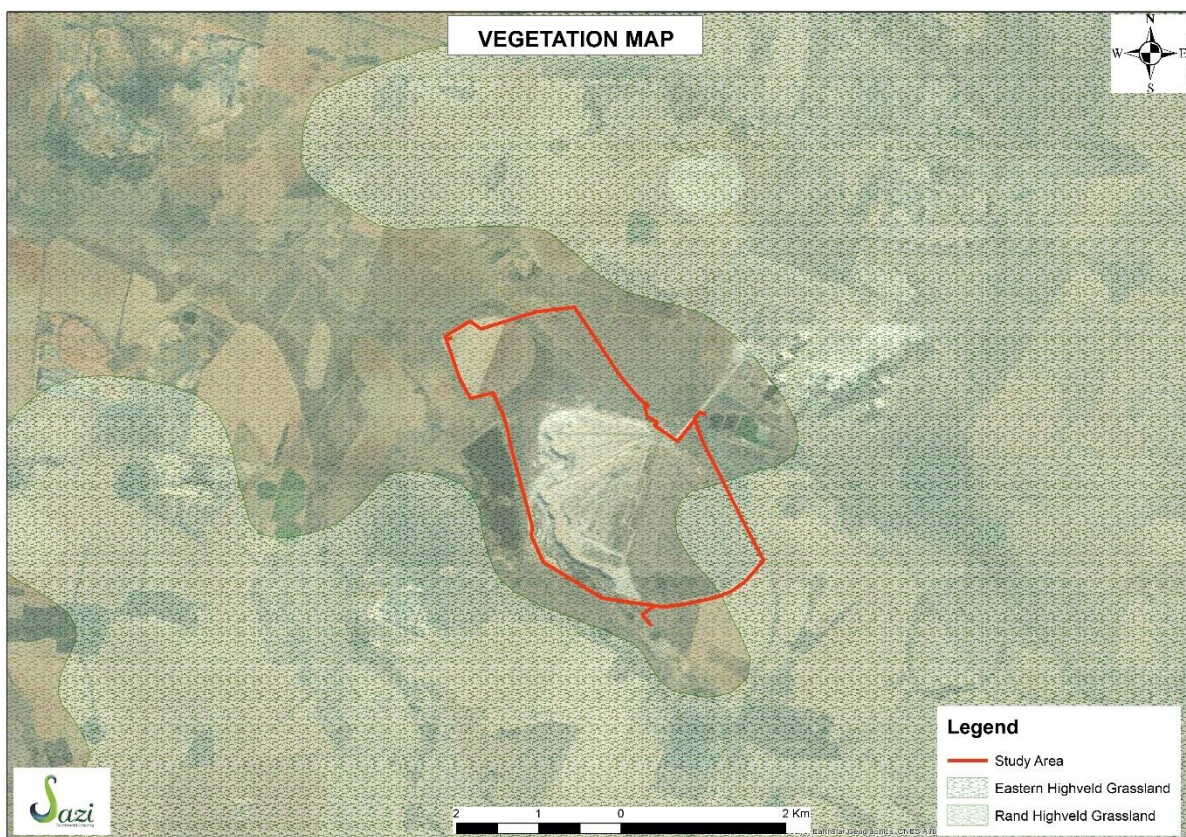


Figure 5: Vegetation Type within the proposed development site

### ❖ Mpumalanga Conservation Plan

According to the Mpumalanga Critical Biodiversity Areas Ecological Supported Areas (ESA) (2010), the proposed development area is situated in an Ecological Support Area (Figure 6). According to Zinn and Hudson (2013), outlined that during the assessment there were areas of show disturbance characteristics on site. The ecological integrity of natural habitat patches ranges from medium (*Hyparrhenia hirta* grasslands & Moist grass and sedge community) to



high (*Themeda triandra* grasslands). Regardless, they provide valuable habitat for plant and fauna, and some have been recognized as CBA – Optimal by the MBSP (2013) (Zinn and Hudson, 2013). The research area was home to a number of endangered species, including the Cape clawless otter (*Aonyx capensis*) and various plant species (Zinn and Hudson, 2013). The conservation importance of the vegetation groups in which they occur is graded medium (*Hyparrhenia hirta* grasslands) and high (Moist grass and sedge community & *Themeda triandra* grasslands). This means that due diligence and care must be undertaken during the development, to identify species of importance that may occur in this area.

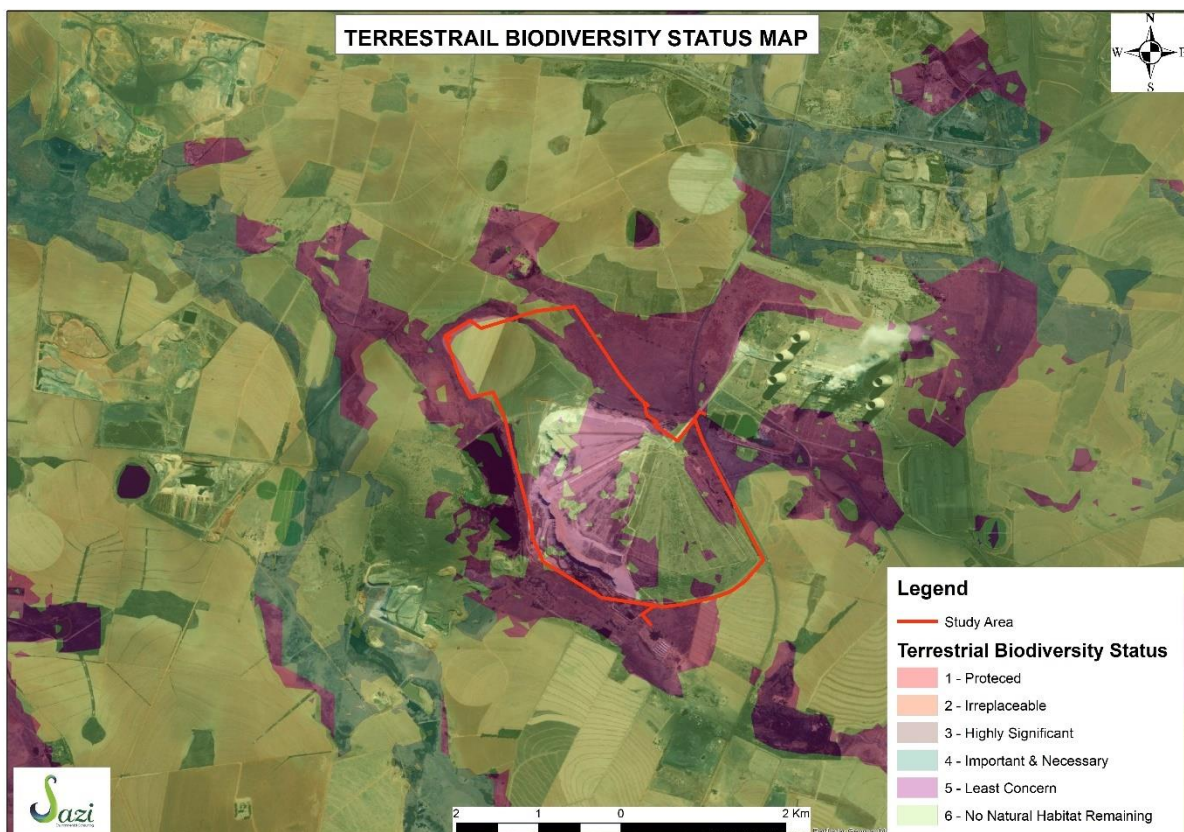


Figure 6: The proposed development Ecosystem status Map

## 4.2 SOCIAL ENVIRONMENT

The proposed development area is located within Ward 30 of the eMalahleni Local Municipality, in the Mpumalanga Province.

### ❖ Population and Education

Population group for eMalahleni is composed of all racial groups with 391,982 Black African, which shows an increase since 2011; Coloured 5 450; Indian or Asian 3 762 and White 54 033. The tables below show an increase in both African/Black and Indian/Asian and decrease in both Coloured and White population since 2011.

The population of eMalahleni is predominantly youth (15-34 years) at 43.1% of the total population. The challenges that are posed by the youthful population in the main are socio-economic. It means that the municipality should grow the economy to meet employment needs of the youth, which at present is estimated to grow at less than 0.9% between 2018 and 2023. This implies that the LED Strategy of the municipality should prioritize skilling youth so that they could participate in the mainstream economy.

Educational attainment is a key indicator of development in a population any country, especially for Human Development Index. Emalahleni registered good improvements in education. To evaluate long term provision of education, it is important to disaggregate educational attainment for persons older than 20 years. This is an ideal group since they would have completed attending educational institutions. Statistics South Africa generated a measure of educational attainment for persons over age 20. This group is expected to have completed educational enrolment and therefore giving a good measure for completed level of education.

According to the 2016 CS of StatsSA, the population in eMalahleni aged 20+ completed grade 12, increased from 117 021 in 2011 to 146 952 (increase of 29 931) in 2016, an increase of 25.6% in the relevant period.

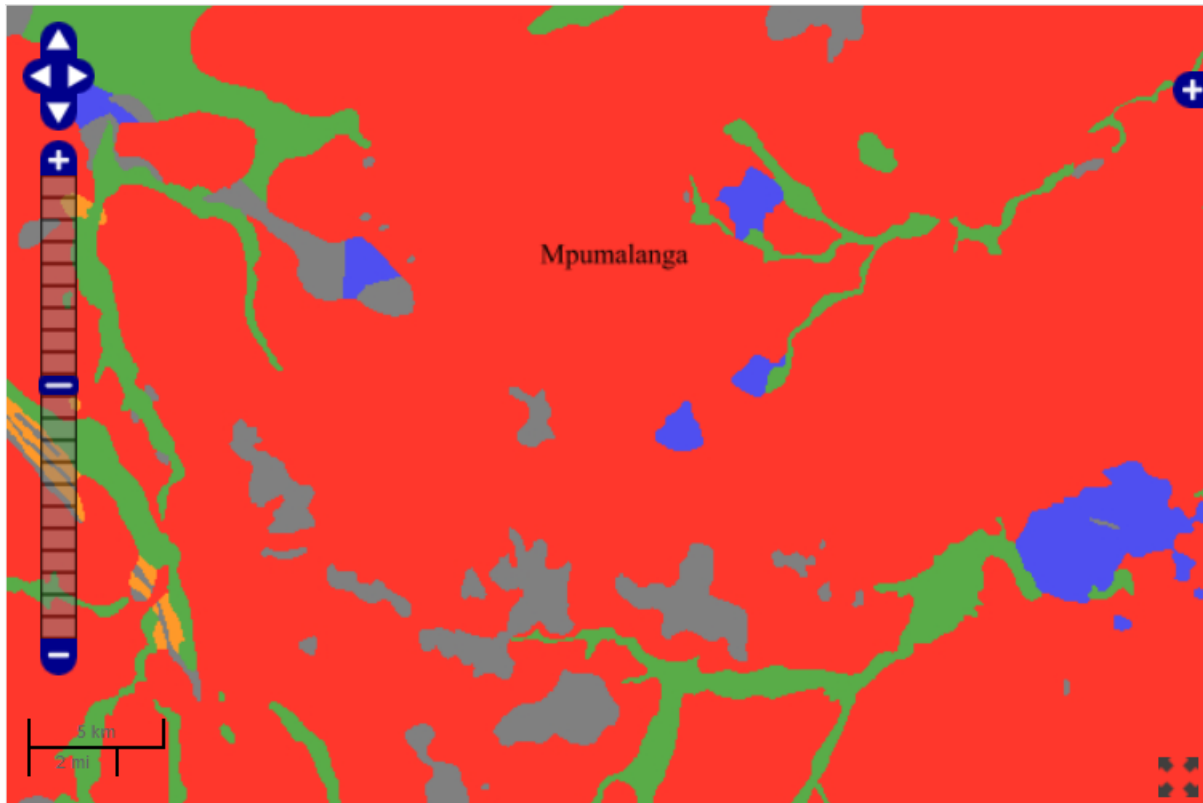
#### ❖ **Employment and Income**

The unemployment rate in the metro was approximately 69% in 2001 and it has dropped by 47,1% according to Census 2011.

#### ❖ **Cultural, Historical and Archaeological Resources**

The proposed development site is considered to be of very high in terms of the presence of heritage and paleontological resources (Figure 7). According to Fourie (2014), the study area is mainly underlain by Vaalian and Mokolian aged igneous rocks of the Transvaal Sequence and Bushveld Complex, with three small outlying areas, including the E-dump area, underlain by Permian Vryheid Formation sediments of the Karoo Supergroup. The damage and/or loss of these fossils due to inadequate mitigation would be a highly negative palaeontological impact. The exposure and subsequent reporting of fossils (that would otherwise have remained undiscovered) to a qualified palaeontologist for excavation, will be a beneficial

palaeontological impact. It is therefore recommended that: If deep excavation into the Vryheid Formation is envisaged, a Palaeontologist must be appointed as part of the Environmental Construction Team for the identified medium sensitivity areas (Fourie, 2014).



Colour	Sensitivity	Required Action
RED	VERY HIGH	field assessment and protocol for finds is required
ORANGE/YELLOW	HIGH	desktop study is required and based on the outcome of the desktop study, a field assessment is likely
GREEN	MODERATE	desktop study is required
BLUE	LOW	no palaeontological studies are required however a protocol for finds is required
GREY	INSIGNIFICANT/ZERO	no palaeontological studies are required
WHITE/CLEAR	UNKNOWN	these areas will require a minimum of a desktop study. As more information comes to light, SAHRA will continue to populate the map.

Figure 7: Palaeosensitivity map of the study area and surroundings (SAHRA, 2021)

If an exceptionally fossil-rich layer of shale or sandstone is exposed during construction, it is advised that the Contractor will inform the developer and ECO of the find and must follow the Chance Palaeontological Find Procedure as stipulated below and the developer will contact a palaeontologist for further advice.

**PROCEDURE FOR CHANCE PALAEONTOLOGICAL FINDS:**

Extracted and adapted from the National Heritage Resources Act, 1999 Regulations Reg No. 6820, GN: 548.-

The following procedure must be considered in the event that previously unknown fossils or fossil sites are exposed or found during the life of the project:

1. Surface excavations should continuously be monitored by the ECO and any fossil material be unearthed the excavation must be halted.
2. If fossiliferous material has been disturbed during the excavation process it should be put aside to prevent it from being destroyed.
3. The Contractor then has to take a GPS reading of the site and take digital pictures of the fossil material and the site from which it came.
4. The Developer then should contact a palaeontologist and supply the palaeontologist with the information (locality and pictures) so that the palaeontologist can assess the importance of the find and make recommendations.
5. If the paleontologist is convinced that this is a major find an inspection of the site must be scheduled as soon as possible to minimize delays to the development.
6. From the photographs and/or the site visit the palaeontologist will make one of the following recommendations:
  - a. The material is of no value so development can proceed, or:
  - b. The fossil material is of some interest and a representative sample should be collected and put aside for further study and to be incorporated into a recognized fossil repository after a permit was obtained from SAHRA for the removal of the fossils, after which the development may proceed, or:
  - c. The fossils are scientifically important, and the paleontologist must obtain a SAHRA permit to excavate the fossils and take them to a recognized fossil repository, after which the development may proceed.
7. If any fossils are found, then a schedule of monitoring will be set up between the developer and paleontologist in case of further discoveries.

## **5 LEGISLATIVE FRAMEWORK**

### **5.1 THE REPUBLIC OF SOUTH AFRICA – CONSTITUTION (ACT 108 OF 1996)**

The Constitution of South Africa Act No. 108 of 1996 provides for an environmental right (contained in the Bill of Rights, Chapter 2). In terms of Section 7, the state has an obligation to respect, promote and fulfill the rights as defined in the Bill of Rights. The environmental right states that:

Everyone has the right –

- a) To an environment that is not harmful to their health or well-being; and
  - b) To have the environment protected, for the benefit of present and future generations,
- 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 undertaking of the Basic Assessment process is in line with the state’s obligations as outlined in the constitution in its effort to ensure sustainability.**

### **5.2 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA), 1998 (ACT NO 107 OF 1998)**

The NEMA Act itself furthermore provides for cooperative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote cooperative governance, and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith. This Act formulates a set of general principles to serve as guidelines for land development through the Environmental Impact Assessment (EIA) regulations as amended, 2014. The EIA listing notices 1, 2, and 3 identify activities that would require environmental authorizations prior to the development commencement, they also identify competent authorities in terms of sections 24 (2), 24 (5), and 24 (D).

Environmental Impact Assessments (EIAs) are required in South Africa in terms of the National Environmental Management Act (Act 107 of 1998) (NEMA) and its’ associated EIA Regulations. Developments likely to have a major impact require scoping and EIA, and those likely to have a lesser impact require a Basic Assessment.

If natural vegetation will be affected by a proposed development, a specialist botanical survey should be commissioned as part of the environmental assessment process. If a sub-population of a species of conservation concern is found to occur on the proposed development site, it would be one indicator that the proposed activity is likely to result in loss of biodiversity, bearing in mind that loss of sub-populations of these species will either increase their extinction risk or may result in their extinction. The detection of a threatened species on a site during an environmental assessment should result in an Environmental Authorisation from the competent authority that avoids, mitigates, remedies, or offsets the loss of habitat for the species in question. The competent authority may also refuse authorization for the proposed activity. In practice, the mitigation requirements that allow the proposed development to proceed, including the amount of habitat set aside differ widely depending on the environmental assessment practitioner's recommendations and the policies of the competent authority.

**This Act will be relevant as the proposed development trigger the following listings (Table 4):**

Table 4: NEMA, EIA Regulations triggered activities

Activity No(s):	Provide the relevant <b>Basic Assessment Activity(ies)</b> as set out in <b>Listing Notice 1</b> of the EIA Regulations, 2014 as amended	Describe the portion of the proposed project to which the applicable listed activity relates.
Listing Notice 1, Activity 9	The construction of facilities or-infrastructure exceeding. 1 000 metres in length for the bulk transportation of water, sewage, or storm water – (i) with an internal diameter of 0,36 metres or more; or (ii) with a peak throughput of 120 litres per second or more.....	The proposed Low-Pressure System pipeline is about 13 kilometres long and the diameter is 0.355 metres which is equivalent to 0.36 metres.
Listing Notice 1, Activity 19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles, or rock from (i) a watercourse. (ii) the sea.....	The proposed Low-Pressure System pipeline will be buried underground, and the pipeline will be crossing water resources resulting in excavation within a watercourse that exceeds 10 cubic metres.

### **5.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (ACT NO 10 OF 2004)**

The purpose of the Biodiversity Act is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.

**According to the Mpumalanga Critical Biodiversity Areas Ecological Supported Areas (ESA) (2010), the proposed development area is not located in an Ecological Support Area, however, it falls within a least concern and no natural habitat remaining areas (Figure 6 above).**

### **5.4 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT (ACT NO. 57 OF 2003) NEMPAA)**

The Act provides for the protection and conservation of ecologically viable areas. It further provides for the establishment of a national register of protected areas and the proclamation and management of these areas.

**The proposed development site is not within or closer to any protected areas.**

### **5.5 NATIONAL HERITAGE RESOURCES ACT (ACT NO 25 OF 1999)**

The National Heritage Resources Act (Act 25 of 1999) was introduced to ensure the protection of South Africa's important heritage features. The protection of archaeological and paleontological sites and material is the responsibility of a provincial heritage resources authority. The NHRA covers the following areas of heritage value: Archaeology, Palaeontology, and Meteorites.

**The proposed development site is considered to be of low to medium sensitivity in terms of the presence of heritage and paleontological resources (Figure 7). Even though the area is considered to be of low to medium sensitivity, in the case where heritage/cultural/ paleontological artifacts are found within the area the measures stipulated in this report must be followed.**

## 5.6 NATIONAL WATER ACT (ACT NO 36 OF 1998)

The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed, and controlled in ways that consider, amongst other factors, the following:

- ❖ Meeting the basic human needs of present and future generations,
- ❖ Promoting equitable access to water,
- ❖ Promoting the efficient, sustainable, and beneficial use of water in the public interest,
- ❖ Reducing and preventing pollution and degradation of water resources,
- ❖ Facilitating social and economic development, and
- ❖ Providing for the growing demand for water use.

In terms of Section 21 of the National Water Act, the developer must obtain water use licenses if the following activities are taking place:

- a) Taking water from a water resource,
- b) Storing water,
- c) Impeding or diverting the flow of water in a watercourse,
- d) Engaging in a stream flow reduction activity contemplated in section 36,
- e) Engaging in a controlled activity identified as such in section 37(1) or declared under section 38(1),
- f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer, sea outfall, or other conduits,
- g) Disposing of waste in a manner that may detrimentally impact a water resource,
- h) Disposing of in any manner of water which contains waste from or which has been heated in any industrial or power generation process,
- i) Altering the bed, banks, course, or characteristics of a watercourse,
- j) Removing, discharging, or disposing of water found underground if it is necessary for the efficient continuation of an activity or the safety of people, and
- k) Using water for recreational purposes.

Section 21 water use licenses will be required for any development which may take place within and/or impact any water resource and or floodlines. The National Water Act also required that the 1:50 and 1:100-year flood lines be indicated on all the development drawings that are being submitted for approval.

**The proposed water uses on the development site triggers the following (table 5):**



Table 5: List of trigger water uses

The proposed activities on site	Triggered Water Uses	Coordinates
Low-pressure System pipeline crossing through water resources	Section 21 (c) & (i)	26° 5'0.74"S, 28°55'43.74"E To 26° 5'30.11"S, 28°55'48.75"E
Powerline crossing within 500m of the watercourses	Section 21 (c) & (i)	26° 4'56.90"S, 28°56'0.20"E Tower 42 to 83.
Abstraction from the clean water dams (dam 2, 3 and 4) for dust suppression and construction activities	Section 21 (a)	26° 05'15.3"S, 28°55'43.3"E DAM 2 26° 06'59.1"S, 28°56'59.3"E DAM 3 26° 05'45.98"S, 28°57'12.12"E DAM 4
Abstraction of water from the dam 1 Pollution Control Dam (PCD) for dust suppression	Section 21 (a)	26° 5'5.03"S, 28°55'46.13"E DAM 1
Taking water from the existing farm dam for dust suppression and using water for construction purposes.	Section 21 (a)	26° 5'5.03"S, 28°55'46.13"E DAM 1 26° 05'15.3"S, 28°55'43.3"E DAM 2 26° 06'59.1"S, 28°56'59.3"E DAM 3 26° 05'45.98"S, 28°57'12.12"E DAM 4
Removing of water from the construction trenches	Section 21 (j)	Various locations around the site where there are construction trenches
Storing water in silt traps and using it for dust suppression	Section 21 (a) (b)	

## 6 THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

Table 6 below outlines the needs and desirability for the proposed construction of a Low-Pressure System (LPS) pipeline and an 11kV powerline, and the preferred location's needs and desirability are also discussed.

Table 6: Needs and desirability of the proposed project

QUESTIONS	RESPONSE
<b>PART 1: NEEDS</b>	
1. Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	Yes; the need for development on the subject properties is acknowledged and promoted in the land-use policies of the Municipality applicable to the area under consideration
2. Should the development, or expansion of the town/area concerned in terms of this land use occur here at this point in time?	<p>Yes; there are no materials of heritage importance found within the demarcated study area.</p> <p>No red data species were found either, hence the proposed site will not be harmed.</p> <p>If the site is not developed, it will be susceptible to continuous erosion and result in a detrimental impact on the surrounding environment.</p>
3. Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level	<p>Yes; The proposed development will have an impact on the socio-economic condition of the local communities surrounding the proposed site, by contributing to employment opportunities through business development and increased revenue on the existing local businesses (purchase of construction materials).</p> <p>The Development will create several employment opportunities for skilled and semi-skilled employees during the construction phase, precisely on a local level.</p>

4. Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater to the development?	Yes; any waste materials will be disposed of at the legalized municipal landfill site, traffic will be managed.
5. Is the development provided for in the infrastructure planning of the municipality, and if not what will the implication be on the infrastructure planning of the municipality (priority and placement of the services and opportunity costs)?	No; the proposed development will not have any implications to the infrastructure planning of the municipality.
6. Is the project part of a national program to address an issue of national concern or importance?	Yes; unemployment will be minimized through this project.
<b>PART 2: DESIRABILITY</b>	
Is the development the best practicable environmental option for this land/site?	Yes, the impacts of LPS pipeline and 11kV powerline are at a local scale and are temporal during the construction phase of the project. The Environmental Management Programme (EMPr) will be in place to mitigate the foreseen impacts that could be as a result of the proposed development.
Would the approval of this application compromise the integrity of the existing approved and credible IDP and SDF as agreed to by the relevant authorities?	No; The proposed project will not compromise the integrity of the IDP and SDF of the Municipality. Hence there would be economic growth and skills development in the area.
Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No; The proposed activities are aimed at supporting the already licensed facilities. These license facilities cannot operate without the ancillary services that are included in this application. The EMF therefore will not be compromised in any way.
Do location factors favor this land use at this place? (this relates to the contextualization of the proposed land use on-site within its broader context)	Yes; The proposed activities are located within the boundary of the licensed facilities with the objective of servicing these facilities.
How will the activity of the land use have associated with the activity being applied for,	No; vegetation or fauna of major importance (red data species) were not found on the site.

<p>impact on sensitive natural and cultural areas (built and rural/natural environment)</p>	
<p>How will the development impact people's health and wellbeing? (E.g., in terms of noise, odors, and visual character and sense of place, etc.)?</p>	<p>Noise and dust emissions are anticipated during the construction phase of the development. The implementation of adequate mitigation and management measures will minimize the impacts.</p>
<p>Will the proposed activity or the land use associated with the activity being applied for, result in unacceptable opportunity costs?</p>	<p>Yes; concerning land pollution by debris and other pollutants from the construction site, if not mitigated there could be an unacceptable cost, hence there must be an implementation of good mitigation and management measures to keep these impacts to a minimum.</p>
<p>Will the proposed land use result in unacceptable cumulative impacts?</p>	<p>Cumulative impacts that may result from the proposed project are stipulated in section 9; point 10.5 of this BAR. Although these cumulative impacts are anticipated, the implementation of good mitigation and management measures will keep these impacts to a minimum. A number of the cumulative impacts are temporary and will only be limited to the construction phase of the project.</p>

## **7 ALTERNATIVE**

### **7.1 PREFERRED ALTERNATIVE**

The preferred alternative for this site is one that encloses the approved boundary of the Kendal ash dump sections in the original unlined areas and the new approved lines. The pipeline route is within the boundary fence of the dump and is critical for the operations of the ash dump in terms of dust suppression and irrigation

The system comprises 5 dams of which 2 are Pollution Control Water Dams (PCD 1 and 2) and 3 Clean Water Dams (CWD 2,3 and 4). Pollution Control Dams shall be used for dust suppressing the ash dump extension and the Clean Water Dams will be used for irrigating the rehabilitated area. It is assumed that each dam shall be equipped with a level indicating transmitter to monitor the water level in the dam. A dedicated pump shall be installed for each dam to supply water for irrigation or dust suppression. The suction of each pump shall be equipped with a strainer to protect the pump from foreign coarse material. Each strainer shall have a differential pressure indicating transmitter to indicate when the basket requires cleaning. The suction and discharge side of the pumps shall be equipped with pressure indicating transmitters to assess the performance of the pumps and protect pumps. To monitor the flow from each dam, a flow meter is installed on the discharge line of each pump. This flow meter will also be employed to trip the pump when a pre-set low flow is recorded. Each pump discharge line will also have a pressure indicating transmitter to monitor the ring main pressure and trip the running pump when a pre-set high-pressure value is recorded. This transmitter also serves as an interlock to prevent two pumps from running simultaneously.

The current preferred route is one that encloses the approved boundary of the Kendal ash dump sections in the original unlined area and the new approved lined areas.. The pipeline connects the dams to each other and allows for water to be supplied for irrigation and dust suppression from multiple sources.

### **7.2 TECHNOLOGY ALTERNATIVE**

The technology alternative considered is a valve system is proposed to separate the clean and dirty water systems instead of separate ring mains for now, while Eskom is operating the 3 clean dams and 2 dirty dams. This is because separated ring mains would need to be joined on the future (10 years from now) when the entire ashing operations are expected to be finished and clean water would be collected in all 5 dams, wherein they would need to be emptied through a ring main that allows for irrigation. A common ring main, with triple isolations as proposed, also allows for multiple levels of redundancy as the system would be designed to allow for water flow to different areas of the dump from multiple sources, should

the need arise. This level of redundancy is meant to ensure even better levels of environmental compliance in regard to dust suppression and irrigation operations.

### **7.3 LOCATION ALTERNATIVE**

No location alternative was considered for this project, this is because the proposed activities are in support of the existing ash dump facility, by following the boundary of the ash dump, it ensures that the pipeline would be constructed in areas that are accessible for maintenance and operations as well as preventing the pipeline from being buried under ash while the dump is being constructed over the next 10 years.

### **7.4 NO-GO ALTERNATIVE**

In accordance with GN R.326, consideration must be given to the option not to develop. This option is usually considered when the proposed development is envisaged to have such significant negative environmental impacts that mitigation measures cannot ameliorate the identified potential impacts effectively. The no-go option would be the option of not undertaking the proposed project but maintaining the status quo.

The licensed Continuous Ash Disposal Facility (CADF) is a critical component of the Kendal Power Station operations. The facility will not be able to operate without these supporting activities that are applied for during this basic assessment process. The NO-Go option would mean a complete overhaul of the KPS strategy with big implications on job security for many individuals, as well as supply of electricity in the country.

## **8 PUBLIC PARTICIPATION**

A draft basic assessment report was submitted for comments to the national and local authority as well as registered stakeholders, those parties were allowed 30 days to comment those comments were then recorded and reflected on this final basic assessment report.

To fulfil the necessary public participation required as part of the BA Process, the following methods of stakeholder engagement were and are in the process of being conducted by the EAP, as outlined below.

### **8.1 SITE NOTICE BOARDS**

The notice boards referred to the 2017 EIA Regulations i.e. GNR 326, GNR 327, and GNR 324. The notice boards were written in English. The purpose of the site notice was to inform neighbours and community members of the proposed development BA process. The details of the EAP were also provided should any member of the public require additional information, or wish to register as I & AP.

### **8.2 WRITTEN NOTIFICATION**

A register of I & APs has been compiled as per Section 42 of the EIA Regulations, 2017. This included all relevant authorities, Government Departments, the Local Municipality, and relevant conservation bodies, as well as neighbouring landowners and the surrounding community. This register will be regularly updated to include those IAPs responding to the newspaper advertisements, site notice boards, flyers, and Notification Letters. A copy of the IAP Register is included in Appendix E of this report.

A Background Information Document (BID) has been compiled and circulated to all identified IAPs by email. The purpose of the BID is to provide preliminary information regarding the project and its location. Furthermore, the BID invites preliminary comments from I&APs. A copy of the BID is included in Appendix E of this report.

### **8.3 NEWSPAPER ADVERTISEMENT**

An advert was placed in the Witbank newspaper on the 18<sup>th</sup> of March 2022 and 02<sup>nd</sup> of September 2022, to notify the public about the Basic Assessment process, inviting members of the public to register as I&APs on the projects database.

#### **8.4 PUBLIC MEETING**

Initially no public meeting was held as a result of Covid19 regulations that were in place for South Africa. A public meeting will be held on 08<sup>th</sup> of September 2022 at the Phola Community Hall during this second round of public participation.

#### **8.5 COMMENTS RECEIVED**

Comments received from the initial round of public participation were from DFFE and they were incorporated into this report and the attached comments and response report. No other comments have been received at this point. Any further comment received will be included into the comments report and attached as an appendix.

#### **8.6 AVAILABILITY AND CIRCULATION OF DBAR**

A copy of the Draft Basic Assessment Report was made available for public review for a 30-day review period at the Sazi Environmental Offices at 57 Pretorius Street, President Pack, Midrand, and Copies of the Draft BA Report were circulated to the following Key Stakeholders and IAPs for review and comment within the month of March-April 2022:

- The Department of Forests, Fisheries and the Environmental (DFFE);
- Department of Water and Sanitation;
- Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs (DARDLEA);
- SAHRA; and
- The Ward Councillor (Ward 30)



## **9 SPECIALIST STUDIES**

The following specialist studies are available and attached in Appendix G of this report. They are as follows:

- Biodiversity Assessment,
- Traffic Impact Assessment,
- Surface water Assessment,
- Heritage Impact Assessment,
- Geohydrological Assessment,
- Wetland Assessment, and
- Geotechnical Assessment.

## 10 IMPACT ASSESSMENT

### 10.1 IMPACT ASSESSMENT METHODOLOGY

In the Basic Assessment Report, the potential impacts are broadly identified and outlined. An assessment of the potential impacts is provided, identifying the impacts that are potentially significant and recommending management and mitigation measures to reduce the impacts.

In general, it is recognized that every development has the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. Therefore, these possible risks must be considered during the planning phase of the development.

The impacts will be assessed according to the criteria outlined in this section. Each issue is ranked according to an extent, duration, magnitude (intensity), and probability. From these criteria, a significance rating is obtained, the method and formula are described below. Where possible, mitigation recommendations have been made and are presented in tabular form.

The criteria given in the tables below will be used to conduct the evaluation. The nature of each impact was to be assessed and described in relation to the extent, duration, intensity, significance, and probability of occurrence attached to it. Table 7 below outlines the impact assessment methods that were followed.

Table 7: Impact Assessment Methodology

Status of Impact	Extent of the Impact
The impacts are assessed as either having a negative effect (i.e. at a `cost' to the environment), positive effect (i.e. a `benefit' to the environment), or Neutral effect on the environment.	(1) Site (site only), (2) Local (site boundary and immediate surrounds), (3) Regional (within the City of Ekurhuleni), (4) National, or (5) International.
Duration of the Impact	Magnitude of the Impact

<p>The length that the impact will last for is described as either:</p> <p>(1) immediate (&lt;1 year)</p> <p>(2) short term (1-5 years),</p> <p>(3) medium-term (5-15 years),</p> <p>(4) long term (ceases after the operational life span of the project),</p> <p>(5) Permanent.</p>	<p>The intensity or severity of the impacts is indicated as either:</p> <p>(0) none,</p> <p>(2) Minor,</p> <p>(4) Low,</p> <p>(6) Moderate (environmental functions altered but continue),</p> <p>(8) High (environmental functions temporarily cease), or</p> <p>(10) Very high / Unsure (environmental functions permanently cease).</p>
<p><b>Probability of Occurrence</b></p>	<p><b>Significance of the Impact</b></p>
<p>The likelihood of the impact occurring is indicated as either:</p> <p>(0) None (the impact will not occur),</p> <p>(1) improbable (probability very low due to design or experience)</p> <p>(2) low probability (unlikely to occur),</p> <p>(3) medium probability (distinct probability that the impact will occur),</p> <p>(4) high probability (most likely to occur), or</p> <p>(5) Definite.</p>	<p>Based on the information contained in the points above, the potential impacts are assigned a significance rating (<b>S</b>). This rating is formulated by adding the sum of the numbers assigned to an extent (<b>E</b>), duration (<b>D</b>), and magnitude (<b>M</b>) and multiplying this sum by the probability (<b>P</b>) of the impact.</p> <p><b>S=(E+D+M) P</b></p>
<p><b>The significance ratings are given below</b></p>	
<p>(&lt;30) low (i.e. where this impact would not have a direct influence on the decision to develop in the area),</p> <p>(30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),</p> <p>(&gt;60) high (i.e. where the impact must have an influence on the decision process to develop in the area).</p>	

## 10.2 CONSTRUCTION PHASE IMPACTS

### Direct impacts:

### **10.2.1 Loss of Biodiversity and habitat (Fauna and Flora)**

During construction, the removal of vegetation may result in the introduction and spread of exotic species. Every effort must be made to minimize the disturbance of the surrounding vegetation.

#### **Mitigation measures**

1. An Invasive alien plant control management plan must be put in place
2. Vegetation clearance should be limited to the areas where it is absolutely necessary for the proposed development.
3. Where possible construction activities should be limited to the area that are already disturbed as identified by Zinn and Hudson 2013.

### **10.2.2 Soil erosion for the LPS pipe and 11kv powerline construction**

The additional hardened surfaces created during construction will increase the amount of storm-water runoff, which has the potential to cause erosion. Erosion can be minimal provided that adequate soil erosion measures are implemented during the construction phase of the proposed activity.

#### **Mitigation measures**

1. After construction, revegetation of the site should be conducted using the indigenous vegetation of the project development site.

### **10.2.3 Land Pollution**

There is potential for the site and surrounding areas to become polluted if waste produced during construction activities is not properly managed (e.g. oil spills from machinery, litter from personnel on-site, sewage from ablutions, and packaging from materials).

#### **Mitigation measures**

1. Refuelling of vehicles and construction machinery should be limited to a designated area.
2. Vehicle and construction machinery should be inspected for leakages prior to accessing the site. Vehicle should not travel within a 20 m buffer of a wetland.
3. Waste produced on site should be deposited in a registered landfilled site or organise with the Local Municipality to collect waste
4. Waste segregation should be implemented on site.

#### **10.2.4 Air Pollution**

Construction activities on the site may lead to land/vegetation clearing and disturbance of the soil resulting in dust creation. The movement of construction vehicles also represents temporary, but important sources of particulates and dust deposition that can be respired. The potential impact on air quality will be short-term and can be controlled.

##### **Mitigation measures**

1. Dust suppression should be conducted at least 2 times a day during the construction phase of the project.
2. A speed limit of 20km per hour should be implemented to avoid dust created by movement of construction vehicles.

#### **10.2.5 Noise Pollution**

There will be an increase in noise from construction vehicles, machinery, and workers can be a nuisance during the construction phase. The level of noise and the distance it will travel will depend entirely on the prevailing construction activities within the site. An increase in noise is expected due to construction, which might have an impact, especially on the residential settlements.

##### **Mitigation measures**

1. Temporary site buildings and material stockpiles can be used as noise barriers. Schedule the installation of permanent walls as soon as feasible so that they can be used as noise barriers. As a noise barrier, use natural landforms. Fixed equipment should be placed in cuts or behind earth berms.

#### **10.2.6 Visual-Environment**

There may be a visual disturbance to the surrounding residential area due to moving vehicles around the construction site emitting dust.

##### **Mitigation measures**

1. Dust suppression must be conducted at least twice a day.

#### **10.2.7 Surface water contamination**

Sedimentation will be one of the main pollutants of concern. When it rains, stormwater washes over the loose soil on a construction site, along with various materials and products being stored on site.

##### **Mitigation measures**

1. Stockpiles such me covered; no stockpiles should be on site for over a week. This will minimize sediments from being washed into the watercourses.

### **10.2.8 Groundwater contamination**

There is a potential of groundwater contamination during the operational phase of the project. Part of the proposed LPS pipeline is to transport dirty water from the dirty water dams (dam 1 and 5), if leaks are not detected and dealt with timeously, this may result in groundwater contamination. The LPS pipeline is transporting dirty water therefore, if the leakages are not identified in time are dealt with may result in groundwater contamination.

#### **Mitigation measures**

1. Leak detector technology is advisable to monitor the leakages for the LPS pipeline

### **10.2.9 Wetland destruction**

The proposed LPS pipeline and the 11kV powerline will be crossing wetland areas resulting in destruction of wetland vegetation, loss of habitat therefore, minimize the impacts by using only touching the area that are necessary.

#### **Mitigation measures**

1. Wetland should be demarcated where possible and should be treated as no go areas.
2. Where the proposed LPS pipeline and 11kV powerline will be crossing the wetland unsure its only limited to the pipeline and powerline route respectively.
3. After constructure unsure rehabilitation of the impacted areas. Refer to the Kendal Continuous Ash Disposal Facility – Wetland Management & Rehabilitation Plan that was conducted by Wetland Consulting Services (Pty) Ltd in 2016.

#### **Indirect Impact:**

##### **❖ Employment Creation.**

Provision of temporary job opportunities during the construction phase the project will yield opportunities for skilled and unskilled labour, although minimal. It is recommended that the local labour be employed where possible and skills development initiatives should be put in place.

❖ **Decreased criminal activities**

With job opportunities arising from the proposed development, criminal activities can reduce in the area.

❖ **Business Growth**

Revenue for local businesses supplying the contractors (i.e. construction materials etc.) and increased use of the surrounding businesses. The use of the local businesses is recommended especially on occasions where they can provide what is needed for the project.

The impacts have been further outlined (Table 8) in terms of nature, extent, duration, magnitude, probability, and significance. Furthermore, mitigation measures have been discussed with possible consequences if the mitigation measures are not implemented.

Table 8: Summary of the potential impacts that can be expected during the construction phase

Proposed activity	Aspect	Impact	Positive/negative impact	Probability	Duration	Scale	Magnitude	Significance/Risk	Impact Significance	Mitigation Required
<b>CONSTRUCTION PHASE</b>										
Excavation for the LPS pipeline	Land clearing	Habitat destruction	Negative	6	2	1	7	60	High	Yes
Refuelling of construction vehicles	Water and soil contamination	Algae formation and loss of habitat	Negative	3	4	2	6	36	Moderate	Yes
Installation of the LPS pipeline within 500m radius of a watercourse	Dirty water runoff	Deterioration of Water quality and loss of habitat	Negative	4	2	2	6	30	Moderate	Yes
Excavation for powerline holes	Land clearing	Destruction and loss habitat		2	3	2	4	18	Low	Yes



Site establishment	Clearance of vegetation	Soil loss/soil erosion and loss of habitat	Negative	4	2	1	6	36	Moderate	Yes
Movement of construction vehicles	Toxic chemicals from construction vehicles (oil, petrol, brake fluid, etc.)	Pollution of vegetation and habitat could ultimately lead to underground water contamination	Negative	2	3	2	4	18	Low	Yes
Construction team/personnel	Domestic waste disposal (littering)	Land pollution leading to degradation and deterioration of vegetation	Negative	3	2	1	4	21	Low	Yes
Construction team/personnel	Human dispersal of alien seeds/saplings by	Alien invasion of native species habitat	Negative	3	4	2	6	36	Moderate	Yes

	construction vehicles, shoes, clothes.									
Installation of the pipeline	Excavation within the wetland area	Potential destruction of wetland areas and destruction of habitat	Negative	6	2	1	7	60	High	Yes
Excavation for the 11KV powerline poles	Removal for wetland soil	Destruction and loss of habitat	Negative	6	2	1	7	60	High	Yes
<b>OPERATION PHASE</b>										
Rehabilitation of the LPS pipeline	Servitude maintenance	Spread of alien invasive species by humans	Negative	2	3	2	6	22	Low	Yes
Daily operation	Leakages from the dirty water portion of	Groundwater pollution	Negative	6	2	1	7	60	High	Yes

	the LPS pipeline									
<b>DECOMMISSIONING PHASE</b>										
Farm dam wall demolishing	Contamination of natural water resources	Deterioration of water quality	Negative	2	3	2	6	22	Low	Yes

### 10.3 OPERATIONAL PHASE IMPACTS

The overall goal in this section is to ensure that the operation of the proposed project does not have unforeseen impacts on the environment and to ensure that all impacts are monitored, and the necessary corrective action taken in all cases; the impacts and their significance with mitigation statements are further discussed in table 10.

To address this goal, it is necessary to operate the project in a way that:

- Ensures that operational activities are properly managed in respect of environmental aspects and impacts.
- Enables the proposed project operation activities to be undertaken without significant disruption to other land uses in the area, regarding traffic and road use, and effects on residents.
- Minimizes impacts on fauna and flora occupying the proposed development site.

## 10.4 REHABILITATION PLAN

Site rehabilitation is an essential component of any construction project. Most components that need to be rehabilitated are soil replacement and re-vegetation. The requirements for the mitigations of soil, water, dust, and noise pollution stipulated above still apply during the site rehabilitation phase of the project. Similarly, the requirements for soil management, erosion control, alien vegetation removal, and vegetation and fauna protection also apply. In accordance with the Kendal Continuous Ash Disposal Facility – Wetland Management & Rehabilitation Plan that was conducted by Wetland Consulting Services (Pty) Ltd in 2016. The follow rehabilitation aspect should be considered.

- ❖ Once construction is completed, all redundant infrastructure, waste, and construction materials should be removed immediately from the site by the contractor and disposed of appropriately, i.e. at a legal landfill site. This includes any wastes that may have been left at the site from previous activities.
- ❖ Disturbed areas, which are to remain free of development, should be rehabilitated to a comparable state to the surrounding area. A need for this can be identified by an Environmental Control Officer.
- ❖ Stockpiled topsoil should be used as the final cover for all disturbed areas where revegetation is required. This is to take place as soon as possible after the civil work is complete.
- ❖ Stockpiles of material and waste will be removed after construction with the area fully rehabilitated.
- ❖ All alien vegetation identified should be removed from rehabilitated areas and reseeded with indigenous vegetation as specified by a suitably qualified specialist (ecologist);
- ❖ The recovery of the indigenous grass layer should be encouraged by leaving some areas intact through the construction phase to create a seed source for adjacent cleared areas;
- ❖ Upon remediation, re-seeding of indigenous grasses should be implemented in all impacted areas and strategic planting of grassland species should take place; and
- ❖ As much vegetation growth as possible should be promoted surrounding the new development to protect soils. In this regard, special mention is made of the need to use indigenous vegetation species where hydroseeding and rehabilitation planting (where applicable) are to be implemented.

## 10.5 CUMULATIVE IMPACTS

- ❖ The proposed development will result in additional employment creation in the area and skills development during the construction phase. Due to the high unemployment rate in the study area; this development will have a positive impact on the surrounding area.
- ❖ Business Growth; the local businesses are likely to increase their revenue during this development.
- ❖ During the site clearance, the removal and sustained low or no infestation with alien invasive species will have a positive cumulative impact as the seed source of these species within the area will be reduced.

Mostly, the cumulative impacts for the proposed project are rated as **Low** if the proposed mitigations are considered during the project life cycle.

## 11 IMPACT SUMMARY FOR THE PROPOSED SITE

Table 9: Impacts Summary

IMPACT	IMPACT SUMMARY
Compliance with relevant environmental legislation and policy	During the construction phase, failure of the contractor to implement mitigation measures specified in the EMP, EA, and WUL could result in a fine, overall project failure or delays in construction, and undue disturbance to the natural environment.
Soils	During the construction phase, there is a possibility that soil may be compacted by the movement of large construction vehicles on site. Compacted soil results in the reduced ability for plant growth and water absorption. In addition, exposed soils are easily susceptible to erosion by wind and water (i.e. run-off) during high wind or rainfall conditions. The non-cohesive nature of the in-situ material coupled with the lack of vegetation creates a potential for surface erosion during the construction phase.
Waste management	During the construction phase, littering on-site may attract vermin and pollute the surrounding areas.
Visual aesthetics	During the construction phase, construction activity and the presence and use of large machinery on-site and along access roads will result in a visual disturbance of the surrounding landscape.
Dust control	During the construction phase, dust generated from construction activities could be a nuisance during windy conditions.
Hazardous substances	During the construction phase, spillage of hazardous substances, such as used oils, paint, diesel, etc. could pollute surface and groundwater resources.
Noise	During the construction phase, construction activity and movement of heavy vehicles could increase ambient noise levels and become a nuisance for surrounding residents.
Traffic volume	During the construction phase, there will be an increase in traffic volumes along approach roads which may result in vehicle/ pedestrian collisions and degrade the road condition.
Socio-Economic	During the construction phase, temporary job opportunities will be created, and this may result in the reduction of crime within the proposed development area.

Most of the identified impacts for the construction phase will be of **medium to low** significance without the implementation of mitigation measures. The implementation of the mitigation measures will reduce the significance of the impacts to **low**.



## 12 ENVIRONMENTAL IMPACT STATEMENT

From an environmental point of view, the impacts associated with the proposed development are minimum and are not anticipated to have a significant impact on natural biodiversity.

### Site preparation and clearance

Site clearance cannot be avoided during the construction phase. This phase will result in exposed soil, which could result in soil erosion and wind-blown dust. Erosion can lead to the destruction of natural habitats. All reasonable measures need to be implemented to minimize erosion during the construction phase. This impact will however be of temporary duration and have a low probability of occurrence with implemented mitigation measures and ultimately low impact.

### Vegetation and habitat loss

Vegetation loss is unavoidable during the construction and operational phase. Development planning must ensure a loss of vegetation and disturbance is restricted to within the recommended site layout. It is not expected that activities will impact the natural faunal and flora to any significant level.

### Socio-economic

The proposed project will contribute to the local economy during both the construction and operational phases as local labourers will be employed.

The impact will be of temporal nature during the construction phase and permanent for the operational phase. The probability of this impact occurring is high and as such a potential high positive impact.

Based on the environmental assessment presented, it is a conclusion of this Basic Assessment that the proposed project will have relatively low impacts on the environment. With the effective implementation of the management and mitigation measures recommended in this report and those of the specialist report, the significance of most impacts on-site from an environmental perspective is of **low significance**.

### 13 GAPS IN KNOWLEDGE AND ASSUMPTIONS

The following assumptions and limitations apply to this report:

**Assumptions:**

- ❖ All information presented to the EAP by the Applicant, Specialists, and I&APs was correct and valid at the time that it was provided;
- ❖ Every effort was made to involve as many as possible I&APs to participate in the EA process;
- ❖ All information included in the BAR was obtained from the Applicant and Specialists and is therefore unbiased and accurate; and
- ❖ The proposed development will be undertaken in accordance with the management and mitigation measures contained in the EMPr.

**Gaps:**

- ❖ The scope of this BAR is limited to assessing the environmental impacts associated with the construction phase of the proposed project; and
- ❖ No feasible alternatives were obtained for the proposed development and therefore only environmental impacts for the Proposal were assessed.

## 14 RECOMMENDATIONS OF THE EAP

There is an existing Environmental Authorisation and a Water Use Licence for all the facilities mentioned above including: Ash dam facility, dirty water dam, clean water dams, and farm dam. The current application is for support services to these facilities, including using water for in the dams dust suppression, connecting the dam facilities with a pipe network and installing a powerline for the pump station to work.

Many aspects of the existing Environmental Authorisation and Water Use License supplement the support services that are covered in this application. These are minor activities in comparison to what has already been licensed. The licensed facilities will not be able to operate without this proposed support infrastructure that were missed during the original application. Additional impact assessment and environmental management plan has been undertaken for these support services. The Practitioner believes that if the environmental considerations made during the original application combined with the additional impact assessment and environmental management plan for the current activities are implemented on site; then very minimal impact on the environment is anticipated for the current support services.

Below follows suggested conditions and mitigation measures that should form part of the EA should the proposed development be authorized:

- ❖ An Environmental Control Officer (ECO) must be appointed by the Developer to oversee impacts to the environment and ensure compliance to the EMPr, EA, and WUL during the construction of the proposed development.
- ❖ A comprehensive waste management plan should be developed for all wastes that will be generated on-site.
- ❖ All mitigation measures/recommendations contained in the specialist reports and EMPr must be strictly adhered to.
- ❖ Areas outside of the footprint and reasonable construction access must be marked as no-go areas.
- ❖ Exposed soil should be kept to a minimum during construction activities and revegetation must be conducted after the construction phase.
- ❖ Environmental monitoring (such as oil spillages, pipes leakages, unsure that the EMPr and the Environmental Authorization condition are applied) and to be conducted during construction and incidents recorded and addressed accordingly.



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