

**DRAFT EIA REPORT FOR ±250km
400kV-POWER LINE FROM BORUTHO
S/S IN MOKOPANE TO
BOKMAKIERIE S/S IN NZHELELE AND
ASSOCIATED SUBSTATION WORKS
TO ACCOMODATE THE POWERLINE
IN LIMPOPO**

Draft Report

January 2013



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DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE PROPOSED CONSTRUCTION OF ±250km 400kV-POWER LINE FROM BORUTHO S/S IN MOKOPANE TO BOKMAKIERIE S/S IN NZHELELE AND ASSOCIATED SUBSTATION WORKS TO ACCOMMODATE THE POWERLINE IN LIMPOPO PROVINCE

January 2013

Prepared by: Hellen Mlotshwa

Public Review:

For and on behalf of
Nzumbululo sustainability, Energy and
Environment (SEE)
Approved by: Dr. McEdward Murimbika

Signed:

Position: Partner/ Director

Date: 17 January 2013

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Table of Contents

| | | |
|-------------------------------------------------------------------|-----------|----|
| 1.1. Introduction | 3 | |
| 1.2 Motivation for Development | 3 | |
| 1.4 Legislative requirements | 4 | |
| 1.5 The EIA process | 5 | |
| ASSUMPTIONS AND LIMITATIONS | 6 | |
| 2 INTRODUCTION | 8 | |
| EXPERTISE OF THE ENVIRONMENTAL ASSESSEMENT PRACTITIONERS | 9 | |
| 2.1 Introduction | 9 | |
| 3 DESCRIPTION OF THE PROPOSED PROJECT | 11 | |
| | | 21 |
| 4 STATUTORY REQUIREMENTS | 22 | |
| 4.1 Legislations Related to the project | | 22 |
| 5 DESCRIPTION OF STUDY AREA | 29 | |
| 6 DISCUSSION OF THE PROJECT ALTERNATIVES | 38 | |
| 7 POTENTIAL ENVIRONMENTAL IMPACTS | 44 | |
| 8.ENVIRONMENTAL IMPACTS ASSESSMENT AND MITIGATION MEASURES | 49 | |
| 9. AUTHORITY CONSULTATION AND PUBLIC PARTICIPATION | 67 | |
| 10 Conclusions drawn from the EIA process | 69 | |
| 11 General conclusion | 74 | |
| 12 Recommendations | 76 | |
| 13 CONCLUDING REMARKS | 79 | |
| 14 BIBLIOGRAPY | 80 | |

EXECUTIVE SUMMARY

1.1. Introduction

In order to address the existing network constraints in the Polokwane North network, Eskom Holdings Limited proposes **to construct a ±250km 400kV transmission power line from the new Borutho Substation near Mokopane to new Nzhelele (Bokmakierie) Substation near Musina in Limpopo Province.** » **Associated infrastructure** to integrate the new transmission power line into the Transmission grid (such as access roads, relocation of existing lines, etc) and accommodate the new line into the substations (such as the construction of new feeder bays).

The proposed power line would be associated with construction works of the Borutho and Bokmakierie Substations, which have already received environmental authorizations (Authorisation Reference Number DEA 12/12/20/1187 and 12/12/20/2084).

1.2 Motivation for Development

Eskom Holdings Ltd is responsible for the provision of reliable and affordable power to its consumers in South Africa. Electricity cannot be stored and therefore must be used as it is generated. Electricity is generated in accordance with supply-demand requirements. In South Africa, thousands of kilometers of high voltage transmission lines (i.e. 765kV or 400kV transmission lines) transmit this power, which is mainly generated at the power stations located within Mpumalanga and Limpopo Provinces, to Eskom's major substations. At these major substations, the voltage is reduced, and distributed to smaller substations all over the country through distribution lines (i.e. 132kV, 88kV or 66kV distribution power lines). Here the voltage is reduced and distributed to local substations, which distribute the power via numerous small lines (i.e. 22kV and 11kV distribution power lines) to local users. The power generated by Eskom can only be utilised from those points of supply, which transform the power into a usable voltage.

If Eskom Transmission is to meet its mandate and commitment to supply the ever-increasing needs of end-users, it has to plan, establish and expand its infrastructure of transmission power lines on an on-going basis, in support of the generation processes. It is therefore vital that transmission capacity keeps up with both electricity generation capacity and electricity demand.

The Northern region is experiencing exponential increasing in energy demand from various socio-economic development and land use activities such as mining, agriculture and local users in the region. The proposed powerline is therefore necessary to:

- Avoiding current and future possible voltage collapse;
- Contributing towards a more flexible electrical network;

Improvement in the overall reliability of the electrical systems, which would benefit electricity users in the region; and
To sustain economic growth in the region.

1.3 Alternative Transmission Line Corridors

Technically feasible alternative transmission line corridors have been identified for investigation within the EIA process. These alternatives were selected on the basis of the local topography, as well on technical criteria. Through the EIA process, a preferred transmission power line corridor will be nominated for consideration in the decision-making process by the National Department of Environmental Affairs (DEA), as competent authority for this project. Should the proposed project be authorised by the DEA, Eskom will enter into a negotiation process with each affected landowner. The negotiation process is independent of the EIA process, and will be undertaken directly by Eskom Transmission.

Three alternative power line corridors have been identified for this project, each planning and environmental studies corridors of 3000m in width. The final servitude would be a corridor required to accommodate 55m constructions of the 400kV power line transmission towers. The receiving environment for the proposed transmission power line consists of rural village settlements; traditional authority lands, game reserves, towns and commercial farmlands distributed between Borutho and Nzhelele (Bokmakierie) Substations. The power line would traverse across two districts, Capricorn and Vhembe in Western and Eastern regions of the Limpopo province respectively. (Refer to map attached appendix 2)

1.4 Legislative requirements

The construction of the 400kV transmission powerline, including associated infrastructures, is an activity identified in terms of the National Environmental Management Act (NEMA) (Act No. 107 of 1998), in respect of the Environmental Impact Assessment (EIA) Regulations No. R543 of 2010, which stipulates that such developments, may not commence without Environmental Authorisation (EA) from the National Department of Environmental Affairs (DEA).

The National Department of Environmental Affairs (DEA) is the competent authority for this project. An application for authorisation has been acknowledged by DEA (under Application Reference number 14/12/16/3/3/2/287). Through the decision-making process, DEA will be supported by the Limpopo Department of Economic Development, Environment and Tourism (LEDET).

1.5 The EIA process

The EIA study and the EIR outcome are planning and decision-making processes and tools respectively undertaken in terms of Section 24 (5) of the National Environmental Management Act (NEMA), Act No. 107 of 1998. The EIA has parallel and integrated processes namely: a technical assessment process and public participation process (PPP). The technical process investigates “hard” information: facts based on scientific and technical study, statistics or technical data. It identifies the potential negative and positive consequences of a proposed project or development at an early stage, and recommends ways to enhance positive impacts and to avoid or reduce or mitigate negative impacts. The PPP exercise engages the public and I&AP’s on the issues relating to the proposed development including identifying community concerns and gather inputs from other relevant parties. Figure 2 below illustrates the EIA process. The findings of an EIA also guide the technical and financial investigations relating to the viability of the proposed development. The EIA regulations also require that an EMP be developed to guide the planning, development and subsequent operation of the development. The provisions of the EMP will be legally binding on Eskom Holdings SOC and on its contractors to ensure a sustainable development subject to DEA issuing the Environmental Authorisation that clears the proposed development to proceed. Figure 1 below provides the EIA process in its entirety.

The Scoping/EIA Process Flow Diagram

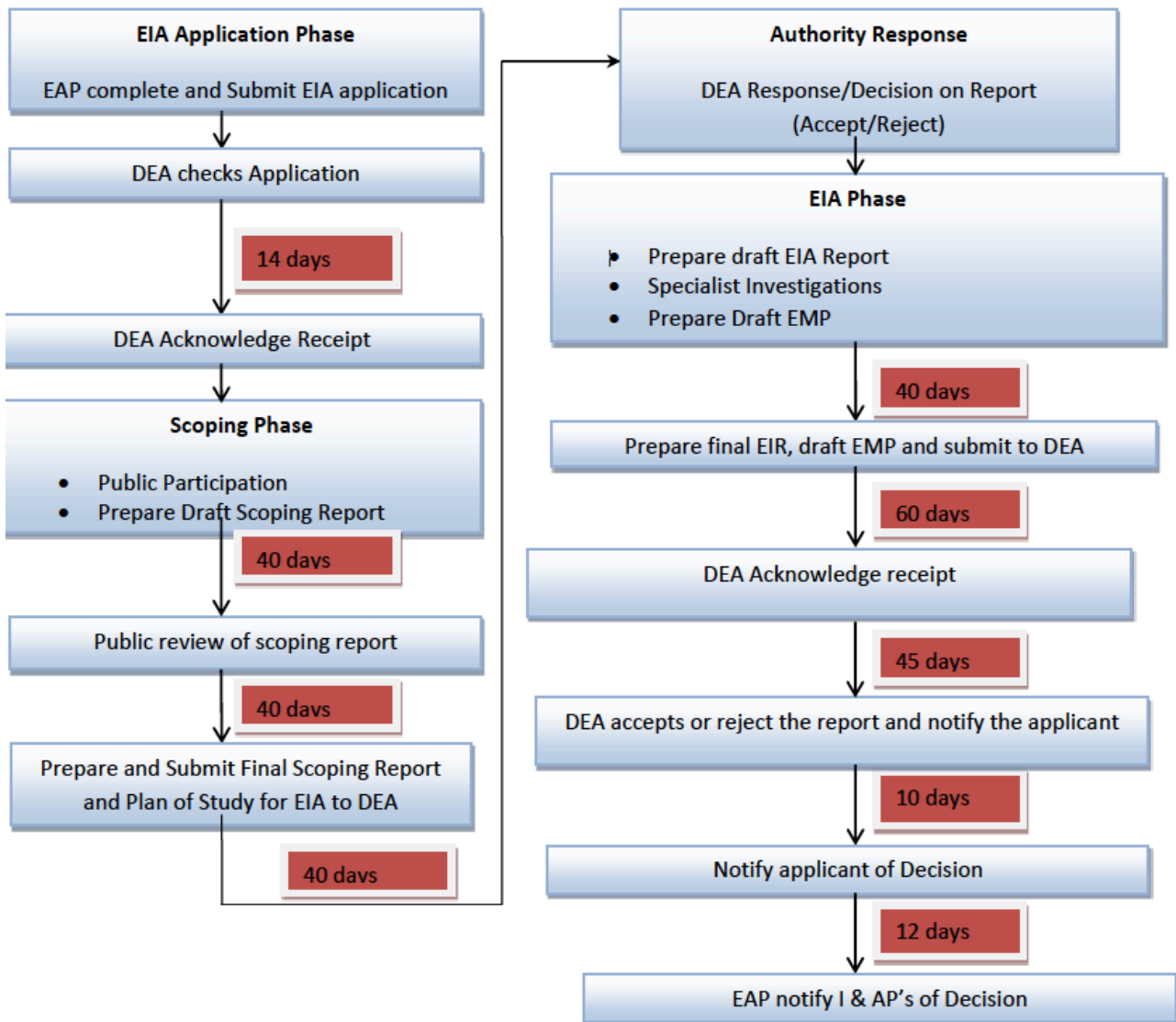


Figure 1: Standardised Process flow diagram of the EIA process.

ASSUMPTIONS AND LIMITATIONS

During the undertaking of the EIA process, the Environmental Assessment Practitioner (EAP) utilised information that was available at the time of the study including specialist inputs, field survey data, PPP inputs and other primary and secondary material review. This report is based on the assessment of the potential environmental impacts associated with and limited to the receptor project area of the proposed development. All specialists who undertook the specialist studies for this EIA were qualified and independent to undertake the necessary investigations required. It is not always possible to involve every Interested and / or Affected Parties (I&AP's) individually. However, every effort has been made to involve as many interested parties as possible. It is also assumed that individuals representing various associations or parties convey the necessary information to these association/ parties. Nonetheless, the project has been advertised and made phone calls to arrange meetings with relevant people, such councilors, farmers, headmans and chiefs.

Approach to EIA Phase

This section provides brief description of the EIA process. This Environmental Impact report aims at highlighting issues that have been identified during Scoping phase in order to assess the likely significance of the various impacts on the receiving environment and to propose mitigation measures (where Possible) to lower the significance of these impacts. As part of the EIR, a comparative assessment of the alternative routes put forward during the Scoping phase has been undertaken in order to highlight the route alignment with least significant impact on the receiving environment.

Assumptions and Limitations

The following assumptions and limitations apply to this report

- it is assumed that all information provided by the applicant and the technical team which informed the environmental consultants as well as which is contained within this report is reliable, accurate and up-to-date.
- All specialists who undertook specialist studies for the Environmental Impact Assessment were qualified and had the necessary experience to undertake the necessary investigations required
- It is assumed that all information and reports obtained from the specialist have taken into consideration all relevant information pertaining to their specialisation
- The final pylon positions are not yet known. A selection of pylon positions (when known) which are deemed to be more environmentally sensitive locations will be investigated by the ecologist and the archaeologist to ensure that no sensitive features are impacted upon.

CONCLUDING REMARK

The EIA Report expands on the key issues and concerns identified during the Scoping phase and incorporate the authorities' comments on the Scoping Report. Specialist investigations were conducted and included in the EIA Report. The specialist studies assisted with the assessment of anticipated impacts as identified in the Scoping Phase and highlighted the key areas of concern as well as necessary mitigation measures. Mitigation measures were provided for each impact.

ENVIRONMENTAL IMPACT ASSESSMENT REPORT FOR THE PROPOSED CONSTRUCTION OF THE 250km 400kV POWERLINE FROM BORUTHO S/S IN MOKOPANE TO BOKMAKIERIE S/S IN NZHELELE AND ASSOCIATED SUBSTATION WORKS TO ACCOMODATE THE POWERLINE LIMPOPO PROVINCE.

2 INTRODUCTION

Nzumbululo Heritage Solutions South Africa (HeSSA) was appointed by Eskom SOC Limited (Transmission) to conduct an Environmental Impact Assessment (EIA) study for the proposed construction of a 250-km-long 400kV transmission powerline and associated substation infrastructure. The powerline will traverse from the west of the Capricorn District to Vhembe District in Limpopo Province. The proposed line will start at Borutho substation in Mokopane to Bokmakierie substation in Nzhelele Limpopo Province.

The proposed powerline and associated substation works are listed activities as defined by GNR 545 (Listing Notice 1) Of 18 June 2010 of the National Environmental :
Activity 8 (I): *“The construction of facilities or infrastructure, for the transmission and distribution of electricity with a capacity of 275 kolovolts or more, outside an urban area or industrial complex.”*

List other activities that are on the application form as well

The above mentioned activities requires a full Environmental Impact Assessment (EIA) study, in line with the 2006 Regulations in order to acquire the environmental authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA). The application for environmental authorisation was made on 2nd February 2012. The lead environmental authority for this application is the Department of Environmental Affairs (DEA). As such an EIA application was lodged with DEA (Application Reference 14/12/16/3/3/2/287) and NEAS: DEA/EA/0001049/2012.

EXPERTISE OF THE ENVIRONMENTAL ASSESSEMENT PRACTITIONERS

2.1 Introduction

The Environmental regulation specifically requires practitioners involved in the EIA process to list their qualifications and expertise in the report. An Environmental Assessment Practitioner (EAP) appointed in terms of regulation 17 (1) is required to:

- Be independent
- Have expertise in conducting environmental impact assessments including knowledge of the Act, these regulations and any guidelines that have relevance to the proposed activity
- 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
- Comply with the Act, these regulations and all other applicable legislation
- Take into account, to the extent possible, the matters listed in regulation 13 when preparing the application and
- Disclose to the applicant and the competent authority all material information in the possession of the EAP that reasonably has or may have the potential of influencing any decision to be taken with respect to the application by the competent authority in terms of these regulations or the objectivity of any report, plan or document to be prepared by the EAP in terms of these regulations for submission to the competent authority.

Nzumbululo Heritage Solution, the independent consultants and the designated project EAP have met the above directives. The table below lists the EAP study team involved in this project. These will work with other independent scientists and specialists until and an Environmental Authorisation is issued by the DEA.

2.1.1 Details of the EAP

Table 1a: Details of EAP (H. Mlotshwa)

| | |
|------------------|----------------------------------------------------------------------|
| Name | Hellen S. Mlotshwa |
| Company | Nzumbululo Heritage Solutions |
| Physical Address | 4 Berger Road, Vorna Valley Midrand |
| Postal Address | P. O. BOX 4106; HALFWAY HOUSE 1685 |
| Telephone Number | 011 021 4937 |
| Fax Number | 086 544 2177 |
| E-mail | mloshwah@nzumbululo.com |
| Role in Project | Environmental Consultant/Practitioner |

Table 2: Details of Assistant EAP (K. Mogajane).

| | |
|------------------|------------------------------------------------------------------------|
| Name | Kelebogile Mogajane |
| Company | Nzumbululo Heritage Solutions for South Africa |
| Physical Address | 4 Berger Road Vorna Valley Midrand |
| Postal Address | P. O. BOX 4106; HALFWAY HOUSE, 1685 |
| Telephone Number | 011 021 4937 |
| Fax Number | 086 544 2177 |
| E-mail | mogajaneK@nzumbululo.com |
| Role in Project | Environmental Consultant/Practitioner |

2.1.2 Detail of Applicant

Table 3: Details of the Proponent.

| | |
|------------------|-----------------------------------------------------------------------------|
| Name | Henry Nawa (Representative of Proponent) |
| Company | ESKOM Holdings Limited |
| Postal Address | P.O. Box 1091, Megawatt Park Maxwell Drive Sunninghill Johannesburg 2000 |
| Telephone number | 011 800 8111 |
| Fax number | 011 800 2122 |
| Email | nawah@eskom.co.za |
| Role in Project | Project Manager |

3 DESCRIPTION OF THE PROPOSED PROJECT

3.1 Introduction

The proposed project will include the construction of a new 250km-long 400kv powerline from Borutho Substation to proposed Nzhelele Substation in the Limpopo Province.

3.2 Project Location

The affected project area is located in the Capricorn and Vhembe Districts in Limpopo Province. The powerline preferred and alternative routes will traverse through the following farms.

Table 4: List of individual farms affected by the proposed powerline development.

| FARMNAME | SG_CODE | FARM_NO | MAJ_REGION | MUNICIPALITY | NM_NUM_DIV |
|---------------|----------------------|---------|------------|--------------|--------------------|
| PYLKOP | TOMS0000000005930000 | 593 | MS | Makhado | PYLKOP593MS |
| KONIGGRATZ | TOLS0000000001350000 | 135 | LS | Molemole | KONIGGRATZ135LS |
| KONIGGRATZ | TOLS0000000001350000 | 135 | LS | Molemole | KONIGGRATZ135LS |
| BOOMZIEN | TOLS0000000001640000 | 164 | LS | Molemole | BOOMZIEN164LS |
| INDERHIKEN | TOLS0000000001650000 | 165 | LS | Molemole | INDERHIKEN165LS |
| | TOLS0000000002600000 | 26 | LS | Makhado | 26LS |
| LA PUCELLA | TOLR0000000006930000 | 693 | LR | Mogalakwena | LA PUCELLA693LR |
| LUXEMBURG | TOLR0000000007720000 | 772 | LR | Mogalakwena | LUXEMBURG772LR |
| ZUID HOLLAND | TOLR0000000007730000 | 773 | LR | Mogalakwena | ZUID HOLLAND773LR |
| NOORD BRABAND | TOLR0000000007740000 | 774 | LR | Mogalakwena | NOORD BRABAND774LR |
| HARTEBEESTPAN | TOLS0000000002200000 | 22 | LS | Makhado | HARTEBEESTPAN22LS |
| BARROW | TOMS0000000006220000 | 622 | MS | Makhado | BARROW622MS |
| KAMEEKOP | TOMS0000000006230000 | 623 | MS | Makhado | KAMEEKOP623MS |
| SANDSLOOT | TOMS0000000006260000 | 626 | MS | Makhado | SANDSLOOT626MS |
| LANGDRAAI | TOMS0000000006270000 | 627 | MS | Makhado | LANGDRAAI627MS |
| OVERDYK | TOLS0000000001470000 | 147 | LS | Molemole | OVERDYK147LS |
| BADBURG | TOLS0000000001680000 | 168 | LS | Molemole | BADBURG168LS |
| WELVAREND | TOLS0000000001670000 | 167 | LS | Blouberg | WELVAREND167LS |
| HOOGLAND | TOLS0000000004300000 | 43 | LS | Blouberg | HOOGLAND43LS |
| SOLINGEN | TOLS0000000008600000 | 86 | LS | Blouberg | SOLINGEN86LS |

| FARMNAME | SG_CODE | FARM_NO | MAJ_REGION | MUNICIPALITY | NM_NUM_DIV |
|---------------|------------------------|---------|------------|--------------|--------------------|
| | 0000 | | | | |
| LUTON | TOLS000000000008700000 | 87 | LS | Blouberg | LUTON87LS |
| WITTEN | TOLS000000000009100000 | 91 | LS | Blouberg | WITTEN91LS |
| WESTPHALIA | TOLS000000000013900000 | 139 | LS | Molemole | WESTPHALIA139LS |
| WELTEVREDEN | TOLS000000000016200000 | 162 | LS | Molemole | WELTEVREDEN162LS |
| POTSDAM | TOLS000000000012800000 | 128 | LS | Molemole | POTSDAM128LS |
| GROOTHOEK | TOLS000000000012900000 | 129 | LS | Molemole | GROOTHOEK129LS |
| MEANDERTHAL | TOLS000000000018800000 | 188 | LS | Molemole | MEANDERTHAL188LS |
| STETTIN | TOLS000000000013300000 | 133 | LS | Molemole | STETTIN133LS |
| TRIEST | TOLS000000000019200000 | 192 | LS | Molemole | TRIEST192LS |
| BRILLIANT | TOLS000000000015500000 | 155 | LS | Molemole | BRILLIANT155LS |
| LISSA | TOLS000000000016100000 | 161 | LS | Molemole | LISSA161LS |
| MARINASPRUIT | TOLS000000000007500000 | 75 | LS | Blouberg | MARINASPRUIT75LS |
| PURASPAN | TOLS000000000008200000 | 82 | LS | Blouberg | PURASPAN82LS |
| WUPPERTOE | TOLS000000000008300000 | 83 | LS | Blouberg | WUPPERTOE83LS |
| SCHROELEN | TOLS000000000008400000 | 84 | LS | Blouberg | SCHROELEN84LS |
| DONSANNA | TOLS000000000014100000 | 141 | LS | Blouberg | DONSANNA141LS |
| BOCHEM | TOLS000000000014500000 | 145 | LS | Blouberg | BOCHEM145LS |
| FRAAIHOLT | TOLS000000000014800000 | 148 | LS | Blouberg | FRAAIHOLT148LS |
| JOSLAND | TOLS000000000013000000 | 13 | LS | Blouberg | JOSLAND13LS |
| MUNT | TOLS000000000013700000 | 137 | LS | Blouberg | MUNT137LS |
| DE RUIGTE | TOLS000000000002700000 | 27 | LS | Makhado | DE RUIGTE27LS |
| JAKHALSDRAAI | TOLS000000000010200000 | 102 | LS | Makhado | JAKHALSDRAAI102LS |
| REDHILL | TOLS000000000010300000 | 103 | LS | Makhado | REDHILL103LS |
| CLAUDIUS HOOP | TOLS000000000010600000 | 106 | LS | Makhado | CLAUDIUS HOOP106LS |
| SCHOONVELD | TOLS000000000002500000 | 25 | LS | Makhado | SCHOONVELD25LS |
| RIETBOKVLEI | TOMS000000000044900000 | 449 | MS | Makhado | RIETBOKVLEI449MS |
| ZWARTKLIP | TOLS000000000002000000 | 20 | LS | Makhado | ZWARTKLIP20LS |

| FARMNAME | SG_CODE | FARM_NO | MAJ_REGION | MUNICIPALITY | NM_NUM_DIV |
|-----------------|-----------------------|---------|------------|--------------|---------------------|
| BALMORAL | TOLS0000000000600000 | 60 | LS | Makhado | BALMORAL60LS |
| VULPAN | TOLS0000000000640000 | 64 | LS | Makhado | VULPAN64LS |
| GRUISPAN | TOLS0000000000650000 | 65 | LS | Makhado | GRUISPAN65LS |
| GRUISPAN | TOLS0000000000650000 | 65 | LS | Makhado | GRUISPAN65LS |
| LEEUKNOP | TOLS0000000000660000 | 66 | LS | Makhado | LEEUKNOP66LS |
| LEEUKNOP | TOLS0000000000660000 | 66 | LS | Makhado | LEEUKNOP66LS |
| TER SCHELLINGEN | TOLS0000000000150000 | 15 | LS | Makhado | TER SCHELLINGEN15LS |
| SCHIERMONIKOOG | TOLS0000000000160000 | 16 | LS | Makhado | SCHIERMONIKOOG16LS |
| HOOGEPLAATS | TOMS00000000003990000 | 399 | MS | Makhado | HOOGEPLAATS399MS |
| VERVULLING | TOMS00000000004010000 | 401 | MS | Makhado | VERVULLING401MS |
| DU PLOOY | TOMS00000000006000000 | 600 | MS | Makhado | DU PLOOY600MS |
| TAMBOTIE | TOMS00000000004220000 | 422 | MS | Makhado | TAMBOTIE422MS |
| ROOS | TOMS00000000006050000 | 605 | MS | Makhado | ROOS605MS |
| DIAMANT | TOMS00000000006280000 | 628 | MS | Makhado | DIAMANT628MS |
| AFSTAP | TOMS00000000006080000 | 608 | MS | Makhado | AFSTAP608MS |
| KORTDRAAI | TOMS00000000006090000 | 609 | MS | Makhado | KORTDRAAI609MS |
| VOGELSTRUIS | TOMS00000000004150000 | 415 | MS | Makhado | VOGELSTRUIS415MS |
| DANIE | TOMS00000000004160000 | 416 | MS | Makhado | DANIE416MS |
| DE BEERS LOOP | TOLS00000000005320000 | 532 | LS | Aganang | DE BEERS LOOP532LS |
| FAIR LAURIE | TOLS00000000005340000 | 534 | LS | Aganang | FAIR LAURIE534LS |
| GRAAFF REINET | TOLS00000000005350000 | 535 | LS | Aganang | GRAAFF REINET535LS |
| LONSDALE | TOLS00000000005380000 | 538 | LS | Aganang | LONSDALE538LS |
| LOUISIANA | TOLS00000000005390000 | 539 | LS | Aganang | LOUISIANA539LS |
| POUR LA PATRIE | TOLS00000000005400000 | 540 | LS | Aganang | POUR LA PATRIE540LS |
| HONEYMOON | TOMS00000000006100000 | 610 | MS | Makhado | HONEYMOON610MS |
| VRYHEID | TOMS00000000004170000 | 417 | MS | Makhado | VRYHEID417MS |
| DUINEN | TOMS00000000004190000 | 419 | MS | Makhado | DUINEN419MS |
| WITLAAGTE | TOMS00000000004210000 | 421 | MS | Makhado | WITLAAGTE421MS |

| FARMNAME | SG_CODE | FARM_NO | MAJ_REGION | MUNICNAME | NM_NUM_DIV |
|-------------------|----------------------|---------|------------|-----------|------------------------|
| | 0000 | | | | |
| SANDHEUVEL | TOMS0000000004250000 | 425 | MS | Makhado | SANDHEUVEL425MS |
| FRAAIFONTEIN | TOMS0000000004470000 | 447 | MS | Makhado | FRAAIFONTEIN447MS |
| KNOPJESDOORN | TOMS0000000004480000 | 448 | MS | Makhado | KNOPJESDOORN448MS |
| KAALPLAATS | TOMS0000000004510000 | 451 | MS | Makhado | KAALPLAATS451MS |
| LEENA | TOMS0000000004530000 | 453 | MS | Makhado | LEENA453MS |
| TWYFEL | TOMS0000000006290000 | 629 | MS | Makhado | TWYFEL629MS |
| RINGER | TOMS0000000004030000 | 403 | MS | Makhado | RINGER403MS |
| BUCHAN | TOMS0000000004040000 | 404 | MS | Makhado | BUCHAN404MS |
| BRUNO | TOMS0000000004070000 | 407 | MS | Makhado | BRUNO407MS |
| VERLOOREN | TOMS0000000004090000 | 409 | MS | Makhado | VERLOOREN409MS |
| BRUILOF | TOMS0000000005980000 | 598 | MS | Makhado | BRUILOF598MS |
| BIERMAN | TOMS0000000005990000 | 599 | MS | Makhado | BIERMAN599MS |
| KALKHEUVEL | TOMS0000000004540000 | 454 | MS | Makhado | KALKHEUVEL454MS |
| JUPITER | TOLS0000000007170000 | 717 | LS | Aganang | JUPITER717LS |
| BILLINGSGATE | TOLS0000000006510000 | 651 | LS | Aganang | BILLINGSGATE651LS |
| VENUS | TOLS0000000006520000 | 652 | LS | Aganang | VENUS652LS |
| RAMPIETJESFONTEIN | TOLS0000000005980000 | 598 | LS | Aganang | RAMPIETJESFONTEIN598LS |
| CERES | TOLS0000000005990000 | 599 | LS | Aganang | CERES599LS |
| LUTTIGSDALE | TOLS0000000005830000 | 583 | LS | Aganang | LUTTIGSDALE583LS |
| KALKSPRUIT | TOLS0000000006330000 | 633 | LS | Aganang | KALKSPRUIT633LS |
| UITZICHT | TOLS0000000006350000 | 635 | LS | Aganang | UITZICHT635LS |
| VLAKLAAGTE | TOLS0000000006360000 | 636 | LS | Aganang | VLAKLAAGTE636LS |
| EENSGEVONDEN | TOLS0000000006450000 | 645 | LS | Aganang | EENSGEVONDEN645LS |
| COMMISSIEDRIFT | TOLS0000000006460000 | 646 | LS | Aganang | COMMISSIEDRIFT646LS |
| LANGVERWACHT | TOLS0000000006470000 | 647 | LS | Aganang | LANGVERWACHT647LS |
| VULCANUS | TOLS0000000005840000 | 584 | LS | Aganang | VULCANUS584LS |
| PERSIE | TOLS0000000002000000 | 200 | LS | Aganang | PERSIE200LS |

| FARMNAME | SG_CODE | FARM_NO | MAJ_REGION | MUNICIPALITY | NM_NUM_DIV |
|------------------|---------------------|---------|------------|--------------|-----------------------|
| ZOMERSFONTEIN | TOLS000000000604000 | 604 | LS | Aganang | ZOMERSFONTEIN604LS |
| OLYMPUS | TOLS000000000585000 | 585 | LS | Aganang | OLYMPUS585LS |
| JUNO | TOLS000000000586000 | 586 | LS | Aganang | JUNO586LS |
| CHLOE | TOLS000000000587000 | 587 | LS | Aganang | CHLOE587LS |
| VLAKFONTEIN | TOLS000000000588000 | 588 | LS | Aganang | VLAKFONTEIN588LS |
| WESTHEIM | TOLS000000000191000 | 191 | LS | Aganang | WESTHEIM191LS |
| WESEL | TOLS000000000193000 | 193 | LS | Aganang | WESEL193LS |
| BURGWAL | TOLS000000000195000 | 195 | LS | Aganang | BURGWAL195LS |
| TERBRUGGE | TOLS000000000156000 | 156 | LS | Aganang | TERBRUGGE156LS |
| LANARK | TOLS000000000199000 | 199 | LS | Aganang | LANARK199LS |
| LUCY'S TOWN | TOLR000000000687000 | 687 | LR | Aganang | LUCY'S TOWN687LR |
| CROMFORD | TOLR000000000690000 | 690 | LR | Aganang | CROMFORD690LR |
| SCHOONGELEGEN | TOLR000000000695000 | 695 | LR | Aganang | SCHOONGELEGEN695LR |
| SOUR APPLE TREE | TOLR000000000691000 | 691 | LR | Aganang | SOUR APPLE TREE691LR |
| GOEDGEVONDEN | TOLR000000000732000 | 732 | LR | Aganang | GOEDGEVONDEN732LR |
| WELGELEGEN | TOLR000000000395000 | 395 | LR | Aganang | WELGELEGEN395LR |
| PRAGUE | TOLR000000000734000 | 734 | LR | Aganang | PRAGUE734LR |
| ROZENKRANS | TOLR000000000424000 | 424 | LR | Aganang | ROZENKRANS424LR |
| MATALAS LOCATION | TOLS000000000591000 | 591 | LS | Aganang | MATALAS LOCATION591LS |

These farms are within the Limpopo Province and comprises of rural settlements, commercial farming areas, urban settlements and agro-industrial with associated infrastructures.

3.3 Layout and design

The proposed project includes the following activities:

- Establish the Nzhelele Substation Site,
- Establish Borutho-Nzhelele 250km 400kV transmission power line,
- Install 2x 250MVA 400/132kV transformers at Nzhelele MTS and terrace Nzhelele for end state 3x 250MVA 400/132kV transformers,
- Terrace the Nzhelele 400kV yard for an end state of 4x 400kV feeders,

- Terrace the Nzhelele 132kV yard for an end state of 8x 132kV feeders,
- Establish the control building, telecommunication infrastructure, oil dam, and
- Establish the entire access road infrastructure to and within Nzhelele MTS.
- Commission all new infrastructure by year 2017.

3.4 Project Motivation

The project was initiated as part and parcel of power transmission network grid improvement and stabilisation within and across the Limpopo Province. Polokwane Customer Load Network (CLN), including the Tabor and Spencer power corridor, remains susceptible to voltage instability and is the weakest part of the Northern Grid network due to being operated beyond its reliability power transfer limit. In addition to this, the Polokwane CLN, i.e., Tabor and Spencer 275kV and 132kV network, is susceptible to low voltages regardless of the approved and commissioned network strengthening in year 2010:

- Tabor-Spencer 275kV line, and
- 2nd 250MVA 275/132kV transformer.

Listed below is another approved 400kV network re-enforcement in the Polokwane CLN which is expected for commissioning by the end of year 2012:

- Witkop-Tabor 400kV line, and
- Tabor 500MVA 400/132kV transformer.

The combined transformation capacity at Tabor and Spencer MTS of 846MW exceeds the installed and the approved transformation capacity of 712MW. In addition to this, the low voltages and thermal constraints in the 132kV Distribution network for both existing and planned network remains far below operational par. The Tabor and Spencer 275/132kV transformation recorded peak in the year 2010 was 280MW and 210MW, respectively. The exceeded Tabor 275/132kV transformation firm capacity will be restored to optimal operational and transmission capacity once the Witkop-Tabor 400kV line and the 1st of the 500MVA 400/132kV transformer have been commissioned. The Spencer 275/132kV transformation firm capacity of 234MW will be exceeded by 40MW in year 2015, as shown in load forecast, therefore, compromising the network reliability by violating the set Grid Code N-1 transformation criteria.

Furthermore, the lengthy Tabor and Spencer 132kV Distribution networks stretching 200km from Polokwane to 50km away from the Mussina border-post result in low voltages and thermal constraints during N-1 transformation and line contingencies in year 2011 and beyond. The expected Tabor and Spencer 132kV load growth is located 100km north of Tabor and 70km from Spencer, therefore, the Transmission outreach constraint will cap the load growth. Following the findings after an assessment of the Tabor and Spencer 400kV, 275kV and 132kV network constraints for the 20 year horizon, Eskom SOC Limited Grid Planning has proposed the following:

- Establish 3x 250MVA 400/132kV Nzhelele Main Transmission Station (MTS),

- Construct Tabor–Nzhelele 130km 400kV line,
- Construct Borutho–Nzhelele 250km 400kV line, and
- Commission all the associated infrastructure by year 2017.

However, the proposed servitudes for the Tabor-Nzhelele-Borutho 400kV power line is likely to be more challenging to acquire due to the Soutpansberg mountain range section of which the lines will have to traverse through to feed into the Nzhelele MTS. However, the planned commissioning date of 2017 has taken into account the EIA approval processes and possible project planning challenges.

The above proposed network solution meets the 10-year Distribution load requirements in the Tabor and Spencer network areas and it is also informed by the 20 year Transmission and Distribution load forecast in meeting the Transmission 20 year plan.

It is in this context that this project is proposed and motivated to be considered for approval by compliance authorities in light of its highlighted significance and critical role in the future socio-economic and national development interests.