



**UPGRADING OF THE ELECTRICAL NETWORK INFRASTRUCTURE ON THE
NORTHERN PART OF ERMELO, MSUKALIGWA LOCAL MUNICIPALITY,
MPUMALANGA PROVINCE**

Draft Basic Assessment Report

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EXECUTIVE SUMMARY

The Msukaligwa Local Municipality is proposing to upgrade the existing electrical network infrastructure on the northern part of Ermelo by means of constructing an 88kV, 5km overhead powerline as well as expanding the existing substation. The proposed new 88kV powerline will be located within an urban area and for this reason the powerline is below the threshold which requires Environmental Authorisation (EA) in terms of NEMA, 1998.

Some of the steel structures will however be constructed within a wetland area which is currently zoned as public open space and as these structures will exceed 10m² in size, EA is required in terms of NEMA 107, of 1998, for the activities to be undertaken within public open space.

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorization by means of conducting a Basic Environmental Authorization Application process in accordance with GNR 982, 2014 (as amended in 2017). The application for Environmental Authorization will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLDEA) for consideration.

As activities will be taking place within a watercourse, a Water Use License will also be required in accordance with Section 21 of the National Water Act 36, of 1998 (NWA 36, of 1998) for impeding or diverting the flow of water in a watercourse and altering the bed, banks, course of characteristics of a watercourse during the construction as well as operational phase of the project.

The proposed upgrade of the existing electrical network infrastructure will require the following approvals in terms of NEMA as well as the NWA:

- Environmental Authorisation from DARLDEA;
- Water Use License from Inkomati Usuthu Catchment Management Agency;

The construction and operation of the powerline are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Visual impact;*
- *Generation of waste*
- *Socio-economic impact.*

The table below summarises the impacts identified and assessed for the establishment of the project:

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Very Low	Very Low
Generation of dust	Low	Very Low
Soil pollution	Low	Very Low
Soil erosion	Very Low	Very Low
Impact on water resources	Medium	Low
Noise generation	Low	Very low
Visual impact	Low	Very low

Generation of waste	Medium	Low
Job opportunities	Low	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on water resources	Low	Very low
Visual impact	Medium	Medium
Socio-economic Impact	High (+)	High (+)

The assessment of the possible impacts associated with the construction and operational activities, concluded that the impact on the surrounding environment is of **medium to low significance** and as for the operational impact, the upgrading of the electrical powerline will have a positive impact on the social environment as additional electrical load will be available for the town of Ermelo. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impacts are included within Section 7 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 7**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

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ABBREVIATIONS

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
EA	Environmental Authorisation
GNR	General Notice Regulation
I&AP	Interested and Affected Party
LIA	Late Iron Age
MDARDLEA	Mpumalanga Department of Agriculture, Rural Development, Land and Administration
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NHRA	National Heritage Resources Agency
PPP	Public Participation Process
SACAA	South African Civil Aviation Authority

1. OVERVIEW OF THE PROJECT

1.1 Introduction

The Msukaligwa Local Municipality is proposing to upgrade the existing electrical network infrastructure on the northern part of Ermelo by means of constructing an 88kV, 5km overhead powerline as well as expanding the existing substation. The proposed new 88kV powerline will be located within an urban area and for this reason the powerline is below the threshold which requires Environmental Authorisation (EA) in terms of NEMA, 1998.

Some of the steel structures will however be constructed within a wetland area which is currently zoned as public open space and as these structures will exceed 10m² in size, EA is required in terms of NEMA 107, of 1998, for the activities to be undertaken within public open space.

Core Environmental Services was subsequently appointed as an independent Environmental Consultant, to apply for the Environmental Authorization by means of conducting a Basic Environmental Authorization Application process in accordance with GNR 982, 2014 (as amended in 2017). The application for Environmental Authorization will be submitted to the Department of Agriculture, Rural Development, Land and Environmental Affairs (DARLDEA) for consideration.

As activities will be taking place within a watercourse, a Water Use License will also be required in accordance with Section 21 of the National Water Act 36, of 1998 (NWA 36, of 1998) for impeding or diverting the flow of water in a watercourse and altering the bed, banks, course of characteristics of a watercourse during the construction as well as operational phase of the project.

The proposed upgrade of the existing electrical network infrastructure will require the following approvals in terms of NEMA as well as the NWA:

- Environmental Authorisation from DARLDEA;
- Water Use License from Inkomati Usuthu Catchment Management Agency;

1.2 Location

The powerline to be constructed is proposed to be constructed within the urban area of Ermelo, located within the Msukaligwa Local Municipality, Mpumalanga Province. The powerline will traverse two wetland areas within the town of Ermelo, which are located at the following coordinates:

Wetland area 1:

26°30'47.60"S

29°58'9.40"E

Wetland area 2:

26°29'25.46"S

29°58'4.83"E

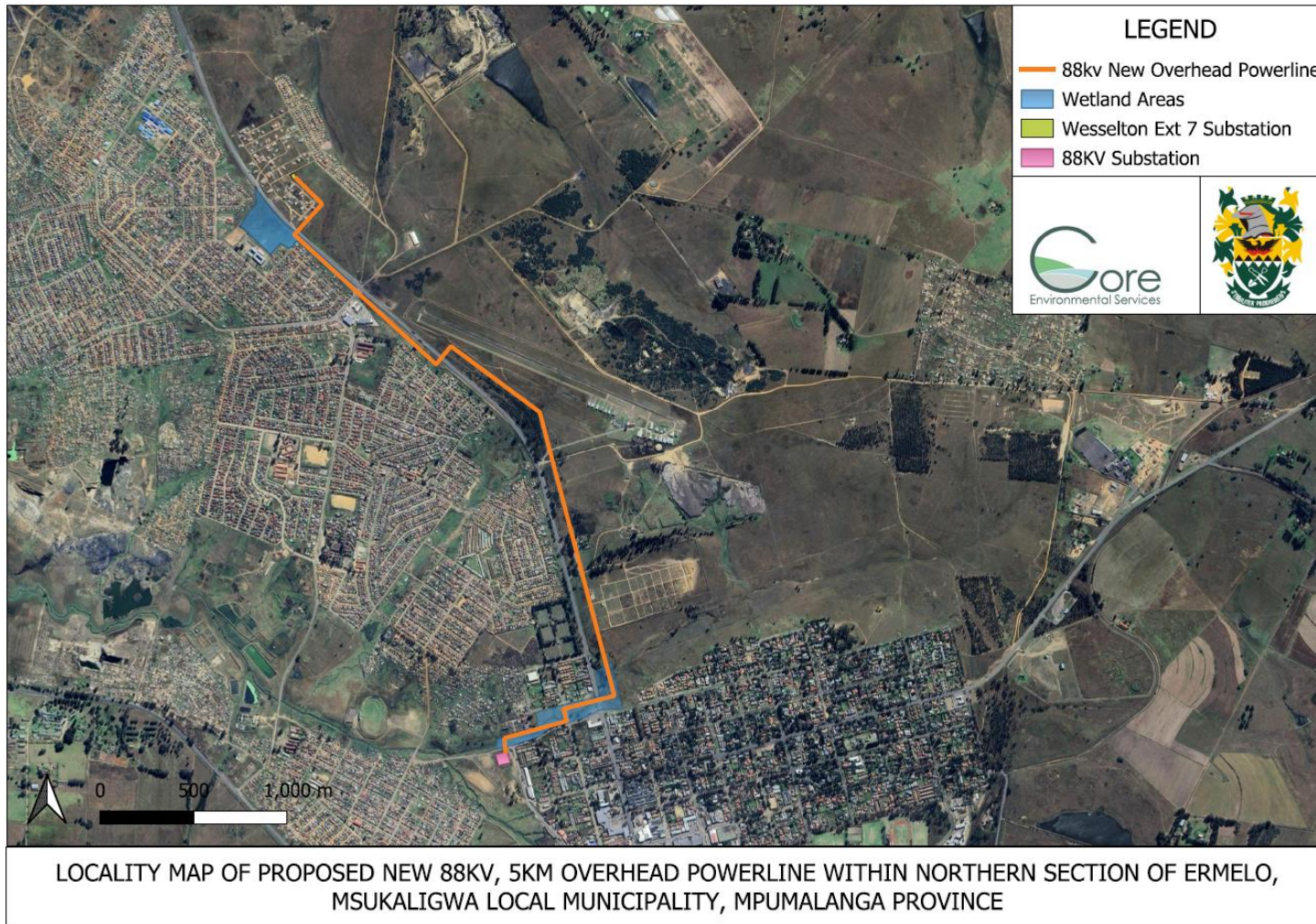


FIGURE 1: LOCALITY MAP OF PROPOSED 88KV POWERLINE ROUTE AND ASSOCIATED WETLAND AREAS, MSUKALIGWA LOCAL MUNICIPALITY, MPUMALANGA

1.3 Details of the EAP

Ms. Anne-Mari Hitge is an Environmental Specialist, who started her studies at the North-West University (NWU) and completed her Bachelor of Science: Environmental Management at the University of South Africa (UNISA) in 2007. Ms. Hitge is registered with the Environmental Assessment Practitioners Association of South Africa (EAPASA Reg No: 2020/602) as well as the South African Council for Natural Scientific Professionals as a Certificated Natural Scientist (Reg. No 300067/15). In addition to her qualification, she completed short courses in soil classification and wetland delineations (Terrasoil Science), Geographic Information Systems (University of KwaZulu-Natal), and Environmental Impact Assessments (NWU).

1.4 Policy, Legal and Administrative Framework

TABLE 1: LEGISLATION APPLICABLE TO THE PROJECT

Applicable legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments considered	Project application and type (permit / licence / authorisation / comment)
The Constitution of South Africa, Act No. 108 of 1996	Msukaligwa Local Municipality will be required to adhere to the Environmental Management Programme (EMPr) requirements to ensure that social and environmental management considerations are considered and implemented. As per Section 25 the Constitution, a public participation process (PPP) was and will continue to be undertaken, as this is an essential mechanism for informing stakeholders of their rights and obligations in terms of the project.
National Environmental Management Act, 1998 (Act No. 107 of 1998)	Environmental Authorisation will subsequently be applied for by means of conducting a Basic Environmental Authorisation process as regulated within GNR982 of 2014 (as amended in 2017).
National Water Act 36, 1998 (Act No. 36 of 1998)	This Act provides for fundamental reform of law relating to water resources and use. The preamble to the Act recognises that the aim of water resource management is to achieve sustainable use of water for the benefit of all users and that the protection of the quality of water resources is necessary to ensure sustainability of the nation's water resources in the interests of all water users. The project entails the construction of culverts and stormwater infrastructure within three water crossings and for this reason an application is

	submitted to the Department of Water and Sanitation (DWS)
National Biodiversity Act, 2004 (Act No. 10 of 2004)	The act provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998; 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 bioprospecting involving indigenous biological resource; the establishment and functions of a South African National Biodiversity Institute; and for matters connected therewith. The National Biodiversity Act, 2004, must therefore be considered prior to the clearance of vegetation to minimise the impact on the terrestrial biodiversity.
Occupational Health and Safety Act, 1998 (Act No. 85 of 1998)	The Act provides for the health and safety of people at work and for the health and safety of people using plant and machinery. During establishment, work must be conducted with strict adherence to the Occupational Health and Safety Act 85 of 1998.
National Heritage Resources Act, 1999 (Act No 25 of 1999)	This legislation aims to promote good management of the national estate, and to enable and encourage communities to nurture and conserve their legacy so that it may be bequeathed to future generations. Should any other items of significance be discovered during establishment, a Heritage Specialist must be contacted immediately, and work must cease until confirmation from the Specialist is received. For this reason, the applicant must adhere to the regulations stipulated within the National Heritage Resources Act, 1999.
National Roads Act, 1971 (Act No. 54 of 1971)	The Act provides that restrictions and permissions regarding construction activities on or near national roads. It stipulates that except as allowed under specific conditions outlined in subsection (2), no person is permitted to erect, construct, lay, or make structural alterations to any structure or object on, over, or under the surface of a national road or land within a building restriction area without written permission from the relevant Agency.

	Consent from SANRAL will therefore be required prior to establishing the powerline over the N11.
Msukaligwa Local Municipality Integrated Development Plan (IDP) (2022 -2027)	The primary objectives of the IDP are to foster economic growth that creates jobs and improve infrastructure within the province. Within the IDP's SWOT Analysis it was listed that one of the weaknesses is the poor ageing electrical infrastructure and the increase of illegal electrical connections is leading to the lack of electricity supply to the people of Msukaligwa Local Municipality. This proposed project will aim to address this challenge which is currently faced. In addition to the above, job opportunities will be created by the proposed activities which supports economic growth within the area as well as contributing to improving infrastructure that contributes to the goals listed within the IDP.

1.5 National Environmental Management Act 107 of 1998

In accordance with the National Environmental Management Act 107, of 1998, the following listed activities will be triggered by the proposed development and will require approval prior to commencement:

As the upgrading and construction of the 88kV powerline involves the disturbance of wetland areas, which is zoned as public open space, the following listed activities will be applicable for the proposed construction activities:

TABLE 2: LISTED ACTIVITIES APPLICABLE IN TERMS OF NEMA 107, 1998:

Government Notice R983 (as amended) Activity No.	Describe the relevant Activity in writing as per Listing Notice 1 (GN No. R983, as amended)	Describe the portion of the development as per the project description that relates to the applicable listed activity
19	<i>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 of more than 10 cubic metres form (a) a watercourse</i>	<i>As some electrical pylons will be constructed within the wetland area, and it is proposed that the powerline will be placed underneath the one watercourse by means of a pipeline, it is expected that approximately 20m³ of sand will be moved, and/or excavated.</i>

Government Notice R985 (as amended) Activity No.	Describe the relevant Activity in writing as per Listing Notice 1 (GN No. R984, as amended)	Describe the portion of the development as per the project description that relates to the applicable listed activity
14	<i>The development of infrastructure or structure with a physical footprint of 10m² or more, where such development occurs within a watercourse, (f) within Mpumalanga, (ii) inside urban areas: (aa) areas zoned for use as public open space</i>	<i>Some of the structures will be located within wetland areas and cumulatively, all structures proposed within the wetland areas will be 75m² is size.</i>

1.6 Description of the project

The Msukaligwa Local Municipality is proposing to upgrade the existing electrical network infrastructure on the northern part of Ermelo by means of constructing an 88kV, 5km overhead powerline as well as expanding the existing substation.

The Scope of Works include the following:

- Construction of an 88kV overhead powerline on 22m steel structures;
- Expansion of the existing substation yard to a footprint of 75m x 75m.

Due to existing powerlines within the proposed project area, the proposed 88kV powerline would have to ensure that the servitudes of the existing powerlines are not affected. Considering the above, the one section of the powerline (50m of the proposed 5km) is therefore proposed to be constructed underneath the watercourse by means of conveying the electrical lines within pipelines.

1.7 Need and Desirability

The Msukaligwa Local Municipality (MLM) have been experiencing challenges with power supply because of the ageing electrical infrastructure and the rise of informal settlements within the northern section of Ermelo, resulting to an increase in illegal connections. As a result of this, the bulk electricity supply for Msukaligwa Local Municipality and more specifically Ermelo, is insufficient. Furthermore, the increased illegal electrical connections results in the MLM not collecting revenue from all electricity consumers, resulting in large debts owed to ESKOM which ultimately affects service delivery due to financial strain.

The upgrading of the powerline infrastructure within the northern part of Ermelo is motivated by the following:

- The construction of the 88kV powerline within the northern part of Ermelo will reduce the lack of electricity supply within the northern section of Ermelo;
- The upgrade of the powerline will play a vital role in reducing the load on the existing ageing electrical infrastructure.

- The construction of the powerline will create job opportunities for residents within the proposed focus area for both skilled and unskilled labours.
- The revenue collected by the Msukaligwa local Municipality from the electricity supply will be used by the Local Municipality to improve service delivery for the local residents.

2. PUBLIC PARTICIPATION PROCESS

The purpose of this chapter is to provide an outline of the public participation process (PPP) to date and the way forward with respect to the Basic Assessment process.

Consultation with the public forms an integral component of the EA process. This process enables Interested and Affected Parties (I&APs) (e.g. directly affected landowners, national-, provincial- and local authorities, and local communities etc.) to raise their issues and concerns regarding the proposed activities, which they feel should be addressed in the BA process. The PPP has thus been structured such as to provide I&APs with an opportunity to gain more knowledge about the proposed project, to provide input through the review of documents/reports, and to voice any issues or concerns at various stages throughout the BA process.

I&APs were identified during the public participation phase of the project. All the parties identified as an I&AP (surrounding landowners, relevant departments, stakeholders, local and district authorities) have automatically been registered in the I&APs database for the project. The registered I&AP list is attached as **Annexure C.1**.

In effort to engage potential stakeholders, different communication methods were used to inform them about the project and how to get involved in the BA process. These methods include:

- Distributing English Background Information Documents (BIDs) to all registered I&APs, proof of which is attached in **Annexure C.2**;
- Placement of media advert in a local newspaper (The Highvelder) on 26 July 2024 (see **Annexure C.3**).
- Placing of a notice at the proposed site took place on 17July2024 (see **Annexure C.4**)

The draft Basic Assessment Report will be made available for public review from September 2024 – October 2024.

To date, no comments have been received.

3. CONSIDERATION OF ALTERNATIVES

The EIA process requires the developer to identify and investigate/assess feasible and reasonable alternatives. The project alternatives range from the location where the activity is proposed, type of activity to be undertaken, design of activity, technology to be used in the activity to the option of not implementing the activity (No-Go Alternative).

The assessment of the alternatives is a complicated and multi-faceted issue, which is essential to the success of this application and ultimately to the proper, responsible and sustainable operation of the proposed project.

3.1 Alternative Selection

3.1.1 Location alternatives

When considering alternative location and route alignments for powerlines, various factors are to be considered. These factors include:

- Existing buildings, residences, powerline and road servitudes;
- Length of powerline (the longer the powerline, the higher the cost);
- Existing substation footprints;
- Access roads to the structures to ensure continuous maintenance;
- Sensitivities of the surrounding environment.

By taking the above into consideration, two location/route alignments were considered for this proposed 88kV powerline.

The first route alternative is demonstrated in Figure 2 below. With this alignment, it is noted that the route is approximately 5km long and will mostly be running adjacent to existing roads and areas which have already been transformed. Within this proposed route alignment, it is noted that two wetland areas will be affected (approximately 1km of the 5km had been classified as a wetland area)

The second route alternative is also demonstrated in Figure 2 below and with this alignment, the proposed powerline route is also approximately 5km in length, however, approximately 3.3km of this proposed route would traverse a wetland area currently zoned as open space. It is also noted that some residents started to settle within this area and therefore these residents will have to be relocated to ensure that there is a 31m servitude for the 88kV powerline. In addition to this, wetland areas are sensitive environments and undertaking construction activities within these sensitive environments, increases the construction costs during the construction phase of the project. Taking into consideration the increased construction costs and relocation of the residents located within the proposed servitude, it would appear that the total construction costs associated with alternative 2, would be much higher than the construction costs associated with alternative 1. In addition to this, the sensitive area to be affected by proposed route alternative 2, is much more than the areas to be affected by proposed route alternative 1.

For the above reasons provided, it was noted that Route Alternative 1 is found to be the preferred route alternative for this proposed 5km, 88kV powerline.

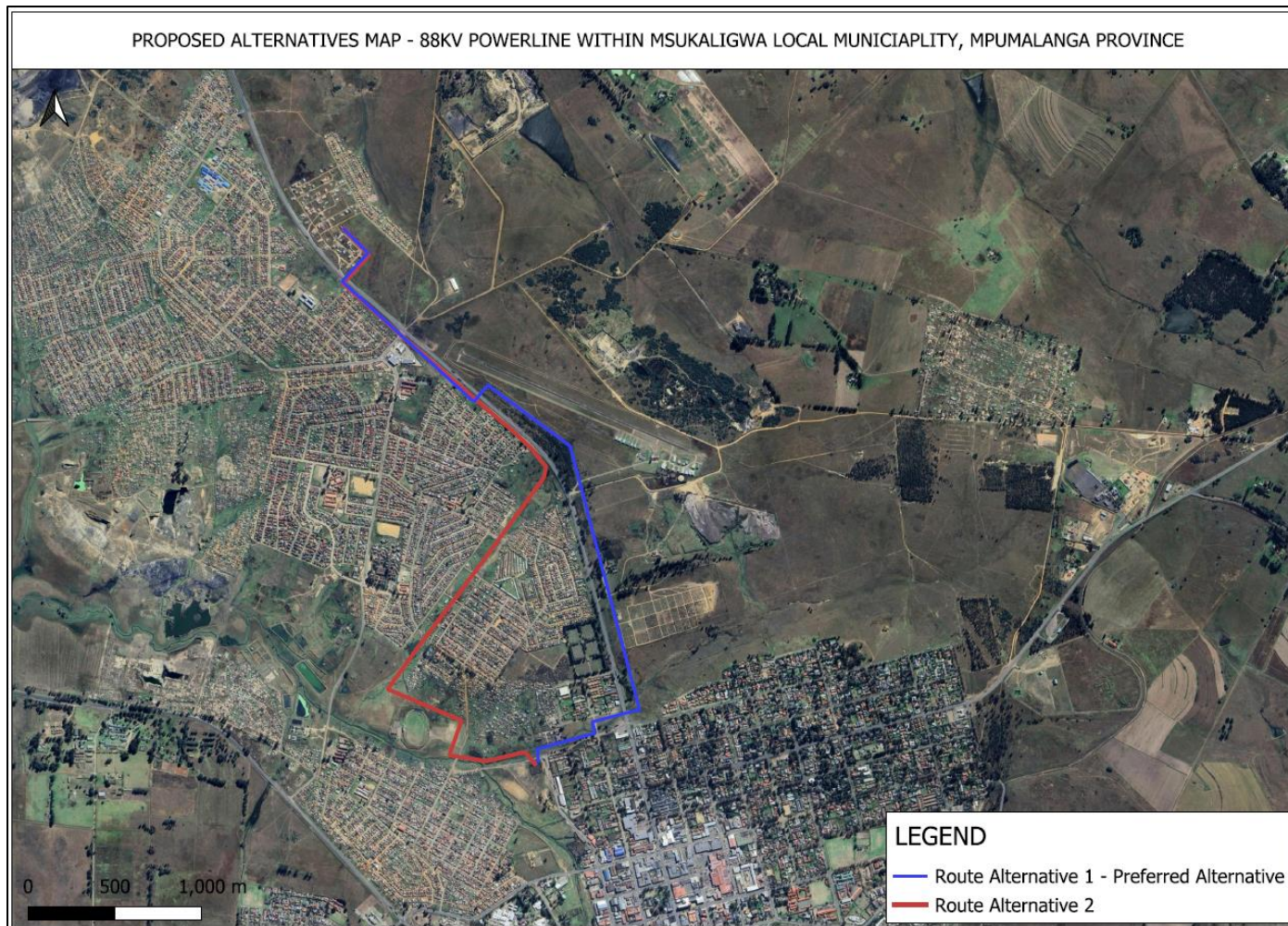


FIGURE 2: PROPOSED ALTERNATIVE ROUTES FOR THE 88kV POWERLINE, MSUKALIGWA LOCAL MUNICIPALITY

3.1.2 No-Go alternative

The no-go alternative would be to not authorise the construction of the 88kV powerline which is proposed to upgrade the electrical infrastructure for the northern part of Ermelo. Should this alternative be favourable, the proposed upgrading of the electrical infrastructure will not take place, and the current negative impact will remain. The northern part of Ermelo will continue to face challenges with regards to electricity supply.

The Msukaligwa Local Municipality have been experiencing challenges on the power supply because of the ageing electrical infrastructure and the rise of informal settlement that result in the increase of illegal connections. Due to the mentioned issues the current existing powerline is then no able to supply enough electricity to the local municipality. Furthermore, due to the increased illegal connection the local municipality end-up not collecting the revenue which puts the municipality running on a loss thus affecting service delivery due to financial strain.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The description of the affected environment below draws on existing knowledge from published data, previous studies, specialist investigations, site visits to the area and is used to understand the possible effects of the proposed project on the environment. As the areas of assessment is mostly restricted to the wetland areas, the environment described below is focussing on the affected wetland areas.

4.1 Topography

The topography associated with Wetland Area 1, can be described as sloping slightly from the east to the west. This project area is located approximately 1680 mamsl (meters above mean sea level). The project area associated with Wetland Area 2 is gently sloping from the south-east to the north-west and is noted as approximately 1760mamsl.

4.2 Climate

The study area falls under the central Mpumalanga climatic zone characterized by warm, rainy summers and dry winters with sharp frosts. Rainstorms are often violent (up to 80mm per day) with severe lightning and strong winds, sometimes accompanied by hail. The winter months are dry with the combined rainfall in June, July and August making up only 3,9% of the annual rainfall total of 734mm. The average daily maximum temperature in January (the hottest month) is 25.2°C and in July (the coldest month) is 16.7°C. Due to its position near the escarpment, the area is somewhat windier than is typical for the South - Eastern Mpumalanga Highveld, although the majority of winds are still light, and their direction is controlled by topography.

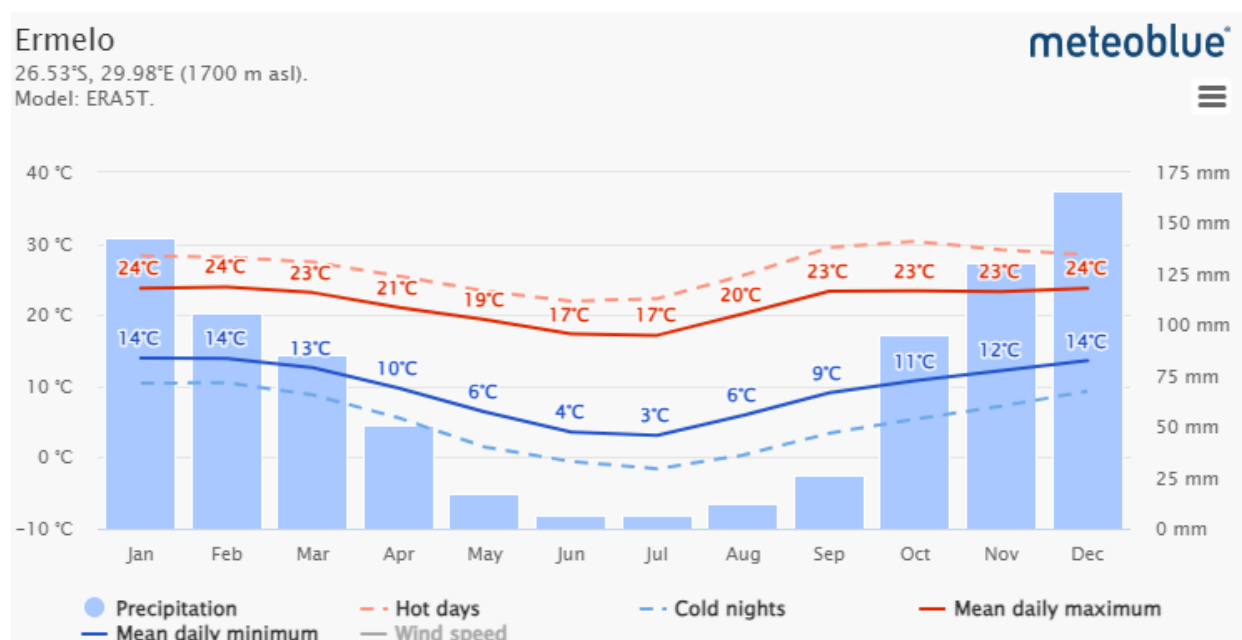


FIGURE 3: ERMELO'S CLIMATE CHANGE (SOURCE: METEOBLUE)

4.3 Ecology

Terrestrial Ecology: The study area is classified as an Eastern Highveld Grassland according to Acocks (1988). The project area falls within the Grassland Biome. The Grassland Biome is a large ecological community dominated by grasses and herbaceous plants, with few or no trees present. It is a subtype of grassland found in the Highveld region of South Africa. The Grassland biome is characterized by vast expanses of grasses with scattered trees and shrubs, and it typically occurs in areas with moderate to seasonal rainfall patterns and a range of temperatures. The **Eastern Highveld Grassland** is one of the major grassland types in South Africa primarily encompassing parts of Gauteng, Mpumalanga, and extending into the Free State and KwaZulu-Natal provinces.

The Vegetation consists typically of hygrophilous grass species in the seasonal zone (e.g. *Eragrostis spp.*) and sedges in the marginal zone of the channel (e.g. *Cyperus spp.*) and the bullrush (*Typha capensis*) in the permanent zone. The wetland grass, *Imperata cylindrica*, will be present as an indicator of the seep zones. The invasive grass, *Pennisetum clandestinum*, is visible on site and will be present in most terrestrial and wetland zones.

According to the Mpumalanga Biodiversity Sector Plan, 2014, the two project areas (**Wetland area 1** and **Wetland area 2**) falls within a Critical Biodiversity Areas (CBA), are “These are terrestrial and aquatic features (e.g., vleis, rivers and estuaries) in the landscape that are critical for conserving biodiversity and maintaining ecosystem functioning in the long term (which is particularly important in the face of climate change)” (von Staden et al., 2023).

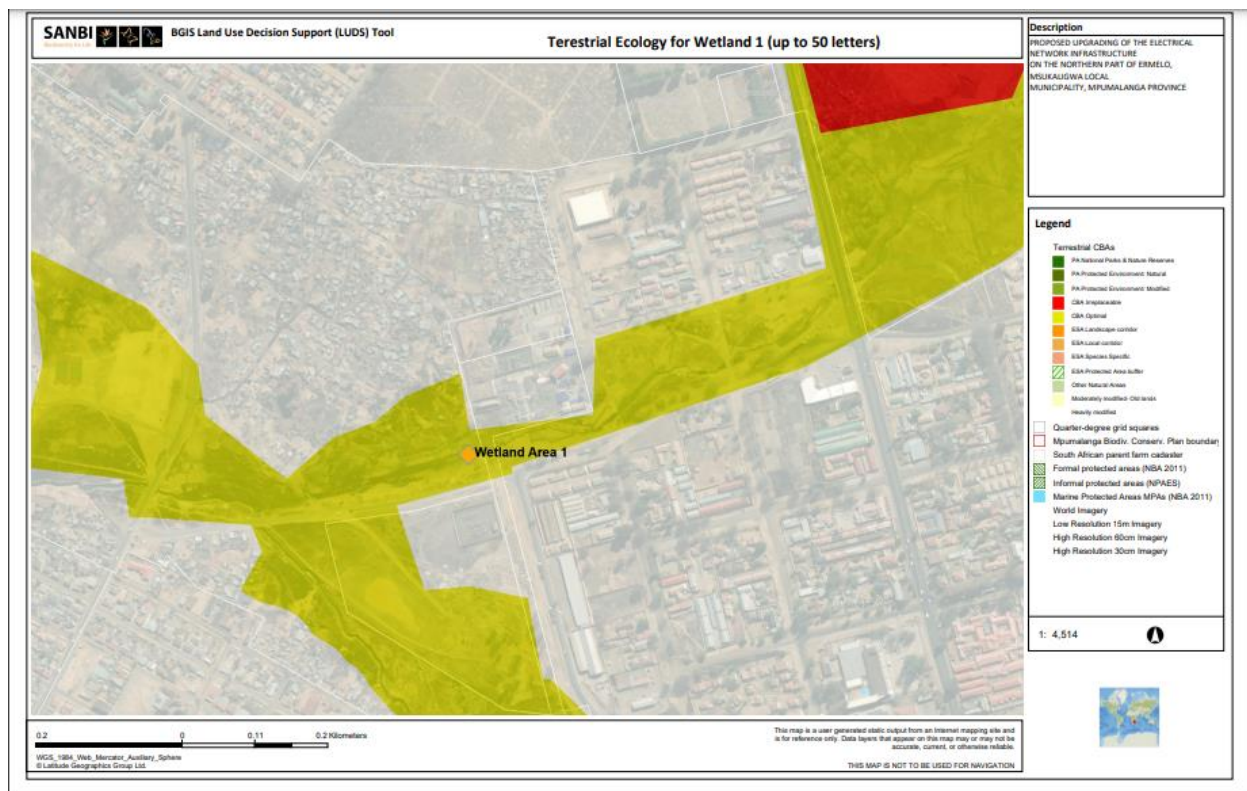


FIGURE 4: TERRESTRIAL ECOLOGICAL SENSITIVITY MAP FOR WETLAND AREA 1 ASSOCIATED WITH THE PROPOSED UPGRADING POWERLINE, ERMELO, MSUKALIGWA LOCAL MUNICIPALITY

While a section of Wetland area 2 falls within a Critical Biodiversity Area, on site verification noted that the area has been heavily modified. Heavy modified refers to landscapes and ecosystems that have undergone significant alterations due to human activities. These modifications can impact the natural state of the ecosystem, affecting biodiversity, ecosystem services, and ecological processes.

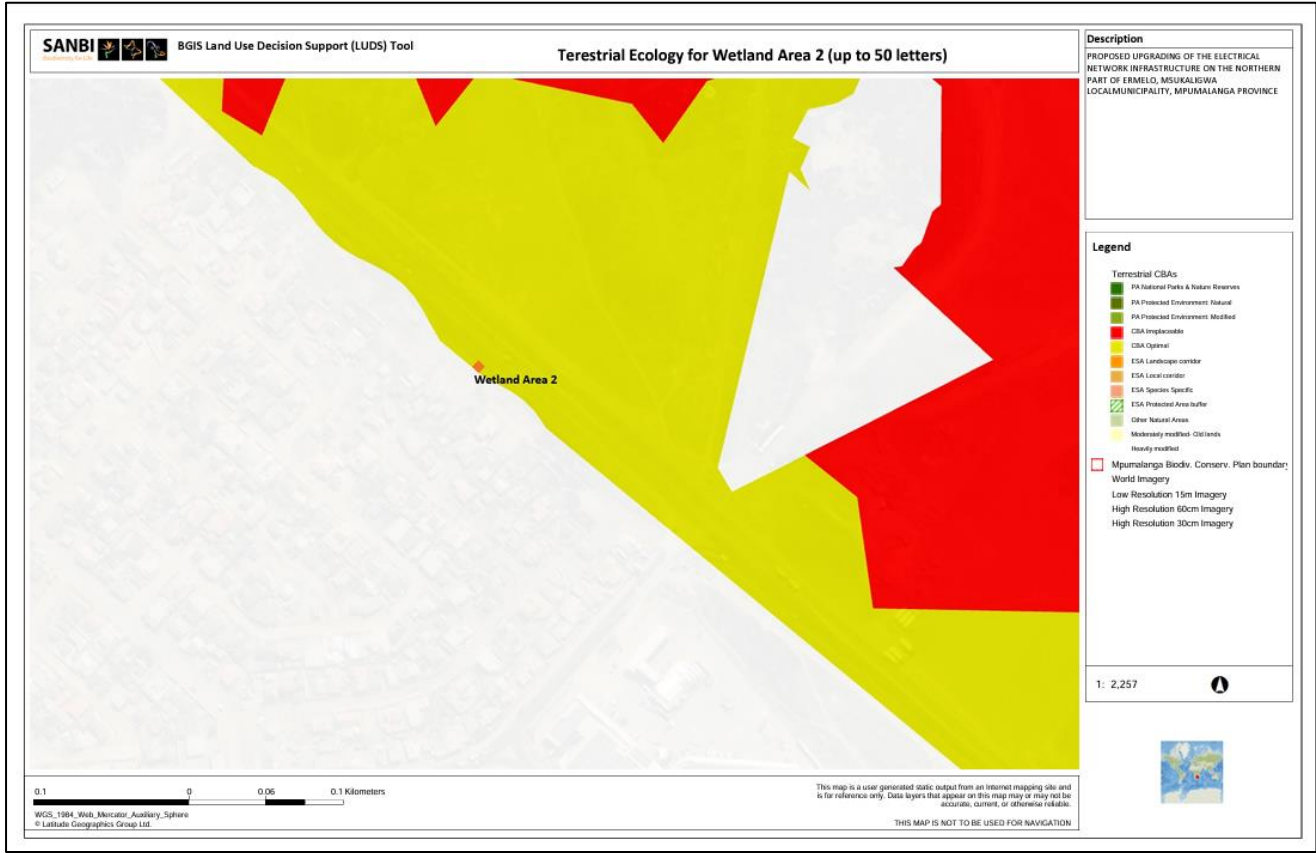


FIGURE 5: TERRESTRIAL ECOLOGY SENSITIVITY MAP FOR WETLAND AREA 2 ASSOCIATED WITH THE PROPOSED UPGRADING POWERLINE, ERMELO, MSUKALIGWA LOCAL MUNICIPALITY

Please refer to Figure 6 below, indicating the transformation of the above wetland area.



FIGURE 6: IMAGE OF WETLAND AREA 2, WHICH HAVE BEEN SEVERELY IMPACTED BY URBAN ACTIVITIES

Freshwater Ecology:

According to the Mpumalanga Biodiversity Sector Plan, 2014, the freshwater ecosystems within the study area, is classified as “Other Natural Areas” as well as “Heavily Modified Areas”. **Other natural Areas (ONAs)** are not required to meet biodiversity targets, and so are not identified as a priority in the MBSP. They do, however, retain much of their natural character. The biodiversity in these non-priority landscapes may still be of value and contribute to maintenance of viable species populations and natural ecosystem functioning and Other Natural Areas may provide essential ecological infrastructure and ecosystem services. ONAs offer the greatest flexibility in terms of management objectives and permissible land-uses and are generally recommended (along with Modified Areas) as the sites for higher-impact land uses. Primary objectives: An overall management objective should be to minimize habitat and species loss and ensure ecosystem functionality through strategic landscape planning. This classification is relevant to aquatic ecological importance of the northern section of the property.

Heavily Modified Natural Areas are areas where natural vegetation has been somewhat altered by human activities (e.g., grazing, low-intensity agriculture) but still retain ecological value and potential for biodiversity conservation. MTPA (Mpumalanga Tourism Parks Agency) objectives for these areas are quoted as follows: Such areas offer the most flexibility regarding potential land-uses, but these should be managed in a biodiversity-sensitive manner, aiming to maximize ecological functionality and authorization is still required for high impact land uses.

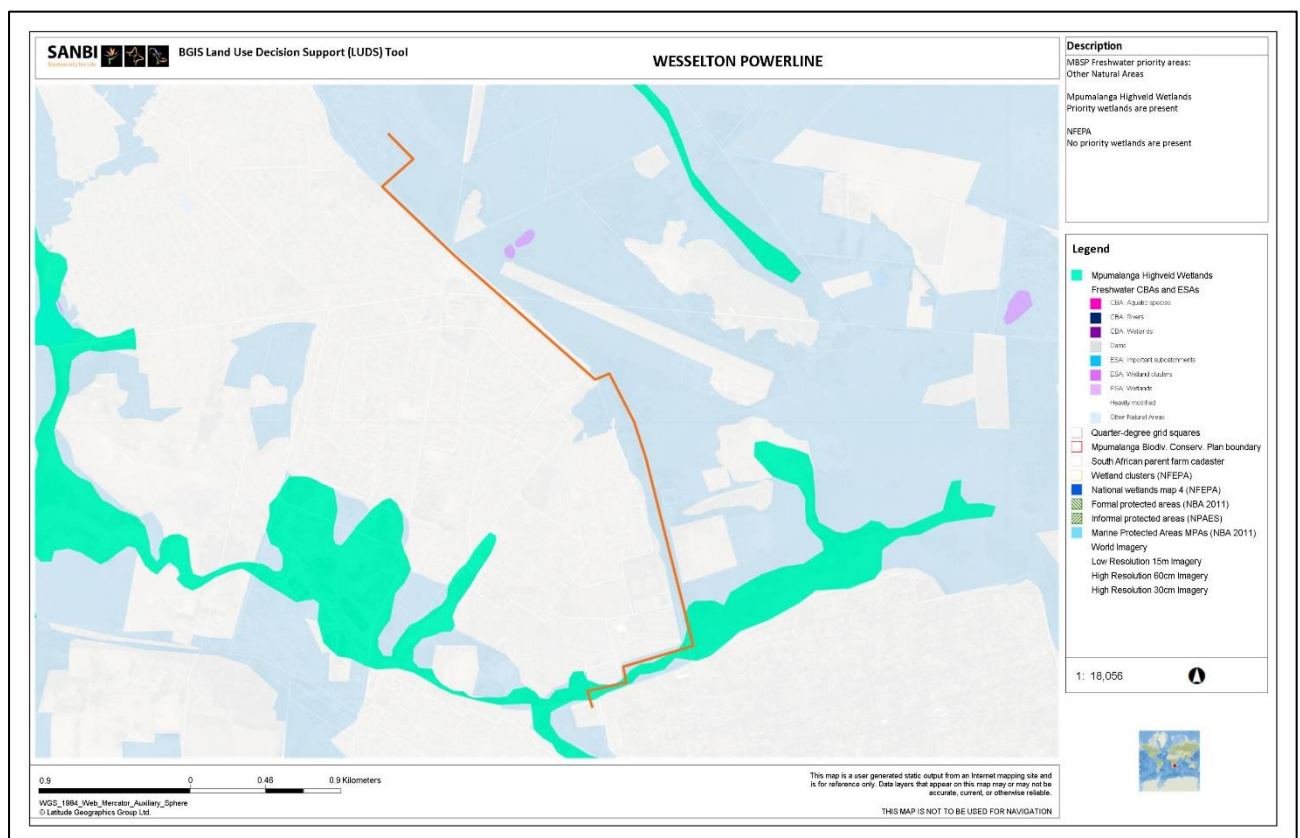


FIGURE 7: FRESHWATER ECOLOGICAL SENSITIVITY MAP FOR THE WETLAND AREAS ASSOCIATED WITH THE 88KV POWERLINE, MSUKALIGWA LOCAL MUNICIPALITY

4.4 Surface and Groundwater

The area's hydrology is one of its distinguishing features. A concentration of pans and freshwater lakes is located in the Chrissiesmeer protected area, which is not only ecologically significant but also a potential tourist attraction. According to the MLM EMF, standing water in the form of dams, lakes and pans comprises about 20% of the municipal area. The pans are fed by rainwater and groundwater, but have no direct surface link to the drainage network. In addition, the area forms part of nationally significant strategic water source areas. While the largest concentration of sensitivity occurs in the eastern part, the western part of Mskaligwa also contains wetlands, wetland clusters and important sub-catchments, however the wetlands to be affected by the proposed 88kV powerline, is not regarded as NFEPA wetland areas.

The table below provides a classification of the identified wetland areas.

TABLE 3: WETLAND CLASSIFICATION AND ATTRIBUTES

Classification and attributes								
Ref. No.	Level 1 Spatial setting	Level 2 Regional setting / Veg type	Level 3 Landscape setting	Level 4 Hydrogeo-morphic	Level 5 Hydrological regime	Level 6 Descriptors	NFEPA Listing	MPU Highveld
Sections 1 & 2	Inland	Mesic Highveld Grassland Group 4	Valley floor	Channelled valley-bottom wetland	Seasonal	Natural Condition: C	No	Yes

The literature and database investigation found the wetlands are not NFEPA wetlands but are listed on the Mpumalanga Highveld Wetlands data base. The wetland condition is categorized as a class C: Moderately modified (Moderate impact category). The wetland delineation is presented in Figure 6 and 7 below.



FIGURE 8: WETLAND DELINEATION OF WETLAND AREA 1 ASSOCIATED WITH THE 88kV POWERLINE, ERMELO



FIGURE 9: WETLAND DELINEATION OF WETLAND AREA 2 ASSOCIATED WITH THE 88kV POWERLINE, ERMELO

4.5 Land use

The project area falls within an urban area which is zoned as a public open space. Large areas of the surrounding environment have been transformed to residential areas (formal and informal). Furthermore, the linear site is aligned alongside roads and residences in a low to medium-income residential area. The surrounding land has been severely modified to suburban land use and open areas, including fragments of natural vegetation is largely degraded

It was also noted that the Ermelo Airfield is also located within a close proximity to the proposed 88kV powerline route and as such, permission must be granted from the Ermelo Airfield prior to the commencement of constructing the powerline route.

4.6 Geology and Soils

Msukaligwa Local Municipality is underlain predominantly by arenite and dolerite intrusions of the Karoo Supergroup. Other underlying rock types include quartz monzonite, granite and basalt. The central-western part of the study area is underlain by the Ermelo coal field, where the predominant rocks are sedimentary, i.e., sandstones, shales and siltstones of the Eccia Group that contains erinaceous strata of the coal-bearing Vryheid formation.

The soil within the project area is classified as undifferentiated shallow soils. Localised issues may occur which should be taken into account in the case of individual developments after the appropriate investigations, e.g. shallow undermining, or clay in the vicinity of the many wetlands. Soil may receive water runoff from associated rock, water intake areas. Lime generally present in part or most of the landscape.

4.8 Heritage

It must be stated that the Environmental Impact Assessment is focussing on the two wetland areas to be affected by the proposed powerline. No Heritage Impact Assessment was conducted as these wetland areas proposed to be affected by the powerline have already been transformed by urban activities. However, it is recommended that the applicant be made aware that distinct archaeological material or human remains may only be revealed during the development phase. Sub-surface finds must be assessed by a qualified archaeologist after which an assessment should be conducted.

4.9 Socio-Economic Environment

The project area is located within the Ermelo. Spatially the population is concentrated in the towns and settlements of Msukaligwa. Close to 60% of the total population in Msukaligwa lives in the main node of Ermelo / Wesselton, followed by 10% in Breyten / KwaZanele. Around 16% of the population lives across the rural wards. A trend of urban migration can be observed between 2016 and 2050, with the population living in Ermelo Wesselton increasing to 67% of the total population in 2050.

Msukaligwa's unemployment rate was the 6th lowest among all the municipal areas of Mpumalanga. The unemployment rate deteriorated slightly. Unemployment rates are higher for females compared to males.

Msukaligwa local municipality currently has an unemployment rate 34.5% of which most unemployed, are the youth. The levels of skill and qualifications of the population is also low which is problematic for future economic development. The socio-economic context of the surrounding environment can therefore be described as a community with a low percentage of education and high unemployment rate.

At present, the socio-economic environment within Ermelo is affected negatively due to the lack of electricity supply. The construction of the powerline would however improve the current electrical infrastructure within Ermelo and aid in providing sufficient electricity to the northern section of Ermelo. This improvement will have a positive socio-economic impact on the local community.

5. SPECIALIST ASSESSMENT REQUIREMENTS AS IDENTIFIED IN THE SCREENING REPORT

The following specialist assessments were identified within the Department of Environmental Affairs Screening Report to be conducted as part of the Basic Environmental Impact Assessment:

- Agricultural Impact Assessment

The proposed project is located in an urban area in Ermelo and is currently being used for urban activities. For this reason, no agricultural activities would ever be proposed within the proposed project areas and therefore no Agricultural Impact Assessment was undertaken.

- Landscape/visual Impact Assessment

According to the Environmental Screening Report, a Visual Impact Assessment was recommended for the proposed powerline construction. However, following the site assessment and verification, it was found that the entire route of the powerline is proposed to be located within the urban area of Ermelo, and therefore all surrounding land uses conform to that of urbanized activities. No sensitive visual receptors were identified along the powerline route. In addition to this it must also be noted that the proposed construction of the powerline falls below the threshold which requires Environmental Authorisation in terms of NEMA, 1998 and therefore this Environmental Impact Assessment is in fact restricted to the wetland areas identified along the proposed powerline route.

- Heritage and Paleontology Impact Assessment

As stated above, it must be noted that the entire alignment of the powerline is proposed within an area which has already been transformed. As the proposed route have already been transformed, no artifacts of historical or cultural significance are expected to be affected by the proposed powerline. According to the DFFE Screening Report, the archaeological sensitivity within the proposed project site was found to be low.

It is also noted within the proposed alignment that the paleontological theme was of high sensitivity. However, almost all fossils are preserved in sedimentary rock. As the assessment is focusing on the powerline construction within the wetland area, it is unlikely that the foundations of the pylons would reach the sedimentary rock area and therefore the impact on paleontology is deemed to be low and no assessment was undertaken.

- Terrestrial and Aquatic Biodiversity Assessment / Plant and Animal Species Assessment / Wetland Assessment

A Wetland Assessment was undertaken for the wetland areas to be affected by the proposed powerline. As part of the assessment, the Specialist also investigated floral and faunal species and the impact on biodiversity.

The assessment found that the wetlands are subject to several historic and present impacts:

- Loss of vegetation in catchment
- Loss of wetland surface area and vegetation

- Loss of biodiversity
- Fragmentation of habitat:
 - Invasive alien plants (IAP)
 - Encroaching roads, watercourse crossings and residences
 - Powerlines
 - Pipelines
- Sand mining and erosion in catchment and within wetlands
- Coal industry (illegal) related activities nearby the wetlands
- Encroaching roads and residences
- Reduced roughness, leading to increased surface water run-off
- Modification of flow regime
- Diversion of flow
- Pollution: Solid waste disposal and littering
- Pollution: Overflowing sewers

Following the site assessment, it was also noted that there is an existing powerline aligned above the wetland, with no obvious negative impacts visible. It could therefore be assumed that the new powerline will not lead to significant changes to the state of the environment and significant negative direct and indirect impacts on the wetlands. The most important potential impacts and consequences on aquatic ecological functions and aquatic biodiversity will be during the construction phase. These are listed and assessed under the following headings:

a) Wetland surface area and habitat:

Minimal vegetation clearing will take place for founding of the poles within the wetlands and very little surface area will be lost. Supervision during construction by a responsible person and proper rehabilitation after completion is the main mitigation to prevent any negative consequences related to the activity. Impact significance after mitigation is rated as low.

b) Loss of vegetation and fragmentation of habitat:

i) Consequence of vegetation clearing nearby the wetland

There is an existing powerline aligned above the wetland, with no obvious negative impacts visible. Vegetation clearing will take place near the wetlands for the footprints of the poles. This task must be done with care and physical disturbance must be limited to the absolute minimum. Additional mitigation is alien invasive vegetation control to prevent fragmentation of habitat. Impact significance after mitigation is rated as low.

ii) Consequence of proposed activities within the wetland

Vegetation clearing will take place nearby the wetlands. The proposed activities within the wetland zone must be limited to the site areas only. These tasks must be done with care and physical disturbance must be limited to the absolute minimum. As mitigation, these activities must be performed during the dry season when flow is at its lowest to prevent erosion and sedimentation. Complete rehabilitation of disturbed areas must take place. Negative impact duration will be short term and significance after mitigation is rated as low.

c) Loss of biodiversity:

It is not anticipated that biodiversity will be lost within the wetlands. Additional mitigation is alien invasive vegetation control to prevent the oppression of indigenous biota. Impact significance after mitigation is rated as low.

d) Loss of threatened and rare biota:

It is not anticipated that any endangered biota is present within or nearby the wetlands that will be affected. Impact significance is rated as low.

e) Wetland morphology:

i) Consequence of vegetation clearing nearby the wetland

The wetland morphology will not be significantly modified but for the purpose of excavation of holes for poles. Clearing of vegetation nearby the wetland of the proposed development land may result in soil erosion and subsequently siltation (sedimentation) of the wetlands. Furthermore, these activities must be performed during the dry season when flow is at its lowest to prevent erosion and sedimentation. Complete rehabilitation of disturbed areas must take place.

ii) Consequence of proposed activities within the wetland

The proposed activities within the wetland zone must be limited to the excavations for poles. These tasks must be done with care and physical disturbance to the morphology must be limited to the absolute minimum. As mitigation, these activities must be performed during the dry season when flow is at its lowest to prevent erosion and sedimentation. Complete rehabilitation of disturbed areas must take place. Negative impact duration will be short term and significance after mitigation is rated as low.

6) Wetland hydrology:

It is not anticipated that the activity will have negative consequences on the wetland hydrology. Impact significance is low.

7) Wetland water quality:

Water quality may be affected by concrete spills and spills of hazardous substances. Supervision during construction by a responsible person and proper rehabilitation after completion is the main mitigation to prevent any negative consequences related to the activity. Impact significance after mitigation is rated as low.

8) Cumulative impacts

Wetlands in the larger study area is under pressure from the cumulative impacts arising from agriculture, residential development and more seriously, illegal sand mining. In the above-mentioned sections potential impacts have been discussed and assessed. By consideration of alternatives, planning and mitigation measures the cumulative impacts of this development will minimize the negative consequences on the integrity of the wetlands on site and further downstream. The cumulative impact magnitude and significance is low.

- Avian Impact assessment

The proposed powerline route is in an urban area which is already severely disturbed and therefore the project area has minimal significant avian habitats, reducing the likelihood of affecting substantial bird populations. Historical data and preliminary assessments indicate a minimal presence of sensitive avian species. Bird-friendly measures, such as visibility enhancements and perch deterrents, are incorporated into the powerline design. Additionally, the construction schedule avoids peak breeding and migration seasons, further mitigating risks to local avian species. Following the site verification, an Avian Impact Assessment was not found to be required to inform the outcome of the assessment.

- RFI assessment (Radio Frequency Interference Assessment)

According to the DFFE Screening Report, an RFI assessment is required for the proposed project. However, as stated, the powerline falls below the threshold which requires an Environmental Authorisation and therefore the powerline in itself need not to be assessed. The impacts assessed are therefore focused on the wetland areas affected and therefore no RFI Assessment was undertaken for this proposed project.

- Civic Aviation Assessment

The powerline falls below the threshold which requires an Environmental Authorisation and therefore the powerline in itself need not to be assessed. The impacts assessed are therefore focused on the wetland areas affected and therefore no Civil Aviation Assessment was undertaken for this proposed project. It is however noted that the Ermelo Airfield is located within a close proximity to the proposed powerline and therefore approval is required from the Ermelo Airfield prior to the commencement of the construction process.

- Geotechnical Assessment

The powerline construction involves minimal excavation mainly for installing towers and poles, which has a limited impact on the geological conditions. The design, based on standard engineering practices, accounts for local soil characteristics, reducing the need for a detailed geotechnical assessment. For this reasons, Geotechnical Assessment was not conducted.

6. METHODOLOGY OF ASSESSING THE SIGNIFICANCE OF IMPACTS

This section outlines the method used for assessing the significance of the potential environmental impacts during the construction/establishment, operational and decommissioning phases.

For each impact, the **EXTENT** (spatial scale), **MAGNITUDE** and **DURATION** (time scale) would be described, as shown in Table 4. These criteria are then used to determine the **SIGNIFICANCE** of the impact, firstly in the case of no mitigation and then with the most effective mitigation measure(s) in place. The mitigation described in the Report represents the full range of plausible and pragmatic measures but does not necessarily imply that they would be implemented.

The following tables show the scale used to assess these variables and defines each of the rating categories.

TABLE 4: ASSESSMENT CRITERIA FOR THE EVALUATION OF IMPACTS

Criteria	Category	Description
Extent or spatial influence of impact	Regional	Beyond a 30km radius of the candidate site.
	Local	Within a 30km radius of the candidate site.
	Site-specific	On site or within 100 m of the candidate site.
Magnitude of impact (at the indicated spatial scale)	High	Natural and/ or social functions and/ or processes are <i>severely</i> altered
	Medium	Natural and/ or social functions and/ or processes are <i>notably</i> altered
	Low	Natural and/ or social functions and/ or processes are <i>slightly</i> altered
	Very low	Natural and/ or social functions and/ or processes are <i>negligibly</i> altered
	Zero	Natural and/ or social functions and/ or processes remain <i>unaltered</i>
Duration of impact	Long-term	More than 10 years after construction
	Medium-term	Up to 5 years after construction
	Construction-term	Up to 3 years

The **SIGNIFICANCE** of an impact is derived by taking into account magnitude, duration and extent of each impact. The criteria employed in arriving at the different significance ratings is shown in Table 5.

TABLE 5: DEFINITION OF SIGNIFICANCE RATINGS

Significance ratings	Level of criteria required
High	• High magnitude with a regional extent and long-term duration • High magnitude with either a regional extent and medium-term duration or a local extent and long-term duration • Medium magnitude with a regional extent and long-term duration
Medium	• High magnitude with a local extent and medium-term duration • High magnitude with a regional extent and construction period or a site-specific extent and long-term duration • High magnitude with either a local extent and construction period duration or a site-specific extent and medium-term duration • Medium magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Low magnitude with a regional extent and long-term duration
Low	• High magnitude with a site-specific extent and construction period duration • Medium magnitude with a site-specific extent and construction period duration • Low magnitude with any combination of extent and duration except site specific and construction period or regional and long term • Very low magnitude with a regional extent and long-term duration
Very low	• Low magnitude with a site-specific extent and construction period duration • Very low magnitude with any combination of extent and duration except regional and long term
Neutral	• Zero magnitude with any combination of extent and duration

Once the significance of an impact has been determined, the **PROBABILITY** and **CONFIDENCE** of this impact are determined using the rating systems outlined in Table 6 and Table 7. The significance of an impact should always be considered in concert with the probability of that impact occurring. Lastly, the **REVERSIBILITY** of the impact is estimated using the rating system outlined in Table 8.

TABLE 6: DEFINITION OF PROBABILITY RATINGS

Probability ratings	Criteria
Definite	Estimated greater than 95 % chance of the impact occurring.
Probable	Estimated 5 to 95 % chance of the impact occurring.
Unlikely	Estimated less than 5 % chance of the impact occurring.

TABLE 7: DEFINITION OF CONFIDENCE RATINGS

Confidence ratings	Criteria
Certain	Wealth of information on and sound understanding of the environmental factors potentially influencing the impact.
Sure	Reasonable amount of useful information on and relatively sound understanding of the environmental factors potentially influencing the impact.
Unsure	Limited useful information on and understanding of the environmental factors potentially influencing this impact.

TABLE 8: DEFINITION OF REVERSIBILITY RATINGS

Reversibility ratings	Criteria
Irreversible	The activity will lead to an impact that is in all practical terms permanent.
Reversible	The impact is reversible within 2 years after the cause of the impact is removed.

7. ENVIRONMENTAL IMPACT ASSESSMENT

The biophysical and social environment will be impacted during the construction and operational phases of the agricultural activities. For this reason, the impacts below are assessed for both phases.

7.1 Impacts during the construction process

The construction activities are likely to result in environmental and socio-economic impacts. The identified impacts are listed below and discussed thereafter:

- *Impact on biodiversity;*
- *Generation of dust;*
- *Impact on soil;*
- *Impact on water resources;*
- *Noise generation*
- *Visual Impact*
- *Generation of waste*
- *Socio-economic impact*

7.1.1. Impact on biodiversity

Description of the potential impact

During the construction process, vegetation clearance would be restricted to the footprints of the powerline pylons within the respective wetland areas. These footprints are relatively small and as the wetland areas have been mostly transformed by anthropogenic activities, the impact is regarded as minimal.

In addition to the clearance of vegetation, there is a possibility of alien invasive species spreading throughout the wetland areas.

Significance of the impact

The proposed wetland areas have mostly been disturbed by human and urban activities however, as mentioned, the proposed wetland areas fall within an area which has been characterised as “*Critical Biodiversity Area*” in accordance with the MBSP, 2014. As these areas have already been affected, it is noted that the magnitude of the impact is regarded to be low. The extent of the impact will be site specific and of short duration during construction and for this reason the impact is regarded to be of very low significance prior to the implementation of mitigation measures.

TABLE 9: SIGNIFICANCE OF BIODIVERSITY IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on biodiversity [NEGATIVE]	Low	Site Specific	Short-term	Probable	Very Low	Very Low

Mitigation measures

- The footprint of activities associated with construction activities must be restricted to footprint of the electrical pylons.
- It must be ensured that the materials used during construction activities are located far away from any other watercourse or drainage lines.
- All disturbed areas must be rehabilitated as soon as possible following construction.
- Stipulations of the Environmental Management Program (EMPr) should be adhered to during the construction phases of the project.

7.1.2. Generation of dust

Description of the potential impact

Soil will be disturbed during the construction phase of the proposed project. Heavy moving vehicles used to transport the electrical pylons could result in the generation of dust which could affect adjacent landowners and road users.

The extent of the proposed powerline route is located within a proximity to the residents of Ermelo and the larger portion of the route is located adjacent to the N11 National Road and therefore dust generation would have an impact on the adjacent land users.

Significance of the impact

The footprint of the project area to be affected by the clearance of vegetation, is restricted to the footprint of the electrical pylons. Thus, vegetation clearance is minimal which implies that the magnitude of the impact is medium, even when considering the adjacent landowners and road users. The impacts associated with the generation of dust is also of short duration and site-specific extent and is therefore regarded to be of low significance prior to the implementation of mitigation measures.

Mitigation measures must however be implemented to minimise the generation of dust.

TABLE 10: DUST GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Dust generation [NEGATIVE]	Medium	Site Specific	Short term	Probable	Low	Very Low

Mitigation measures

- Areas may not be disturbed and left for unattended for long periods of time;
- Heavy moving vehicles and other vehicles must adhere to a speed limit of 40km/h;
- Construction site must be sprayed with water to limit the generation of dust of the surfaces (if required).
- Vegetation clearance must be kept to the footprint of the affected areas.

7.1.3 Impact on soil

Description of the potential impact

The construction process will disturb the soil surface and increase the possibility of soil erosion. The construction of the 88kV powerline and expansion of the substation, will result to the alteration and disturbance of the soil surface which could potentially lead to increased erosion and sedimentation in the wetland areas.

Other activities which could have an impact on soil, include any spillage of hazardous substances. Hazardous substances such as oil, diesel etc., could be spilled while refuelling or using machinery, resulting in soil pollution which can alter microbial processes and be toxic to soil organisms.

Significance of the impact

During establishment, soil could be impacted by the following:

- Erosion; and
- Contamination with the use and possible spillage of hazardous substances.

As activities will be taking place within wetland areas, the impact of soil pollution is of medium magnitude, site specific and short duration and for this reason the impact is of also of low significance prior to the implementation of mitigation measures.

As for erosion, it is noted that the clearance of vegetation is restricted to the footprint of the electrical pylons and therefore the magnitude of the impact is low, site specific and of short duration. This will result to the impact being of low significance prior to the implementation of mitigation measures.

TABLE 11: IMPACT ON SOIL

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Soil pollution [NEGATIVE]	Medium	Site Specific	Short-term	Probable	Low	Very Low
Erosion [NEGATIVE]	Low	Site Specific	Short term	Probable	Very Low	Very Low

Mitigation measures

- To minimise the possibility of erosion, it is recommended that no disturbed areas be left unattended. Disturbance and removal of vegetation must be restricted to the proposed footprint.
- Measures to reduce the velocity of water, must be taken on areas prone to erosion.
- Should there be any spillage of hazardous substances during the desilting activities, soil must be removed up to a depth of 300mm and be disposed of at a registered hazardous waste disposal facility. Proof of such disposal must be kept on file.

7.1.4 Impact on water resources

Description of the potential impact

The proposed 88kV powerline alignment will be affecting two wetland areas along the proposed 5km route. These wetland areas were noted in Figure 1 of the Draft Basic Assessment Report. As also noted within the project description, within one section along the proposed powerline route, the powerline is proposed to go underneath the watercourse by means of installing pipelines within which these electrical lines will be placed. This is proposed due to the number of other electrical infrastructure within that specific area which cannot be traversed. This activity will therefore result to significant dredging and moving of soil within the watercourse which could result to sedimentation downstream of the affected watercourse.

As for the other activities proposed within the wetland areas, it is noted that electrical pylon structures will be constructed, and the engineering team will therefore have to consider the geology and soil for the foundations of these respective pylons.

The construction activities to be undertaken with the watercourse could therefore lead to sedimentation and water pollution and for this reason, careful consideration must be given when working within these watercourses.

Significance of the impact

Any spillages of hazardous substances within the wetland areas could result in the pollution of surface and groundwater. As natural functions could be notably altered is water becomes polluted, the magnitude of the impact is rated as medium. Should water become polluted or activities result in sedimentation accumulation, the impact could affect adjacent and downstream water users as well. For this reason, the extent of the impact has been regarded as local, but of short-term duration. This will result to the impact being of medium significance prior to implementing mitigation measures.

The implementation of mitigation measures will be imperative to ensure minimal impact on the water resources.

TABLE 12: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on water resources [NEGATIVE]	Medium	Local	Short-term	Probable	Medium	Low

Mitigation measures

- No material or stockpiles may be stored within 50m from the edge the wetlands areas.
- It must be ensured that all machinery working within the watercourse must be in a good working condition to ensure that there are no oil leaks.
- Sediment traps must be placed downstream of the watercourse to be affected by the pipeline construction underneath the watercourse;
- Should vehicles be washed, it must take place on a designated area, located far from these wetland Areas. Washing of equipment or any vehicles are not allowed within or near any watercourse.

7.1.5 Noise generation

Description of the potential impact

Heavy machinery and construction workers could generate loud operational sounds during the construction phase of the project. As it is noted that the proposed powerline route is located within a proximity to other residents, the generation of noise could have a negative impact on the adjacent landowners and users.

Significance of the Impact

The continuous noise can significantly degrade the quality of life for nearby residents by interfering with daily activities, reducing enjoyment of outdoor spaces, and creating persistent discomfort and

irritation. This disruption is especially problematic for individuals working from home or students needing a quiet environment. High noise levels can also lead to tensions between project developers and the local community, potentially resulting in opposition and legal challenges.

Due to the proximity of other residents, the magnitude of the impact associated with the generation of noise is regarded as medium. This impact is however of short duration and site specific in nature and therefore the impact is regarded to be of low significance prior to the implementation of mitigation measures.

TABLE 13: NOISE GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Noise generation [NEGATIVE]	Medium	Site Specific	Short term	Probable	Low	Very Low

Mitigation measures

- Restrict noisy activities to daytime hours, avoiding early mornings, evenings, and weekends to minimize disruption.
- Provide advance notice to residents about the construction schedule and any noise generation phases.
- Appoint a Community Liaison Officer (CLO) to handle complaints and keep residents informed about progress and noise mitigation efforts.

7.1.6 Visual Impact

Description of the potential impact

The Construction 88kv powerline's impacts on the visual environment include site disturbance, which disrupts the natural or existing landscape, and the storage of materials and machinery, making the area appear untidy and visually unattractive. The presence of construction equipment, debris, and unfinished structures can significantly detract from the aesthetic appeal of the site, causing a negative visual impact until the project is completed and the site is restored.

Significance of the Impact

The construction of the powerline will be undertaken adjacent to various visual receptors (residents and road users of the N11). An untidy construction site could be visually unattractive, having a negative impact on the surrounding area. Due to the surrounding visual receptors within a proximity to the site, the impact

is regarded to be of medium magnitude. However, the short duration of the construction phase and site-specific nature of the impact will reduce the impact to be of low significance prior to the implementation of mitigation measures.

TABLE 14: VISUAL IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Visual Impact [NEGATIVE]	Medium	Site Specific	Short-term	Probable	Low	Very Low

Mitigation measures

- Ensure that the site is kept neat and tidy at all time
- Sufficient waste bin must be provided and it must be ensured that no waste is dumped in adjacent areas
- Cordon off all material storage /stock place Areas.
- Cordon off the site with shade cloth if necessary

7.1.7 Generation of waste

Description of the potential impact

Waste will be generated during the construction phase of the proposed powerline. The waste to be generated during the construction phase include the following:

- General waste, which is generated by the construction workers;
- Construction waste, which is generated as a result of the construction activities being undertaken (steel/metal, rubber, cement etc.); and
- Effluent (from construction workers).

If the above waste streams are not managed and mitigated, it could result to having a significant impact on the surrounding environment.

Significance of the Impact

As noted above, the generation of waste could have a significant impact on the surrounding environment if it is not properly mitigated. As activities will also be undertaken within sensitive environments such as wetland areas, it is believed that the magnitude of the impact can be regarded as high, as natural processes could be significantly altered if waste is not managed during the construction phase. The site-specific extent and short-term duration reduced the significance of the impact to be medium prior to the implementation of mitigation measures and therefore these measures must be implemented to ensure that the impact can be regarded to be of low significance.

TABLE 15: WASTE GENERATION

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Waste generation [NEGATIVE]	High	Site Specific	Short term	Probable	Medium	Low

Mitigation measures

- Develop a comprehensive waste management plan before construction begins, identifying potential sources of waste and strategies to minimize such waste;
- Keep accurate inventories to prevent over-ordering and ensure efficient use of materials.
- Recycle and re-use where applicable;
- Provide chemical toilet facilities for all staff members and ensure that construction staff do not defecate in the surrounding environment;
- Ensure that these toilet facilities are regularly cleaned;
- Keep detailed records of waste generation and disposal practices to track progress and ensure compliance with waste management goals.

7.1.8 Socio-economic Impact

Description of the potential impact

During the construction activities, various temporary job opportunities will be created for the construction activities proposed.

In terms of safety and security, there is always risk associated when working with heavy machinery, large infrastructure and electrical cables and therefore it is essential that all workers comply with the Health and Safety Act 85 of 1993.

Significance of the impacts

Based on the methodology detailed in **Section 6**, the following ratings have been assigned to the 'employment opportunities and impact associated with health and safety of employees, respectively.

The job opportunities during the construction phase are short-lived and therefore the impact is only of medium (+) significance. In terms of the health and safety aspects of workforce, the significance of the impact has been rated to be of low significance due to the short construction timeframe and site-specific nature. Mitigation measures must however be adhered to.

TABLE 16: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Job opportunities [POSITIVE]	Medium	Local	Short-term	Define	Low	Medium (+)
Health and Safety [NEGATIVE]	Medium	Site Specific	Short-term	Probable	Low	Very Low

Mitigation measures

The applicant and/or project manager must ensure that local residents receive preference for job opportunities where local labour might be required.

It is imperative that all personnel adhere to the Occupational Health and Safety Act 85 of 1998 and that no personnel enter any other surrounding properties.

7.2 Operational Phase Impacts

During operation the activities are likely to result in the following environmental and socio-economic impacts:

- *Impact on water resources;*
- *Visual Impact;*
- *Socio-economic impact.*

7.2.1. Impact on water resources

Description of the potential impact

During operation, some of the electrical pylons will be located within the wetland area and a pipeline will run underneath the one watercourse to convey the electrical cables within the area where the presence of other overhead electrical powerlines are prohibiting the proposed 88kV powerline to go over the watercourse. The impact on the wetland areas will be minimal and the areas surrounding the pylons would have been rehabilitated and the operation of the structures would not result in any impact on the watercourse. The activity could have an impact on the hydrology of the watercourse, however the possibility of impacting the hydrology was found to be improbable and therefore of very low significance

As for the 88kV powerline running underneath the watercourse (conveyed in pipelines), it is not expected that the operational activities would have any impact on the water quality or quantity, except if maintenance is required to be undertaken and the pipelines would have to be excavated in order to undertake some repairs.

Significance of the impact

As the alteration of the natural processes and functions is regarded to be negligibly altered when considering the impact on the water resource, the magnitude is regarded to be very low. The impact is however of long-term duration but site specific and therefore the impact is rated to be of low of magnitude.

TABLE 17: IMPACT ON WATER RESOURCES

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Impact on water resources [NEGATIVE]	Very Low	Site Specific	Long-term	Probable	Low	Very Low

Mitigation measures

- Should maintenance activities be undertaken, the existing and drafted Environmental Management Programme must be implemented and adhered to.

7.2.2 Visual Impact

Description of the potential impact

The proposed powerline can be visually intrusive, disrupting natural and architectural landscapes and altering skylines, which detracts from scenic views and reduces overall visual appeal. This can lead to decreased property values, diminished sense of place and community identity, as well as resident dissatisfaction. The perceived environmental impact and disruption of green spaces further diminish the enjoyment and recreational value of the area. Additionally, the continuous exposure to unattractive structures could result to stress and anxiety.

Significance of the Impact

The powerline will be located adjacent to various visual receptors (residents and road users of the N11). Due to the surrounding visual receptors, the impact is regarded to be of medium magnitude, long-term duration and site-specific extent. The impact is therefore rated to be of medium significance prior to the implementation of mitigation measures. Unfortunately, no mitigation measures can be proposed to reduce the negative impact.

TABLE 18: VISUAL IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Visual Impact [NEGATIVE]	Medium	Site Specific	Long-term	Definite	Medium	Medium

Mitigation measures

- Paint structures in colors that match the natural or built environment to reduce visual intrusion.
- Establish green belts or buffer zones with dense vegetation between the powerlines and residential areas.
- Where feasible, use underground cables instead of overhead lines to eliminate visual impact.
- Use advanced materials and designs that are less visually obtrusive, such as monopoles or lattice towers with minimal visual footprint.

7.2.3 Socio-economic Impact

Description of the potential impact

The construction of the 88kV powerline within the northern part of Ermelo is poised to significantly enhance the reliability of electricity supply in the region. This critical infrastructure project aims to alleviate the persistent electricity shortages that have plagued the northern section of Ermelo. By upgrading the powerline, the project will reduce the strain on the current, aging electrical infrastructure, thereby improving overall system stability and efficiency. Additionally, the construction phase will generate numerous job opportunities for local residents, benefiting both skilled and unskilled workers within the proposed area. This influx of employment will not only bolster the local economy but also provide valuable experience and income for the community. Furthermore, the revenue collected by the Msukaligwa Local Municipality from the enhanced electricity supply will be reinvested into the municipality, facilitating improved service delivery and fostering further development initiatives for the benefit of the local population.

Significance of the impact

Based on the methodology detailed in **Section 6**, the following ratings have been assigned to the 'Socio-economic' impact before and after mitigation.

TABLE 19: SOCIO-ECONOMIC IMPACT

IMPACT	BEFORE MITIGATION					AFTER MITIGATION
	Magnitude	Extent	Duration	Probability	Impact Rating	Impact Rating
Socio-economic [POSITIVE]	High	Local	Long-term	Definite	High (+)	High (+)

The improved infrastructure will have a positive impact on the local community. No mitigation measures would be required to further enhance this impact.

7.3 Environmental Impact Statement

The table below summarises the impacts identified and assessed for the construction activities proposed for the project:

TABLE 20: ENVIRONMENTAL IMPACT STATEMENT

IMPACT	SIGNIFICANCE BEFORE MITIGATION MEASURES	SIGNIFICANCE AFTER MITIGATION MEASURES
Construction Phase Impacts		
Biodiversity Impact	Very Low	Very Low
Generation of dust	Low	Very Low
Soil pollution	Low	Very Low
Soil erosion	Very Low	Very Low
Impact on water resources	Medium	Low
Noise generation	Low	Very low
Visual impact	Low	Very low
Generation of waste	Medium	Low
Job opportunities	Low	Medium (+)
Health and Safety	Low	Very Low
Operational Phase Impacts		
Impact on water resources	Low	Very low
Visual impact	Medium	Medium
Socio-economic Impact	High (+)	High (+)

8. CONCLUSION AND WAY FORWARD

8.1 Assumptions and Limitations

In undertaking this investigation and compiling the Draft Basic Assessment Report, the following has been assumed:

- The information provided by the proponent is accurate and unbiased, and no information that could change the outcome of the Environmental Authorisation process has been withheld.
- The scope of this investigation is limited to assessing the environmental impacts associated with the establishment and operation of the powerline.
- The conclusion and recommendations proposed are based solely on the information, scope of works as agreed with the proponent.

8.2 Conclusion

The essence of all environmental assessment processes is aimed at ensuring informed decision-making and environmental accountability. Furthermore, it assists in achieving environmentally sound and sustainable development. The impact assessment for this project has been undertaken in line with the requirements prescribed in the NEMA regulations.

The assessment of the possible impacts associated with the construction and operational activities, concluded that the impact on the surrounding environment is of **medium to low significance** and as for the operational impact, the upgrading of the electrical powerline will have a positive impact on the social environment as additional electrical load will be available for the town of Ermelo. Recommendations have however been made to address the impacts which could affect the biophysical and socio-economic environment. Recommendations for the mitigation of impacts are included within Section 7 and also the Draft Environmental Management Plan attached.

The significance of the potential environmental (biophysical and social) impacts associated with the proposed project are discussed in detail under **Section 7**.

It is the opinion of the EAP that the EA for this project should be granted, and the proposed mitigation included as the conditions of the authorisation.

8.2 Way Forward

The next steps for the Basic Assessment process will be to distribute the Draft Basic Assessment Report and make it available to the public (including the registered I&APs) and Organs of State for a period of 30 days, during which the Competent Authority (DARDLEA) will also be given the opportunity to provide comments on the report. After the 30-day comment period, all comments will be addressed by the EAP and incorporated within the Final Basic Assessment Report to be submitted to the DARDLEA for decision making. All registered I&APs will be notified of the decision and will be given an opportunity to appeal as per the NEMA requirements.

9. REFERENCES

Msukaligwa Local Municipality Final Integrated Development Plan 2022-2027

National Environmental Management Act 107 of 1998 (NEMA 107, 1998)

General Notice Regulation 982, 983, 984 and 985 of 2014 (as amended in 2017)

Mpumalanga Biodiversity Conservation Plan, 2014

Mucina, L. and Rutherford, M.C. (eds.) 2006. The vegetation of South Africa, Lesotho and Swaziland. Strelitzia 19. South African Biodiversity Institute, Pretoria.