

PROJECT DETAILS

- DEAT Reference No.** : 12/12/20/1471 (Kwagga – Phoebus Transmission Power Line)
12/12/20/1524 (Extension of Kwagga substation and establishment of Phoebus substation)
- Title** : Environmental Impact Assessment Process
Draft Scoping Report for the Proposed Tshwane Strengthening Project Phase 1, Gauteng Province
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PURPOSE OF THE SCOPING REPORT

In order to reinforce the existing Transmission network in the Tshwane Region, Eskom Transmission is currently proposing the construction of a 400 kV transmission power line between the existing Apollo and Verwoerdburg substations. In addition, increased demand for a reliable electricity supply in the Central Grid has necessitated that Eskom Transmission improves the reliability and capacity of the transmission network in the area. Further, upgrade of the 400/132 kV Verwoerdburg substation and establishment of a new Phoebus substation is also being proposed in the area in order to improve the reliability and quality of supply problems in the Tshwane area. Numerous Distribution options were investigated by Distribution network planning, the investment and a new Transmission network was preferred as the most suitable long-term solution. Eskom Transmission is therefore proposing the construction of the **Tshwane Strengthening Project Phase 1**. The Tshwane Strengthening project comprises of the following:

- » **The extension of the existing Verwoerdburg** Substation.
- » Construction of **2x 400 kV loop-in lines from the existing Apollo–Pluto** transmission line which will feed into the Verwoerdburg Substation, a distance of approximately 4 km.
- » Construction of the **new Phoebus Substation** adjacent to Hangklip Substation.
- » Construction of **400 kV loop-in lines to feed the proposed new Phoebus Substation** from the existing Apollo-Dinaledi transmission power line, a distance of approximately 1 km.
- » Construction of a **new 400 kV transmission power line** between the Phoebus Substation and the Kwagga Substation, a distance of ~30 km.
- » **Associated infrastructure works** to integrate the new transmission power lines and substation into the Transmission grid (such as access roads, communication tower, etc) and accommodate the new lines at existing substations (such as the construction of new feeder bays within the existing substation sites).

In total, **approximately 36 km of new power line** is proposed as part of the proposed project. The purpose of this project is to:

- » Improve the reliability of the existing Central Transmission network; and
- » Improve the voltage regulation on the Central Grid Distribution and City of Tshwane Metropolitan Municipality network.
- » Create additional Transmission network capacity which will supply the increasing electricity demand in the Central Grid.

Applications for Authorisation have been submitted to the National Department of Environmental Affairs and Tourism (DEAT), as the competent authority for this project. The Application Reference numbers are **12/12/20/1471 (Kwagga-Phoebus 400kV transmission power line and 12/12/20/1524 (Extension of Kwagga substation and establishment of Phoebus substation))**. The nature and extent of the proposed Tshwane Strengthening Project Phase 1 and potential environmental impacts associated with construction, operation and decommissioning have been evaluated in this Draft Scoping Report.

Eskom has appointed Savannah Environmental, as independent environmental consultants, to undertake the EIA. The EIA process is being undertaken in accordance with the requirements of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

The Scoping Phase of the EIA refers to the process of identifying and describing potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This is achieved through an evaluation of the proposed project, involving the project proponent, specialists with experience in EIAs for similar projects and in the study area, and a consultation process with key stakeholders that includes both governmental authorities and Interested and Affected Parties (I&APs).

The main purpose of the Scoping Study is to focus the environmental assessment in order to ensure that only significant issues and reasonable and feasible alternatives are examined. It is recommended that this report is read in conjunction with all the components of the broader Tshwane Strengthening Phase 1 project.

In accordance with the EIA Regulations, the main purpose of the Draft Scoping Report is to provide stakeholders with an opportunity to verify that the issues they have raised to date have been captured and considered within the study, and to raise any additional key issues for consideration. The Final Scoping Report will incorporate all issues and responses prior to submission to DEAT, the decision-making authority.

The Scoping Report consists of eight sections:

- » **Chapter 1** provides background to the proposed Tshwane Strengthening project (Apollo-Verwoerdburg, Kwagga-Phoebus and new Phoebus Substation) and the environmental impact assessment process
- » **Chapter 2** provides an overview of the proposed project and the process followed in identifying reasonable and feasible alternatives

- » **Chapter 3** outlines the process which was followed during the Scoping Phase of the EIA process
- » **Chapter 4** provides a description of the environment which may be potentially affected by the proposed project
- » **Chapter 5** provides a description and discussion of the potential environmental impacts associated with the proposed Kwagga-Phoebus 400 kV transmission power line including the 275 kV feeder bay
- » **Chapter 6** provides a description and discussion of the potential environmental impacts of the proposed establishment of Phoebus substation and the extension of the existing Kwagga substation.
- » **Chapter 7** presents the conclusions and recommendations of the Scoping Study
- » **Chapter 8** describes the plan of study for the EIA and describes the activities associated with the project

PUBLIC REVIEW OF THE DRAFT SCOPING REPORT

The Draft Scoping Report will be available for public review at the following public places in the project area from **20 July to 19 August 2009** at the following locations:

Laudium Library – 4th Avenue	Atteridgeville Library – Mohlaba Street
Bodibeng Community Library – Buitekant Street, Soshanguve	Danville Community Library – De Villiers Street
City of Tshwane Metropolitan Municipality – Development Planning	www.eskom.co.za/eia
www.savannahsa.com	

SUMMARY

Background and Project Overview

Electricity cannot be stored and must therefore be generated and delivered 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 the power stations located in the Mpumalanga coal fields to major substations, where the voltage is reduced for distribution to industry, businesses, homes and farms all over the country.

If Eskom Transmission is to honour its mandate and commitment to meet the increasing needs of end-users, it has to establish and expand its infrastructure of transmission power lines and substations on an ongoing basis. Due to substantial annual load growth, load shifts and step loads in the recent past, it has become necessary to reinforce the existing electrical infrastructure through the establishment of new electricity generation and transmission capacity.

Eskom is the primary supplier of electricity in South Africa and supplies power in bulk to most towns and cities, the municipalities of which sell it to households, industrialists and other end-users within their areas of jurisdiction. Eskom also sells bulk electricity directly to end-users in some parts of South Africa. 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 remaining within the capabilities of the environment. In order to achieve this Eskom must continually re-assess the projected demand for electricity¹ in relation to 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.

As part of its capacity expansion and grid strengthening programme, Eskom Transmission is proposing the **Tshwane Strengthening Project Phase 1**. The Tshwane Strengthening Project Phase 1 (Kwagga - Phoebus transmission power lines, establishment of the Phoebus and extension of Kwagga substation) is proposed to include the following:

- » Construction of 400 kV loop-in lines to feed into the Phoebus Substation from the existing Apollo-Dinaledi transmission power line, a distance of approximately 1 km.
- » Construction of a new 400 kV transmission power line between the Phoebus Substation and the Kwagga Substation, a distance of ~30 km.

¹ This is undertaken through the Integrated Strategic Electricity Planning (ISEP) process

- » Establishment of the new Phoebus substation adjacent to existing Hangklip substation
- » Extension of the existing Kwagga Substation.
- » **Associated infrastructure works** to integrate the new transmission power lines and substation into the Transmission grid (such as access roads, communication tower, etc) and accommodate the new lines at existing substations (such as the construction of new feeder bays and bus bars within the new Phoebus substation).

It is important to read this report in relation to the other component of the Tshwane Strengthening Project Phase 1. The following technically feasible transmission power line alternatives have been identified for investigation during the EIA process (refer to Figure 1 and 2):

- » Three (3) power line alternatives from the Kwagga substation to the proposed Phoebus substation have been identified for consideration in the EIA phase of the Kwagga-Phoebus 400kV transmission power line project.
- » One (1) possible site adjacent to the existing Hangklip substation has been identified for the proposed establishment of the Phoebus substation.

Environmental Impact Assessment

The proposed Tshwane Strengthening Project is subject to

the requirements of the Environmental Impact Assessment Regulations (EIA Regulations) published in GN 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA, No 107 of 1998). In terms of sections 24 and 24D of NEMA, as read with GNs R385 (Regulations 27–36) and R387, a Scoping and EIA are required to be undertaken for this proposed project. The National Department of Environmental Affairs and Tourism (DEAT) is the competent authority for this project as Eskom is a statutory body. Two applications for authorisation of these components of the Tshwane Strengthening Project Phase 1 (Kwagga - Phoebus 400kV transmission lines; Establishment of Phoebus substation, extension of Kwagga substation) have been accepted by DEAT (under the following Application Reference numbers **12/12/20/1471** & **12/12/20/1524**).

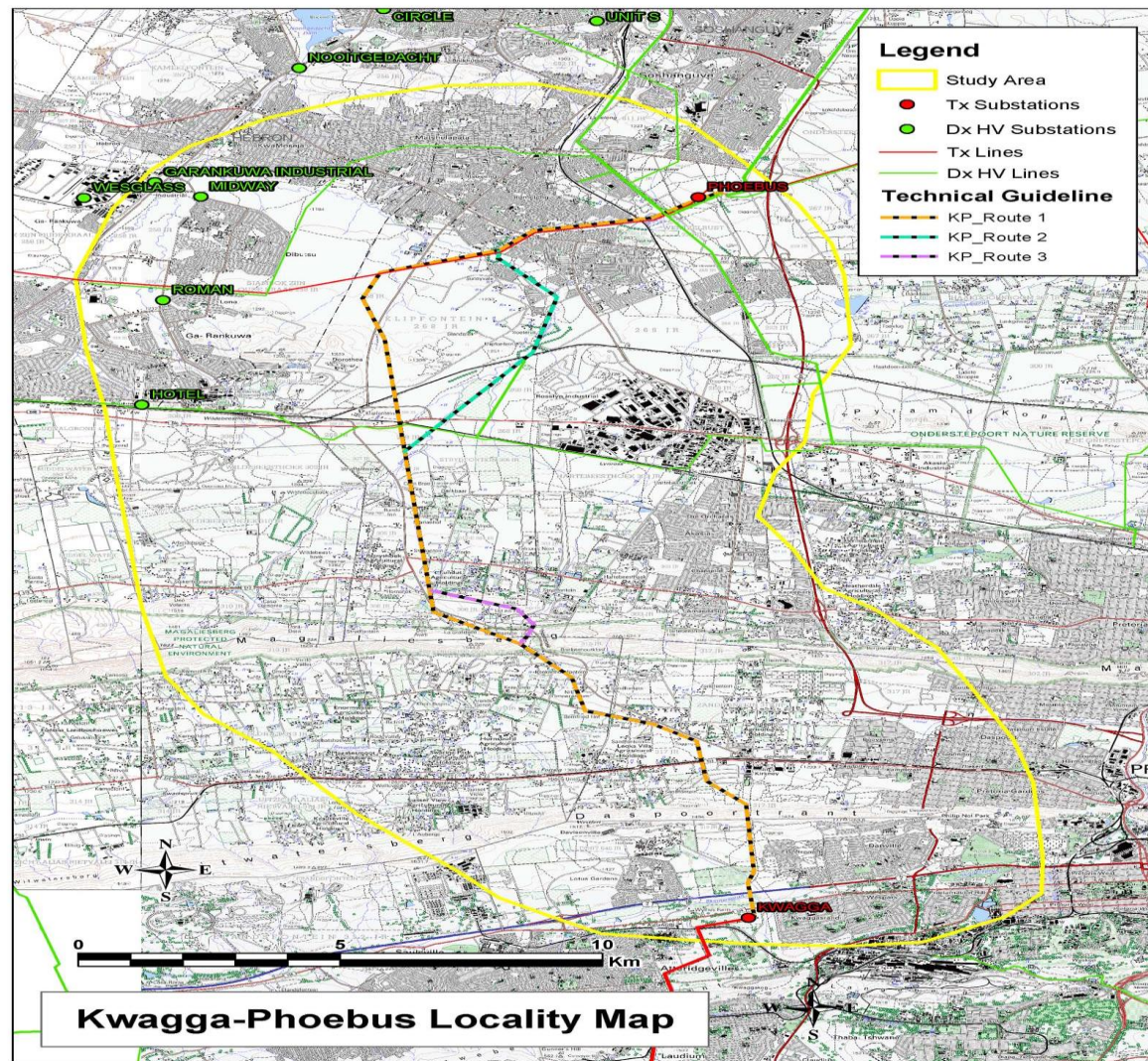


Figure 1: Map showing the alternate Kwagga - Phoebus transmission line corridors identified for consideration in the EIA process

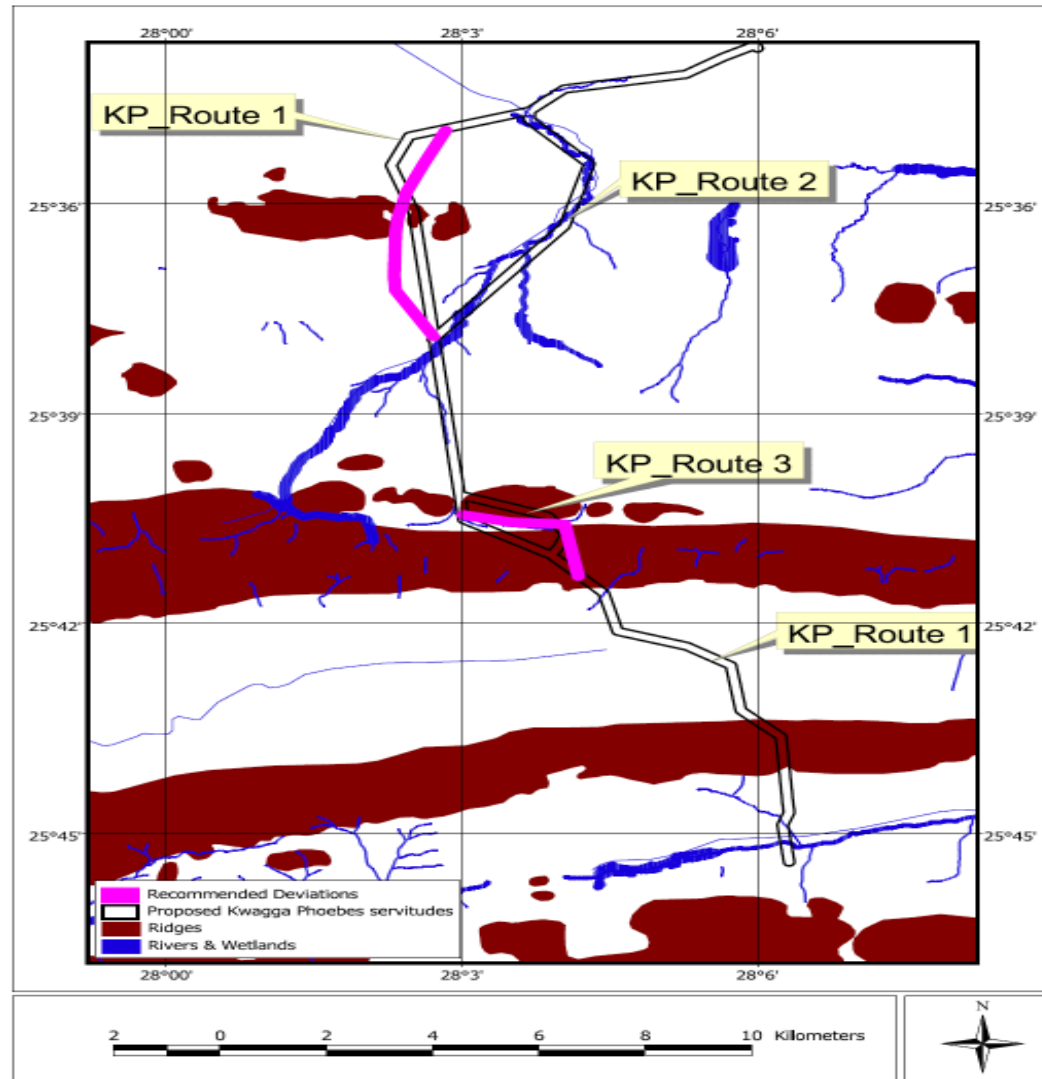


Figure 2: Map showing the recommended deviations from a biodiversity perspective for Kwagga - Phoebus transmission power lines

Through the decision-making process, DEAT will be supported by the Gauteng Department of Agriculture, Conservation and Environment (GDACE) as the commenting authority.

The Scoping Study for the proposed Tshwane Strengthening Project has been undertaken in accordance with the EIA Regulations published in Government Notice 28753 of 21 April 2006, in terms of Section 24(5) of the National Environmental Management Act (NEMA; No 107 of 1998). This Scoping Study aimed at describing the baseline environmental conditions on site, describing the proposed project, identifying potential environmental issues and impacts associated with the proposed project, and defining the extent of studies required within the EIA. This was achieved through an evaluation of the proposed project, involving the project proponent, specialists with experience in EIAs for similar projects, and a consultation process with key stakeholders that included both relevant government authorities (local and provincial) and interested and affected parties (I&APs).

A comprehensive Public Participation process is being undertaken in accordance with Regulation 56 of Government Notice No R385 of 2006 during the Scoping phase of this EIA process. This public participation process comprises the following:

- » **Notification of the EIA Process** in local and regional newspapers and on site, as well as through written

notification to identified stakeholders and identified affected landowners

- » **Identification and registration** of I&APs and key stakeholders.
- » Compilation and distribution of a **Background Information Document** (BID) to all identified I&APs and key stakeholders
- » **On-going consultation** with identified I&APs and stakeholders
- » Compilation and maintenance of a **database** containing the names and addresses of all identified I&APs and key stakeholders
- » Preparation of a **Comments and Response Report** detailing key issues raised by I&APs as part of the EIA Process.

Evaluation of the Proposed Tshwane Strengthening Project Phase 1

All three alternatives presented for the proposed Kwagga - Phoebus transmission power line development are expected to have moderately significant impacts on important natural attributes of the region. They have a potential to impact on perennial water courses and ridge systems.

However, no environmental fatal flaws were identified to be associated with any of the power line alternatives, although certain issues (associated with alternative 2 and 3 requiring further study have been highlighted.

Some sensitive natural elements are present within the proposed Kwagga-Phoebus power line variant. Except for the Daspoort and Witwatersberg ridge

systems in the southern part of the study area, it is possible to avoid most

of these sensitive areas by means of local deviations or re-alignment. In particular, a localised Class 1 ridge is present in the northern part of this line variant. A local deviation towards the east is therefore recommended to avoid impact on this ridge system. It is also recommended to align the servitude parallel with the road for this section. The use of Alternatives 2 and 3 is not recommended. Therefore localised deviations should be implemented in order to avoid significant impacts on particularly ridge systems in the area.

No site alternatives have been identified for either substation, as these substations already exist in the area.

Conclusions and Recommendations for the Proposed Tshwane Strengthening Project Phase 1

The transmission power line alternatives proposed for the Tshwane Strengthening Project Phase 1 (Kwagga-Phoebus transmission component) cross various habitat sensitivity classes such as ridges and perennial rivers and potentially impact on numerous land uses and communities. From the specialist studies undertaken no environmental fatal flaws have been identified to be associated with any of the power line alternatives at this stage of the investigation. However, there are varying conclusions with regards to the alternatives which would require detailed assessment and investigation during the next phase of the project. The

nomination of a preferred alternative from an environmental perspective will, therefore, be required to be confirmed in the EIA phase of the process through a comparative assessment of the revised alternatives identified.

A number of issues requiring further study have been highlighted through the scoping study. In order to fully assess and address these issues, the following studies are required to be undertaken as part of the EIA phase of the process:

- » A **detailed ecological survey** of the transmission power line alternatives in order to establish the likelihood of any flora and/or fauna species of concern occurring in the study area. The detailed survey must concentrate on habitats classified as having High or Very High sensitivity.
- » A detailed survey of the proposed substation establishment and extension in order to assess the **potential impacts of the proposed project on fauna and flora species** and to recommend appropriate mitigation measures for significant impacts, where required.
- » A **detailed agricultural survey of the proposed Apollo-Dinaledi 2x 400 kV loop-in and out line alignments** (once determined) in order to fully understand the area in terms of its agricultural potential.
- » A **visual impact assessment** in order to determine the specific visual impact within identified exposed areas. The visual impact assessment within the EIA will address other crucial issues related to the visibility

of the transmission power lines and the proposed Phoebus substation in order to quantify the actual visual impact and to identify areas of perceived impact.

- » **Phase 1 and Phase 2 archaeological** surveys in accordance with the requirements of Section 38(3) of the National Heritage resources Act (Act No 25 of 1999).
- » A **Socio-Economic Impact Assessment** (including land use) in order to address identified information gaps and assesses the significance of potential impacts on the social environment as a result of the construction and operation of the proposed transmission power lines.
- » Development of appropriate and practical mitigation and management measures for potentially significant environmental impacts for inclusion in the project EMP.

Studies and/or specialist processes which are required to be undertaken outside of the EIA process include:

- » An assessment of the potential impacts of climate and atmospheric conditions (e.g. potential impacts associated with lightning, precipitation and pollution levels) on the proposed transmission infrastructure, in order to provide an indication of what conditions are required to be accounted for by the design team to extend the life and reliability of the new infrastructure.
- » A detailed geotechnical survey of the proposed power line alignments (once determined) in order to fully

understand the soils in terms of founding conditions and erosion potential. This information is required to be used as part of the planning and design phase of the power lines.

- » Development of appropriate and practical mitigation and management measures for potentially significant environmental impacts for inclusion in the project EMP.
- » A detailed consultation process in accordance with the requirements of Regulation 56 of Government Notice No R.385 of 2006.

Alternatives to be assessed during the EIA process

- » *The "Do Nothing" Option*

The do nothing option would be the option of not constructing any new transmission power lines or the substation. By not taking any action, Eskom may end with a situation of not being able to ensure firm supply into some parts of the country (northern Gauteng and Tshwane Region) in the very near future. This would eventually lead to load shedding which can cause major disruptions of power supply to different areas at different times. This can have a significant impact on the economy of the country, as no real economic growth would be able to take place without additional electricity supply. This option will however, be evaluated and assessed in detail during the EIA phase of the study as it is a mandatory requirement in terms of the EIA Regulations.

No significant impacts or fatal flaws have been identified at this stage.

The routes outlined in this report should be further studied during the EIA phase and all the impacts assessed in much more detail.

» *Kwagga-Phoebus Transmission Power Line Alternatives*

The use of Alternative lines 2 and 3 is not recommended. Therefore localised deviations should be implemented in order to avoid significant impacts on particularly ridge systems in the area. The location of the substations north and south of the ridges and the east west orientation of these features makes the recommendation of alternative alignments to avoid these features altogether impossible. Therefore, short of exercising the No-Go option, it is recommended that an extensive route selection exercise be conducted as part of the EIA investigation in order to:

- » Select areas where existing infrastructure is already in place, thereby minimising the cumulative impact in the region
- » Recommend site-specific and significant mitigation measures in order to minimise any potential long-term adverse impacts within the servitudes; and
- » Investigate any potential ridge and wetland crossing points in

the immediate vicinity of the proposed servitude that could be considered suitable in terms of minimising potential impacts on the ridge systems.

» *Phoebus substation establishment and Kwagga substation extension*

The area under investigation is already characterised by infrastructure of a similar nature, i.e. the existing Hangklip and Kwagga substations and a number of high voltage transmission power lines. It is therefore, at this stage, not foreseen that additions to the Kwagga substation or the construction and operation of the new Phoebus substation adjacent to the Hangklip substation would yield significant negative impacts to the surrounding environment. Therefore, no issues emerged that can be considered as fatal flaws and at this stage. It is recommended that the detailed assessment and evaluation be undertaken during the next phase to test the assumptions made in this scoping report in respect of issues identified.

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