


# 2018

**FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED  
DEVELOPMENT OF  $\pm 9$ KM 88kV ESKOM ETNA – TRADE ROUTE  
POWER LINE WITHIN THE JURISDICTION OF CITY OF  
JOHANNESBURG METROPOLITAN MUNICIPALITY, GAUTENG  
PROVINCE**

**JUNE 2018**

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## EXECUTIVE SUMMARY

Nsovo Environmental Consulting (hereafter referred to as Nsovo) has been appointed, as the Environmental Assessment Practitioner (EAP) by Eskom Holdings SOC Ltd (hereafter referred to as Eskom) to undertake a Basic Assessment process for the proposed development of approximately ±9km 88kV Eskom Etna – Trade Route power line near Lenasia, Ward 122 within the jurisdiction of City of Johannesburg Metropolitan Municipality, Gauteng Province.

In terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended) (NEMA), as read with the December 2014 EIA Regulations GN 982 and GN983 as amended, the proposed development triggers activities which require Eskom to obtain an Environmental Authorisation (EA) through a Basic Assessment (BA) process from the National Department of Environmental Affairs (DEA) prior to commencement of the development.

The description of associated listed activities which trigger the BA process are listed in this report and this includes

- **Activity 11** (i.e. the development of facilities or infrastructure for the transmission and distribution of electricity outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 Kilovolts).

This Basic Assessment Report contains the following:

- The details and expertise of the Environmental Assessment Practitioner (EAP) who prepared the report;
- The location of the proposed activities;
- A plan which locates the proposed activities to be undertaken;
- Description of the scope of the proposed project including the listed activities and the associated structures and infrastructures;
- Description of Policy and Legislative content within which the development is located and an explanation of how the development complies with and responds to the legislation and policy context;

- A motivation for the need and desirability of the proposed development;
- A full description of the process followed to reach the proposed preferred activities; and
- An undertaking under oath or affirmation by the EAP.

Due to the nature of the proposed project, being a replacement of the existing alignment, no alternative routes were identified and assessed as this would defeat the purpose. Subsequently only one route alternative has been considered; alongside other alternatives such as structural and technical.

The servitude is 31m wide and stretches for approximately 9km starting from the existing Etna substation via Lehae substation to the Trade Route switching station which is under construction. The route runs parallel to the R553 Main Road starting from Etna substation until Olifantsvlei dam, whereby it bends along the dam via Rietfontein town to the Trade Route Switching Station (under construction by City Power) near Trade Route Mall. The route has approximately 7 bends and it crosses another power line next to Zakariyya Park. The following advantages have been noted for the proposed route:

- The power line will be built in the existing servitude.
- It runs close to the access road.
- Minimal vegetation will be cleared on the servitude.

From the EAP's and Specialists' point of view, there is no reason why the development should not proceed if the recommendations made in this report, Environmental Management Programme (EMPr) and the specialists' reports are adhered to.

This report was made available to Interested and Affected Parties (I&APs) as well as Organs of State for a period of thirty (30) days in order to afford them an opportunity to review and provide comments. All comments received are included in the Comments and Response Report and are incorporated in this report which is submitted together with the EMPr to the Competent Authority (CA) which is the, Department of Environmental Affairs (DEA) for decision making.



*“From the world we live to the world we seek ”*

## DOCUMENT CONTROL

### PROJECT TITLE:

FINAL BASIC ASSESSMENT REPORT FOR THE PROPOSED DEVELOPMENT OF ±9KM 88kV  
ESKOM ETNA – TRADE ROUTE POWER LINE WITHIN THE JURISDICTION OF CITY OF  
JOHANNESBURG METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

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## LIST OF ACRONYMS AND ABBREVIATIONS

<b>ARC</b>	Agricultural Research Council
<b>CBA</b>	Critical Biodiversity Area
<b>CLN</b>	Customer Load Network
<b>DEA</b>	Department of Environmental Affairs
<b>EA</b>	Environmental Authorisation
<b>EIA</b>	Environmental Impact Assessment
<b>EMPr</b>	Environmental Management Programme
<b>HV</b>	High Voltage
<b>I&amp;APs</b>	Interested and Affected Parties

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<b>km</b>	Kilometers
<b>kV</b>	Kilovolts
<b>MTS</b>	Main Transmission Substation
<b>Mm</b>	Millimetre
<b>NEMA</b>	National Environmental Management Act
<b>SAHRA</b>	South African Heritage Resources Agency
<b>SOC</b>	State Owned Company
<b>SANBI</b>	South African National Biodiversity Institute
<b>Tx</b>	Transmission
<b>WULA</b>	Water Use Licence Application

## 1. INTRODUCTION OF THE PROPOSED PROJECT

Nsovo Environmental Consulting has been appointed by Eskom Holdings SOC Limited (hereafter referred to as Eskom) to undertake a Basic Assessment (BA) study in terms of the National Environmental Management Act, 1998 Act No. 107 of 1998) (NEMA) and the Environmental Impact Assessment Regulations of 2014 (as amended in April 2017) (hereafter referred to as the EIA Regulations) for the proposed development of approximately 9km 88kV Etna-Trade Route power line located within the jurisdiction of City of Johannesburg (CoJ) Metropolitan Municipality in Gauteng Province.

The proposed 88kV power line aims to strengthen the distribution network capacity as well as to improve the quality of electricity supply in the region and the national electricity grid at large. The project will also entail decommissioning of the existing 88kV to make way for the proposed new power line which is planned to be built within the same servitude.

The proposed project triggers activities listed under Government Notices R.983 which required Eskom to obtain an Environmental Authorisation prior to commencement of activities. The proposed project is located near Lenasia within the jurisdiction of the City of Johannesburg Metropolitan Municipality, Ward 122 in the Gauteng Province.

## 2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Nsovo Environmental Consulting has been appointed as the EAP for the proposed project. Nsovo meets the general requirements for EAP as stipulated in the EIA Regulation 13 (1) (2) (3) of 2017. Nsovo is:

- Independent and Objective;
- Has expertise in conducting EIA's;
- Takes into account all relevant factors relating to the application; and
- Provides full disclosure to the applicant and the relevant environmental authority.

Table 1 below provide Details of the EAP and relevant experience. A detailed CV and Qualifications is attached as Appendix E.

**Table 1: Details of the Environmental Assessment Practitioner (EAP)**

<b>Name of Company</b>	Nsovo Environmental Consulting
<b>Person Responsible</b>	Masala Mahumela
<b>Professional Registration</b>	South African Council for Natural Scientific Professions (SACNASP)
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<b>Fax Number</b>	086 602 8821
<b>Email</b>	<a href="mailto:khuliso@nsovo.co.za">khuliso@nsovo.co.za</a>
<b>Qualifications &amp; Experience</b>	B.Sc. Honours Environmental Management <b>10 years of experience</b>
<b>Project Related Expertise</b>	<p>In terms of project related expertise the EAP has completed the following projects:</p> <ul style="list-style-type: none"> <li>• EMPr, WULA and EA amendment for the proposed Juno Gromis 400kV power line</li> <li>• Basic Assessment for the proposed Decommissioning and Demolition of Verwoedberg Substation and 275kV power.</li> <li>• BAR for the proposed Abersethin Substation and loop in and out power lines in Bethlehem.</li> <li>• Basic Assessment for Bloemendal Substation and loop in and out lines.</li> <li>• BAR for the proposed Abersethin Substation and loop in and out power lines in Bethlehem.</li> <li>• EIA, EMP and WULA for Senakangwedi-Senakangwedi B Integration in Limpopo.</li> <li>• EIA for the proposed Tubatse strengthening phase 1 – Senakangwedi B integration within the jurisdiction of Greater Tubatse Local</li> </ul>

Municipality in Limpopo Province.

### 3. DESCRIPTION OF LOCALITY AND THE PROPERTY ON WHICH THE ACTIVITY IS TO BE UNDERTAKEN AND LOCATION OF ACTIVITY ON THE PROPERTY

This section provides detailed information of the proposed location of the power line and associated infrastructure. The main aim is to provide the environmental aspects found within the location of the proposed project and to provide the description of the surroundings.

#### 3.1 LOCALITY OF THE PROPOSED PROJECT

##### 3.1.1 Province

The proposed project is to be undertaken within the Gauteng province which is bordered by North-west, Limpopo, Free State and Mpumalanga provinces in South Africa.

##### 3.1.2 Municipal Wards

The proposed project is in Lenasia, Ward 122 which falls within the City of Johannesburg Metropolitan Municipality.

##### 3.1.3 Affected Farms

The farms affected by the proposed project together with the 21 digit Surveyor General Code are shown in **Appendix G**. The GPS start, middle and end coordinates for the proposed power line are shown in **Table 2** below.

**Table 2: Start, Middle and End coordinate of the proposed route**

Start	Middle	End
26° 23' 08.68"S	26° 21' 16.32"S	26° 19' 08.07"S
27° 52' 29.10"E	27° 53' 03.05"E	27° 52' 16.77"E

### 3.1.4 LOCALITY MAP

**Figure 1** below shows a locality map which depicts the proposed study area at a scale of 1:50 000. The proposed study area is mainly used for residential purposes.

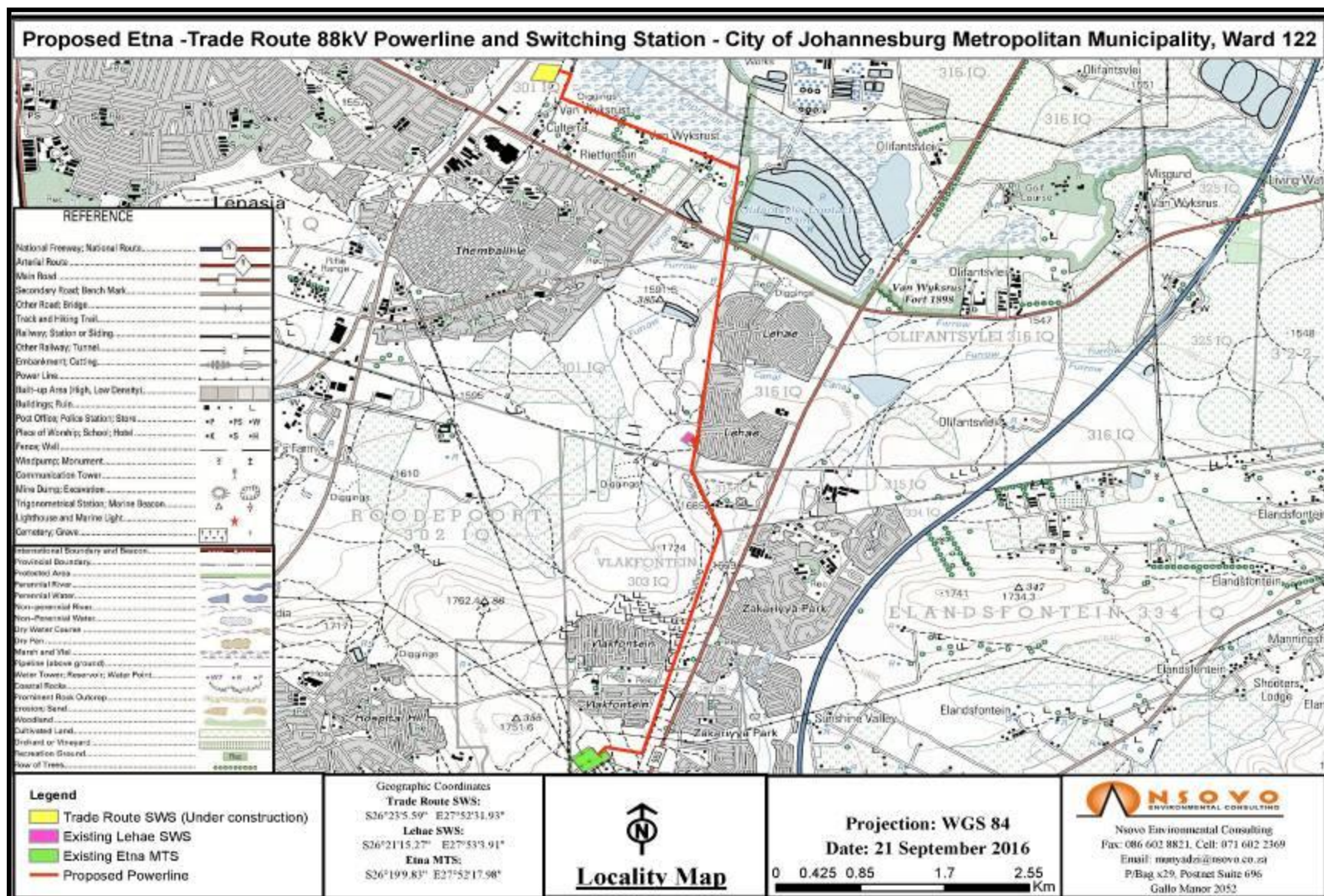


Figure 1: Locality map of the proposed project route

## 3.2 SURROUNDING LAND USES

This section provides the description of the land uses within and around the proposed study area discussed as follows:

### 3.2.1 Residential

The properties located within the study area are residential and agricultural smallholdings as depicted in Figure 3. Residential areas to be affected by the proposed development include Lehae, Zakariyya Park, and Vlakfontein.



**Figure 2: The residential settlements within the proposed study area**

### **3.3 SURFACE INFRASTRUCTURE**

This section provides the description of the surface infrastructures within the study area which include the description of road network, existing substations and power lines.

#### **3.3.1 Road Network**

Access road to the proposed study area is the R553 which will be used as the primary access to site during construction. Other gravel roads and streets within the residential areas will be used to gain direct access to the power line servitude.

#### **3.3.2 Power lines and associated Infrastructure**

The project entails decommissioning of the existing 88kV to allow for the development of the new power line to be built within the same servitude. The proposed power line will connect the existing Etna substation, existing Lehae substation and the Trade Route switching station which is currently under construction.

## **4. DESCRIPTION OF THE SCOPE OF THE PROPOSED ACTIVITIES**

This section provides the description of the proposed activities focusing on the listed activities which triggers the BA process.

### **4.1 BACKGROUND AND THE PROPOSED SCOPE OF WORK**

The existing Etna 88kV power line is old and some of the towers are corroded therefore need to be replaced as it is increasingly becoming difficult to carry out routine maintenance for the line to carry the required load. The condition of the old operating line has deteriorated, and this will result in poor line performance due to faults and outages. Subsequently Eskom proposed to decommission the old 88kV line between Etna substation and Lenasia which is heavily loaded and is predicted to reach full capacity soon thus it will not meet the increased demand in the area.

It is for this reason that Eskom proposes the development of the 88kV power line with the aim of strengthening the distribution network capacity as well as to improve the quality of electricity supply in the region and the national electricity grid at large. The project will also entail decommissioning of the existing 88kV so that the proposed new power line can be built within the same servitude.

In order to meet City Power's needs adequately, Eskom has proposed to develop the new 88kV power line with the following Scope of Work:

- Construction of an 88kV power line which will connect the existing Etna substation, existing Lehae substation and the Trade Route switching which is under construction.
- The proposed power line will be an 88kV double circuit twin turn and will be built with 132kV specifications.
- Currently there is an 88kV power line running from Etna substation to Lenasia. This project aims to replace a section of the existing 88kV power line from Etna substation to Trade Route substation.
- Prior to construction of the proposed power line, the existing line will be decommissioned in phases.
- The proposed power line will be built within the 31m servitude where the existing power line is located.

## **4.2 ACTIVITIES ASSOCIATED WITH THE PROJECT**

The construction phase of the proposed project will take approximately 2 years and the activities included are discussed hereunder.

### **4.2.1 Corridor walk-down**

The main aim of conducting the corridor walk-down is to ensure that sensitive areas are identified, avoided where need be and buffers are created for conservation purposes.

### **4.2.2 Access roads**

As indicated above, primary access to the proposed sites will be through the R553 while secondary access will be public roads as well as private farm roads negotiated with land owners. Where necessary, suitable erosion control measures such as the construction of gabions and culverts to control storm-water will be implemented as part of maintaining the existing access roads.

### **4.2.3 Vegetation clearance**

Thirty-one meter (31m) servitude is required for the proposed 88kV power line; only the immediate footprint within the servitude will be cleared for construction. Further, clearance will be according to the Environmental Management Programme (EMPr) as well as Eskom's policies and guidelines. It is not anticipated that clearing will be required since there is an existing line which will be demolished and the new line erected.

### **4.2.4 Construction of power line**

The civil works will include the establishment of foundations for the proposed 88kV towers.

### **4.2.5 Steelworks structures**

Various types of pylons are under consideration and final selection will depend on the terrain and the possible visual aspects of the selected pylon will be taken into consideration. The towers will be transported in segments and will be assembled on site.

### **4.2.6 Stringing**

Once the pylons have been erected, the conductors will be strung between the pylons and where necessary bird guards installed as recommended by the specialists.

### **4.2.7 Completion of construction work**

Once construction work is complete, the site will be rehabilitated as per the specifications of the EMPr and approved Method Statements, among other activities. The rehabilitation activities will include:

- Removal of excess building material and waste;
- Repairing any damage caused by construction activities;
- Rehabilitating the area affected by temporary access roads;
- Reinstating existing roads; and
- Replacing topsoil and planting indigenous vegetation where necessary.

### 4.3 LISTED ACTIVITIES APPLICABLE TO THE PROJECT

The proposed development triggers listed activities in terms of EIA Regulations as amended. Listed activities applicable to the proposed project are included in Table 5 below:

**Table 3:** Listed Activities triggering EIA applicable to the proposed project

Listed activities	Activity/Project description
<b>GN R. 983, Activity 11</b> The development of facilities or infrastructure for the transmission and distribution of electricity- (i) Outside urban areas or industrial complexes with a capacity of more than 33 but less than 275 kilovolts.	The proposed project entails construction of an 88kV power line.
<b>GN R 983 Activity 19</b> The infilling or depositing of any material of more than 5 cubic metres into, of the dredging, excavation, removal or moving of soil, sand, shell grit, pebbles or rock of more than 5 cubic metres from (i) A watercourse;	The power line will cross a wetland and it is anticipated that more than 5 cubic metres of soil will be removed during the excavation of the tower foundations.
<b>GNR 983, Activity 31</b> The decommissioning of existing facilities, structures or infrastructure for- (i) any development and related operation activity or activities listed in this Notice, Listing Notice 2 of 2014 or Listing Notice 3 of 2014;	The existing 88kV power line will be decommissioned in phases.
<b>GN R. 983 Activity 12</b> The development of- (xii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs- (a) within a watercourse; (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a	The study area contains several watercourses that may be affected during the construction of the proposed development. A Water Use License Application (WULA) will be undertaken accordingly prior to commencement of construction activities.

Listed activities	Activity/Project description
watercourse.	

## 5. APPLICABLE LEGISLATION AND GUIDELINES

The EIA Regulations of December 2014 require a description of applicable legislations in the basic assessment report. Therefore, this section list and describe the acts and legislations applicable to the proposed development. A list of the current South African environmental legislation, which is considered to be pertinent to the proposed development are described in Table 5 below.

Municipal policies, plans and by-laws as well as Eskom policies and world best practices were considered during the undertaking of the EIA process. The list of legislations that are applicable to the project is not an exhaustive analysis; however, it provides a guideline to the relevant aspects of each act.

**Table 4: Legislation pertaining to the proposed project**

Aspect	Relevant Legislation	Brief Description
Environment	National Environmental Management: Act 1998, (Act No. 107 of 1998) as amended.	The overarching principles of sound environmental responsibility are reflected in the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) apply to all listed projects. Construction and operation of activities shall be conducted in line with the generally accepted principles of sustainable development, integrating social, economic and environmental factors.
Biodiversity	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	The purpose of the National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004) (NEMBA) is to provide for the management and conservation of South Africa's biodiversity within the framework of the NEMA and the protection of

Aspect	Relevant Legislation	Brief Description
		<p>species and ecosystems that warrant national protection. As part of its implementation strategy, the National Spatial Biodiversity Assessment was developed.</p> <p>There are many Important Areas along the entire route. Further, Olifantsvlei Contact Dam is located 100m south of the power line to Trade Route switching station.</p> <p>The proposed power line will cross a Class 2 ridge.</p>
Protected Areas	National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003)	<p>The purpose of this Act is to provide for the protection, conservation and management of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes.</p> <p>The diversity of ecological processes was determined throughout the study. This Act will be read together with relevant policies and management plans.</p>
Heritage Resources	National Heritage Resources Act, 1999 (Act No. 25 of 1999)	The National Heritage Resources Act, 1999 (Act No. 25 of 1999) legislates the necessity for cultural and heritage impact assessment in areas earmarked for development, which exceed 0.5 ha. The Act makes provision for the potential destruction to existing sites, pending the archaeologist's recommendations through permitting procedures. Permits are administered by the South African Heritage Resources Agency (SAHRA).
Conservation of Agricultural	Conservation of	The objective is to provide for control over the utilisation of the natural agricultural resources of the

Aspect	Relevant Legislation	Brief Description
Resources Act	Agricultural Resources Act, 1983 (Act 43 of 1983)	Republic to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
Air quality management and control	National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004)	<p>The objective of the Act is to protect the environment by providing reasonable measures for the protection and enhancement of air quality and to prevent air pollution.</p> <p>The Act makes provision for measures to control dust, noise and offensive odours.</p> <p>Section 32 of The National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004) deals with dust control measures in respect of dust control. Whilst none are promulgated at present, it provides that the Minister or MEC may prescribe measures for the control of dust in specified places or areas, either in general or by specified machinery or in specified instances, the steps to be taken to prevent nuisance or other measures aimed at the control of dust.</p> <p>The proposed project may create minimal dust during excavations which is expected to be short term and site specific.</p>
Noise Management and Control	Noise Control Regulations in terms of the Environmental Conservation, 1989 (Act 73 of 1989)	The assessment of impacts relating to noise pollution management and control, where appropriate, must form part of the EMP. Applicable laws regarding noise management and control refer to the National Noise Control Regulations issued in

Aspect	Relevant Legislation	Brief Description
		<p>terms of the Environment Conservation Act, 1989 (Act 73 of 1989).</p> <p>The occupation of site by contractors may generally increase the ambient noise levels in the area. Additional noise may be expected from the increased heavy-duty traffic as well as construction equipment.</p>
Water	National Water Act, 1998 (Act 36 of 1998)	<p>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.</p> <p>There are various wetlands near the proposed power line.</p>
Waste	National Environmental Management: Waste Act 59 of 2008	<p>This Act provides fundamental reform of the law regulating waste management to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development. This act also ensures the provision of national norms and standards for regulating the management of waste by all spheres of government. The National Environmental Management: Waste Act provides for specific waste management measures; licensing and control of waste management activities; remediation of contaminated land; compliance and enforcement;</p>

Aspect	Relevant Legislation	Brief Description
		and for matters connected therewith.
Agricultural Resources	Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	The Act aims to provide for control over the utilization of natural agricultural resources to promote the conservation of the soil, water resources and vegetation and to combat weeds and invader plants. Section 6 of the Act makes provision for control measures to be applied to achieve the objectives of the Act.
Human	The Constitution of South Africa, 1996 (Act No. 108 of 1996)	<p>The Constitution of South Africa, 1996 (Act No. 108 of 1996) provides for an environmental right (contained in the Bill of Rights, Chapter 2). The state is obliged “to respect, protect, promote and fulfil the social, economic and environmental rights of everyone...”</p> <p>The environmental right states that:</p> <p>“Everyone has the right -</p> <ol style="list-style-type: none"> <li>To an environment that is not harmful to their health or well-being; and</li> <li>To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -</li> </ol> <ul style="list-style-type: none"> <li>Prevent pollution and ecological degradation;</li> <li>Promote conservation; and</li> <li>Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”</li> </ul> <p>The undertaking of the BA process is in line with the state’s obligations as outlined in the constitution in its effort to ensure sustainability.</p>

## 6. DESCRIPTION OF THE NEED AND DESIRABILITY OF THE PROPOSED ACTIVITY

This section provides justification for the need of the proposed project with focus on the benefits and its importance to the people within the CoJ and in particular the affected communities.

### 6.1 MOTIVATION FOR THE DEVELOPMENT

Eskom Transmission's ten-year plan indicates that a reliable electricity supply of acceptable quality is essential for the economic development of South Africa. It is also a prerequisite for socio-economic development, as it paves the way to access to education, improved nutrition and health care, and jobs, amongst others. The transmission system plays a vital role in the delivery of a reliable, high quality electricity supply throughout the region and the country at large, by delivering electricity in bulk to load centres wherein the distribution networks owned by Eskom and municipalities deliver electricity to end-users. The transmission system needs to be well-maintained to deliver a reliable supply of electricity, and it also needs to be strengthened to meet changing customer needs.

The City of Johannesburg acknowledges that the provision of electricity infrastructure is of key importance and prioritises the need to provide universal access to this service. The IDP highlights that the area requires considerable resources to eliminate the backlogs of electricity provision to ensure that the provision of service keeps pace with the demand to prevent a further accumulation of backlogs. Within the Local Municipalities, the smaller villages in the rural areas have the greatest backlog. Electrification of rural homes, schools, clinics, small businesses is one of the main policy considerations currently under discussion. Increased number of transmission lines is considered as a need to increase the electricity supply within the area. Eskom will invest in the local economy by providing the infrastructure, which in turn will then assist the municipalities in reaching their objectives. In this way the proposed development is aligned with the municipal objectives and priorities for service delivery and infrastructural development in the area.

This project relates to the high increase in development of housing and commercial activities in the area. The proposed new distribution line is planned to create capacity for the expected load. The proposed development is aligned with Eskom's Integrated Strategic Electricity Planning (ISEP) process, which is intended to provide strategic projections of supply-side and demand-side options to be implemented to

meet long-term load forecasts. It provides the framework for Eskom to investigate a wide range of new supply-side and demand-side technologies with a view to optimising investments and returns. The proposed project will ensure the following:

- Supply link between the existing Etna substation via existing Lehae substation to the proposed substation supply network is strengthened;
- Improvement in reliability of electricity supply which will benefit residential and industries in the area; and
- Improvement of South Africa's socio-economic status.

## **6.2 BENEFITS OF THE PROJECT**

The existing power line will reach its capacity to function optimally and therefore it is important that the new power line be built. The potential benefit of the proposed power line to the area lies in the support of the local economy and housing developments through a reliable electricity supply, which will increasingly benefit the provision of services. The provision of electricity may promote local economic development and further investment in the area. Provision of electricity is critical for economic development, related employment and sustainable development in South Africa. In the context of the development, the proposed project is critical to the improvement of provision of household and commercial electricity.

Electrification has significant positive benefits from a socio-economic and ecological perspective. The provision of electricity leads to many social benefits for organs of state, individuals, industries and communities since it enables development and encourages small and medium enterprise development, and as a result, contributes to a possible increase in disposable income.

### **6.2.1 Supporting Strategies**

The proposed power line is a project which is well within the Municipality's plans, therefore the proposed project is to make way for other approved developments within the Municipality. The objective of this project is to strengthen the arm of electricity within the Municipality and will also allow for load growth and improve reliability of supply. Therefore, the project is provided for in the infrastructure planning of the Municipality.

## **7. DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED PREFERRED ACTIVITY, SITE AND LOCATION WITHIN THE SITE**

The identification of alternatives is an important component of the BA process. The identified alternatives are assessed in terms of environmental acceptability, technical as well as economic feasibility during the BA process wherein the preferred alternative is highlighted and presented to the Authorities.

Due to the nature of the proposed project, being a replacement of the existing alignment, no alternative routes were identified and assessed as this would defeat the purpose. Subsequently only one route alternative has been considered; alongside other alternatives such as structural and technical. The proposed development will entail demolishing the existing power line to erect the new power line on the same servitude, hence once route alternative. This power line will commence at the existing Etna substation via the existing Lehae substation and terminate at the Trade Route switching station (under construction by City Power).

The project has considered technical alternatives (Section 7.1) of which were found to be economically and environmentally viable compared to the other options. Further, the no-go alternative has also been considered as part of the environmental assessment process.

The selection of project alternatives was primarily based on Eskom's prefeasibility study that technically determined the broad location based on the need. Subsequent site visits were undertaken by the environmental and specialist teams. Further, a detailed public consultation is being undertaken to assess the viability of the selected route alternative which may result in the identification of more corridors for consideration to assess the economic need and desirability of the project. The route selection process also focused on reviewing the municipal Integrated Development Plan, Eskom's 10 Year Development Plan and associated documents that address current and future development in and around the area.

### **7.1 DETAILS OF ALTERNATIVES CONSIDERED**

This section describes the alternatives considered and includes the technical, structural, route and no-go alternatives which are discussed as follows:

### 7.1.1 Technical Alternatives

Two technical alternatives have been identified for the proposed project, i.e. the overhead power line and underground cabling. Instead of constructing the proposed power line above ground, underground construction is considered to be a feasible alternative. The advantages of the underground alternative would include a reduced impact on bird interaction and a distinct visual impact benefit.

However, for the proposed project the underground power line alternative would not be the most feasible owing to the undulating nature of the area. This could cause major technical problems and would have cost implications. Technically, underground cables need to be insulated against the surrounding soil. On low voltage reticulation networks (11kV & 22kV) the heat generated by the cable is low enough for standard insulation to be used; however, on higher voltages the method of electrical and heat insulation becomes more burdensome.

Control of electrical losses and heat control are critical for underground cables. As a result, cables are as much as 4 times the diameter and 10 times the weight of equivalent overhead lines. Heat control is also a factor in the laying of the cables. Should underground alternative be considered it will require clearance of vegetation and trenching of approximately 9km. Parts of the proposed route passes through wetlands and therefore would pose technical difficulty during trenching and relatively higher negative environmental impacts.

When faults occur on overhead lines they are usually re-energised by automatically reclosing the circuit-breaker within a few seconds of the fault. More serious faults, such as a damaged line may be easily found and repaired within a few days at most. Underground cables have faults that are almost exclusively permanent, requiring inspection and correction on site. This usually requires excavating a section of the power line. As a result, finding the location of faults is not easy unless there is clear evidence of excavation damage. Therefore, the search and repair of underground cables can take several weeks. This may severely compromise the network of the operation.

Economically, costs vary and are dependent on terrain, land use and size of line. However, underground cabling is in orders of magnitude greater than overhead power lines. Underground cables are 3 to 10 times more expensive than overhead lines. Further, the lifespan for underground cables is reported to be much shorter, about half that of overhead power lines.

The underground option is not preferred for this project, particularly given the length and undulating nature of the terrain. Further, sensitive features such as the ridge and wetlands would be highly impacted upon should this option be considered.

### **7.1.2 Structural alternatives**

Several design alternatives have been proposed and are illustrated in Figures 3, 4, and 5 below. It is important to note that the topography and technical requirements such as bend points, will largely dictate the type of tower to be used. These towers include one or more of the following:

- Twin Bersfort/Kingbird Conductor
- Double Circuit Twin Bunting Conductor Suspension Structure (258C)
- Double Strain Pole 208 kN 15 - 90 DEG.

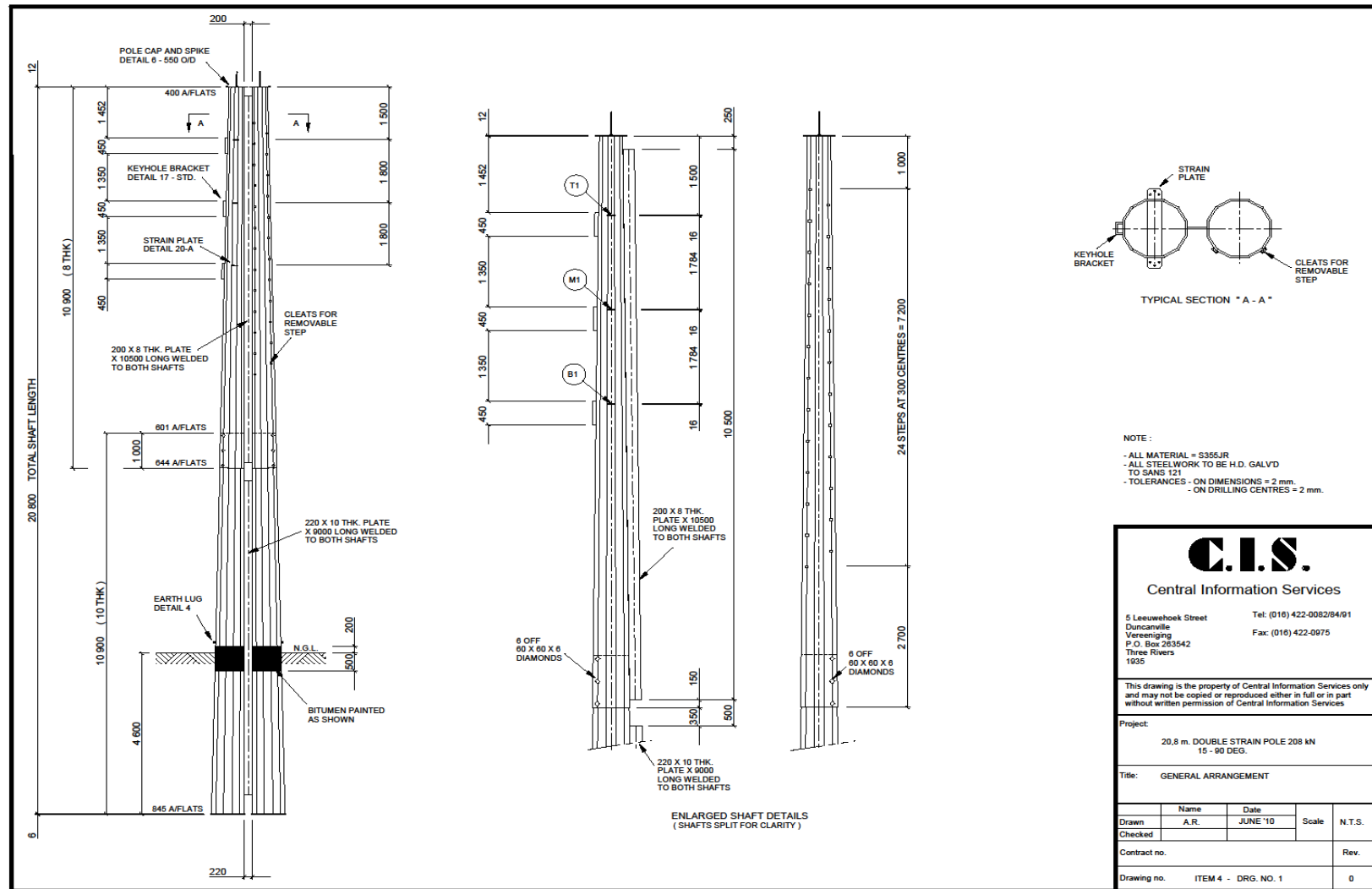


Figure 3: 20, 8 m. Double Strain Pole 208 kN 15 - 90 DEG - General Arrangement

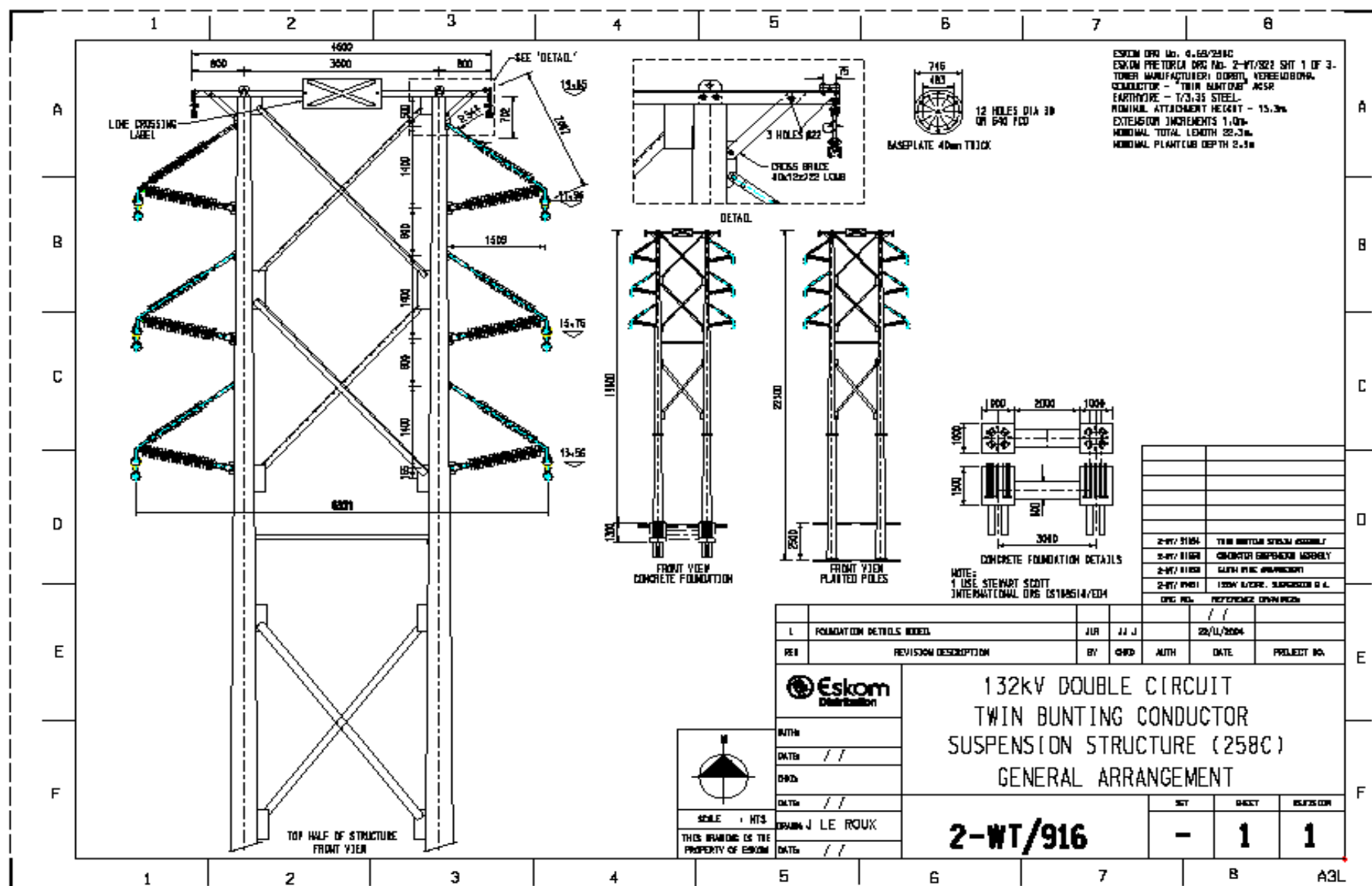


Figure 4: 132kV Double Circuit Twin Bunting Conductor Suspension Structure (258C) - General Arrangement

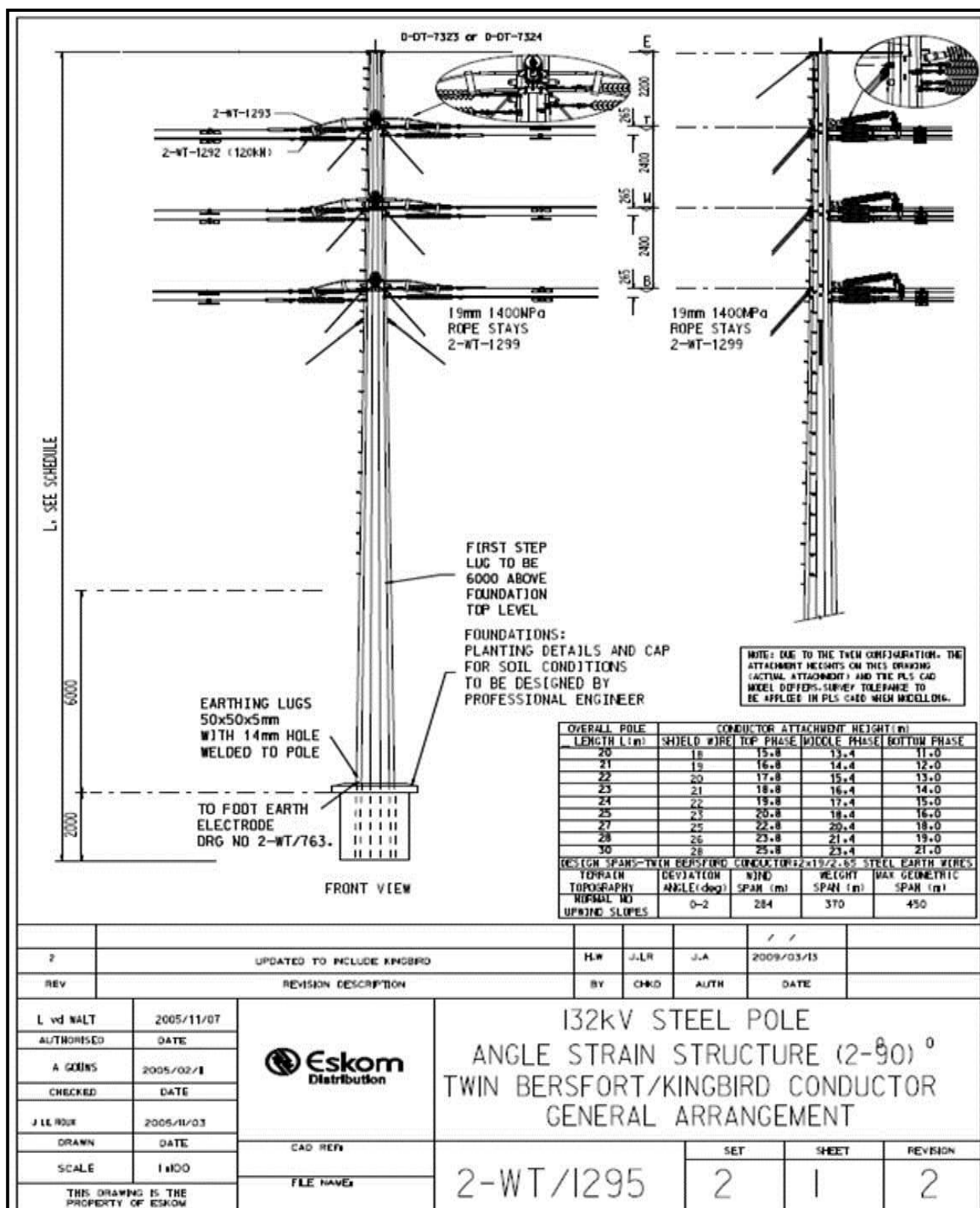


Figure 5: 132kv Steel Pole Angle Strain Structure (2-90) Twin Bersfort/Kingbird Conductor - General Arrangement.

### 7.1.3 Route Alternatives

This section provides detailed information of the route alternatives considered for the proposed power line. This entails the description of the proposed power line alignment and no-go alternatives which are discussed as follows:

#### 7.1.3.1 Route alternatives of the proposed power line

The proposed development entails demolishing the existing power line in order to erect the new power line on the same servitude; hence one route alternative has been considered as indicated above.

**Table 5: Start, middle and end coordinates**

Route	Latitude	Longitude	Length of route
Start	26° 23' 08.68"S	27° 52' 29.10"E	Approximately 9km
Middle	26° 21' 16.32"S	27° 53' 03.05"E	
End	26° 19' 08.07"S	27° 52' 16.77"E	

The servitude is 22m wide and stretches for approximately 9km starting from the existing Etna substation via Lehae substation to the Trade Route switching station which is under construction. The route runs parallel to the R553 Main Road starting from Etna substation until Olifantsvlei Dam, whereby it bends along the Dam via Rietfontein town to the Trade Route switching station near Trade Route Mall. The route has approximately 7 bends and it crosses another power line (voltage not known) next to Zakariyya Park. The following advantages have been noted for the proposed route:

- It runs close to the access road.
- The power line will be built in the existing servitude.
- Minimal vegetation will be cleared on the servitude.

**Table 6: Summary of Specialist Findings Route Alternatives**

Specialist	Description of the route alternatives
Avifauna	<p>The study area is located within the Grassland &amp; Savannah Biomes and is comprised of the Carletonville Dolomite Grassland, Soweto Highveld Grassland and Gauteng Shale Mountain Bushveld vegetation types. Investigation of the immediate study area revealed the presence of grassland, woodland, water bodies (rivers, dams, wetlands and drainage lines), rocky outcrops, urban areas and stands of Eucalyptus trees. The most sensitive of the micro habitats within the study area is the water bodies and woodland vegetation which provide foraging and roosting habitat for the large diversity of water bird and passerine species recorded in the area.</p> <p>A fairly wide diversity of species (305 species) could be found in the broader area within which this site falls based on existing data sources. Although eight Red List species have been recorded in the broader study area, most of the site is already relatively highly impacted upon by human activities and the likelihood of these species utilizing the site is considered to be low for most species. This is particularly true of the Red List species, of which only a handful are likely to frequent the site itself.</p> <p>In general terms, the impacts that could be associated with a project of this nature are: collision of birds on certain sections of the lines, particularly in the open grassland-type habitat and wetland areas; electrocution of large birds perched on the poles; destruction of habitat, and disturbance of birds. Relevant to this study area, these impacts are rated as being of low to medium significance as a result of relatively high existing levels of habitat degradation and disturbance and the low reporting rates for power line sensitive Red List species.</p>
Biodiversity	<p>The existing Etna – Trade Route line is situated within a largely urbanised environment and is exhibit by typical responses of the natural environment to the pressures of urbanisation. High levels of habitat fragmentation and isolation is noted across the region, although a moderate level of connectivity is noted for the remaining areas of natural habitat that are crossed by the line. Limited</p>

Specialist	Description of the route alternatives
	<p>agriculture and extensive urbanisation has played a major role in transforming the landscape of the immediate region, while remnants of mining infrastructure, secondary anthropogenic activities, and mine dumps are prevalent in the immediate surrounds, particularly to the south of the line. The status of remaining natural grasslands exhibits a typical degradation gradient, varying between pristine and deteriorated and is also a reflection of the size of remnant area; smaller portions are frequently more deteriorated, while edge effects and secondary impacts have less of an impact on larger areas.</p> <p>A Class 2 ridge is crossed by the existing line and impacts associated with the construction activities of new lines are regarded a significant threat to the continued conservation of this area, particularly in view of the presence of pristine grasslands that buffer the ridge from nearby development and anthropogenic activities. This ridge is situated within the proposed corridor was found to exhibit a high proportion of natural, climax grassland that is representative of the regional ecological types, and is therefore regarded a highly sensitive environment. The proposed activity is expected to result in limited, but manageable impacts on the status of these areas. A number of large wetland systems and rivers are situated near the proposed route. These drainage systems form part of the Vaal Catchment area, none of which are likely to be affected adversely by the proposed activity. The status of these areas is generally found to be severely degraded due to current land use, existing agricultural activities, trampling, overgrazing, erosion and poor water quality from historic mining activities.</p> <p>The study area is located in the Mesic Highveld Grassland Bioregion, more specifically spatially represented within the following ecological types (as defined by Mucina and Rutherford, 2006): Carletonville Dolomite Grassland (Vulnerable); Eastern Temperate Freshwater Wetlands (Vulnerable); Gauteng Shale Mountain Bushveld (Vulnerable); and Soweto Highveld Grassland (Endangered). The faunal assessment for the proposed upgrade of the Etna – Trade Route line was conducted in October 2016; the study approach focused on a quantitative and qualitative habitat assessment and collection of data on ecological indicators</p>

Specialist	Description of the route alternatives
	<p>such as tracks, dung, diggings, etc. of mammals present in the study area. This assessment also focused on Gauteng's fauna species of conservation concern.</p> <p>A total of twenty-nine animal species were recorded in the study area during this brief survey. This diversity includes:</p> <ul style="list-style-type: none"> <li>• 6 insect species;</li> <li>• 36 bird species; and</li> <li>• 2 mammal species.</li> </ul> <p>The alien and invasive Common Myna, <i>Acridotheres tristis</i> (Linnaeus, 1766) was recorded. No Red Data species were recorded during the brief survey period.</p>
Geotechnical	<p>Geological map of the study area indicate that the geology of the area is dominated by the Transvaal, Rooiberg and Griqualand-Wet groups followed by the Ventersdorp group in the north. The Carletonville Dolomite Grassland is associated with Dolomite and chert of the Malmani Subgroup (Transvaal Supergroup). The remainder of the study area is dominated by shale</p> <p>Therefore its highly recommended that dolomite stability investigation be carried out for the proposed development of ±9km 88kv eskom etna – trade route powerline. The purpose of this investigation would be to assess the stability of the study area in respect to avoid division caused by the pylons and sinkholes since the area is dolomitic environment.</p>
Heritage	<p>HCAC was appointed to assess the study area in terms of the archaeological component of Section 35 of the NHRA as part of the basic assessment for the project. No archaeological sites (Iron Age or Stone Age) of significance were recorded. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.</p> <p>In terms of Section 34 of the Act (Built Environment) a single ruin occurs in close proximity to the power line (approximately 30 meters). The exact age of the structure is unknown but it could possibly be older than 60 years and if the structure will be impacted on, it is recommended that the age of the structure should be confirmed. If the structure is confirmed to be older than 60 years, it is</p>

Specialist	Description of the route alternatives
	<p>recommended that a conservation architect should be appointed to assess the structures and assist with the application of a demolition permit.</p> <p>In terms of Section 36 of the Act no formal burial sites were recorded in the study area. There are however, several stone cairns recorded of which the purpose is unknown, but these should be treated as graves unless proven otherwise. If any other graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation. Due to the subsurface nature of archaeological remains and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project as part of the EMP.</p> <p>The study area is surrounded by residential developments (formal and informal) and no significant cultural landscapes or viewsapes were noted during the fieldwork. Based on the results of the field survey of the proposed development there are no significant archaeological risks associated with the development. HCAC is of the opinion that from an archaeological point of view there is no reason why the development should not proceed if the recommendations as made in the report are adhered to.</p>
Wetland	<p>The study area is located within Quaternary Catchments A22A and C22H and is in the eighth water management area, the Upper Vaal. In this water management area, the major rivers include the Vaal-, Wilge, Suikerbosrant and Klip River. The proposed power line alignment does not traverse any major rivers but rather the wetland areas associated with the Klip River and/or tributaries that drain into the Klip River and Rietspruit.</p> <p>A total of three wetlands were recorded within the study site. These wetlands were classified as channelled valley bottom wetlands except for a non-perennial system (drainage lines) in the middle of the site. More wetlands not included in the assessment are located within the surrounding area. Another channelled valley bottom wetland not affected by the proposed alignment is located to the east of the R553. Two small artificial depressions one south of the Trade Route substation (under construction) and one to</p>

Specialist	Description of the route alternatives
	<p>the south of the existing Etna substation (created by sand mining) are also located within the surrounding area. Both the channelled valley bottom and non-perennial drainage lines have been impacted on.</p>
Ridge	<p>The study site was evaluated in terms of compositional aspects, including Red Data species, geology and substrate heterogeneity, and topography and habitat availability. Factors such as exotic vegetation, species cover and utilization (trade or collect) of specific species were also considered. The functional aspects of the ridge habitat were assessed by considering the connectivity of the ridge to other ridge areas, as well as to adjacent areas of natural vegetation. Impacts on the ridge ecology were rated, discussed and mitigation measures proposed.</p> <p>The proposed route falls in an area consisting of shale and quartzite, as well as in a dolomitic area.</p> <p>The ridges on the study site (within 200m of the proposed power line) fall in the Gauteng shale mountain bushveld. There is no arboreal component on the ridges, except for a small area of indigenous closed savannah on a section of the north-facing slope of the Class 1 ridge on site, and some scattered alien trees. Rupicolous habitat is plentiful, ranging from rocky grassland to larger boulders on the Class 1 ridge.</p> <p>The majority of the Class 1 &amp; 2 ridges on site are in pristine condition with minor disturbances by urban development and some related impacts including illegal rubble- and chicken slaughter waste dumping. The cover of alien vegetation on the ridges constitutes less than 5% and can be relatively easily controlled, since these are mostly larger trees including <i>Acacia mearnsii</i> and <i>Eucalyptus</i> spp.</p> <p>Class 2 ridge on the study site slopes towards the existing Etna Eskom substation with an average slope of 8% over a distance of approximately 1km from the crest to the substation.</p> <p>Class 3 ridge on the study site is highly transformed by urban development.</p> <p>The study site also lies in the quarter degree square 2628AD (Springs). Mucina &amp; Rutherford (2006) classified the area as Soweto</p>

Specialist	Description of the route alternatives
	<p>Highveld Grassland, a gently to moderately undulating landscape on the Highveld plateau supporting short to medium high, dense, tufted grassland dominated almost entirely by <i>Themeda triandra</i>, and accompanied by a variety of other grasses. It is in places undisturbed, with scattered small wetlands, narrow stream alluvia and pans. Occasional ridges or rocky outcrops interrupt the continuous grassland cover. This vegetation unit comprises shale, sandstone or mudstone, or the intrusive Karoo Suite dolerites which feature prominently. The soil is deep and red on the flat plains. This vegetation unit is considered endangered. Its conservation target is 24%. Only few patches are conserved in statutory reserves and a few private nature reserves. Almost 50% of the unit is already transformed by cultivation, urbanization, mining and road infrastructure and some areas have been flooded by dams.</p> <p>Although no development may take place on the Class 1 ridges and a 200m buffer zone must be implemented around these ridges, it is the findings of this report that the proposed activity will pose minimum risk to the habitat and biodiversity of the ridges, should all mitigation measures be implemented and should the contractors be guided by an ECO on a daily basis for the period of installation. As the proposed power line installation is of relatively short duration, it is possible to minimise impacts on the ecology of the ridge, which must include rehabilitation of the affected areas.</p>

### 7.1.3.2 No-go alternative

In accordance with GN R982, consideration must be given to the option not to act. This option is usually considered when the proposed development is envisaged to have significant negative environmental impacts that mitigation measures cannot ameliorate the identified impacts effectively. The no-go alternative would be the option of not undertaking the development of the proposed project. It would imply that the current electricity supply network is not strengthened, industrial development in the area will be hindered and the integration of potential renewable energy in the area will not be possible.

## 7.2 PUBLIC PARTICIPATION PROCESS

The EIA Regulations require that during the undertaking of a Basic Assessment (BA) process, the organs of State together with Interested and Affected Parties (I&APs) and the general public be informed of the application for EA and be afforded an opportunity to comment on the application.

Public Participation Process (PPP) is any process that involves the public in problem solving and decision-making and it forms an integral part of the BA process. The PPP provides people who may be interested in or affected by the proposed development, with an opportunity to provide comments and to raise issues or concern, or to make suggestions that may result in enhanced benefits for the project. The primary purpose of the PPP report is as follows:

- To outline the PPP that was undertaken;
- To synthesise the comments and issues raised by the key stakeholders, I&APs and
- To ensure that the EIA process fully address the issues and concerns raised.

Chapter 6, Regulation 39 through 44, of the EIA Regulations stipulates the manner in which the PPP should be conducted as well as the minimum requirements for a compliant process. These requirements include but not limited to:

#### (a) Fixing a notice board at or on the fence of-

- (i) The site where the activity to which the application relates is or is to be undertaken; and
- (ii) A place conspicuous to the public at the boundary of the site

**(b) Giving written notice to-**

- (i) The occupiers of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;
- (ii) The owners or persons in control of that land occupiers of land adjacent to the site where the activity is or is to be undertaken and to any alternative site where the activity is to be undertaken;
- (iii) The municipal councillor of the ward in which the site and alternative site is situated and any organisation of rate payers that represent the community in the area;
- (iv) The municipality which has jurisdiction in the area;
- (v) Any organ of state having jurisdiction in respect of any aspect of the activity; and
- (vi) Any other party as required by the competent authority;

**(c) Placing an advertisement in-**

- (i) One of the local Newspaper within or around the proposed site

### 7.2.1 PUBLIC PARTICIPATION PRINCIPLES

The principle of the Public Participation holds that those who are affected by a decision have the right to be involved in the decision-making process (i.e. the public's contribution will influence the decision). One of the primary objectives of conducting the PPP is to provide interested and affected parties with an opportunity to express their concerns and views on issues relating to the proposed project. The principles of public participation are to ensure that the PPP:

- Communicates the interests of and meet the process needs of all participants.
- Seek to facilitate the involvement of those potentially affected.
- Involves participants in defining how they participate.
- Is as inclusive and transparent as possible.

## 7.2.2 APPROACH AND METHODOLOGY

The Public Participation approach adopted in this process is in line with the processes contemplated in Regulation 39 - 44, in terms of NEMA, which provides that I&APs must be notified about the proposed project:

## 7.2.3 IDENTIFICATION OF INTERESTED AND AFFECTED PARTIES

Interested and Affected Parties (I&APs) identified include pre-identified stakeholders (government department), landowners and the general public. Notification and request for comments were submitted to the following key stakeholders:

- Gauteng Department of Agriculture and Rural Development;
- National Department of Water and Sanitation;
- South African Heritage Resource Agency and
- City of Johannesburg Metropolitan Municipality;
- City Power
- Gauteng Department of Roads and Transport
- Lehae Primary School
- Trade Route Mall
- Ward 122 Councillor
- Zakariyya Secondary School

The notifications were sent by registered mail; refer to **Appendix D3**

## 7.2.4 PUBLIC PARTICIPATION DATABASE

The Regulations also require that a register of I&APs be kept by the public participation practitioner. In fulfilment of this requirement, such a register is compiled and details of the I&APs including their comments will be updated throughout the project cycle. The database is attached as **Appendix D5**.

### 7.2.5 SITE NOTICES

On the 30<sup>th</sup> September 2016, A2, A3 and A5 size notices were fixed at different conspicuous locations within and around the proposed project study area including City of Johannesburg Metropolitan Municipalities, Ward 122. Photographic evidence of the site notices is attached as **Appendix D1**.

### 7.2.6 DISTRIBUTION OF NOTICES TO SURROUNDING LAND OWNERS / OCCUPIERS

Notification letters were posted via registered mail to stakeholders on the 05<sup>th</sup> October 2016 (Refer to **Appendix D3** for proof of postage), whereas A5 size notices in English were hand delivered to landowners/occupiers on the 30<sup>th</sup> September 2016. These notifications were informing stakeholders and the public of the project as well as affording them an opportunity to register as I&AP and also to comment or raise any issues pertaining to the proposed project.

### 7.2.7 PLACEMENT OF ADVERTISEMENT IN THE LOCAL NEWSPAPER

An advertisement was placed on The Star Newspaper on the 30<sup>th</sup> September 2016. The advertisement was aimed at further informing the I&APs of the proposed activity. A 30-day period was allowed for the public to submit their comments, issues and concerns. Proof of newspaper advertisement is attached as **Appendix D2**.

### 7.2.8 PLACEMENT OF DRAFT BASIC ASSESSMENT REPORT FOR COMMENTS

- An advert for availability of the draft Basic Assessment Report for review and comment at public spaces was placed on The Star Newspaper on the 04<sup>th</sup> May 2018 and copies were made available on the Nsovo website. Further, copies of the draft Basic assessment report were submitted to various departments and other stakeholders for review and comments this included the National Department of Environmental Affairs, Gauteng City of Johannesburg Metropolitan Municipality, Department of Agriculture and Rural Development, Gauteng Department of Roads and Transport, and Mount Olive Outreach Community Centre.

### 7.2.9 PUBLIC MEETINGS

A public and focus group meeting was scheduled to take place on the 05<sup>th</sup> June 2018 to enlighten the community about the project as no issues and comments were raised by the community during the draft BAR review phase. However, during the scheduling of the meeting, Nsovo was advised to communicate with Councillor Ace Mokoena for the arrangement of the hall as he is the one who authorise the use of the hall. The Councillor was consulted and indicated that he needed to have a meeting with the consultant before the public meeting. The meeting was scheduled accordingly and held on 23<sup>rd</sup> May 2018 and the minutes are attached as **Appendix D9**. The Councillor indicated that he will arrange the meeting as a way forward; however he never responded to our communication since the meeting, proof of correspondence is attached as **Appendix D9**.

### 7.3 A SUMMARY OF ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Comments, issues and concerns raised together with the responses provided by the Environmental Assessment Practitioner (EAP) are presented as **Appendix D4**.

## 8. DESCRIPTION OF THE ENVIRONMENTAL ATTRIBUTES ASSOCIATED WITH THE ALTERNATIVES FOCUSING ON THE GEOGRAPHICAL, PHYSICAL, BIOLOGICAL, SOCIAL, HERITAGE AND CULTURAL ASPECTS

This section outlines parts of the socio-economic and biophysical environment that could be affected by the proposed development. Using the project description in and knowledge of the existing environment, potential interactions between the project and the environment are identified below. The potential effects of the project on the human environment, socio-economic conditions, physical and cultural resources are included.

### 8.1.1 SOCIO-ECONOMIC DESCRIPTION

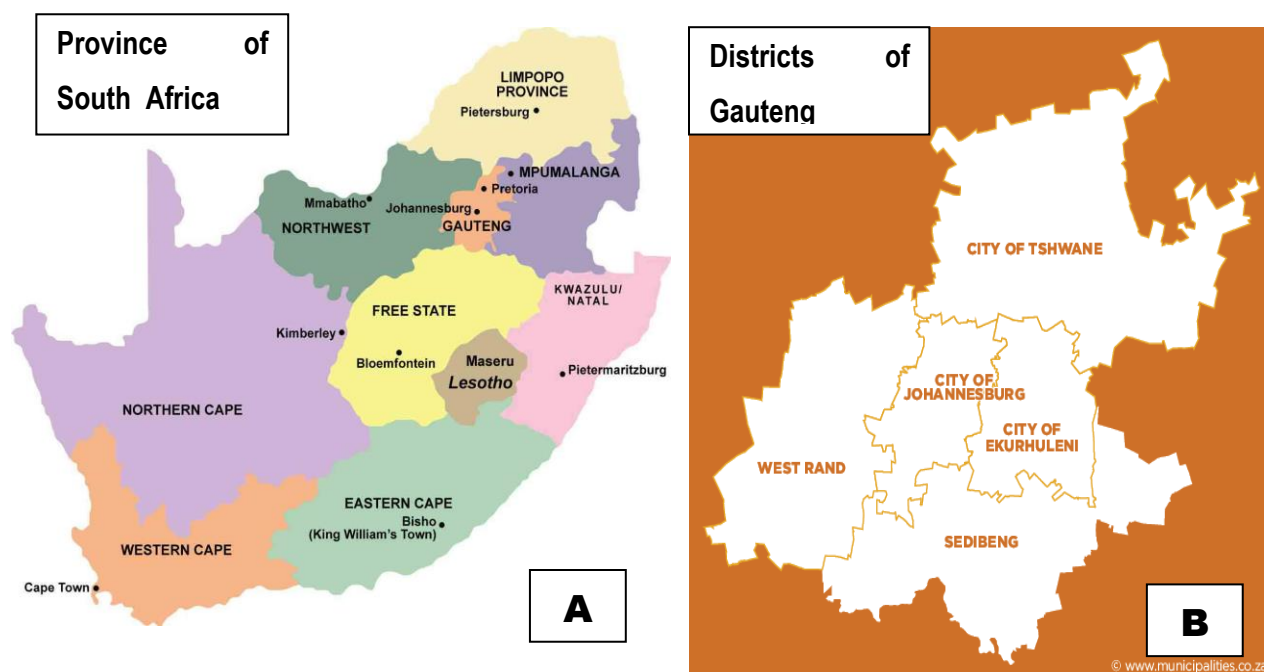
This section presents the socio-economic aspects focusing on the Province and Municipalities within the proposed study area.

### 8.1.1.1 Provincial Description of the Proposed Project

Gauteng is a northern province of South Africa. Gauteng is the smallest province in South Africa, However, it is highly urbanized, containing the country's largest city, Johannesburg Metropolitan, its administrative capital, Pretoria, and other large industrial areas such as Midrand and Vanderbijl Park. It borders onto other South African provinces namely Limpopo, Mpumalanga, Free State and North West provinces.

Gauteng is divided into district municipalities viz. City of Ekurhuleni Metropolitan, CoJ, City of Tshwane Metropolitan, West Rand District and Sedibeng District. The proposed development will traverse in one of these municipalities i.e. City of Johannesburg Metropolitan Municipality. The five districts are further subdivided into six local municipalities Mogale City, Merafong City, Rand West City, Emfuleni, Midvaal, Lesedi Local of which only, City of Johannesburg Metropolitan municipality will be impacted by the proposed development. The province covers an area of 18 176km<sup>2</sup> which has population of approximately 14, 278, 700 which is 25, 3%. The capital city of Gauteng is Johannesburg while other cities and towns include Pretoria, Benoni, Carletonville, Centurion, Kempton Park, Boksburg, Vereeniging, Vanderbijlpark, Midrand, and Randburg.

In addition, Gauteng is. Mining is the primary driver of economic activity, rich in precious mineral reserves such as gold. The economic performance of Gauteng is attributed to growth in the wholesale, retail and motor trade; catering and accommodation industry, general government services, the finance, real estate and business services and the manufacturing industry



**Figure 6: Photograph A shows the provinces of South Africa and Photograph B shows Gauteng province with Municipal Districts (Source: [www.municipality.co.za](http://www.municipality.co.za))**

#### 8.1.1.2 Municipality within the study area

This section provides the description of the municipality with the proposed study area which is City of Johannesburg Metropolitan Municipality (CoJ).

CoJ is under region G located in the Gauteng Province, bordering on the City of Tshwane Metropolitan, City Ekurhuleni Metropolitan, West Rand and Sedibeng District Municipalities and as shown in Figure 4 below. The CoJ covers an area of approximately 1 645km<sup>2</sup> and consists of Cities and towns namely: Alexandra, Diepkloof, Diepsloot, Ennerdale, Johannesburg, Johannesburg South, Lawley, Lenasia, Lenasia South, Meadowlands East, Meadowlands West, Midrand, Orange Farm, Pimville, Randburg, Roodepoort, Sandton, and Soweto. The Main Economic Sectors in Johannesburg Metropolitan are finance and business services, community services, manufacturing, trade (collectively 82%).



**Figure 7:** Map of City of Johannesburg Metropolitan municipality with major cities and towns.

### 8.1.2 CLIMATIC CONDITION OF THE PROPOSED AREA

Lenasia's climate is classified as warm and temperate. In winter, there is much less rainfall in Lenasia than in summer. The average annual temperature is 15.8°C in Lenasia. About 696 mm of precipitation falls annually.

### 8.1.3 GEOLOGY WITHIN THE STUDY AREA

The geology of the area is dominated by the Transvaal, Rooiberg and Griqualand-Wet groups followed by the Ventersdorp group in the north (Council of Geoscience, 1997). The Carletonville Dolomite Grassland is associated with Dolomite and chert of the Malmani Subgroup (Transvaal Supergroup). The remainder of the study area is dominated by shale (Mucina & Rutherford, 2006).

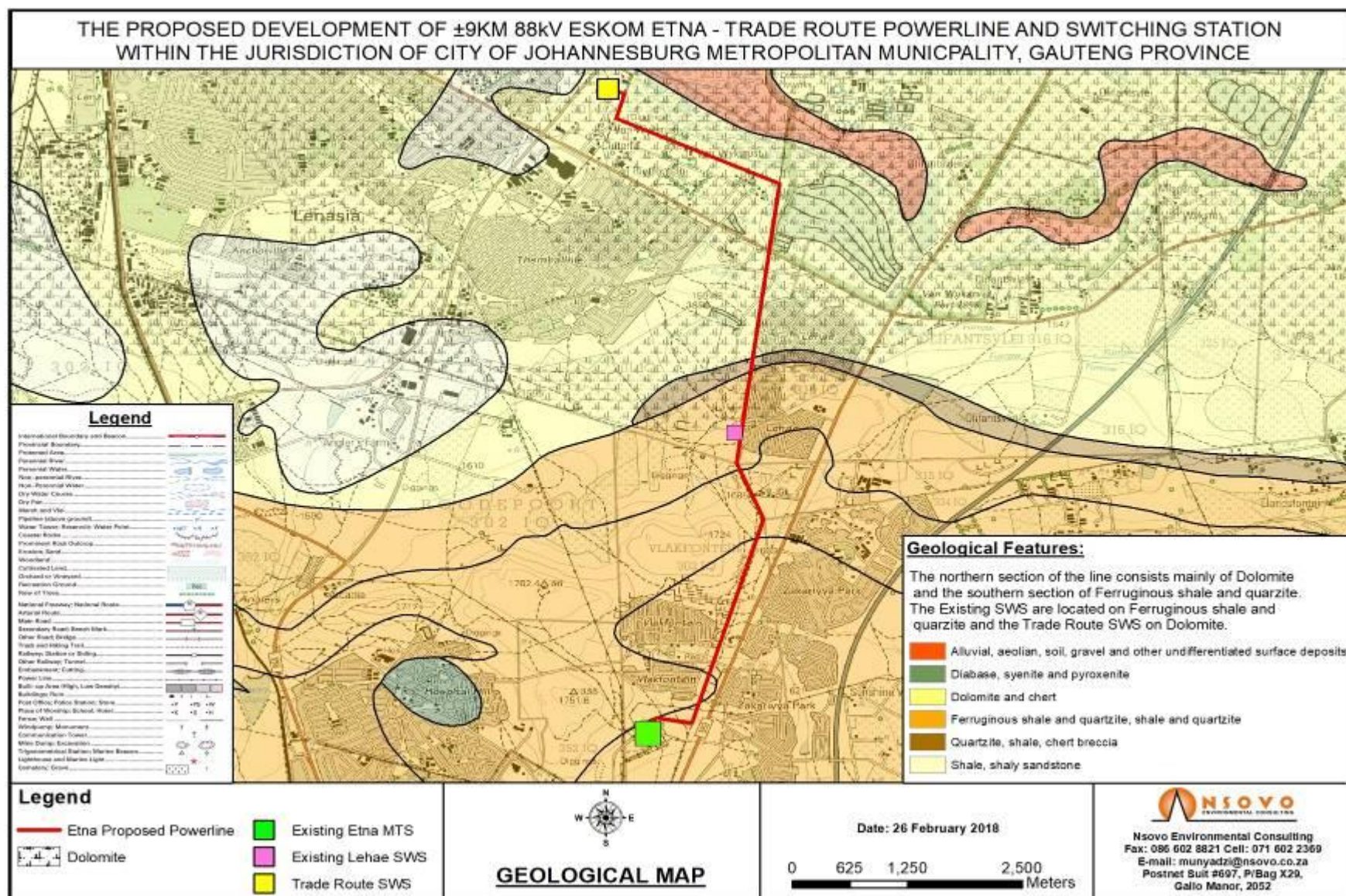
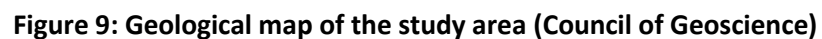


Figure 8: Geological map of the study area



#### 8.1.4 TOPOGRAPHY OF THE STUDY AREA

The topography of the proposed study area is characterized by plains and low-lying hills which attract more settlement developments resulting in relatively large and congested communities along the alignment. Topography influences nutrient and water movement in the landscape, which contributes to the variety of habitats associated with ridges and, in turn, biodiversity. A Class 2 ridge is crossed by the existing line and impacts associated with the construction activities of new lines is regarded a significant threat to the continued conservation of this area, particularly in view of the presence of pristine grasslands that buffer the ridge from nearby development and anthropogenic activities. The ridges on site provide a diverse array of aspect, slope, moisture content and refuges.

#### 8.1.5 Surface Water within the area

The study area is located within Quaternary Catchments A22A and C22H in the Upper Vaal water management area. In this water management area, the major rivers include the Vaal-, Wilge, Suikerbosrant and Klip River. The proposed power line alignment does not traverse any major rivers but rather the wetland areas associated with the Klip River and/or tributaries that drain into the Klip River and Rietspruit.



### 8.1.6 AIR QUALITY AND POLLUTION

Air quality is defined to include noise and odour as well as addressing all sources of air pollution (i.e. point, area and mobile sources). The Gauteng Air Quality Management Plan has been developed to comply with the National Environmental Management: Air Quality Act, 39 of 2004 and more specifically, to provide guidance on Air Quality Management. The Plan identifies air pollution sources in the proposed locations as follows:

- Clay brick manufacturing;
- Biomass burning (veld fires);
- Domestic fuel burning (wood and paraffin);
- Vehicle emissions;
- Waste treatment and disposal;
- Dust from infrastructural development;
- Dust from unpaved roads; and
- Other fugitive dust sources such as wind erosion of exposed areas.

### 8.1.7 VEGETATION STRUCTURE AND COMPOSITION

The study area is located within the Grassland & Savannah Biomes and is comprised of the Carletonville Dolomite Grassland, Soweto Highveld Grassland and Gauteng Shale Mountain Bushveld vegetation types. Investigation of the immediate study area revealed the presence of grassland, woodland, water bodies (rivers, dams, wetlands and drainage lines), rocky outcrops, urban areas and stands of Eucalyptus trees. The most sensitive of the micro habitats within the study area is the water bodies and woodland vegetation which provide foraging and roosting habitat for the large diversity of water bird and passerine species recorded in the area.



## **9. DESCRIPTION OF THE ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS INCLUDING CUMULATIVE IMPACTS IDENTIFIED**

This section describes the potential impacts that the proposed project may pose on the receiving environment. Impacts associated with the relevant environmental components within the study area as identified, have been assessed based on the EAP's opinion as well as consultation with specialist studies. Refer to **Table 13** below, for the potential impacts identified. These impacts are similar for all three alternatives and will be comprehensively assessed during the EIA phase.

## 9.1 POTENTIAL ENVIRONMENTAL IMPACTS IDENTIFIED

Potential environmental impacts identified are described in **Table 7** below.

**Table 7:** Potential Environmental Impact Identified

Activity	Impact summary	Significance	Proposed mitigation
The impacts associated with the proposed route are as follows:			
	<b>Direct Impacts</b>  <b>Employment</b> - Job creation and investments into the project result in opportunities during the planning and design phase. This impact will typically be limited to skilled engineers and planning professionals. Proposed project will result in very limited opportunities to the skilled local community during the construction phase. This impact will be positive.	Medium	No mitigation
	<b>Air Pollution</b> The potential air pollutant during construction may be dust emanating	Low	<ul style="list-style-type: none"> <li>Dust suppression techniques must be implemented. These techniques will include dampening the ground with a water truck, adhering to site speed limits etc. all construction staff must wear</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>from site preparation and excavations during construction as well as exhaust fumes from construction vehicles. Given the nature and magnitude of the proposed project it is anticipated that if not mitigated the impact will be site specific in extent, short term, and of low significance</p>		<p>their dust masks whenever necessary.</p> <ul style="list-style-type: none"> <li>• No burning of waste material, such as vegetation from any clearing operations is allowed; and</li> </ul>
	<p><b>Visual Impact</b></p> <p>During construction, the proposed activity will certainly change the visual character of the area due to stockpiles and other activities on site. However, during the operational phase of the project, there will be not much difference in terms of visual impact as there is currently an existing 88kV power line on site.</p> <p>The impact can be considered definite, short term, local in extent and low to insignificant as there is already existing</p>	Low	<ul style="list-style-type: none"> <li>• Keep the construction sites and camps neat, clean and organised in order to portray a tidy appearance; and</li> <li>• Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade cloth of no less than 2m height.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	power line and associated linear infrastructure.		
	<b>Noise</b>  An increase in noise is expected due to construction, which might have a minor impact. Given the proximity of the proposed project to the communities the noise during the construction phase may be of medium significance. With proposed mitigation the impact will be even lower and short term.	Medium.	<ul style="list-style-type: none"> <li>• It must be ensured that all vehicles used during construction are properly maintained.</li> <li>• Surrounding residents should be notified in advance of construction schedules.</li> <li>• Working hours must be restricted to daytime only (7am – 5pm).</li> <li>• Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations.</li> </ul>
	<b>Soils and Erosion</b>  The loss of topsoil in South Africa is a national concern and thus erosion control should be taken seriously. Ineffective storm water management systems can result in soil erosion. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion.	Low	<ul style="list-style-type: none"> <li>• Implementation of anti-erosion measures such as the construction of berms to reduce the water velocity is essential.</li> <li>• Storm water runoff shall be considered and its flow controlled on the construction site.</li> <li>• Stockpiles should not be higher than 2m.</li> <li>• Foundation excavations for each structure must be inspected by a competent person during construction.</li> <li>• Excavation must not be left open for longer than four weeks. Proper storm water management measures must be put in place.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>Extensive soil erosion is not expected during the construction of the proposed project, however, it is anticipated that it might be experienced during wet seasons especially on the stockpiles.</p> <p>The potential impact on soils will be of low significance.</p>		<ul style="list-style-type: none"> <li>• All areas susceptible to erosion must be protected.</li> <li>• Monitoring of disturbed areas is essential in order to combat and mitigate alien encroachment.</li> <li>• Vegetation must be removed from the area to be constructed.</li> <li>• Make use of existing roads as well approved roads construction for the proposed project.</li> </ul>
	<p><b>Fauna/ Avifauna</b></p> <p>The construction phase will result in habitat destruction which will impact on the faunal communities including avifauna. The impacts identified include the following:</p> <ul style="list-style-type: none"> <li>• Destruction of bird habitat – likely to affect Red List species and grassland habitat specialists, such as Melodious Lark, White-bellied</li> </ul>	Medium	<ul style="list-style-type: none"> <li>• An Eskom approved bird friendly pole design must be used. The Distribution Technical Bulletin must be used in this regard.</li> <li>• In addition, if a monopole structure is used, a Bird Perch must be installed on top of all poles, to provide safe perching substrate for birds well above the dangerous hardware.</li> <li>• Do not disturb nests, breeding sites or young ones. Do not attempt to kill or capture snakes unless directly threatening the safety of employees.</li> <li>• No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.</li> <li>• Contract employees must be educated about the value of wild animals and the importance of their conservation.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>Korhaan and others.</p> <ul style="list-style-type: none"> <li>• Electrocution – likely to affect large raptors, and species such as storks, and herons.</li> <li>• Collision of birds – likely to affect water birds, korhaans, storks and possible Secretary bird.</li> <li>• Disturbance of birds – likely to affect breeding birds in particular.</li> </ul> <p>This impact is of medium significance considering the sensitivity of the area that the line will traverse (wetland, woodland vegetation etc.).</p>		<ul style="list-style-type: none"> <li>• The collection, hunting or harvesting of any animals at the site should be strictly forbidden. The rocky outcrops are particularly sensitive in this regard and construction personnel should not be allowed off of the construction site and onto these areas.</li> <li>• Fires should only be allowed within fire-safe demarcated areas.</li> <li>• No pets must be allowed on site.</li> </ul>
	<p><b>Flora</b></p> <p>Sections of the proposed power line are located within the Ecological Support Area. Site preparation and construction</p>	Low	<ul style="list-style-type: none"> <li>• Vegetation clearing should be kept minimal and only area to be used for construction should be cleared.</li> <li>• Where soil disturbance is required for the laying of service infrastructure, the topsoil should be put aside and replaced after the infrastructure has been installed. Areas to be cleared should</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	will result in the disturbance of and the loss of vegetation This impact will be of medium significance if not well managed, however with proper mitigation measures it can be reduced to low.		<p>be demarcated and only those individuals of plant species directly within the foot print should be cleared/ removed.</p> <ul style="list-style-type: none"> <li>• Soil disturbance and vegetation clearing should be kept to minimum.</li> <li>• Cleared areas that are not going to be used should be re-vegetated with locally-collected seed of indigenous species.</li> <li>• Regular monitoring to ensure that alien plants are not increasing as a result of the disturbance that has taken place.</li> <li>• Before the commencement of construction, an independent Ecological Control Officer (ECO) should be appointed to supervise the process.</li> <li>• The area where construction will take place should be marked off with a fence or any other form of demarcation in order to keep vegetation destruction to minimum and confined to a single area.</li> <li>• Make use of existing roads (both vehicles and pedestrians).</li> <li>• Construction in sensitive areas should be avoided and prohibited.</li> <li>• No fires should be allowed on site.</li> <li>• A rehabilitation plan for vegetation should be in place and implemented.</li> </ul>
	<b>Surface and groundwater pollution</b>		

Activity	Impact summary	Significance	Proposed mitigation
	<p>During construction there is a risk that construction material may pollute the surface and/or ground water on site. The closest water source includes non-perennial streams and wetlands within the proposed site. Substances such as cement residue, bio fuels, and paints must be adequately controlled. In addition, exposed surfaces during construction would provide a source of sediments to be taken up by storm water and resulting in down-stream sedimentation of water resources. This impact is of medium negative significance and can be reduced to a low significance.</p>	Low	<ul style="list-style-type: none"> <li>• Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals).</li> <li>• Adequate measures must be put in place to prevent runoff of construction debris to nearby streams or water bodies.</li> <li>• Impacts on wetlands may include changing the quantity and fluctuation as well as the amount of sediment entering the water resource and associated change in turbidity.</li> <li>• If construction takes place during the rainy season, storm water will have to be managed appropriately to reduce the opportunities of construction debris being washed off.</li> </ul>
	<p><b>Impact on cultural and heritage resources</b></p> <p>No archaeological sites (Iron Age or Stone Age) of significance were</p>	Medium	<ul style="list-style-type: none"> <li>• It is recommended that a conservation architect should be appointed to assess the structures and assist with the application</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>recorded. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed.</p> <p>In terms of Section 34 of the Act (Built Environment) a single ruin occurs in close proximity to the power line (approximately 30 meters). The exact age of the structure is unknown but it could possibly be older than 60 years and if the structure will be impacted on, it is recommended that the age of the structure should be confirmed. If the structure is confirmed to be older than 60 years, it is recommended that a conservation architect should be appointed to assess the structures and assist with the application of a demolition permit.</p>		<p>of a demolition permit.</p> <ul style="list-style-type: none"> <li>• If any other graves are located in future they should ideally be preserved in-situ or alternatively relocated according to existing legislation.</li> <li>• Due to the subsurface nature of archaeological remains and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project as part of the EMP.</li> <li>• Should any other the heritage or archaeological artefacts be discovered during construction or operational phase, all works must be stopped at the affected area and SAHRA must be contacted.</li> </ul>
	<b>Traffic</b>		

Activity	Impact summary	Significance	Proposed mitigation
	<p>During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further unmanaged construction vehicles may decrease road safety for other road users and uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.</p>	Medium	<ul style="list-style-type: none"> <li>• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads.</li> <li>• Delivery vehicles must comply with all traffic laws and by laws.</li> <li>• A speed limit of 30km/hr must be adhered to avoid dust.</li> </ul>
	<p><b>Social Environment</b></p> <p>The construction phase may have an impact on the surrounding residents if not properly managed. It could result in the disturbance of residents due to construction related activities. Other impacts may be safety, considering the</p>	Low	<ul style="list-style-type: none"> <li>• Residents must be kept abreast with the on-going activities.</li> <li>• A land owner liaison officer must be appointed to manage and address societal issues accordingly.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p>proximity of residential settlements and facilities to the proposed project alignment. The potential increase in traffic may pose a safety risk to surrounding residents, particularly scholars. Other social related issues may include theft; however, this will be local.</p>		
	<p><b>Indirect Impacts</b></p> <p><b>Safety and Security</b></p> <p>The presence of the construction workforce in the area is a potential risk to the surrounding landowners in terms of safety, crime and security. The significance of the potential impacts without the corrective actions (adequate safety measures in dangerous areas) is considered to be of low significance. The implementation of corrective actions could reduce the impacts to a lower level of significance.</p>	Low	<ul style="list-style-type: none"> <li>• Liaison with landowners prior to entering their properties;</li> <li>• Access to the construction site should be controlled;</li> <li>• Warning signs should be placed on site to make people aware of the dangers;</li> <li>• No-go area should be clearly demarcated, marked and visible;</li> <li>• Landowners must be kept abreast with movements in and around their properties;</li> <li>• Health and Safety standards and guidelines must be implemented.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	<p><b>Cumulative Impacts</b></p> <p><b>Habitat Destruction</b></p> <p>Although each power line probably affects a relatively small proportion of the landscape, there are already several existing power lines in this area, and additional lines will add further cumulative impact. It is important therefore to limit the effects of this new power line as much as possible, by applying the necessary mitigations measures as recommended.</p>	Low	The normal suite of environmental good practices should be applied, such as ensuring strict control of staff, vehicles and machinery on site and limiting the creation of new roads as far as possible.
	<p><b>Fauna and Avifauna</b></p> <p>The cumulative impacts of power lines on birds through collision are significant.</p>	Low	Efforts should be made to ensure that the new power line is built bird friendly and results in no additional impact on birds in the area.

Activity	Impact summary	Significance	Proposed mitigation
	<p>This area already has several existing distribution power lines.</p> <p>The cumulative impacts of power lines on birds through electrocution are significant nationally since the species already suffer from significant power line mortalities. This particular area already has several existing distribution power lines.</p>		
	<p><b>Traffic</b></p> <p>During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further unmanaged construction vehicles may decrease road safety for other road users and uncontrolled movement of construction</p>	Medium	<ul style="list-style-type: none"> <li>• The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads.</li> <li>• Delivery vehicles must comply with all traffic laws and by laws.</li> <li>• A speed limit of 30km/hr must be adhered to avoid dust.</li> </ul>

Activity	Impact summary	Significance	Proposed mitigation
	vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.		
	<p><b>Social Environment</b></p> <p>The construction phase may have an impact on the surrounding residents if not properly managed. It could result in the disturbance of residents due to construction related activities. Other impacts may be safety, considering the proximity of informal settlements and facilities to the proposed project alignment. The potential increase in traffic may pose a safety risk to surrounding residents, particularly scholars. Other social related issues may include theft; however, this will be local.</p>	Low	<ul style="list-style-type: none"> <li>Residents must be kept abreast with the on-going activities.</li> <li>A land owner liaison officer must be appointed to manage and address societal issues accordingly.</li> </ul>

## 9.1 METHODOLOGY FOR ASSESSING SIGNIFICANCE OF POTENTIAL IMPACTS

The assessment of impacts is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment considers impacts arising from the proposed activities of the project both before and after the implementation of appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in this section. Each issue is ranked according to extent, duration, magnitude (intensity) and probability. From these criteria, a significance rating is obtained, the method and formula is 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 will be assessed and described in relation to the extent, duration, intensity, significance and probability of occurrence attached to it.

**Table 8: Methodology used in determining the significance of potential environmental impacts**

### **Status of 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.

### **Extent of the Impact**

- (1) Site (site only),
- (2) Local (site boundary and immediate surrounds ),
- (3) Regional (within the City of Johannesburg),
- (4) National, or
- (5) International.

### **Duration of the Impact**

The length that the impact will last for is described as either:

- (1) immediate (<1 year)
- (2) short term (1-5 years),
- (3) medium term (5-15 years),
- (4) long term (ceases after the operational life span of the project),
- (5) Permanent.

### **Magnitude of the Impact**

The intensity or severity of the impacts is indicated as either:

- (0) none,
- (2) Minor,
- (4) Low,
- (6) Moderate (environmental functions altered but continue),
- (8) High (environmental functions temporarily cease), or
- (10) Very high / Unsure (environmental functions permanently cease).

### **Probability of Occurrence**

The likelihood of the impact actually occurring is indicated as either:

- (0) None (the impact will not occur),
- (1) improbable (probability very low due to design or experience)
- (2) low probability (unlikely to occur),
- (3) medium probability (distinct probability that the impact will occur),
- (4) high probability (most likely to occur), or
- (5) Definite.

### **Significance of the Impact**

Based on the information contained in the points above, the potential impacts are assigned a significance rating (**S**). This rating is formulated by adding the sum of the numbers assigned to extent (**E**), duration (**D**) and magnitude (**M**) and multiplying this sum by the probability (**P**) of the impact.

$$S=(E+D+M)P$$

### **The significance ratings are given below**

(<30) low (i.e. where this impact would not have a direct influence on the decision to develop in the

area),

(30-60) medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),

(>60) high (i.e. where the impact must have an influence on the decision process to develop in the area).

## 9.2 ASSESSMENT OF IMPACTS

This section presents the assessment of anticipated impacts of the proposed project as well as mitigation measures. The assessment of impacts is largely based on the Department of Environmental Affairs and Tourism's (1998) Guideline Document: Environmental Impact Assessment Regulations. The assessment considers impacts arising from the proposed activities of the project both before and after the implementation of appropriate mitigation measures.

The impacts are assessed according to the criteria outlined in section 9.4 below. Each issue is ranked according to extent, duration, magnitude (intensity) and probability. From these criteria, a significance rating is obtained, the method and formula is also described below. Mitigation measures and recommendations have been made and are presented in tabular form below.

## 9.2.1 Impacts Relating to Design and Planning Phase

### ***Direct Impacts:***

#### **Employment Creation**

The planning and design of the proposed development requires input from various individuals, resulting in the employment opportunities for such persons. This employment would include both direct (e.g. Environmental Consultants, Engineers, Project Managers, Planners, etc.) and indirect (e.g. reviewing and commenting authorities such as the local authority planning authorities and the environmental authorities). The extent and magnitude of this impact is relatively low compared to the other economic impacts, and is typically restricted to a limited number of professionals. The identified technical alternatives are likely to result in the same level of significance for this impact. The No-go Alternative would differ in that this impact would not occur.

<b><i>Issue</i></b>	<b><i>Corrective measures</i></b>	<b><i>Impact rating criteria</i></b>					<b><i>Significance</i></b>
		<b><i>Nature</i></b>	<b><i>Extent</i></b>	<b><i>Duration</i></b>	<b><i>Magnitude</i></b>	<b><i>Probability</i></b>	
Employment	No	Positive	3	2	8	4	52 Medium
Creation	Yes	N/A	N/A	N/A	N./A	N/A	
Corrective Actions	<ul style="list-style-type: none"> <li>No mitigation measures have been identified.</li> </ul>						

### ***Indirect Impacts:***

None Identified.

### ***Cumulative Impacts:***

No cumulative impacts were identified.

## 9.2.2 Impacts Relating to Construction Phase

### ***Direct Impacts:***

### 9.2.2.1 Soils and erosion

The loss of topsoil in South Africa is a national concern and thus erosion control should be taken seriously. Ineffective storm water management systems can result in soil erosion. Where soils are highly erodible, adequate measures must be implemented to prevent undue soil erosion. Extensive soil erosion is not expected during the construction of the proposed project, however, it is anticipated that the proposed project might be experienced during wet seasons especially on the stockpiles (Topsoil and Subsoil).

The potential impact on soils will be of low significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Soils and erosion	No	Negative	2	2	4	4	32 Medium
	Yes	Negative	1	1	2	3	12 Low
Corrective Actions	<ul style="list-style-type: none"> <li>Implementation of anti-erosion measures such as the construction of berms to reduce the water velocity is essential.</li> <li>Soil must be stabilised in order to prevent the resulting wash downs into any water resource and where possible rehabilitation of the disturbed area must be done concurrently with the construction activity.</li> <li>A storm water management plan and proper storm water management measures must be developed and implemented to prevent pollution runoff.</li> <li>Stockpiles should not be higher than 2 meters.</li> <li>Foundation excavations for each structure must be inspected by a competent person during construction.</li> <li>Construction must be preferably during the dry season.</li> <li>In the event of significant erosion occurring, adequate corrective measures must be implemented to prevent any further soil loss.</li> <li>Monitoring of disturbed areas is essential to combat and mitigate alien encroachment.</li> <li>Excavation must not be left open for longer than necessary.</li> <li>Make use of existing roads.</li> </ul>						

### 9.2.2.2 Impact on Traffic

During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further, construction vehicles may

decrease road safety for other road users and uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	No	Negative	3	2	6	4	44 Medium
	Yes	Negative	2	2	4	3	24 Low
Corrective Actions	<ul style="list-style-type: none"> <li>The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads.</li> <li>Access roads must be clearly marked.</li> <li>Delivery vehicles must comply with all traffic laws and bylaws.</li> <li>A speed limit of 30km per hour must be maintained.</li> </ul>						

### 9.2.2.3 Visual Impact

The proposed activity will certainly change the visual character of the area that allows the power line to be viewed from the adjacent regional roads and railway line. Given the undulating topography of the site and the proximity to the R553 and some residential settlements, the impact can be considered definite, short term, local in extent and low insignificance as the project involves replacing the existing power line with a new one.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Visual character of the area.	No	Negative	2	4	6	4	48 = Medium
	Yes	Negative	2	2	4	3	24 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Keep the construction sites and camps neat, clean and organised to portray a tidy appearance; and</li> <li>Screen the construction camp and lay-down yards by enclosing the entire area with a dark green or black shade cloth of no less than 2m height.</li> </ul>						

#### 9.2.2.4 Air pollution

The potential air pollutant during construction may be dust emanating from site preparation and excavations during construction as well as exhaust fumes from construction vehicles. Given the nature and magnitude of the proposed project it is anticipated that if not mitigated the impact will be local in extent, short term, and of low significance

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Air pollution	No	Negative	2	2	4	4	32 = Medium
	Yes	Negative	2	2	2	3	18 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Unnecessary clearing of vegetation must be avoided to limit dust generation.</li> <li>Dust suppression techniques must be implemented. These techniques will include dampening the ground with a water truck, adhering to site speed limits etc. All construction staff must wear their dust masks whenever necessary.</li> <li>Vehicles travelling on the site should always be within the speed limit.</li> <li>No burning of waste material, such as vegetation from any clearing operations is allowed.</li> </ul>						

#### 9.2.2.5 Changes in water flow regime

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Changes in water flow regime	No	Negative	2	4	6	4	48 = Medium
	Yes	Negative	2	2	4	3	24 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>No activities should take place in the watercourses and associated buffer zone. Where the above is unavoidable, only the construction footprint and no access roads can be considered. This is subjected to authorization by means of a water use license</li> <li>Construction must be restricted to the dryer winter months where possible.</li> <li>A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the</li> </ul>						

	<p>adjacent portions of the watercourse.</p> <ul style="list-style-type: none"> <li>Effective storm water management should be a priority during both construction and operational phase. This should be monitored as part of the EMP. High energy storm water input into the watercourses should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) on the site above the river/wetland area resulting from the proposed power line should be considered.</li> </ul>
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### 9.2.2.6 Changes in sediment entering and exiting the system

Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount). Construction and operational activities will result in earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the wetland and increase the turbidity of the water. Possible sources of the impacts include:

- Earthwork activities during power line construction
- Clearing of surface vegetation will expose the soils, which in rainy events would wash through the watercourse, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive trees can spread easily into these eroded soils.
- Disturbance of soil surface
- Disturbance of slopes through creation of roads and tracks adjacent to the watercourse
- Erosion (e.g. gully formation, bank collapse)

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Changes in sediment	No	Negative	3	3	6	4	48 = Medium
	Yes	Negative	2	3	4	3	27 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Water may seep into earthworks. It is likely that water will be contaminated within these earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed.</li> </ul>						

- Construction in and around watercourses must be restricted to the dryer winter months where possible.
- Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area.
- Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
- Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
- Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
- During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation.
- Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
- Runoff from the construction area must be managed to avoid erosion and pollution problems.
- Implementation of best management practices.
- Source-directed controls.
- Buffer zones to trap sediments.
- Monitoring should be done to ensure that sediment pollution is timeously dressed.

### 9.2.2.7 Introduction and spread of alien vegetation

The moving of soil and vegetation resulting in opportunistic invasions after disturbance. Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a wetland, and out-compete natural vegetation, decreasing the natural biodiversity. Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plants can easily colonise and impact on downstream users.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Introduction and spread of alien vegetation	No	Negative	3	3	6	3	36 = Medium
	Yes	Negative	2	2	4	2	16 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>• Weed control</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.</li> <li>• Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.</li> <li>• Rehabilitation and/ or revegetation of disturbed areas</li> </ul>						

### 9.2.3 Loss and disturbance of wetland/riparian habitat and fringe vegetation

Loss and disturbance of wetland/riparian habitat and fringe vegetation due to direct development on the wetland as well as changes in management, fire regime and habitat fragmentation is expected. This impact is definite and of medium significance without mitigation.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Loss and disturbance of wetland/riparian habitat	No	Negative	2	3	6	3	33 = Medium
	Yes	Negative	2	2	4	2	16 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>• The development footprint should be designed around current wetland and wetland buffers.</li> <li>• Where construction occurs in the demarcated wetland and buffer, extra precautions</li> </ul>						

	<p>should be implemented to minimise wetland loss.</p> <ul style="list-style-type: none"> <li>Where wetlands are impacted, compensation should be made to protect the remaining wetlands and their catchments, increase their buffers and rehabilitate their condition and functionality.</li> <li>Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.</li> <li>Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas.</li> <li>Weed control in buffer zone.</li> <li>Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.</li> <li>Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish.</li> <li>Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.</li> <li>Operational activities should not impact on rehabilitated or naturally vegetated areas.</li> </ul>
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### 9.2.3.1 Surface and groundwater pollution

During construction there is a risk that construction material may pollute the surface and/or ground water on site. The closest water source includes wetland within the proposed site. Substances such as cement residue, bio fuels, and paints must be adequately controlled. Impacts on wetlands may include changing the quantity and fluctuation as well as the amount of sediment entering the water resource and associated change in turbidity. In addition, exposed surfaces during construction would provide a source of sediments to be taken up by storm water and resulting in down-stream sedimentation of water resources. This impact is of significance after mitigation measures.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Surface and	No	Negative	3	2	6	4	44 = Medium

ground water pollution	Yes	Negative	2	2	4	3	24 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>No activities should occur within a 100m or within a 1:100 year flood line whichever is greatest without approval from DWS.</li> <li>Care must be taken during construction to prevent leaks and spillage of materials that may detrimentally affect water quality (especially fuels and chemicals).</li> <li>Care must be taken to avoid destruction of water courses.</li> <li>Adequate measures must be put in place to prevent runoff of construction debris to nearby water bodies.</li> <li>Fuel must be stored in bunded and caged area in limited quantities.</li> <li>During refuelling, drip trays must be placed under the machinery or vehicle to prevent contamination of soil in case of spillages.</li> <li>If construction takes place during the rainy season, storm water will have to be managed appropriately to reduce the opportunities of construction debris being washed off.</li> </ul>						

### 9.2.3.2 Waste generation

During the construction phase there will be a variety of waste material produced. Contractors must adhere to all proposed measures and provide adequate waste skips and bins around the site. Waste must be regularly removed from site and disposed of at appropriate waste disposal sites. The impact is negative, site specific, low significance and will last the duration of the construction and rehabilitation phases.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste generation and management	No	Negative	2	2	4	4	32 = Medium
	Yes	Negative	1	2	2	3	15 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>No waste will be buried on site or incorporated into the foundation trenches.</li> <li>The work force must be encouraged to sort waste into recyclable and non-recyclable waste.</li> <li>No burning of waste will be allowed on site.</li> </ul>						

	<ul style="list-style-type: none"> <li>Waste must be regularly removed from site and disposed of at a registered waste disposal facility.</li> </ul>
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### 9.2.3.3 Impact on Avifauna

The construction of the proposed power line will have the following impacts on avifaunal communities:

- Electrocution of birds.
- Collision of birds with power line.
- Destruction of bird habitat.

The significance of the impact after mitigation will be low.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Avifauna	No	Negative	3	4	6	3	39 = Medium
	Yes	Negative	2	4	4	2	20 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Small sections of power line marking will be required to mitigate for the collision impact, particularly in those areas that contain wetlands and dams.</li> <li>Bird flight diverters must be installed on the full span length on each of the conductors (according to Eskom guidelines).</li> <li>Light and dark colour devices must be alternated so as to provide contrast against both dark and light backgrounds respectively. These devices must be installed as soon as the conductors are strung.</li> <li>Construction activity should be restricted to the existing servitude and immediate footprint of the infrastructure. Maximum use should be made of existing access roads and the construction of new roads should be kept to a minimum.</li> <li>Access to the remainder of the site should be strictly controlled to prevent unnecessary disturbance of Red List species. Measures to control noise should be applied according to current best practice in the industry.</li> </ul>						

### 9.2.3.4 Noise Pollution

An increase in noise is expected due to construction, which might have a minor impact. Given the distance of the proposed site from the communities the noise during the construction phase will be well managed and significance kept low. This impact will be short term, only during the construction phase.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Noise pollution	No	Negative	2	2	4	3	24 = Low
	Yes	Negative	1	2	2	2	10 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>It must be ensured that all vehicles used during construction are properly maintained.</li> <li>Surrounding residents should be notified in advance of construction schedules.</li> <li>Working hours must be restricted to daytime only (7am – 5pm).</li> <li>Selecting equipment with lower sound power levels which is in accordance with the Health and Safety Regulations.</li> </ul>						

### 9.2.3.5 Fire hazards

Onsite storage of fuel and other flammable solvents, during construction increase the risk of fire. It is anticipated that uncontrolled fires on site could cause damage to infrastructure and the biophysical environment and impact on the social environment. Should the recommended mitigation measures be implemented, the significance of the impact will have low significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Fire hazards	No	Negative	2	2	4	3	24 = Low
	Yes	Negative	1	1	4	2	12 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Areas where flammable substances are kept must have proper warning signs on display (Highly flammable, No smoking etc.) to warn personnel on site of risk associated with such areas.</li> <li>No burning of waste or cooking will be allowed on site.</li> <li>Contracting personnel must be well versed in the relevant existing fire and safety management procedures and activities on site.</li> <li>Designate a site safety official and ensure that personnel are adequately trained regarding fire hazards and procedures.</li> </ul>						

### 9.2.3.6 Impact on cultural and heritage resources

No archaeological sites (Iron Age or Stone Age) of significance were recorded. No further mitigation prior to construction is recommended in terms of Section 35 for the proposed development to proceed. In terms of Section 34 of the Act (Built Environment) a single ruin occurs in close proximity to the power line (approximately 30 meters) however, the exact age of the structure is unknown but could possibly be older than 60 years. This impact is of low significance with mitigation.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Cultural and heritage resources	No	Negative	1	5	6	4	48 = Medium
	Yes	Negative	1	5	4	3	30 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>It is recommended that a conservation architect should be appointed to assess the identified single ruin structure and assist with the application of a demolition permit.</li> <li>If any other graves are discovered during the construction phase, they should ideally be preserved in-situ or alternatively relocated according to existing legislation.</li> <li>Due to the subsurface nature of archaeological remains and the fact that graves can occur anywhere on the landscape, it is recommended that a chance find procedure is implemented for the project as part of the EMP.</li> <li>Should any other the heritage or archaeological artefacts be discovered during construction or operational phase, all works must be stopped at the affected area and SAHRA must be contacted.</li> </ul>						

### 9.2.3.7 Social Environment

The construction phase may have an impact on the surrounding residents if not properly managed. It could result in the disturbance of residents due to construction related activities. Other impacts may be safety, considering the proximity of residents to the proposed project alignment. The potential increase in traffic may pose a safety risk to surrounding residents, particularly scholars. Other social related issues may include theft; however, this will be localised and mitigation measures will be implemented to reduce the significance if the impact.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	

Social	No	Negative	2	2	8	4	48 = Medium
Environment	Yes	Negative	2	2	4	3	24 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Residents must be kept abreast with the on-going activities.</li> <li>A Land owner liaison officer must be appointed to manage and address societal issues accordingly.</li> </ul>						

## 9.2.4 Indirect Impacts

### 9.2.4.1 Safety and Security

The presence of the construction workforce in the area is a potential risk to the surrounding landowners in terms of safety, crime and security. The implementation of corrective actions (adequate safety measures in dangerous areas) will reduce the impacts to a low level of significance.

Issue	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Safety and Security	No	Negative	2	2	4	3	24 = Low
	Yes	Negative	2	2	2	2	12 = Low
Corrective Actions	<ul style="list-style-type: none"> <li>Liaison with landowners prior to entering their properties.</li> <li>Access to the construction site should be controlled.</li> <li>Warning signs should be placed on site to make people aware of the dangers.</li> <li>No-go area should be clearly demarcated, marked and visible.</li> <li>Landowners must be kept abreast with movements in and around their properties.</li> <li>Health and Safety standards and guidelines must be implemented.</li> </ul>						

## 9.2.5 Cumulative Impacts:

### 9.2.5.1 Changes in water flow regime

Construction activities throughout the proposed power line alignment may result in cumulative impact to the water courses within the local catchments and beyond. It is very important that protective measures should be put into place and monitored. A rehabilitation plan should be put into action should any degradation be observed as a result from storm water or sediment input.

### 9.2.5.2 Changes in sediment entering and exiting the system

Changes in sediment entering and exiting the system are expected to have moderate significance. Should mitigation measure not be implemented and changes made to the bed or banks of watercourse unstable channel conditions may result causing erosion, meandering, increased potential for flooding and movement of bed material, which will result in property damage adjacent to and downstream of the site. Reversing this process is unlikely and should be prevented in the first place.

### 9.2.5.3 Alien Species Invasion

The introduction of alien species is expected to have moderate to high significance. Construction areas within the watercourses along the proposed servitude can experience an increased invasion if mitigation is not implemented or implemented correctly. Regular monitoring should be implemented during construction, rehabilitation including for a period after rehabilitation is completed.

## 9.3 GENERAL CUMULATIVE IMPACTS

This section provide cumulative impacts ratings associated with the proposed project which include the waste generation, traffic, socio-economic and visual impacts. It also outlines the mitigation measures of each rated cumulative impacts as follows:

### 9.3.1 Waste generation

During the construction phase of the proposed power line there will be a variety of waste material produced within the study area. The waste generation impact rating and the proposed mitigation measures are provided in table below as follows:

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Waste	No	Negative	2	2	8	5	60=Medium
	Yes	Negative	1	2	4	4	28=Low
Corrective Actions	<ul style="list-style-type: none"> <li>No waste will be buried on site or incorporated into the foundation trenches;</li> <li>The work force must be encouraged to sort waste into recyclable and non-recyclable waste;</li> <li>No burning of waste will be allowed on site; and</li> </ul>						

	<ul style="list-style-type: none"> <li>Waste must be regularly removed from site and disposed of at a registered waste disposal facility.</li> </ul>
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### 9.3.2 Socio-economic impact

The proposed development will result in a positive socio-economic impact as the demand for equipment, building material and labour will increase. Secondary service provision such as food supply, toilet hire, equipment maintenance and many more items would also stimulate the local economy especially during the construction phase. The impacts of socio-economic impacts associated with the proposed development are rated as follows:

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
socio-economic	No	Positive	3	2	8	5	65=Medium
Corrective Actions	<ul style="list-style-type: none"> <li>Contractors must by all means practice the localisation matrix while seeking for construction equipment or building materials.</li> <li>For minimal jobs, the appointed contractor should by all means consider the local residents for jobs that do not need any skill transfer.</li> <li>Property owners or occupiers must be treated with respect and courtesy at all times;</li> <li>The culture and lifestyles of the communities living in close proximity to the proposed development must be respected;</li> <li>No firewood is to be collected except with the written consent of the landowner; and</li> <li>A register must be maintained of all complaints or queries received as well as action taken.</li> </ul>						

### 9.3.3 Traffic Impact

During the construction phase increased heavy vehicle traffic should be expected. Without management, such increased traffic loads may negatively impact existing traffic flow. Further unmanaged construction vehicles may decrease road safety for other road users and uncontrolled movement of construction vehicles may result in unnecessary impacts to the environment through vegetation and habitat destruction.

Aspect	Corrective measures	Impact rating criteria					Significance
		Nature	Extent	Duration	Magnitude	Probability	
Traffic	No	Negative	3	2	8	3	39=Medium
	Yes	Negative	2	2	6	2	20=Low
Corrective Actions	<ul style="list-style-type: none"> <li>The delivery of construction material and equipment should be limited to hours outside peak traffic times (including weekends) prevailing on the surrounding roads;</li> <li>Access roads must be clearly marked; and</li> <li>Delivery vehicles must comply with all traffic laws and bylaws.</li> </ul>						

#### 10. UNDERTAKING UNDER OATH OR AFFIRMATION BY THE EAP

In undertaking the basic assessment process for the proposed development, the EAP has taken into consideration the requirements stipulated in the EIA Regulations, as well as other relevant Acts and Regulations. The EAP hereby confirm that with the information available at the time of preparing the BAR and the reports prepared by the specialists, the following has been considered in preparing this report:

- The correctness of the information provided in the report;
- The inclusion of comments and inputs from stakeholders and interested and affected parties; and
- Any information provided by the EAP to the interested and affected parties and any responses by the EAP to comments or inputs made by interested and affected parties.

Refer to **Appendix E2** for the Declaration of the EAP.

#### 11. WHERE APPLICABLE, ANY SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

The information required by the authority and is currently available, has been included in this Report

#### 12. ANY OTHER MATTER REQUIRED IN TERMS OF SECTION 24(4) (A) AND (B) OF THE ACT.

This Report has been prepared in terms of NEMA, its respective 2014 EIA Regulations as well as other various Acts. Information that is required by the NEMA has been included in this Report.

#### 13. CONCLUSION

The Basic Assessment has been undertaken in accordance with the provisions of the NEMA and the EIA Regulations of December 2014 as well as associated legislations. The alternatives have been proposed and the primary objective was to assess their suitability as well as the impacts of the proposed development. This report has comprehensively addressed the baseline environment which forms the backdrop of the impact assessment. Information provided has been supported by specialist studies that were undertaken and attached hereto. No fatal flaws or highly significant impacts were identified during the draft BA phase that would necessitate substantial redesign or termination of the project. From the EAP's and the Specialists' point of view, there is no reason why the development should not proceed if the recommendations made in this report and the specialists' reports are adhered to.

Further, the following is recommended by the EAP:

- That a final walkthrough must take place to identify sensitivities and assist in identifying areas that require conservation
- That all mitigation measures made by the specialist are taken into consideration during both the construction and operational phase.
- The applicant shall ensure that fluids are stored and handled properly in a concrete to cement lined with berm walls to avoid any seepage into the ground water resources and also to ensure that the design of the storage area is such that any leakages or spillages can be contained.
- That the Environmental Management Programme attached hereto be a living document that guides the construction and operational phases of the proposed project.
- That all necessary permits and licenses required by any Act, Policy, Law or By-Law be obtained prior construction.
- An integrated waste management approach be implemented that is based on waste minimisation and must incorporate reduction, reuse, recycling and disposal where appropriate.
- That necessary Water Use Licenses must be obtained as applicable from the Department of Water and Sanitation.
- Excessive wash-down of soil shall be prevented and the disturbed areas shall be rehabilitated on an on-going basis to prevent erosion.
- The applicant will provide the Department of Water and Sanitation with the quality and estimated quantity of the water that will be used for dust suppression during the developmental phase of the proposed project.

- As per Section 19(1) of the NWA, the applicant will ensure that any pollution incident(s) (of a water resource) originating from the proposed project shall be reported to the Regional Office of the DWA within 24hours.
- A detailed dolomite stability investigation be carried out before construction commencement of the proposed project.
- The City of Johannesburg must be informed of the commencement date of the construction for the purpose of compliance monitoring
- Sensitive seepage zones and wetlands must be avoided for tower placement. This must be identified by an ecologist during the walk down assessment.

The undertaking of this Basic Assessment process has fully complied with the requirements of the NEMA and associated regulations. It is therefore recommended that the proposed project proceed.

## 14. REFERENCES

- Central Information Services (Eskom), 2010, Double Strain Pole 208 kN 15 - 90 DEG - General Arrangement
- Council of Geoscience, 2018, Geological Map – Proposed Etna Trade Route Power Line
- DEAT, 1998 Guideline Document: Environmental Impact Assessment Regulations
- DEAT, 1998. A National Strategy for Integrated Environmental Management in South Africa. Compiled by Environomics
- [www.municipalities.co.za](http://www.municipalities.co.za) accessed 04 February 2018.