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## CONCLUSIONS AND RECOMMENDATIONS

## CHAPTER 7

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The Environmental Scoping Study for the proposed activities within the Gauteng Province has been undertaken in accordance with the EIA Regulations which was 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). The Tshwane Strengthening Project Phase 1 (Kwagga – Phoebus 400kV transmission power line) entails:

- » Construction of a 400kV transmission power line between Kwagga and Phoebus substation and associated 275kV feeder bay

This Environmental Scoping Study aimed at identifying potential issues 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; and
- » Specialists with experience in EIAs for similar projects and within the study area, consultation process with key stakeholders including both relevant Government Authorities and Interested and Affected Parties (I&APs).

In terms of the EIA Regulations, feasible alternatives have been considered within the Scoping Study (and discussed in full detail within Chapters 2 and 5).

The conclusions and recommendations of this Scoping Study are the result of on-site inspections, desktop evaluations of impacts identified by specialists, and the parallel process, Public Participation. Every effort has been made to include representatives of all stakeholders in the study area.

A summary of the conclusions of the evaluation of the proposed transmission line alternatives identified for the Kwagga-Phoebus 400kV power lines and the establishment of the new Phoebus substation and extension of the Kwagga substation as well as recommendations regarding investigations within the EIA are provided below.

### **7.1. Conclusions and Recommendations drawn from the Evaluation and Comparison of the Transmission Power Line Alternatives**

The study area is situated within the City of Tshwane Metropolitan Municipality in the Gauteng Province.

### **7.1.1. Kwagga-Phoebus Transmission Power Line Alternatives**

The land use is largely residential and industrial. Other sections of the study area fall within the Magaliesburg Protected Area south of the proposed Phoebus substation. Some parts of the study area have existing power lines and substations.

### **7.2.2. Selection of a Preferred Alternative Transmission Power Line Corridor for the Proposed Kwagga-Phoebus 400 kV Transmission Power Lines**

From the specialist studies undertaken within this Scoping Study, as well as from the outcomes of the specialist workshop, the following conclusions can be drawn regarding preferred alternatives for the Kwagga-Phoebus power lines for further investigation in the EIA phase.

» *Conclusions in terms of impacts on biodiversity:*

Both alternatives presented for the proposed development are expected to have moderately significant impacts on important natural attributes of the region. Both of the proposed route variants will affect a Class 3 ridge, while existing Apollo-Pluto Alternative Route 1 will affect a perennial river. Impacts of both line variants are of a similar nature, although the Route 1 is regarded as resulting in a slightly lower potential impact on biodiversity.

#### *Alternative Line 1*

Some sensitive natural elements are present within this proposed line variant; except for the ridge systems in the southern part; it is possible to avoid most of these sensitive areas by means of local deviations or a recommended 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.

#### *Alternative Line 2*

This line variant is not regarded a suitable option because of the number of river crossings are encountered. Much of the alignment runs parallel to perennial rivers and the impacts associated with this line variant is regarded significant. Other, more acceptable options are available and more feasible.

#### *Alternative Line 3*

This line variant is not regarded a suitable option because of a ridge crossing. Although alternative line 1 also involves a ridge crossing, less area will be affected by selecting this alternative.

The presence of the Magaliesberg, Witwatersberg and Daspoort ridges in the southern part of the study area is regarded the most significant impact in terms of the natural environment. Impacts relating to the construction and operation of power lines in a natural environment of this nature are regarded to be of significant nature and extent. Specific comments pertaining to the respective line variants and substations are as follows:

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 are already in place, thereby minimising the cumulative impact in the region
- » Recommend site specific and significant mitigation measures in order to prevent any potential long-term adverse impacts within the servitudes; and
- » Investigate any potential 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.

In order to fully assess the impact of the proposed development on the biological environment, it is necessary to undertake the following:

- » Survey environmentally sensitive areas in order to verify results of the GIS modelling and scoping assessment, preferably in the summer period.
- » Survey representative areas in order to obtain a clear understanding of the nature of sensitivity in specific sites.
- » Survey the area for general floristic and faunal diversity (common species, Red Data flora and fauna species, alien and invasive plant species).
- » Assess the potential presence of Red List flora and fauna species.
- » Describe the status and importance of any primary vegetation.
- » Provide descriptions of ecological habitat types, plant communities and faunal assemblages.
- » Compile an ecological impact evaluation, taking the following aspects into consideration:
  - \* the relationship of potential impacts to temporal scales
  - \* the relationship of potential impacts to spatial scales as well as biological systems and processes
  - \* the severity of potential impacts
  - \* the risk or likelihood of potential impacts occurring and

- \* the degree of confidence placed in the assessment of potential impacts.
- » Map all relevant aspects
- » Recommend a preferred substation site and route variants based on results of the ecological impact evaluation.

» *Conclusions in terms of impacts on avifauna:*

**Alternative 1:**

- » The majority of the route has been classified as being of medium sensitivity in the SEA with some medium to low areas and one medium to high area (i.e. the ridge). This is an advantage to avifauna in that most of the route is only of medium sensitivity and those areas of higher sensitivity are very small.

**Alternative 2:**

- » The majority of this route has been classified as being of medium to low and medium sensitivity in the SEA.

**Alternative 3**

- » Crosses a ridge and some agricultural land which is negative for avifauna as it may serve as a flight path for raptors along the ridge.
- » As this alternative is very small, the avifaunal sensitivity as identified in the SEA is considered to be the same as alternative 1.

No significant impacts or fatal flaws have been identified at this stage. The routes outlined in this report should be further studied at EIA phase and the impacts assessed in greater detail.

» *Conclusions in terms of visual impacts:*

From the viewshed analyses of the three alternatives for the Kwagga-Phoebus line, it can be seen that there is effectively no difference in visual exposure. It is therefore, recommended that a finer resolution Digital Terrain Model (DTM) be generated using the 5m contour dataset for the Tshwane area in order to refine the viewshed analyses to a more accurate detailed level.

It is recommended for the EIA phase that a more accurate viewshed analysis mentioned above, be merged with two other datasets, namely a proximity analysis and a land use classification, to form a sensitivity analysis that incorporates the value of information of all three into a one dataset. A sensitivity analysis will need to be done on all alternatives emerging from the scoping phase as still viable. It is envisaged that area calculations of each sensitivity analysis will provide a quantified estimate of the overall visual impact of each proposed alternative, thus providing a quantifiable means of establishing a preference ranking.

The visual impact assessment within the EIA will address these and other crucial issues related to the visibility of the proposed Tshwane Strengthening Project. These

issues or criteria will aim to quantify the actual visual impact and to identify areas of perceived visual impact. Other issues/criteria to be addressed by the visual impact assessment include:

- » Visual distance/observer proximity to the proposed infrastructure (apply the principle of reduced impact over distance)
  - » Viewer incidence/viewer perception (identify areas with high viewer incidence and negative viewer perception)
  - » Landscape character/land use character (identify conflict areas in terms of existing and proposed land use)
  - » Visually sensitive features (scenic features or attractions)
  - » General visual quality of the affected area
  - » Visual absorption capacity of the natural vegetation
  - » Potential visual impact of lighting (after hours operations and security) of the proposed substation
  - » Potential mitigation measures
- » *Conclusions in terms of heritage impacts:*  
The proposed Tshwane Strengthening Project may impact on South Africa's 'national estate' which comprises a wide range of heritage resources, some of which may occur in Tshwane Strengthening Project Area (see Part 2, 'The National Estate'). Therefore, ultimately, a Phase I Heritage Impact Assessment (HIA) has to be undertaken for the Tshwane Strengthening Project as outlined in Section 38 of the National Heritage Resources Act (No 25 of 1999).

This Heritage Scoping report precedes the Phase I HIA study as it outlines the following:

- » The possible presence of certain types and ranges of heritage resources as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) (see Part 3) which may occur in the Project Area by means of consulting archaeological data bases, literary sources and earlier HIA studies of the Project Area (see Part 3, 'Methodology').
- » *Conclusions in terms of social impacts:*  
During the Scoping study, no issues emerged that can be considered as fatal flaws from a social perspective. However, there are areas of concern as outlined in this report and therefore careful consideration should be given to the enhancement and/or mitigation measures (that will be proposed during the next phase of the project), both during the construction as well as the operation phases of the project. This recommendation was based on the specialist's:
- » Understanding of the proposed project, including the alternative route alignments and the nature and timeframe of the proposed activities; and

- » Assessment of the affected communities, settlements and institutions in terms of:
  - \* **Demographic Processes:** the number and composition of the local population;
  - \* **Geographic Processes:** the land use pattern within the (affected) area; and
  - \* **Economic Processes:** the way in which people make a living and the economic activities within a specific (affected) area;
  - \* **Empowerment and Institutional Processes:** people's ability to become actively involved and influence the decision making process, and also the efficiency and operation of local authorities and other significant organisations); and
  - \* **Socio-Cultural Processes:** the way in which humans interact and relate to each other within the context of their environment, and how this interaction is guided by value systems.

## ***7.2. Recommendations for Further Investigations pertaining to Power Line Alternatives and Substations within the EIA Phase***

A number of issues requiring further study have been highlighted through the environmental scoping study. In order to 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 agricultural survey of the proposed Apollo-Verwoerdburg 2X 400 kV turn-in 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 lightening, 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.