


FINAL SCOPING REPORT

**CONSTRUCTION OF A PROPOSED NEW 2X400kV POWER
LINE FROM GLOCKNER SUBSTATION TO ETNA
SUBSTATION, GAUTENG PROVINCE**

PREPARED FOR:

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MARCH 2007

EXECUTIVE SUMMARY

INTRODUCTION

Naledzi Environmental Consultants (NEC) has been appointed by Eskom Holdings Limited to conduct an Environmental Impact Assessment (EIA) for the proposed 30km² x 400kV Power Lines from Glockner Substation to Etna Substation. The said EIA is being carried out as per the requirements of Regulations 27 to 36 of the Regulations compiled in terms of Chapter 5 of the National Environmental Management Act, 1998 (Act 107 of 1998).

This Final Scoping Report (FSR) details the conclusions of the first stage of the EIA study, which entails a Scoping process aimed at identifying the most likely impacts of the proposed development on the surrounding environment. This stage also recommends the alternatives to be investigated during the EIA second phase, which requires a comprehensive impact assessment along the alternative routes identified.

BACKGROUND AND THE NEED FOR THE PROJECT

Electricity cannot be stored, it is therefore necessary to generate and deliver power over long distances at the very instant it is needed. In South Africa, thousands of kilometres of high voltage transmission power lines transmit power, mainly from power stations to major substations around the country. At these substations voltage is reduced for distribution to smaller substations, from where electricity is distributed to industry, businesses, homes and farms throughout the country.

If Eskom is to honour its mandate and commitment to meet the increasing needs of end-users, it has to establish and expand its infrastructure of both transmission/distribution power lines and substations on an ongoing basis. As a result of an increase in load, it is necessary to reinforce the existing electrical infrastructure.

A need was identified for Eskom Transmission to augment the existing electricity infrastructure within the Vaal/West Rand area of the Gauteng Province. Eskom Transmission is to build a double circuit 400kV power line between the existing Etna Substation and Glockner Substation.

It is expected that the average growth in load demand in the Vaal and West Rand area will be in the order of 1.5% per annum from 2006 to 2026, i.e. over the 20-year Eskom Planning Period. It is also reported that since 1995, there has been a marked increase in load demand at Taunus Substation, which primarily supplies Soweto and its surrounding areas.

This load build-up, which reached a combined peak of almost 1000MW in 2005, has resulted in a significant increase in the amount of power flowing from Lethabo Power Station to Taunus and Etna Substations, via Eiger and Brenner Substations. Load flow studies indicated that the peak power flowing from Eiger Substation towards Etna and Taunus Substations is expected to be as high as 700MW during the winter period of 2006 (under system healthy conditions).

The analysis showed, therefore, that it was sensible to consider alternative ways in which power from Lethabo Power Station could be more effectively delivered to these two substations, which in this case was to build more power lines between the two substations.

THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

Building the above mentioned power lines falls within ‘listed activities’, as defined by the National Environmental Management Act (NEMA), 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations of 2006. Listed activities are activities, which may have potentially detrimental impacts on the environment and therefore require environmental authorization from the competent authority.

In this case, the primary listed activity is the transmission and distribution of above ground electricity with a capacity in excess of 120kV. Since the applicant is Eskom (a Parastatal), the national Department of Environmental Affairs and Tourism (DEAT) was identified as the competent regulatory authority. Environmental Impact Assessment is a two phased process (Scoping Phase and Environmental Impact Reporting Phase). This report is the result of the first phase.

PUBLIC PARTICIPATION PROCESS

As part of the requirements within the above mentioned regulation, a public participation process is required during the scoping phase. A comprehensive public participation process was therefore followed throughout the Scoping exercise. The process was aimed at allowing the public to participate meaningfully, and to be involved at an early phase of the environmental impact assessment process.

The public participation process included consultation with the municipalities, government departments, non-governmental organizations and environmental groups as well as an extensive effort to identify potentially affected individuals and the general public. This included the distribution of documents by mail, e-mail, use of printed media, telephonic conversations, one-on-one meetings, focus group meetings and public meetings.

The public participation process for the EIA does not include the final servitude negotiation with the landowners who will be directly affected by the proposed development. The servitude negotiation process will be done by an Eskom negotiator once an authorization has been received from the Department of Environmental Affairs and Tourism. The Eskom negotiator however has been involved in discussions and meetings which were aimed at identifying different options or routes. Issues raised by stakeholders and an indication of how they were addressed have been recorded in an Issues and Response Report.

DESCRIPTION OF THE STUDY AREA AND ANTICIPATED IMPACTS

The study area is a stretch of land between the existing Etna Substation and the existing Glockner Substation. This piece of land traverses the City of Johannesburg and Sedibeng District Municipality's jurisdiction. The upper part of the study area (the area where Etna Substation is located) that falls under the City of Johannesburg comprises Lenasia, Ennerdale and Orange Farm, both falling under Region G of the City of Johannesburg. The lower part falls within the Sedibeng District Municipality, and specifically within the Emfuleni and Midvaal Local Municipalities.

Etna substation is located (**26°23' 7.61"s and 27°52' 31.33"e**) some 26km southwest of Johannesburg. It is also approximately 15km from Lenasia and approximately 5km from Ennerdale, within the City of Johannesburg area of jurisdiction. Glockner substation on the other hand is located (**26°36' 17.28"s and 27°59' 12.78"e**) in the Rothdene area of the Midvaal Local Municipality. The climate in the area under study is characteristic of the highveld. It has warm summers with showers and thunderstorms commonly occurring in the late afternoon with rainfalls that vary between 700mm and 800mm. The winters are cool and dry.

The study area falls within the Grassland Biome, which covers the high central plateau of South Africa. Most of the area is covered by Cymbogon Themeda Veld Type 48b, Northern Variation. *Setaria* grass species and *Themeda* and *Eragrostis* species dominate this veld type. Normally occurring trees and shrubs are limited to specialised niches, such as riverine fringes.

On a broader scale, the area under study is used mostly for two major land use activities (agriculture and residential), with agricultural activities mostly found towards the eastern side and the residential activities towards the western side. The stretch of land towards Rothdene (Glockner substation) is mostly privately owned while the land towards Lenasia South (Etna substation) is mostly government owned. The area in between the two above is characterised by the presence of Agricultural Holdings/Estates which are scattered almost everywhere.

The scoping process identified a large number of potential environmental impacts anticipated during the implementation of the Glockner-Etna 2x400kV Power line. It is important to highlight that the significant impacts are chosen from a pool of this vast number of identified impacts. It is also vital to point out that the impacts were identified through site visits, internal workshops by the project team and the public participation process. The following (not exhaustive since the process is still continuing) are the identified potential impacts:

- ❖ Impact on ecological processes
- ❖ Impact on soils and geology (including agricultural potential)
- ❖ Impacts on water resources (including streams and wetlands)
- ❖ Impacts of electromagnetic fields
- ❖ Impacts on safety and security
- ❖ Impacts on heritage and archaeological resources
- ❖ Impacts on visual conditions and aesthetics (visual impacts)
- ❖ Impacts on current and future developments
- ❖ Impacts of air quality on transmission power lines

- ❖ Impacts on birds (avi-fauna)

The issues below would be investigated in detail during the second phase of the EIA process:

- ❖ Geology and soils (including agricultural potential)
- ❖ Visual impacts
- ❖ Avi-fauna
- ❖ Ecological processes (including flora and fauna)
- ❖ Heritage and archaeological impacts
- ❖ Social impact (including tourism and infrastructure)

ALTERNATIVES CONSIDERED

Three alternative routes were identified during the scoping phase. The three alternative routes are coloured (Blue-Alternative 1, Pink-Alternative 2 and Yellow-Alternative 3). Detailed description of where the three alternative routes are found and which area they traverse is given in detail in the report. A methodology was developed, which will be used to evaluate impacts associated with each of the three alternative routes. This will be for the second phase of the EIA process.

CONCLUSION

The scoping process followed up to this point tried to identify possible impacts of the proposed 2x400kV Power line from Glockner to Etna substations. The process also identified possible route alternatives at a broad scale through specialist inputs and the issues raised during the public participation process. At this point in time, there is no route amongst the three that can be proposed as the most preferred route for the proposed 2x400kV power line. A full EIA will therefore be conducted along the proposed three alternative routes. The aim would be to come up with possible impacts envisaged for each route and to determine the most preferred route. A variety of mitigation measures will also be identified that could mitigate the scale, intensity, duration or significance of these impacts.

The following steps are envisaged for the remainder of the EIA process:

- ❖ Once the FSR and Plan of Study for EIA are accepted by DEAT, the EIA would proceed onto the Specialist Study Phase.

The findings of the specialist studies to be carried out and other relevant information will be integrated into a Draft EIR, which will be published for comment by interested and affected parties (including authorities). A notification letter (with an Executive Summary of the Draft EIR) will be sent to registered and identified I&APs to inform them of the release of the Draft EIR and where the full report can be reviewed. Information-sharing meetings and/or public open days would be held during the comment period to present the results of the EIA to I&APs and to provide them with the opportunity to comment on the study.

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1. INTRODUCTION

Naledzi Environmental Consultants (NEC) has been appointed by Eskom Holdings Limited to conduct an Environmental Impact Assessment (EIA) for the proposed 30km 2 x 400kV Power Lines from Glockner Substation to Etna Substation. Glockner substation is found within the Midvaal Local Municipality of the Sedibeng District while Etna substation is within the Johannesburg City Council area of jurisdiction. Both Sedibeng District Municipality and the Johannesburg City Council fall under the Gauteng Province, South Africa. Naledzi Environmental Consultants would serve as independent environmental consultants in this project while Eskom Holdings Limited would be referred to as the project proponents.

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Table 1: Environmental Impact Assessment Practitioner's Contact Details

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Table 2: Project Proponent's Contact Details

This report (Final Scoping Report) details the outcomes/findings and/or conclusions of the initial assessment stage (scoping) of the two phased EIA approach (scoping and full EIA) which was aimed at gathering baseline information from the study area, liaison with both the authorities and the Interested and Affected Parties (I&APs). The whole process was aimed at identifying potential environmental (encompassing both the socio-economic and the biophysical components) impacts that might arise from the proposed development.

1.1 SCOPE OF WORKS

In light of the above, Naledzi Environmental Consultants committed itself to implement the project as per the requirements of the new environmental impact assessment regulations. The following Scope of Work or Terms of Reference, as extracted from the regulations was applicable to the scoping study:

“After having submitted an application, the EAP managing the application must”

- (a) Conduct at least the public participation process set out in regulation 56 (stipulates methodology);
- (b) Give notice, in writing, of the proposed application to any organ of state which has jurisdiction in respect of any aspect of the activity;
- (c) Open and maintain a register of all interested and affected parties in respect of the application in accordance with regulation (stipulates the methodology);
- (d) Consider all objections and representations received from interested and affected parties following the public participation process;
- (e) Subject the application to scoping by identifying –
 - (i) Issues that will be relevant for consideration of the application;
 - (ii) The potential environmental impacts of the proposed activity (including cumulative impacts); and
 - (iii) Alternatives to the proposed activity that are feasible and reasonable;
- (f) Prepare a scoping report in accordance with regulation 29 (stipulates contents, which is representative of the framework of this report); and
- (g) Give all registered interested and affected parties an opportunity to comment on the scoping report in accordance with regulation 58 (stipulates the methodology).

In addition, a scoping report must take into account the legislation and relevant guidelines applicable to the kind of activity which is the subject of the application. The framework of this report is a representation of the requirements of the regulations.

1.2 ASSUMPTIONS AND LIMITATIONS

Naledzi Environmental Consultants has prepared this scoping report for the sole use of Eskom Transmission and the appointed development consultants/contractors to this project, in accordance with generally accepted consulting practices and for the intended purposes, as stated in the agreement under which this work was prepared. The report is also intended for review by the relevant competent authorities. Interested & Affected Parties are also privy to the review of the report to provide input to the EIA process. This report may not be relied upon by any other party without the explicit written agreement of Eskom Transmission and Naledzi Environmental Consultants. No other warranty, expressed or implied, is made as to the professional advice included in this scoping report.

2. ENVIRONMENTAL ASSESSMENT PRACTITIONERS

2.1 BACKGROUND

The Environmental Regulations specifically calls for practitioners involved in Environmental Assessment Work to list their qualifications and expertise in the report. The Regulations also indicates that the role of the Environmental Consultant or Environmental Assessment Practitioner (EAP) is to conduct the environmental scoping study or full EIA in an independent fashion. Independence is at the core of the EIA process.

An Environmental Assessment Practitioner appointed in terms of regulation 17(1) is required to –

- (a) be independent;
- (b) have expertise in conducting environmental impact assessments, including knowledge of the Act, the Regulations and any guidelines that have relevance to the proposed activity;
- (c) perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant.

Naledzi Environmental Consultants on its own is an independent Environmental Consulting Company which performs environmental assessment objectively. The team outlined below abide by the company's best practices in the consulting industry.

2.2 THE STUDY TEAM

A team of qualified and experienced consultants was assembled for this project. The following consultants are involved in this project:

Name	Qualifications	Roles and Responsibility
Mr. Musetsho K.D	B.EnvM (Hons)	Project Management
Mr. Mutshatshi T.N	B.EnvM (Hons), Msc (pending)	Maps Compilation
Ms. Mudau R	N.Dip Env.M	Public Participation
Mr. Nangammbi M.S	B.EnvSc	Public Participation

Table 3: Naledzi Environmental Consultant's Team

All these individuals are permanent employees of Naledzi Environmental Consultants. Other individuals from other companies were roped in to serve as specialists, their names and the organisations they represent would be highlighted throughout the scoping report and reference would be made to their findings and conclusions

3. NATURE OF THE DEVELOPMENT

3.1 BACKGROUND

Electricity cannot be stored, it is therefore necessary to generate and deliver power over long distances at the very instant it is needed. In South Africa, thousands of kilometres of high voltage transmission power lines transmit power, mainly from power stations to major substations around the country. At these substations voltage is reduced for distribution to smaller substations, from where electricity is distributed to industry, businesses, homes and farms throughout the country.

If Eskom is to honour its mandate and commitment to meet the increasing needs of end-users, it has to establish and expand its infrastructure of both transmission/distribution power lines and substations on an ongoing basis. As a result of an increase in load, it is necessary to reinforce the existing electrical infrastructure.

Eskom has a mandate to satisfy potential customer needs, which implies certain responsibilities. One of the most significant of these is to find and maintain the balance between satisfying the needs of society and balance these with environmental constraints. In order to achieve this, Eskom continually re-assesses its present infrastructure and take into account new developments to ensure that there is a continued supply of electricity, without significantly impacting on the environment.

A need (described in details below) aroused for Eskom Transmission to augment the existing electricity infrastructure within the Vaal/West Rand area of the Gauteng Province. Eskom Transmission is to build a double circuit 400kV power line between the existing Etna Substation and Glockner Substation. There are possible environmental impacts that arise from the proposed development, hence this environmental impact assessment process.

3.2 THE NEED AND DESIRABILITY OF THE PROJECT

It is expected that the average growth in load demand in the Vaal and West Rand area will be in the order of 1.5% per annum from 2006 to 2026, i.e. over the 20-year Eskom Planning Period. It is also reported that since 1995, there has been a marked increase in load demand at Taunus Substation, which primarily supplies Soweto and its surrounding areas. This trend is shown in **Figure 1** below.

This load build-up, which reached a combined peak of almost 1000MW in 2005, has resulted in a significant increase in the amount of power flowing from Lethabo Power Station to Taunus and Etna Substations, via Eiger and Brenner Substations (**Figure 2**). Load flow studies indicated that the peak power flowing from Eiger Substation towards Etna and Taunus Substations is expected to be as high as 700MW during the winter period of 2006 (under system healthy conditions). The analysis showed, therefore, that it was sensible to consider alternative ways in which power from Lethabo Power Station could be more effectively delivered to these two substations.

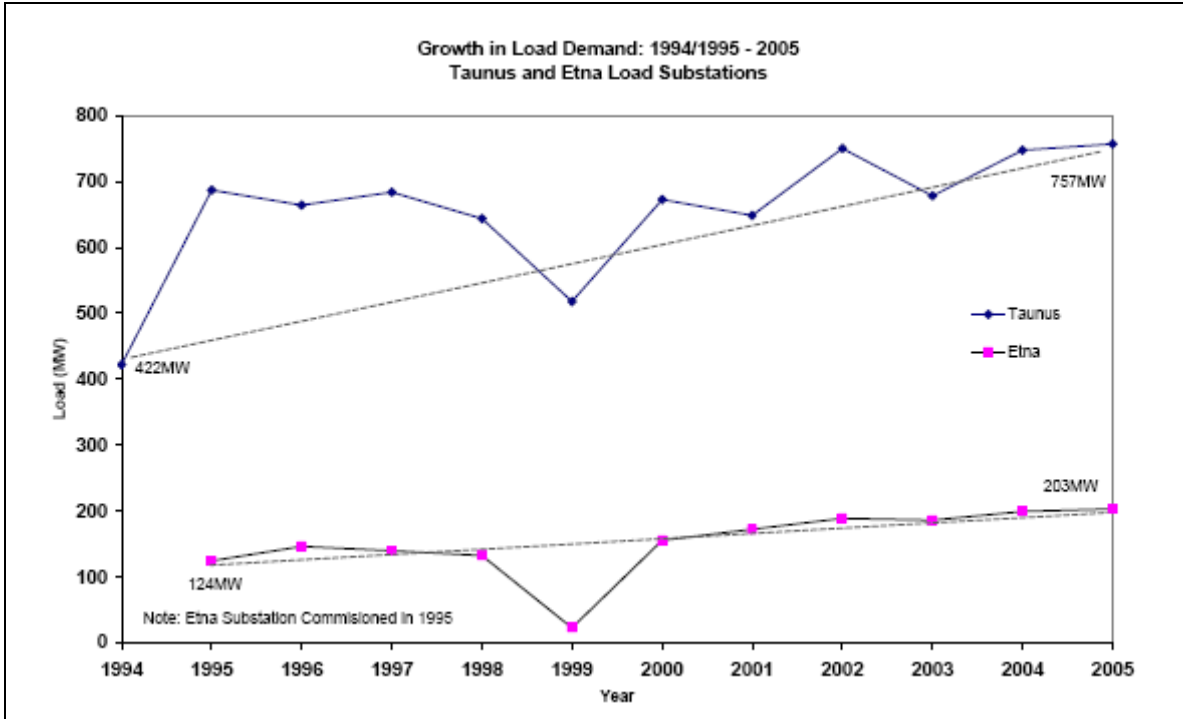


Figure 1: Actual load demand for Taunus and Etna 1994-2005

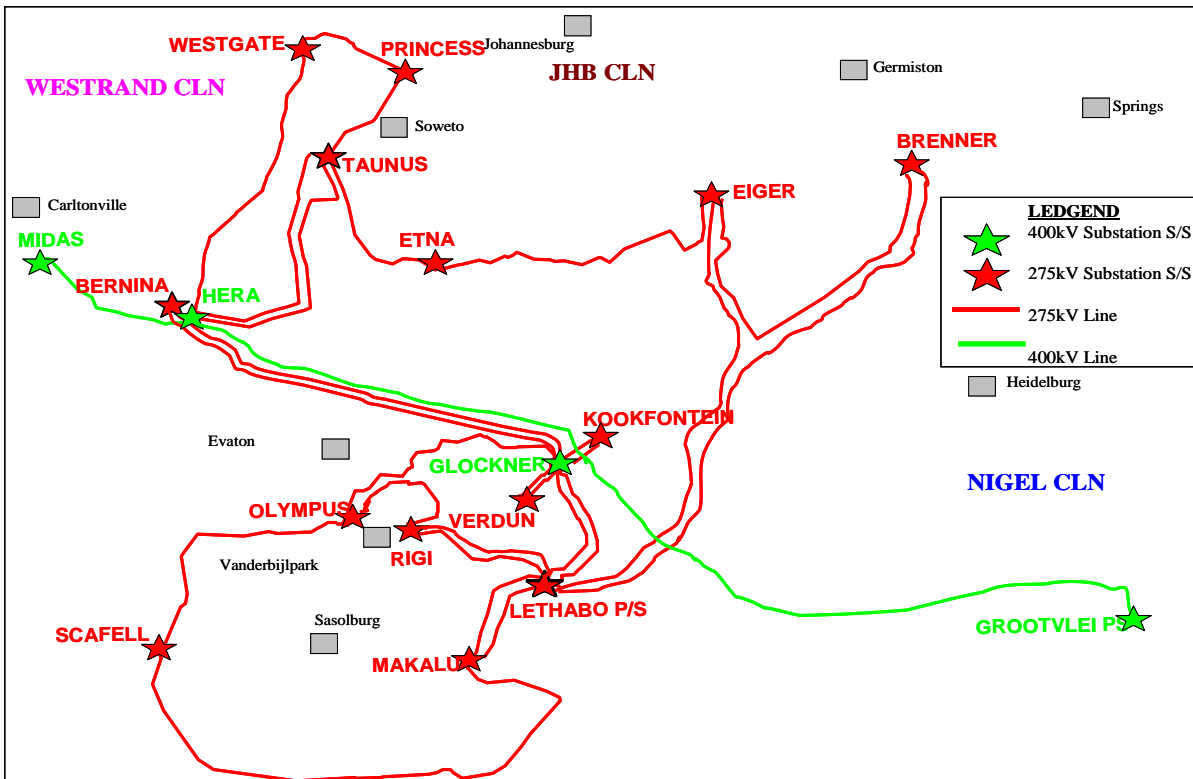


Figure 2: Current Geographical Layout of the Vaal and West Rand CLN Networks

The increase in load demand in the Vaal, West Rand and Johannesburg Area, which is partly described above, has raised concerns that the loadings on the Lethabo –Eiger and Lethabo – Brenner 275kV lines are approaching the permissible thermal ratings for these lines. These two lines are critical since they transmit approximately 40% of the power generated at Lethabo Power Station. This figure is expected to increase in future; therefore, the future loadings on these two lines were a major concern.

The acquisition of the servitude for the construction of a double circuit 400kV power lines (2x400kV Power lines) would address the concerns raised above. At the same time, the line would provide network strengthening to support future load growth and prevent thermals limits being exceeded in the Johannesburg, Vaal and West Rand areas.

An Environmental Impact Assessment study was commissioned to establish if it would be feasible to build 2 x 400kV power lines from Glockner to Etna substations. It is envisaged that should it be feasible, the lines would be built to reduce the power flow through the existing Lethabo-Eiger and Lethabo-Brenner 275kV lines.

3.3 STRATEGIC ALTERNATIVES CONSIDERED

Before a decision was made to commit to the environmental impact assessment on the proposed Glockner-Etna power line, alternatives were considered at a strategic level to address the situation. The following paragraphs outlines the options investigated.

3.3.1 OPTION 1: DO NOTHING

The very first option was to do nothing about the solution of the transfer constraint of the Vaal and West Rand area. This option was found not feasible for the following reasons:

With the projected load growth, the line loadings of the Lethabo Eiger 275kV and Lethabo Brenner 275kV will increase to unacceptable levels resulting in:

- Contravention of statutory limits
- Possible voltage collapse on the Transmission network.
- Inability to meet natural and step load increases.

It was therefore necessary to investigate other possible options, hence the paragraphs below.

3.3.2 OPTION 2: NEW 400kV CIRCUIT LINES BETWEEN ETNA-HERA AND GLOCKNER-HERA SUBSTATIONS

The new line servitude will be approximately 59km long. The line servitude will be in proximity to the existing 275kV Glockner –Bernina and Bernina Etna line.

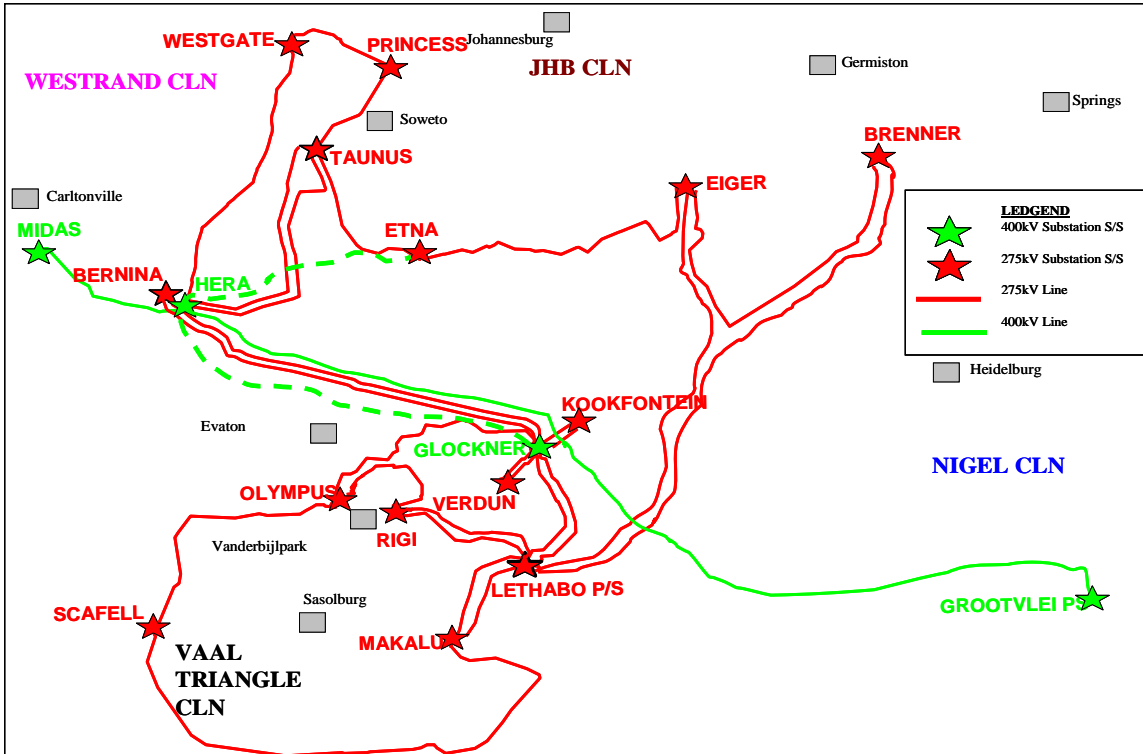


Figure 3: Proposed new 400kV circuit lines between Etna-Hera and Glockner-Hera substations

The following disadvantages were identified:

- CAPEX outlay is the highest.
- Johannesburg CLN and West Rand CLN interconnected.

3.3.3 OPTION 3: BUILD A NEW 275kV DOUBLE CIRCUIT LINE BETWEEN GLOCKNER AND ETNA SUBSTATIONS

The new line will be approximately 30km long. This line will basically follow the route due North of Glockner to Etna.

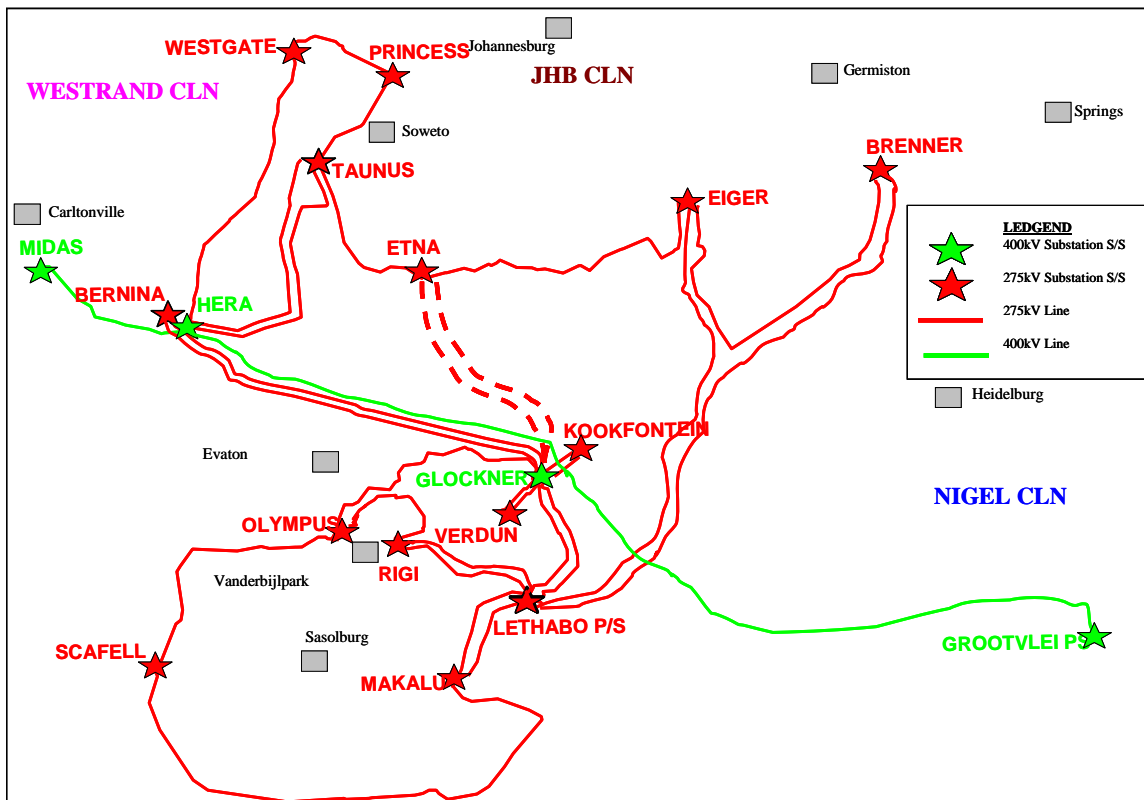


Figure 4: Proposed 275kV Double Circuit Line between Glockner and Etna

The following advantages were identified:

- The alternative has the most PV worth, i.e. it is the cheapest option to implement;
- The alternative remains the cheapest option over the 6% to 12% range of real discount rates that were considered

At the end, option three was found to be the most preferred one from a strategic point of view, hence the commencement of the environmental impact assessment to investigate further on the practicality of building the line, taking into consideration all the environmental issues. Should it be found feasible to build the lines, they would be operated at 275kV and then later, depending on the demand for more power, will be switched to operate at 400kV. Throughout the report, the project would be referred to as Glockner-Etna 2x400kV power lines.

3.4 THE ROUTE/CORRIDOR ALTERNATIVES CONSIDERED

After choosing the area between Glockner and Etna as the preferred option from a strategic point of view, it was also very important to consider possible route alternatives within the study area. Three alternative routes/alignment or corridors were identified where the proposed 2x400kV power lines could be built. Detailed description of the area where the three routes are was given in Chapter 7 (7.4) of this report.

3.4.1 NO PROJECT/ACTION ALTERNATIVE

3.4.1.1 Background

The “no-go” alternative is sometimes referred to as the “no-action” alternative, which assumes that the proposed activity does not go ahead and in turn implying a continuation of the current situation or the status quo. The “no-go, no-project, no-action” alternative was identified to try and highlight those positive environmental issues that could be seen if the project does not continue. It has always been the impression of both the environmental assessment practitioners, the authorities and the proponents that the “no-go” alternative is there merely for the purposes of showing the positive impacts of the project, but over time, people are starting to realize that even if the project does not go ahead, there are positive outcomes at the end of the day.

For the purposes of a comparative analysis, it is important to highlight that there is a strong need for the project. In the paragraphs above, the need for the project indicated that the existing power line infrastructure in the area is overloading, and that future developments would not be catered for through the existing infrastructure.

3.5 THE TECHNICAL DETAILS OF THE PROJECT

3.5.1 TYPES OF TOWERS/PYLONS

The environmental impact assessment process being carried out is part and parcel of Eskom Holdings Limited’s planning process, and as such, specific details regarding certain components of the proposed development could only be finalized once it is clear that the development could proceed. As a result, there is no final decision made yet as to the exact type of towers/pylons to be used in this project. That notwithstanding, the following are the common types of towers or pylons that may be used on this project:

- ❖ Cross rope suspension tower;
- ❖ Guyed suspension tower; and
- ❖ Self-supporting suspension tower.

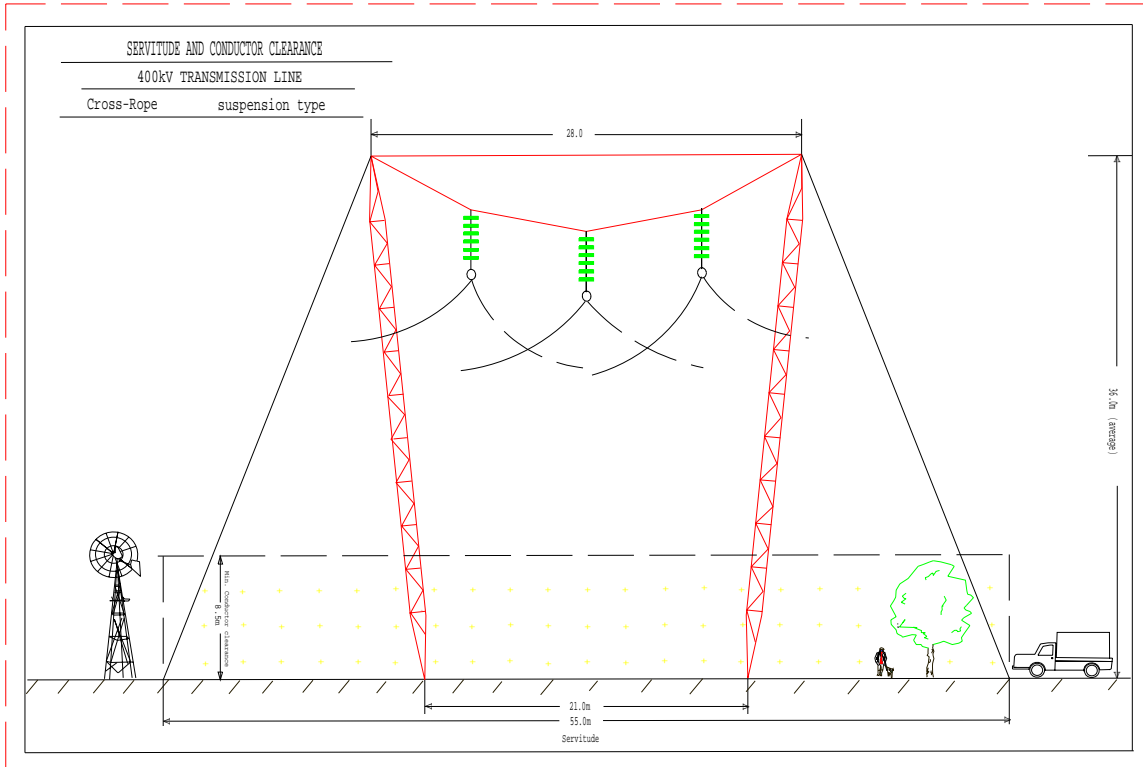


Figure 5: Cross Rope Suspension Tower

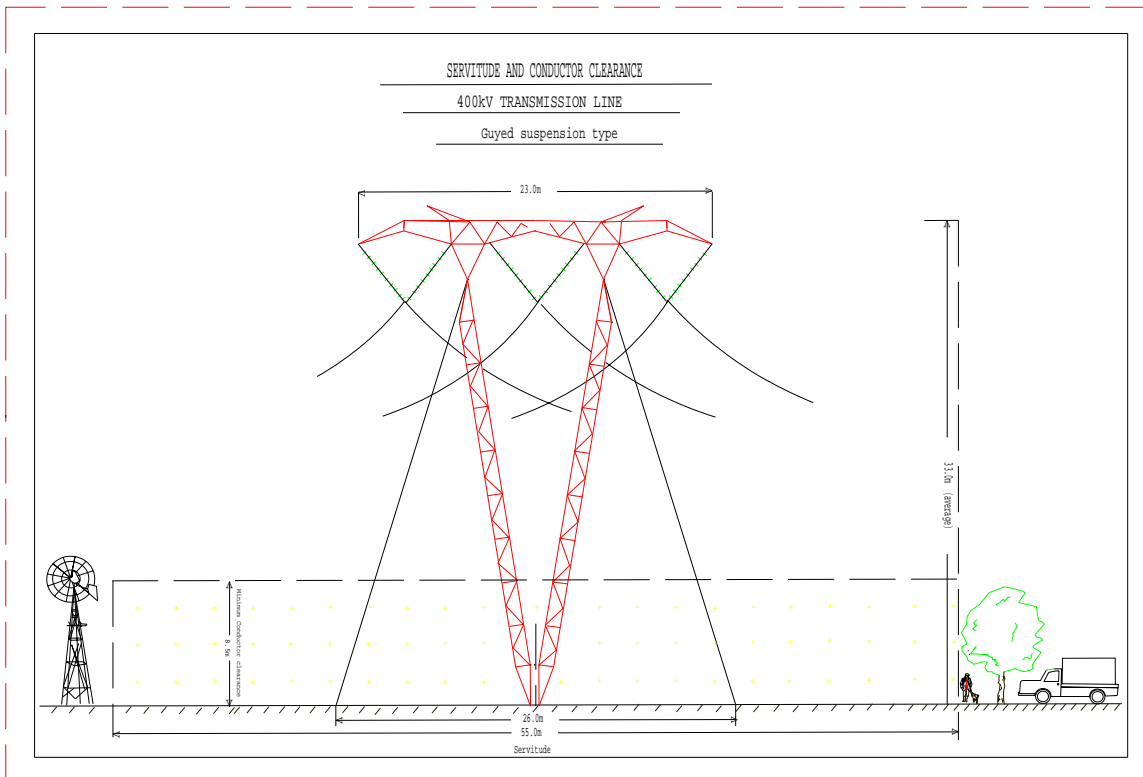


Figure 6: Guyed Suspension Tower

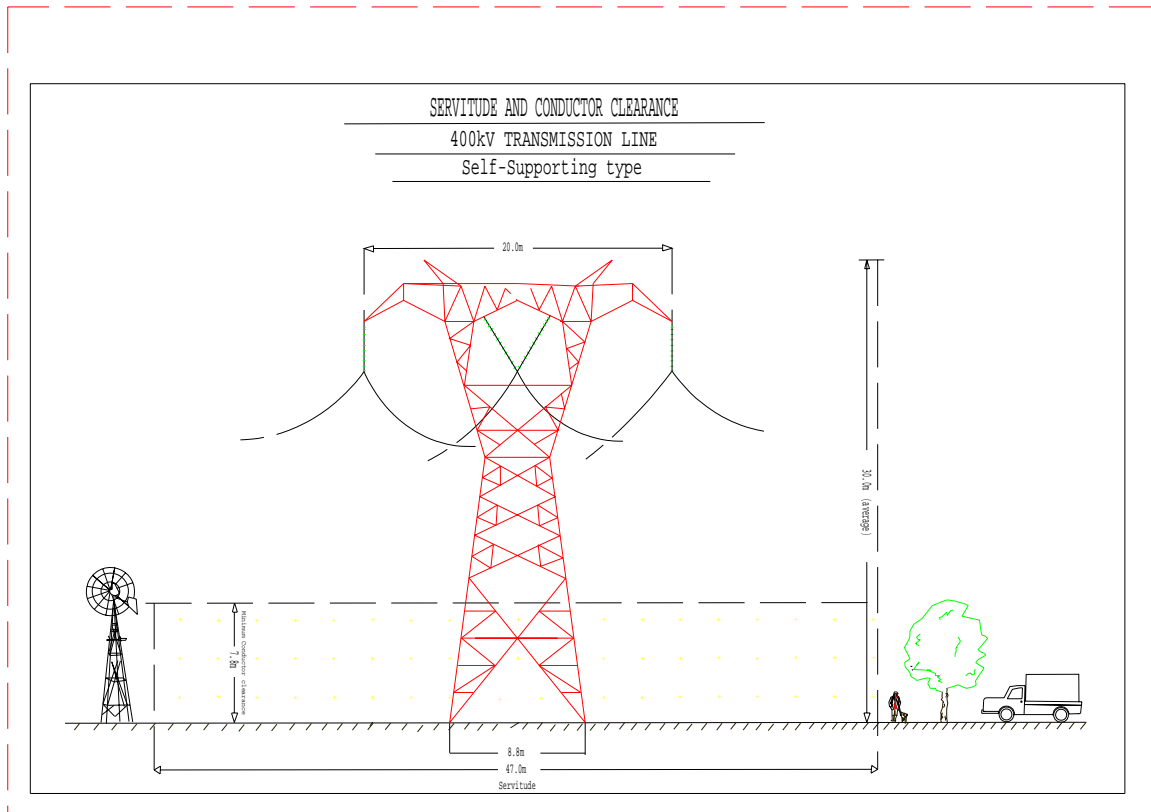


Figure 7: Self-Supporting Tower

It is important to highlight at this point that the final tower type chosen will depend on both technical and environmental constraints. Landowner requirements also play a pivotal role in the tower selection process. Where necessary a different tower type could be used if it enables Eskom to address a site-specific challenge.

3.5.2 SERVITUDE REQUIRED FOR THE PROPOSED POWER LINES

Throughout this report, any reference to a servitude should be interpreted as the piece of land demarcated for the proposed Transmission line, including areas required for routine maintenance that are carried out once the power line is in operation.

The servitude required for a single 400kV Transmission Power line would be 55m, while the separation distance between 400kV and any other line would be 55m. In cases where there are constraints related to space, the separation distance can be limited to 35m (towers opposite)

Power line servitudes are usually secured along existing servitudes such as roads and pipelines. In cases where the servitude is required next to a road reserve, a distance of 95m from the centre of road to edge of power line servitude is required.

3.5.3 PHASES OF THE DEVELOPMENT

Establishment of power lines is a long process that starts with the identification of a need, power system planning, environmental impact assessment, route selection, **negotiation** (**Appendix 1**, difference between scoping and negotiation processes), surveying, the actual construction, operation and maintenance and end with the decommissioning of the power lines. The whole process completes the life cycle of the power line. Other things being equal, the environmental impact assessment, although related to most of the listed aspects of the planning process, focuses more or identifies environmental issues related to the construction phase, operation and maintenance and the subsequent decommissioning.

3.5.3.1 Construction phase

This phase basically entails the establishment of construction camp sites, equipment yards and lay-down areas, access routes establishment, installation of gates (at points where power line intersects fence lines), clearance of servitude to facilitate access, construction of over head power lines (excavation of pits for tower foundations, casting of foundation for towers, assembly and erection of towers, stringing of pilot wire, stringing of conductors including winching and tensioning), movement of construction workforce, equipment and materials.

3.5.3.2 Operation and Maintenance Phase

The phase mainly involves the transmission/distribution of electricity/power from one substation to the other, including the use of electricity from the substation by beneficiaries. It also includes the inspections and maintenance of the power line infrastructure, all areas disturbed during construction, servitude/right of way vegetation pruning/cutting, ongoing monitoring and management of erosion and lastly eradication and control of invasive species if any.

Some of the activities that characterize this phase include replacements of hardware on the line such as insulators, improvement of earthing cables, maintenance of bird patches/platforms, aviation markers and bird flappers.

3.5.3.3 Decommissioning Phase

Decommissioning phase mainly entails the dismantling of the power lines. Environmental rehabilitation is carried out during this phase of the development. Breaking up and removal of foundations also characterize the decommissioning phase of the power line development. This includes creation of access routes to facilitate demolition and transport of waste materials, disposal of waste materials and monitoring of the success of rehabilitation measures.

4. DESCRIPTION OF THE AFFECTED ENVIRONMENT

4.1 BACKGROUND (LOCATION)

The study area is a stretch of land between the existing Etna Substation and the existing Glockner Substation. This piece of land traverses the City of Johannesburg and Sedibeng District Municipality's jurisdiction. The upper part of the study area (the area where Etna Substation is located) that falls under the City of Johannesburg comprises Lenasia, Ennerdale and Orange Farm, both falling under Region G of the City of Johannesburg. Other areas include Pinetown, Cyferfontein, Hartebeestfontein. The lower part falls within the Sedibeng District Municipality, and specifically within the Emfuleni and Midvaal Local Municipalities. Other specific areas include Dadaville, Rust ter Vaal and Debonair Park (**Figure 8: Locality Map**).

Etna substation is located (**26°23' 7.61"s and 27°52' 31.33"e**) some 26km southwest of Johannesburg. It is also approximately 15km from Lenasia and approximately 5km from Ennerdale, within the City of Johannesburg area of jurisdiction. Glockner substation on the other hand is located (**26°36' 17.28"s and 27°59' 12.78"e**) in the Rothdene area of the Midvaal Local Municipality.

4.2 BIOPHYSICAL ENVIRONMENT

4.2.1 CLIMATE

The climate in the area under study is characteristic of the highveld. It has warm summers with showers and thunderstorms commonly occurring in the late afternoon with rainfalls that vary between 700mm and 800mm. The winters are cool and dry. The area (particularly Midvaal) is located in the southern portions of the Gauteng Province, where air pollution occurs. This is attributed to the fact that the area is situated south of the mining belt in Johannesburg, which results in dust being blown over the area from the mining activities. Further causes of air pollution are the industries situated in Johannesburg, the East Rand and within the Sedibeng District as a whole.

4.2.2 TOPOGRAPHY AND MAJOR LAND FEATURES

The topography of the area covering the southern tip of the City of Johannesburg through Emfuleni Local Municipality to the Midvaal Local Municipality is characterised by gentle slopes with the elevation above sea level varying from 800m to over 1500m at the top of the Suikersbosrand which is the highest point in Gauteng.

4.2.3 FAUNA AND FLORA

The study area falls within the Grassland Biome, which covers the high central plateau of South Africa. Most of the area is covered by Cymbogon Themeda Veld Type 48b, Northern Variation. Setaria grass species and Themeda and Eragrostis species dominate this veld type. Normally occurring trees and shrubs are limited to specialised niches, such as riverine fringes.

Certain areas along the Midvaal Local Municipal jurisdiction are covered by Babenveld type 61b, which is underlain by the Ventersdorp lava. This is a sour, unpalatable grassveld, which typically includes *Trachypogon*, *Tristachya*, *Setaria* and *Eragrostis* grass species.

The Grassland Biome is found chiefly on the high central plateau of South Africa, and the inland areas of KwaZuluNatal and the Eastern Cape. Grasslands (also known locally as Grassveld) are dominated by a single layer of grasses. The amount of cover depends on rainfall and the degree of grazing. Trees are absent, except in a few localized habitats. Geophytes are often abundant. Frosts, fire and grazing maintain the grass dominance and prevent the establishment of trees.

Urbanization is a major additional influence on the loss of natural areas - the Witwatersrand is centred in this biome. The Grassland Biome is considered to have an extremely high biodiversity, second only to the Fynbos Biome. Rare plants are often found in the grasslands, especially in the escarpment area. These rare species are often endangered, comprising mainly endemic geophytes or dicotyledonous herbaceous plants. Very few grasses are rare or endangered.

Although the area is broadly described as Grassland, it is also subdivided into two main veld types (Bankenveld towards Etna substation and Cymbogon-Themeda veld towards Glockner substation). The two veld types are known to harbour a diversity of faunal species, but unfortunately the development activities in the area, dominated by cultivation are responsible for the diminishing faunal species in the area. It is said that at the time when the area was still intact, the following number of faunal species were identified or could be identified:

Mammals (205)

Butterflies (157)

Birds (505)

Reptiles (33)

These species are unfortunately found in conservation areas such as the Suikerbosrand Nature Reserve, and they are hardly identified in developed areas. Red data that are common in the area include those of birds (within the Suikerbosrand Nature Reserve, Bullfrog (particularly North West of Midvaal),

4.2.4 CONSERVATION AREAS

The area under study is characteristic of the Gauteng Urban environment, where most portions have already been developed and where there are no major mountains and forests such as the ones found in the Limpopo, Mpumalanga and Kwazulu Natal Provinces. One nature reserve (Johanna Jacobs Nature Reserve) was identified in the study area while there are small pockets of conservancies (especially around the Walkerville area).

4.2.5 SOILS

Deep, red (Hutton) and yellow (Clovelly) soils, mostly on Karoo Sequence sediments but also on shale (Witwatersrand Supergroup), andesitic lava (Ventersdorp Supergroup) and some other substrates, predominate.

4.2.6 GEOLOGY AND GEOMORPHOLOGY

The area between Glockner substation and Etna substation is characterised by five different geological strata. For ease of reference, all of these are labelled as Vp, Vh, Vm, Pes and RVv (**Figure 9**: Geological Map).

4.2.6.1 Vp

Lithology: Quartzite, shale, conglomerate, iron formation, breccia, diamictite, limestone, dolomite and where not shown separately as Vh, andesite; also includes Malmani dolomite.

Formation: Part of the Pretoria Group, Duitschland, Penge and Langrant Formations.

Rock type: Compact sedimentary strata

4.2.6.2 Vh

Lithology: Andesite

Formation: Hekpoort Formation

Rock type: Mafic/basic lava

4.2.6.3 Vm

Lithology: Dolomite, chert, subordinate quartzite, conglomerate, shale; diabase and syenite dykes and sills

Formation: Malmani Supergroup, Assen and Black Reef Formations (except where the latter is included with Godwan Formation).

Rock type: Dolomite, chert and subordinate limestone

4.2.6.4 Pes

Lithology: Shale, sandstone,; intruded by dolerite dyke and sheets

Formation: Eccca Group

Rock type: Compact arenaceous and argillaceous strata

4.2.6.5 Rvv

Lithology: Andesite, quartz porphyry, dacite, rhyolite, trachyte, tuff, agglomerate, volcanoclastics, conglomerate, sandstone, arkose, quartzite shale and chert

Formation: Ventersdorp SuperGroup' Klipriviersber, Zoetlief, Amalia, Hartswater and Sodium Groups' Hereford

Rock type: Assemblage of compact sedimentary and extrusive rocks

4.2.7 HYDROLOGY AND DRAINAGE

The study area does not have major river ecosystems. Rietspruit and Varkensfonteinspruit are the main streams located within the study area. There are patches of other streams such as Fouriespruit, including several man made water bodies scattered all over the area. Due to the unavailability of surface water bodies, there is a lot of ground water sources (wind pumps) scattered across the area. Reservoirs are also common features in the area. The majority of the streams (if not all) are tributaries of the Vaal River which is found south of the study area. There are no well defined dams in the study area. There are patches of wetland ecosystems found along the identified streams, especially along the Rietspruit. Major wetlands are found to the north of the study area (along the Kliprivier).

4.3 SOCIO-ECONOMIC ENVIRONMENT

4.3.1 LAND USE AND PROPERTIES

On a broader scale, the area under study is used mostly for two major land use activities (agriculture and residential), with agricultural activities mostly found towards the eastern side and the residential activities towards the western side. The stretch of land where the three route alternatives were identified is characterised by a mixture of the two major land use activities, with agricultural activities as the dominant activities.

The stretch of land towards Rothdene (Glockner substation) is privately owned while the land towards Lenasia South (Etna substation) is government owned. The area in between the two above is characterised by the presence of Agricultural Holdings/Estates which are scattered almost everywhere. The following agricultural holdings/estates were identified in the area:

- ❖ Walkerville Agricultural Holdings
- ❖ Blignautsrus Agricultural Holdings
- ❖ Golf View Agricultural Holdings
- ❖ Althea Agricultural Holdings
- ❖ Homestead Apple Orchards Agricultural Holdings
- ❖ Walker Fruit Farms Agricultural Holdings
- ❖ Balmoral Estate
- ❖ De Deur Estate
- ❖ Ironside Agricultural Holdings
- ❖ Dreamland Agricultural Holdings
- ❖ Steelview Agricultural Holdings
- ❖ Ebenneserpark Agricultural Holdings
- ❖ Ophir Agricultural Holdings

Residential areas identified throughout the study area include:

- ❖ Lenasia South

- ❖ Ennerdale
- ❖ Sweetwaters
- ❖ Cyferfontein
- ❖ Zakariya Park
- ❖ Kanana
- ❖ Hartbeestfontein
- ❖ Rothdene
- ❖ Debonair Park
- ❖ Dadaville
- ❖ Rust ter Vaal
- ❖ Roshnee

It is also important to mention that there are informal settlements mushrooming throughout the study area, especially towards the Etna substation. The area between Rust-ter-Vaal and Waldrift has been suggested for residential development, and it is important to highlight that housing developments have already started in the vicinity of Rust-ter-Vaal. Other areas earmarked for further housing developments (amongst others) include Sweetwaters.

4.3.2 AGRICULTURE

As mentioned above, agriculture is one of the major land use activities in the area. The area, particularly towards the southern tip of the 30km stretch of land between Glockner and Enta substations is considered part of the Maize Triangle of South Africa. Bluegum species are also scattered throughout the study area, especially within the identified agricultural holdings. These are very tall trees which can grow up to an average height of 40m.

4.3.3 EXISTING AND FUTURE INFRASTRUCTURE/DEVELOPMENTS

Vereeniging Aerodome is located within the study area, near Dadaville. No any other landing strips or aircraft centres were identified throughout the study area. Mobile Telephone Network (MTN), Vodacom and Telkom telecommunication infrastructure is also scattered through out the area, just like in any other urban kind of environment. Mining and industrial activities were also identified in the area, especially towards Glockner substation.

On a broader scale, tourism development has been identified as having a huge potential in the area, particularly along the Midvaal area. A recently approved Tourism Master Plan for the Midvaal area has identified the Suikerbosrand Reserve and the Vaal Dam as the cornerstones of tourism development in the area. The stretch of land between Glockner and Etna substations lack tourist attraction areas, except for the Johanna Jacob Nature Reserve.

5. LEGISLATION AND GUIDELINES

In the past the Environment Conservation Act, 1989 (ECA) (Act No 73 of 1989) identified activities (Section 21(1), Government Gazette #18261), which may have a substantial detrimental effect on the environment and that are subject to the Environmental Impact Assessment (EIA) regulations.

The EIA regulations in terms of ECA have recently been repealed and replaced by Regulations promulgated (GN R385, 2006) in terms of Chapter 5 of the National Environmental Management Act (NEMA), 1998. The Minister of Environmental Affairs and Tourism has in terms of section 24(5) read with section 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), made the EIA Regulations.

The purpose of these Regulations is to regulate procedures and criteria as contemplated in Chapter 5 of the Act for the submission, processing, consideration and decision of applications for environmental authorization of activities and for matters pertaining thereto. Government Notice 386 and 387 identify activities in terms of NEMA that require the undertaking of either a Basic Assessment Report or a Scoping Study together with an Environmental Impact Assessment Report respectively.

The project that Eskom Transmission Services proposes entails the following activities which are listed in terms of the Environmental Impact Assessment (EIA) regulations under the NEMA Act:

Number and date of the relevant notice	Activity No (s) in terms of the relevant notice	Description of each activity
No. R387, 21 April 2006	1 (l)	The construction of facilities or infrastructure, including associated structures or infrastructure, for the transmission and distribution of above ground electricity with a capacity of 120 kilovolts or more

As a result, the proposed development has to undertake both a Scoping Study and a Full Environmental Impact Assessment (Environmental Impact Report – EIR). In addition to the requirement for an authorization in terms of NEMA there may be additional legislative requirements which need to be considered prior to commencing with the activity, for example: The National Water Act (Act 36 of 1998); National Heritage Resources Act (Act 25 of 1999), National Forest Act (Section 7) etc. Naledzi Environmental Consultants were commissioned by the applicant, Eskom Transmission Services, to provide an environmental report that seeks to comply with the EIA regulations above.

The following are possible activities that may take place that might also require authorization:

Number and date of the relevant notice	Activity No (s) in terms of the relevant notice	Description of each activity
No. R386, 21 April 2006	1 (m)	The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the one in ten year flood line of a river or stream, or within 32 meters from the bank of a river or stream where the floodline is unknown, excluding purposes associated with existing residential use, but including canals, channels, bridges, dams and weirs.
No. R386, 21 April 2006	7	The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combination capacity of more than 30 cubic meters but less than 1000 cubic meters at one location or site
No. R386, 21 April 2006	14	<p>The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding</p> <p>Masts of 15 meters and lower exclusively used</p> <p>by radio amateurs or</p> <p>for lighting purposes</p> <p>Flag poles</p> <p>Lightning conductor poles</p>
No. R386, 21 April 2006	15	The construction of a road that is wider than 4 meters or that has a reserve wider than 6 meters, excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 meters

In addition to the above, other legislation and guidelines have been considered in the preparation of the scoping report. Various legislation are provided in this section indicating those consulted during the environmental scoping study for determining relevance to the proposed development. Relevant administrative, legal and policy requirements, which the proponent will be responsible for carrying out during the construction and operation of the proposed power lines, are therefore included. The list of legislation may or may not be applicable to the proposed development. The relevance of this legislation may become clear when the affected biological environment is assessed and the impacts determined during the EIA phase.

5.1 THE CONSTITUTION ACT, 1996 (ACT NO. 108 OF 1996)

The constitution states that:

“...everyone has the right to an environment that is not harmful to their health or well being; and to have the environment protected for the benefit of present and future generations”. The Act therefore imply that measures must be implemented that 1) prevent pollution and ecological degradation; 2) promote conservation; and 3) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development'.

5.2 ENVIRONMENT CONSERVATION ACT, 1989 (ACT NO 107 OF 1989)

The purpose of the Environment Conservation Act is to provide the effective protection and controlled utilization of the environment. The coming into effect of the National Environment Management Act (NEMA) repealed some but not all of ECA provisions, namely the control of environmental pollution, the control of activities which may have a detrimental effect on the environment and the remediation of environmental damage. Development must be environmentally, socially and economically sustainable. In terms of section 20, the developer is required to obtain a permit from the Department of Water Affairs and Forestry in order to establish, provide or operate any waste disposal site within the boundaries of the proposed development. Where hazardous or domestic wastes are to be removed from the site by contractors, the developer needs to place a contractual obligation on the contractor to dispose of the waste at a licensed site and to ensure that this is properly done.

The Act therefore implies that the developer must develop in a sustainable fashion in which integrated environmental management is implemented i.e. taking cognizance of ecological, social and economic issues. No waste disposal is proposed, but any hazardous waste created during construction will have to be disposed off at a permitted Waste Disposal Site. The developer will be responsible for rehabilitating disturbed sites.

5.3 NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998 (ACT NO. 107 OF 1998)

The act states that sustainable development requires the consideration of all relevant factors including:

- (i) that the disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimized and remedied;
- (ii) that a risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions
- (iii) the participation of all interested and affected parties in environmental governance is promoted, and all people have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured.

5.4 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT, 2004 (ACT NO. 10 OF 2004)

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

The National Spatial Biodiversity Assessment (NSBA) classifies areas as worthy of protection based on their biophysical characteristics, which are ranked according to priority levels.

5.5 NATIONAL FOREST ACT, 1998 (ACT NO. 84 OF 1998)

This Act provides for the management, utilisation and protection of forests through the enforcement of permitting requirements associated with the removal of protected tree species, as indicated in a list of protected trees (first promulgated in 1976 and has been updated since). Permits are administered by the Department of Water Affairs and Forestry (DWAF).

Provincial ordinances were developed to protect particular plant species within specific provinces. The protection of these species is enforced through permitting requirements associated with provincial lists of protected species. Permits are administered by the provincial departments responsible for environmental affairs.

5.6 NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

Section 22.2 of the Water Act states "A person who uses water (a) must use the water subject to any condition of the relevant authorisation of that use; (b) is subject to any limitation, restriction or prohibition in terms of this Act or any other applicable law (c) in the case of the discharge or disposal of water or water containing waste contemplated in section 21(f),(g), (h) or (j) must comply with any applicable waste standards or management practices prescribed under section 26(I)(h) and (i), unless the conditions of the relevant authorisation provide otherwise: (d) may not waste that water.

In terms of Section 22 of the National Water Act a water use must be authorized. In section 21 "water use" is defined to include: impeding or diverting the flow of water in a watercourse or altering the bed, banks, course or characteristics of a watercourse.

The Act implies that the developers are responsible for taking reasonable measures to prevent pollution of water resources that they owns, controls occupies or uses on the proposed study area in question. The developers are required to remedy situation where pollution of a water resource occurs following emergency incident and where it is responsible for the incident or owns or is in control of the substance involved. The developers must take all reasonable measures to minimize the impacts of the incident, undertake cleanup procedures, remedy the effects of the incident and take measures as directed by the catchment agency.

The water Act guides the management of water in South Africa as a common resource. The Act aims to regulate the use of water and activities which may impact on water resources through the categorization of 'listed water uses' encompassing water extraction, flow attenuation within catchments as well as the potential contamination of water resources, where DWAF is the administering body in this regard.

5.7 CONSERVATION OF AGRICULTURAL RESOURCES ACT

Various regulations promulgated in terms of the Conservation of Agricultural Resources Act are also relevant. In terms of section 6 of the Act, the Minister may prescribe control measures with which all land users have to comply. The control measure may relate to the following:

- ❖ the regulating of the flow pattern of run-off water;
- ❖ the control of weeds and invader plants;
- ❖ the restoration or reclamation of eroded land or land which is otherwise disturbed or denuded.

These regulations therefore imply that;

(i) Unless authorized thereto in terms of the National Water Act, 1998 (Act No. 36 of 1998), no land user shall allow category 2 plants (weeds) to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland. Wetlands and streams exist in the area between Glockner Substation and Etna substation. These include Rietspruit, Varkensfonteinspruit and Fouriespruit.

(ii) No land user shall allow category 3 plants (weeds) to occur within 30 meters of the 1:50 year flood line of a river, stream, spring, natural channel in which water flows regularly or intermittently, lake, dam or wetland.

(iii) Storm-water control must be implemented both during construction and operation.

5.8 NATIONAL HERITAGE RESOURCES ACT, 1999 (ACT NO. 25 OF 1999)

The protection of archaeological and palaeontological sites and material is the responsibility of a provincial heritage resources authority and all archaeological objects, palaeontological material and meteorites are the property of the state. Any person who discovers archaeological or palaeontological objects or material or a meteorite in the course of development must immediately report the find to the responsible heritage resources authority, or to the nearest local authority offices or museum, which must immediately notify such heritage resources authority.

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorized as

(a) the construction of a road, wall, power line, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;

(b) the construction of a bridge or similar structure exceeding 50 m in length;

(c) any development or other activity which will change the character of a site—

(i) exceeding 5 000 m² in extent; or

(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources authority;

(d) the re-zoning of a site exceeding 10 000 m² in extent; or

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

(2) The responsible heritage resources authority must, within 14 days of receipt of a notification in terms of subsection (1)—

(a) if there is reason to believe that heritage resources will be affected by such development, notify the person who intends to undertake the development to submit an impact assessment report. Such report must be compiled at the cost of the person proposing the development, by a person or persons approved by the responsible heritage resources authority with relevant qualifications and experience and professional standing in heritage resources management;

(b) notify the person concerned that this section does not apply.

The Act implies that no person may alter or demolish any structure or part of a structure, which is older than 60 years or disturb any archaeological or palaeontological site or grave older than 60 years without a permit issued by the relevant provincial heritage resources authority. No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise.

5.9 NATIONAL ENVIRONMENTAL MANAGEMENT: PROTECTED AREAS ACT, 2003 (ACT NO. 57 OF 2003)

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.

6. AUHTORITY CONSULTATION AND PUBLIC PARTICIPATION

6.1 APPLICATION TO THE AUTHORITIES

The National Department of Environmental Affairs and Tourism was identified as the relevant competent authority for this project. An Application Form was submitted to DEAT on 26 October 2006. Subsequent to the submission of the application form, an acknowledgement letter (**Appendix 2**) with a Reference Number (12/12/20/867) was received on 31 October 2006. The letter called for the environmental assessment practitioners to submit the scoping report.

6.2 EIA COMMENCEMENT PRESS ADVERTISEMENTS

Advertisements (**Appendix 3**) were placed in national, regional and local newspapers to notify people of the commencement of the environmental impact assessment process. The adverts were placed in the following newspapers:

Name of the newspaper	Date of placement
Sowetan	22 November 2006
Vaal Vision	24 November 2006
Vaal weekly	22 November 2006
Meyerton Star	21 November 2006
Lenasia Times	29 November 2006

Table 4: List of newspapers where the EIA commencement was announced

6.3 EIA COMMENCEMENT ON-SITE ADVERTISEMENTS

On-site advertisements (**Appendix 4**) were placed at Glockner/Etna substations and throughout the study area at the same time when newspaper advertisements were released. A0 size on-site advertisements were used to enhance their visibility. A map clearly showing the study area was placed next to the EIA advertisement site notice. Both the newspaper and site advertisements called for Interested and Affected Parties (I&APs) to register their names, organizations as I&APs so that they could receive project information or invited to public meetings.

6.4 IDENTIFICATION OF KEY STAKEHOLDERS AND I&APS

Immediately after both the newspaper and on-site advertisements, the project team started identifying individuals, organizations and/or their representatives who could potentially be interested and/or affected by the development. This included authorities in whose jurisdiction the project study area falls. A database (**Appendix 5**) of interested and affected parties, including key stakeholders was created and is being updated on regular bases.

6.5 FOCUS GROUP MEETINGS

Focus group meetings were arranged with relevant government groups, especially the district, local and metro councils whose jurisdiction the project falls. The following municipalities were invited to these focus group meetings:

Municipality name	Focus Group Meeting Date
Midvaal Local Municipality	28 November 2006
Joburg City Council	13 February 2007
Sedibeng District Municipality	TBC
Emfuleni Local Municipality	TBC

Table 5: Municipalities invited to Focus Group Meetings

6.6 KEY STAKEHOLDER WORKSHOP

A key stakeholder workshop was held on 30 January 2007 with identified key stakeholders. The following organizations, departments and individuals were invited to the Key Stakeholder Workshop:

- ❖ Midvaal Local Municipality
- ❖ Emfuleni Local Municipality
- ❖ Sedibeng District Municipality
- ❖ Gauteng Provincial Government
- ❖ Telkom
- ❖ Gauteng Conservancy Association
- ❖ Spoornet
- ❖ South African Heritage Resources Agency
- ❖ South African National Roads Agency
- ❖ Agricultural Research Council: Plant Protection
- ❖ Birdlife South Africa
- ❖ Earth Life
- ❖ National Department of Environmental Affairs and Tourism
- ❖ Department of Minerals and Energy
- ❖ Ingwe ya Lekoa Entertainment

6.7 PROJECT PUBLIC MEETINGS ADVERTISEMENTS

An invitation was published in newspapers (**Appendix 5**) calling for all interested and affected parties to attend public meetings. Advertisements appeared in the following newspapers:

Name of the newspaper	Advertisement date
Sowetan	16 January 2007
Daily Sun	16 January 2007
Beeld	16 January 2007

Table 6: Public meetings newspaper advertisements

On-site public meetings advertisements/posters (**Appendix 7**) were distributed throughout the study area at least two days before the public meetings. These posters/adverts informed the general public about the intended public meetings date, venue and time.

The combination of all the above approaches were aimed at notifying potential interested and affected parties, government departments and other organizations about the project and an opportunity for them to get involved. Background information documents were prepared in English (**Appendix 8**), Afrikaans (**Appendix 9**) and SeSotho (**Appendix 10**) and distributed to those who showed interest on the project and to those identified as potential I&APs including key stakeholders. Comment and registration form (**Appendix 11**), with spaces provided for comments were also distributed along with the BIDs. Personalized letter were also sent to those who requested to be registered as I&APs in the project. Issues were raised and discussed throughout the public participation process. A Comment and Issues Response Report (**Appendix 12**) was prepared. It should be noted that both I&APs identification and engagement are ongoing processes that would continue throughout the environmental impact assessment.

A draft scoping report (DSR) was prepared and made available to the public and key stakeholders through newspaper advertisements and placing in public places. Interested & Affected Parties, key stakeholders and authorities were invited to review the draft scoping report and comment. Issues raised were considered and the Comment and Issues Response Report was updated accordingly.

Draft Scoping Report availability was advertised in the following newspapers:

Name of the newspaper	Advertisement date
Sowetan	23 February 2007
Daily Sun	20 February 2007
Meyerton Ster	23 February 2007
Vaal Vision	20 February 2007

Table 7: Newspapers where DSR availability was advertised

Draft Scoping Reports were placed in the following areas”

Place	Placement date
Vereeniging Public Library	20 February 2007
Vanderbijlpark Public Library	20 February 2007
Midvaal Municipal Library	20 February 2007
Kookrus Clinic	20 February 2007
Wilberforce Community College Library	20 February 2007
Ennerdale Extension 9 Public Library	20 February 2007
Lenasia South Public Library	20 February 2007
Naledzi Environmental Consultants offices	20 February 2007
Eskom website (www.eskom.co.za/eia)	20 February 2007

Table 8: Public places where DSR were placed for review and comments

Information about the availability of the draft scoping report was also sent to Interested & Affected Parties and Stakeholders in the project database through e-mails and personalized letters.

6.8 PLACEMENT OF PROJECT INFORMATION ON ESKOM'S WEBSITE

Public documents described above were also posted on the Eskom Holdings Limited website address. The aim was also to create different ways in which people could access project information.

7. ENVIRONMENTAL ISSUES AND POTENTIAL IMPACTS IDENTIFIED

7.1 BACKGROUND

Identifying a significant environmental impact is very important for any development project. The concept of significance therefore was at the core of impact identification. The first step in managing environmental consequences of a development is to identify its environmental aspects; these are those elements of a development, its activities, facilities, services, and inputs and outputs, which interact with the environment in some way to cause positive or negative environmental impacts. The paragraphs below are a short description of the general environmental impacts that arise during the construction, operation, maintenance and decommissioning of power lines. The description below is on a general note, where specific issues would be highlighted for this project.

7.1.1 BIODIVERSITY

7.1.1.1 Flora/vegetation

Impacts on vegetation start from an ecosystem level. Power line routes do traverse intact vegetation communities, thereby creating habitat fragmentation. Vegetation clearance required along the servitude/right-of-way may result in a gap in the tree canopy. The seed bank contained in top layers of soil often contains dormant seeds of invasive species. The growth of these may be stimulated if the soil is disturbed or if the natural vegetation covers is damaged or removed.

7.1.1.2 Fauna/animals

Most bird species have a limited zone of three-dimensional vision and therefore a limited capacity to judge distance, they often realise their proximity to a line when it is too late to take evasive actions. Certain birds are more prone to collisions, mainly due to their large size and lack of manoeuvrability, foraging habits or because they fly at night or during times when visibility is poor.

Large mammals such as elephants may damage towers. Conductors may drop to the ground or their ground clearance (height above ground level) may be compromised due to the damage. This may result in sparks and veld fires or electrocution of animals if they come in contact with the conductors at the point of damage. Tall mammals such as giraffes may collide with conductors if the ground clearance is not sufficient. They may collide with tower stabilisation cables used at suspension towers.

7.1.2 LAND USE

The linear area traversed by a power line may cover a wide range of land uses. The impacts of the power line on current and potential land use and the restrictions that the land uses will pose on the development may vary significantly along the length of the line. Power lines generally span across various property boundaries and livestock or game mammal camps.

The access that is required along the length of the line necessitates the installation of gates at certain points where the power line intersects with fence lines. Fences may be damaged during construction or gates may be left open, resulting in the escape of game mammals or livestock and the unplanned integration of livestock. The type of agricultural cropping or orchards that would be allowed within the servitude/right-of-way during operation of the line will largely depend on the size of the line and the risks of damage to the line. The cables used to stabilize suspension type towers used along straight sections of the line may restrict the type of farming to be allowed. The use of certain machinery may be restricted and there may be limitations for certain irrigation systems.

Areas occupied by power lines become danger zones for civil aviation. Aircrafts, including planes, paraglide, and parachutes near landing strips are largely restricted due to the presence of power lines.

7.1.3 AESTHETICS AND LANDSCAPE CHARACTER

People may view power lines as intruding on the aesthetics, landscape and sense of place of an area. The introduction of uncharacteristic objects to the surrounding landscape character of the area, such as towers, conductors and removal of vegetation may be regarded as intruding by certain communities.

7.1.4 HERITAGE RESOURCES

The establishment of power lines usually took place along a very long strip of land. It sometimes becomes difficult to identify all archaeological and/or heritage resources along the power line servitude, particularly the ones that are buried beneath the ground. These resources may be destroyed during clearing for construction purposes. At the same time, contractors normally do not report cases where these artifacts are unearthed due the belief that it takes time for authorities to respond.

7.1.5 WATER RESOURCES

Due to the vast spatial extent of power line developments, it is often impossible for the power line corridor not to cross over water bodies such as rivers and wetlands. Construction activities within the vicinity of these water bodies create problems if care is not taken to prevent them. These range from erosion into rivers, which creates water pollution to draining of wetlands in order to give way for the construction equipment. Some of the construction equipment could be located within floodplains and/or within 1:50 year flood lines. The combination of all these presents threat to water resources.

7.1.6 SOIL RESOURCES

Much of the impacts on soil resources are associated with the construction phases of the power line development. Establishment of construction camps, equipment yards, lay down areas, access routes hauling and clearance forms the crust of potential impacts on soil resources. Excavation of pits for tower foundation, casting of foundation for towers, assembly and erection of towers requires the use of heavy construction vehicles. Access roads for these should be cleared. These routes sometimes start developing sheet, rill and subsequently gully erosion if not properly managed and/or planned.

The same applies for the maintenance phases of the development. The need for access roads means that the ground cover would remain bare for longer periods of time. These areas become susceptible to erosion in a long run.

7.1.7 AIR QUALITY, HEALTH AND SAFETY

Dust generated on un-surfaced access and hauling routes during construction may settle on flora; crops and naturally occurring species. Dust may present health concerns in built-up areas and near farm residences. Burning of vegetation cover during vegetation clearing produces smokes, and burning of wastes at construction camps may result in the emission of fumes that can compromise the health of construction workforce.

Potential health impacts of radiation and electromagnetic fields (EMF), especially in residential areas and near schools remain one of the major concerns with any electrical supply development. Lastly, the presence of construction camps and migration workers may be seen as an ideal opportunity for locals to commit crime under the guise of it being the construction workers.

7.1.8 NOISE AND VIBRATIONS

People living or working along heavily used access and hauling routes may be exposed to noise during the construction phase. Vibrations may cause interference with microwave, radio and other telecommunication transmissions (corona effect), and may be audible to people in close proximity to the line during the operation of the line.

7.1.9 LOCAL COMMUNITIES AND LIVELIHOODS

The power line development activities generally require the procurement of privately owned land as people and properties may be in the direct path of the power line. Depending on the size and type of the power line, servitude or a right-of-way will need to be established. Land procurement may cause dissatisfaction and opposition from the owners and/or occupants of the land when the compensation process is viewed as inadequate and unfair.

Informal settlements are often located within an established servitude or right-of-way. People living within the servitude or right-of-way will have to be relocated. Relocation of people is often highly sensitive and controversial.

7.1.10 INFRASTRUCTURE AND SERVICES

Due to their linear nature, power lines often intersect or are aligned in close proximity to existing infrastructure and services such as roads, railway lines, telecommunication lines, other power lines, various pipelines, air ports and landing strips. Temporary disruption of infrastructure and services is often unavoidable during construction of a power line, especially in built-up areas.

Power line development can potentially restrict the development of future infrastructure and expansion of existing infrastructure such as roads and pipelines. Interference with microwave, radio and other telecommunication transmissions (corona effect) is still viewed as one major impact associated with power lines.

7.1.11 TOPOGRAPHY AND GEOLOGY

The topography of an area determines the level of visual exposure or screening of power line infrastructure. Power line infrastructure and scars in the landscape are generally most obvious when located on elevated areas in the landscape. Topography also determines the number of times the route will change direction (number of bend points). Bulkier, self supporting tower structures are required at bend points and through more difficult terrain. These bulkier towers have higher visual impacts than the smaller suspension towers used along straight sections of the line.

Certain geological formations are of palaeontological significance, with a high likelihood of containing fossils. Large-scale excavations in such an area may consequently be of palaeontological interest.

7.2 GLOCKNER-ETNA ANTICIPATED IMPACTS

The scoping process identified a large number of potential impacts anticipated during the implementation of the Glockner-Etna 2x400kV Power line. It is important to highlight that the significant impacts are chosen from a pool of this vast number of identified impacts. It is also vital to point out that the impacts were identified through site visits, internal workshops by the project team and the public participation process. The following (not exhaustive since the process is still continuing) are the identified potential impacts, which are categorised broadly under three themes (biophysical, socio economic and cultural):

7.2.1 IMPACTS ON BIO-PHYSICAL ENVIRONMENT

The project team, through internal workshops, literature review, site visits and the public participation processes came to a conclusion that, from a bio-physical point of view, the proposed development has a potential to impact on the following

- ❖ Impact on ecological processes
- ❖ Impact on soils and geology (including agricultural potential)
- ❖ Impacts on water resources (including streams and wetlands)
- ❖ Impacts of air quality on transmission power lines
- ❖ Impacts on birds (avi-fauna)

7.2.2 IMPACTS ON SOCIO-ECONOMIC ENVIRONMENT

- ❖ Impacts on current and future developments
- ❖ Impacts on visual conditions and aesthetics (visual impacts)
- ❖ Impacts on safety and security
- ❖ Impacts of electromagnetic fields

7.2.3 IMPACTS ON CULTURAL RESOURCES

- ❖ Impacts on archaeological and heritage resources

The potential and/or significant impacts identified above could be looked at in isolation or could be group together to determine their cumulative impacts. At the same time, putting together measures to reduce the impacts of one identified potential impact could lead to minimised impacts from the associated potential impact.

It was on these bases that the environmental assessment team decided to focus on certain key potential impacts chosen from the pool above. These would be investigated in more detail by specialists who will report on the findings. The said investigations would form part and parcel of the EIA phase. The issues below would be investigated in detail:

- ❖ Geology and soils (including agricultural potential)
- ❖ Visual impacts
- ❖ Avi-fauna
- ❖ Ecological processes (including flora and fauna)
- ❖ Heritage and archaeological impacts
- ❖ Social impact (including tourism and infrastructure)

It is expected that the findings on these potential impacts would assist in coming up with measures to reduce or avoid major impacts. At the same time, addressing the above impacts could result in significant reduction in the cumulative impacts of the majority of impacts identified earlier.

7.3 DETERMINATION OF ALTERNATIVE ROUTES

The scoping exercise undertaken for this project was aimed at gathering baseline environmental information, which will assist during the selection of an alignment or route or corridor with minimal environmental impacts. For the identification of an alternative with minimal environmental impacts, different role players play different roles. The following (not exhaustive) are some of the roles various stakeholders could play.

7.3.1 ROLE OF ENVIRONMENTAL PRACTITIONERS

The environmental practitioners are required to:

- ❖ Encourage the proponent to consider all feasible alternatives
- ❖ Provide opportunities for stakeholder input to the identification and evaluation of alternatives
- ❖ Document the process of identification and selection of alternatives
- ❖ Provide a comprehensive consideration of impacts of each alternatives
- ❖ Document the process of evaluation of alternatives

The public participation process being carried out for the scoping process tries to achieve the above, by giving stakeholders a chance to have inputs into the whole process.

7.3.2 ROLE OF THE PROPONENT

The proponent comes into the picture by:

- ❖ Assisting in the identification of alternatives, particularly where these may be of technical nature
- ❖ Disclosing all information relevant to the identification and evaluation of the alternatives
- ❖ Being open to the consideration of all reasonable alternatives, and

- ❖ Being prepared for possible modifications to the project proposal before setting on a preferred option.

7.3.3 ROLE OF THE PUBLIC

The role of the public is to:

- ❖ Assist in the identification of alternatives, particularly where local knowledge is required
- ❖ Be open to the consideration of all reasonable alternatives
- ❖ Recognize that there is rarely one favored alternative that suits all stakeholders and that alternative will be evaluated across a broad range of criteria, including environmental, social and economic aspects.

The combination of the three role player culminated into the identification of three possible route alignments for the proposed 2x400kV power line from Glockner substation to Etna substation. It should be noted that the said alternatives identified does not stop the identification of other alternatives, and that inputs are still required.

Alternative routes or alignments will be discussed further in the forthcoming EIR, subsequent to the specialist findings and input from the affected landowners along the proposed alternative routes. The preferred alternative will be one that will minimize the environmental impact of the proposed development. The preferred alignment will be determined based on:

- ❖ The opinion of the public, ascertained through the public consultation process;
- ❖ Specialists' recommendations;
- ❖ Environmental constraints; and

At this stage of the scoping exercise, which is based on a preliminary identification of physical, biological and social constraints (captured through the public participation process) there is no indication of what the preferred route would be. It is however noted that the comprehensive impact assessment phase will specifically assess the likely impacts of the alternative routes of the line. Only at the end of this phase can the exact alignment of the servitude be determined. This notwithstanding, three alternative routes were identified and would briefly be described below. The description would basically be on their location and the potential farm portions that might be affected including a brief explanation of the disadvantages of choosing each of the three routes. The aim is for the public to assist in choosing the preferred route.

7.4 ALTERNATIVES IDENTIFIED

The following alternative routes are highlighted on the Locality Map attached as **Figure 8** in this report.

7.4.1 ALTERNATIVE ROUTE 1

From Glockner substation, the route takes the western direction parallel to the existing power lines, up to the west of Jacobskop, where it turns north from the existing lines. There is a vacant servitude where the route runs parallel to other existing power lines from Glockner to Jacobskop.

The route goes up past the Steelview Agricultural Holdings, Dreamland Agricultural Holdings, Annaton, Vlakfontein, Ironside Agricultural Holdings, Debonair Park, Kanana, Sweetwaters, Hartebeestfontein, Unaville Agricultural Holdings and then into Etna substation.

For ease of reference, the route traverses and/or is located in and close to the following Farms:

- ❖ Aerovaal 637 IQ
- ❖ De Deur 539 IQ
- ❖ Driemoeg 537 IQ
- ❖ Doornkuil 369 IQ
- ❖ Braklaagte 370 IQ
- ❖ Fonteine 813 IQ
- ❖ Hartebeestfontein 312 IQ
- ❖ Vlakfontein 303 IQ

7.4.2 ALTERNATIVE ROUTE 2

The route starts the same way as route 1 up to just north of Ironside Agricultural Holdings where it proceed straight between Homestead Apple Orchards Agricultural Holdings and Althea Agricultural Holdings. The route then goes through Spioenkop, Cyferfontein up to Elandsfontein where it turns left/west through Sunshine Valley and Sunrise Farm up to Etna substation. There is a vacant servitude from Cyferfontein through Sunshine Valley and Sunrise Farm.

For ease of reference, the route traverses and/or is located in and close to the following Farms:

- ❖ Aerovaal 637 IQ
- ❖ De Deur 539 IQ
- ❖ Driemoeg 537 IQ
- ❖ Doornkuil 369 IQ
- ❖ Cyferfontein 333 IQ
- ❖ Elandsfontein 334 IQ
- ❖ Vlakfontein 303 IQ

7.4.3 ALTERNATIVE ROUTE 3

Starting from Glockner, the route takes the north direction parallel the existing power lines. It turns left at 27 58 56.05e and 26 35 49.50s and runs on the eastern side of Vereeniging Aerodome up to Road R551 where it turns left/west and goes through De Deur Estates, The Reeds, west of Walkers Fruit Farms Agricultural Holdings, Walkerville Manor and turns left/west at Hartsenbergfontein, goes straight to join route 2 at Elandsfontein and subsequently up to Etna substation.

For ease of reference, the route traverses and/or is located in and close to the following Farms:

- ❖ Aeroval 637 IQ
- ❖ De Deur 539 IQ
- ❖ Varkensfontein 373 IQ
- ❖ Faroasfontein 372 IQ
- ❖ Hartsenbergfontein 332 IQ
- ❖ Elandsfontein 334 IQ
- ❖ Vlakfontein 303 IQ

The three routes were identified at a broad scale, and as indicated above, they should not be considered final routes for the proposed power lines. At the same time, not all of the identified routes would be used; a preferred route/corridor is the one that will be used. At this point in time, inputs are required from different role players as described above. These inputs, together with specialist recommendations and the proponent's views would be used together with the methodology outlined below to assess the impacts related to the three routes and to finalize the preferred route selection. All these will form part of the EIR phase of the project.

7.5 IMPACT ASSESSMENT METHODOLOGY

The identified impacts on each of the identified routes would be assessed by considering seven rating scales as listed below. All specialist studies proposed or listed for the proposed power line would consider these ratings when assessing potential impacts. These ratings include:

- ❖ Extent;
- ❖ Duration;
- ❖ Intensity;
- ❖ Significance;
- ❖ Status of impact;
- ❖ Probability; and
- ❖ Degree of confidence.

In assigning significance ratings to potential impacts before and after mitigation specialists would be instructed to follow the approach presented below:

The core criteria for determining significance ratings are “extent” (Section 7.5.1), “duration” (Section 7.5.2) and “intensity” (Section 7.5.3). The preliminary significance ratings for combinations of these three criteria are given in Section 7.5.4.

The status of an impact is used to describe whether the impact will have a negative, positive or zero effect on the affected / receiving environment. An impact may therefore be negative, positive (or referred to as a benefit) or neutral (see Section 7.5.5).

Describe the impact in terms of the probability of the impact occurring (Section 7.5.6) and the degree of confidence in the impact predictions, based on the availability of information and specialist knowledge (Section 7.5.7).

Additional criteria to be considered, which could “increase” the significance rating if deemed justified by the specialist, with motivation, are the following:

- ❖ Permanent / irreversible impacts (as distinct from long-term, reversible impacts);
- ❖ Potentially substantial cumulative effects; and
- ❖ High level of risk or uncertainty, with potentially substantial negative consequences.

Additional criteria to be considered, which could “decrease” the significance rating if deemed justified by the specialist, with motivation, are the following:

- ❖ Improbable impact, where confidence level in prediction is high.

When assigning significance ratings to impacts *after mitigation*, the specialist needs to:

- ❖ First, consider probable changes in intensity, extent and duration of the impact after mitigation, assuming effective implementation of mitigation measures, leading to a revised significance rating; and
- ❖ Then moderate the significance rating after taking into account the likelihood of proposed mitigation measures being effectively implemented. Consider:
 - Any potentially significant risks or uncertainties associated with the effectiveness of mitigation measures;
 - The technical and financial ability of the proponent to implement the measure; and
 - The commitment of the proponent to implementing the measure, or guarantee over time that the measures would be implemented.

The significance ratings are based on largely objective criteria and inform decision-making at a project level as opposed to a local community level. In some instances, therefore, whilst the significance rating of potential impacts might be “low” or “very low”, the importance of these impacts to local communities or individuals might be extremely high. The importance which I&APs attach to impacts will be taken into consideration, and recommendations will be made as to ways of avoiding or minimizing these negative impacts through project design, selection of appropriate alternatives and / or management.

The relationship between the significance ratings after mitigation and decision-making can be broadly defined as follows:

Significance rating	Effect on decision-making
Very Low; Low	Will not have an influence on the decision to proceed with the proposed project, provided that recommended measures to mitigate negative impacts are implemented.
Medium	Should influence the decision to proceed with the proposed project, provided that recommended measures to mitigate negative impacts are implemented.
High; Very High	Would strongly influence the decision to proceed with the proposed project.

Table 9: Impact Significance Rating 1

7.5.1 EXTENT

“Extent” defines the physical extent or spatial scale of the impact.

Rating	Description
Local	Extending only as far as the activity, limited to the site and its immediate surroundings. Specialist studies will specify extent.
Regional	Gauteng Province
National	South Africa
International	

Figure 10: Impact Extent Rating

7.5.2 DURATION

Rating	Description
Short term	0-5 years
Medium term	5-15 years
Long term	Where the impact will cease after the operational life of the activity, either

	because of natural processes or by human intervention.
Permanent	Where mitigation either by natural processes or by human intervention will not occur in such a way or in such time span that the impact can be considered transient.

Table 11: Impact Duration Rating

7.5.3 INTENSITY

“Intensity” establishes whether the impact would be destructive or benign.

Rating	Description
Low	Where the impact affects the environment in such a way that natural, cultural and social functions and processes are not affected.
Medium	Where the affected environment is altered, but natural, cultural and social functions and processes continue, albeit in a modified way.
High	Where natural, cultural and social functions or processes are altered to the extent that it will temporarily or permanently cease.

Table 12: Impact Intensity Rating

7.5.4 SIGNIFICANCE

“Significance” attempts to evaluate the importance of a particular impact, and in doing so incorporates the above three scales (i.e. extent, duration and intensity).

Rating	Description
Very High	Impacts could be EITHER: of <i>high intensity</i> at a <i>regional level</i> and endure in the <i>long term</i> ; OR of <i>high intensity</i> at a <i>national level</i> in the <i>medium term</i> ; OR of <i>medium intensity</i> at a <i>national level</i> in the <i>long term</i> .
High	Impacts could be EITHER: of <i>high intensity</i> at a <i>regional level</i> and endure in the <i>medium term</i> ; OR of <i>high intensity</i> at a <i>national level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>national level</i> in the <i>medium term</i> ; OR of <i>low intensity</i> at a <i>national level</i> in the <i>long term</i> ; OR of <i>high intensity</i> at a <i>local level</i> in the <i>long term</i> ; OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>long term</i> .
Medium	Impacts could be EITHER: of <i>high intensity</i> at a <i>local level</i> and endure in the <i>medium term</i> ; OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>medium term</i> ; OR of <i>high intensity</i> at a <i>regional level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>national level</i> in the <i>short term</i> ; OR of <i>medium intensity</i> at a <i>local level</i> in the <i>long term</i> ; OR of <i>low intensity</i> at a <i>national level</i> in

	<p>the <i>medium term</i>;</p> <p>OR of <i>low intensity</i> at a <i>regional level</i> in the <i>long term</i>.</p>
Low	<p>Impacts could be EITHER</p> <p>of <i>low intensity</i> at a <i>regional level</i> and endure in the <i>medium term</i>;</p> <p>OR of <i>low intensity</i> at a <i>national level</i> in the <i>short term</i>;</p> <p>OR of <i>high intensity</i> at a <i>local level</i> and endure in the <i>short term</i>;</p> <p>OR of <i>medium intensity</i> at a <i>regional level</i> in the <i>short term</i>;</p> <p>OR of <i>low intensity</i> at a <i>local level</i> in the <i>long term</i>;</p> <p>OR of medium intensity at a local level and endure in the medium term.</p>
Very low	<p>Impacts could be EITHER</p> <p>of <i>low intensity</i> at a <i>local level</i> and endure in the <i>medium term</i>;</p> <p>OR of <i>low intensity</i> at a <i>regional level</i> and endure in the <i>short term</i>;</p> <p>OR of low to medium intensity at a local level and endure in the short term.</p>
Not applicable	<p>Impacts with:</p> <p>Zero intensity with any combination of extent and duration.</p>
Unknown	<p>In certain cases it may not be possible to determine the significance of an impact.</p>

Table 13: Impact significance Rating 2

7.5.5 STATUS OF IMPACT

The status of an impact is used to describe whether the impact would have a negative, positive or zero effect on the affected environment. An impact may therefore be negative, positive (or referred to as a benefit) or neutral.

7.5.6 PROBABILITY

“Probability” describes the likelihood of the impact occurring.

Rating	Description
Improbable	Where the possibility of the impact to materialise is very low either because of design or historic experience.
Probable	Where there is a distinct possibility that the impact will occur.
Highly probable	Where it is most likely that the impact will occur.
Definite	Where the impact will occur regardless of any prevention measures.

Table 14: Impact Probability Rating

7.5.7 DEGREE OF CONFIDENCE

This indicates the degree of confidence in the impact predictions, based on the availability of information and specialist knowledge.

Rating	Description
High	Greater than 70% sure of impact prediction.
Medium	Between 35% and 70% sure of impact prediction.
Low	Less than 35% sure of impact prediction.

Table 15: Impact Rating Degree of Confidence

8. CONCLUSIONS AND RECOMENDATIONS

The scoping process followed up to this point tried to identify possible impacts of the proposed 2x400kV Power line from Glockner to Etna substations. The process also identified possible route alternatives at a broad scale through specialist inputs and the issues raised during the public participation process. At this point in time, there is no route amongst the three that is proposed as the most preferred route for the proposed 2x400kV power line. A full EIA will therefore be conducted along the proposed three alternative routes. The aim would be to come up with possible impacts envisaged for each route and to determine the most preferred route. A variety of mitigation measures will also be identified that could mitigate the scale, intensity, duration or significance of these impacts.

The following steps are envisaged for the remainder of the EIA process:

- ❖ Once the FSR, along with a Plan of Study for EIA (**Appendix 14**), is accepted by DEAT, the project will proceed straight into the specialist studies. Terms of Reference (**Appendix 15**) for the specialist studies were developed and would be adopted for all the specialist studies. Cases where specialists need to add more information outside the scope or the terms of reference would be accepted, as long as they contribute meaningfully to the EIA process and its findings.

The following specialist studies will be conducted in the next phase of the EIA in order to assess the key potential impacts identified during the Scoping Study:

- ❖ Geology and soils (including agricultural potential)
- ❖ Visual impacts
- ❖ Avi-fauna
- ❖ Ecological processes (including flora and fauna)
- ❖ Heritage and archaeological impacts
- ❖ Social impact (including tourism and infrastructure)

The findings of the specialist studies and other relevant information will be integrated into a Draft EIR, which will be published for comment by interested and affected parties (including authorities). A notification letter (with an Executive Summary of the Draft EIR) will be sent to registered and identified I&APs to inform them of the release of the Draft EIR and where the full report can be reviewed. Information-sharing meetings and/or public open days would be held during the comment period to present the results of the EIA to I&APs and to provide them with the opportunity to comment on the study.

All the comments received will be collated into a Comments and Responses Report, which will be included in the Final EIR. The Final EIR will be submitted to DEAT for decision-making. After decision-making by DEAT, an ROD (Record of Decision) will be released setting out the decision, the reasons for the decision and any conditions thereof. The ROD will be distributed to I&APs on the project database. The release of the ROD will be followed by a statutory appeal period, during which any I&AP may appeal against any aspect of the ROD.