

PLAN OF STUDY FOR ENVIRONMENTAL IMPACT ASSESSMENT

CHAPTER 8

A detailed description of the components which form part of the Tshwane Strengthening Project Phase 1 (Kwagga – Phoebus transmission power line), the Scoping process, as well as the issues identified and evaluated through the Scoping phase (to date) have been included in the Draft Scoping Report. This chapter of the report provides the context for the Plan of Study for the Environmental Impact Assessment (EIA).

This Plan of Study describes how the EIA for the proposed Tshwane Strengthening Project Phase 1 will proceed during the EIA phase. The EIA phase of the study includes detailed specialist studies for those potential impacts evaluated to be of significance. The major findings of the Scoping process (which includes inputs from authorities, the public, the proponent and the EIA specialist team) are used to inform this Plan of Study for EIA, together with the requirements of the NEMA EIA Regulations and associated guidelines.

It should be noted that no specific information requirements for the Scoping Report have been specified by DEAT, in terms of Regulation 29(1)(j) of the EIA Regulations, besides the general requirement to meet Regulations 29 and 30 of Government Notice No. R385 of 21 April 2006.

8.1. Aims of the EIA

The EIA will aim to achieve the following:

- » Provide an overall assessment of the social and biophysical environments affected by the proposed project
- » Assess potentially significant impacts associated with the nominated preferred transmission line corridors and the substation.
- » Identify and recommend appropriate mitigation measures for potentially significant environmental impacts
- » Undertake a fully inclusive public involvement process to ensure that I&AP are afforded the opportunity to participate, and that their issues and concerns are recorded

The EIA will address potential environmental impacts and benefits (direct, indirect and cumulative impacts) associated with all phases of the project including design, construction, and operation and decommissioning, and will aim to provide the environmental authorities with sufficient information in order to make an informed decision regarding the project.

8.2. Authority Consultation

Consultation with the regulating authorities has been undertaken throughout the Scoping process and will continue throughout the EIA process. On-going consultation will include the following:

- » Invitation to attend a site inspection and consultation meeting during the review period of the draft Scoping Report
- » Submission of a final Scoping Report following the 30-day public review period
- » Submission of a final EIA report following the 30-day public review period and
- » A consultation meeting with DEAT and GDACE in order to discuss the findings and conclusions of the EIA.

8.3. Selection of Least Impact/Preferred Alternatives to be assessed within the EIA

The following transmission power line corridor alternatives have been selected through the scoping process undertaken for further investigation within the EIA phase of the study:

- » Kwagga-Phoebus, 400Kv transmission lines from Kwagga to Phoebus substation, a distance of approximately 30km (refer to figure 1.2).

In addition, the potential environmental impacts associated with the proposed project component (Kwagga – Phoebus transmission power lines) will be investigated and evaluated in further detail within the EIA phase of the study.

8.4. Assessment of Potential Impacts and Recommendations regarding Mitigation Measures

In order to make clear recommendations regarding the preferred alternatives for the establishment of the proposed transmission power lines and the substations, more detailed studies are required to be undertaken within the EIA phase.

Based on the findings of the Draft Scoping Report, the following issues were identified as being of low significance, and therefore no further investigation within the EIA will be required:

- » Potential impacts on topography
- » Potential impacts on geology and soils

A summary of the issues which require further investigation within the EIA phase, as well as the proposed activities to be undertaken in order to assess the

significance of these potential impacts is provided within Table 8.1. The specialists involved in the EIA Phase are also reflected in Table 8.1. A Peer Review of the EIA process was undertaken by Dr. Pieter Aucamp.

Table 8.1: Summary of the issues which require further investigation within the EIA phase and activities to be undertaken in order to assess the significance of these potential impacts

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
Biodiversity	<p>In order to determine the impact of the proposed development on the biological environment, it is necessary to compiled baseline information of the area in the EIA phase of the project as follows:</p> <ul style="list-style-type: none"> » Survey environmentally sensitive areas in order to verify results of the GIS modelling and scoping assessment » 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: <ul style="list-style-type: none"> * the relationship of potential impacts to temporal scales * the relationship of potential impacts to spatial scales * 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 preferred route variants based on results of the ecological impact evaluation 	Riaan Robbeson of Bathusi Environmental Consulting
Avifauna	<ul style="list-style-type: none"> » During the EIA Phase, the identified impacts will be assessed in more detail for the overall preferred alternative corridor/s after integration of all specialist input. Particular emphasis will be placed on the impact of collision of birds with the earth wire, as this has been identified as potentially being of high significance. » Measures for the mitigation of identified significant impacts will also be recommended and detailed. » In addition to this the potential for negative impacts on the bird’s habitats through the construction of the proposed 2x 400kV loop-in transmission power lines will be investigated as well as the likelihood of disturbance of breeding pairs of Red-Data birds during the construction period. 	Luke Strugnell of EWT

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
Agricultural Potential	<ul style="list-style-type: none"> » Desktop determination of agricultural potential of the proposed power line routes through access to existing soils information for South Africa 	Garry Paterson of the ARC
Visual impacts	<p>The visual impact assessment within the EIA will address crucial issues related to the visibility of the proposed 400kV power lines. These issues or criteria will aim to quantify the actual visual impact and to identify areas of perceived visual impact. Specific areas of focus for the visual impact assessment of nominated preferred transmission line alternative should be on the visual exposure to and potential visual impact on individual residences, lodges (both private and commercial) and communities within close proximity of the proposed infrastructure. The visual impact study must take cognizance of the results and information generated by the social impact assessment study and the public participation process of this project.</p> <p>Other issues/criteria to be addressed by the visual impact assessment:</p> <ul style="list-style-type: none"> » 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 and/or suggested deviations from the proposed alignment 	Lourens du Plessis and Stephen Townshend of MetroGIS
Heritage sites	<ul style="list-style-type: none"> » Further studies are required during the EIA phase of the project to fully identify heritage resources and mitigation measures. The Phase I Heritage Impact Assessment study will provide a synthesis of the results achieved by the scoping study and will also describe the status quo of the Tshwane Strengthening Project Area (Apollo-Verwoerdburg and Kwagga-Phoebus) with regard to its pre-historical (archaeological), historical and cultural context. Depending on the types and ranges of heritage resources that may be discovered and the level of significance of these remains certain mitigation and management measures have to be applied to these resources, particularly if they 	Dr Julius Pistorius

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>are to be affected (destroyed, altered, removed) during the construction, operation or maintenance of the proposed power lines.</p> <ul style="list-style-type: none"> » Phase II studies include in-depth heritage studies and vary according to the types and ranges of heritage resources that may be affected. These studies include the documentation of sites dating from the Stone Age, Iron Age and the Historical Period by means of mapping, excavating, photographing and describing archaeological sites. Excavations of archaeological sites could be followed by laboratory work when archaeological collections have to be studied and analysed. Phase II work may also include the documenting of rock art, engravings or historical sites and dwellings; the sampling of archaeological sites or shipwrecks; extended excavations of archaeological sites; the exhumation and relocation of graves and graveyards; the collection or excavation of paleontological samples, etc. and may require the input of different types of specialists. 	
<p>Social Impact Assessment (including impacts on land use and livelihoods)</p>	<p>To fully assess the <i>potential demographic impacts as a result of socio-cultural change processes</i>, more information is needed on the following aspects:</p> <ul style="list-style-type: none"> » The construction process » The profile of a typical construction worker » Local employment creation and expectations » Local employment possibilities » Expected population influx » Origin of construction workers; and » A health profile of the local community (if available), including HIV prevalence. <p>In order to address these information gaps, the following studies are recommended:</p> <ul style="list-style-type: none"> » Conduct a comparative desktop study between Census 2001 and Community Survey data » Request construction and maintenance information from the project proponent » Interview the public participation consultant » Interview the project proponent, other companies and the municipalities of Tshwane and Kungwini » Conduct interviews/focus group discussions; and » Access crime statistics and interview members of the SAPS if necessary. <p>To fully assess the potential <i>impacts as a result of economic change processes</i>, more information</p>	<p>Nonka Byker of MasterQ Research</p>

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>is needed on the following aspects:</p> <ul style="list-style-type: none"> » Landowners' and visitors' perception on the effect of visible infrastructure at tourist destinations » Study area's contribution to the GDP » The drop of property values in South Africa as a result of the presence of power lines » The local employment opportunities that will be created, both directly and indirectly » The skills levels of people in the study area » Number of jobs available and skills levels of these » If available, the average period of employment and an outline of a typical salary package for skilled and unskilled labour » The input cost of the project » The size of farms and the economic activities on farms; and » Attitude toward housing construction workers in communities. <p>In order to address these information gaps, the following studies are recommended:</p> <ul style="list-style-type: none"> » Request the necessary information from the project proponent and interview them if necessary; and <p>To fully assess the potential impacts as a result of institutional and empowerment change processes, more information is needed on the following aspects:</p> <ul style="list-style-type: none"> » Obtain the issues register or issues report from the public participation consultant to determine the recurrent issues raised from the public's side and how these issues were addressed throughout the process. An analysis of these issues would indicate the risk for social mobilisation » Obtain information from the local municipality on the existing capacity to deliver municipal services and to determine the capacity for an additional demand on municipal services » Discuss issues and concerns regarding the negotiation process and how these issues should be addressed with the project proponent; and » Obtain and analyse information on any existing disaster management plans at similar installations. Also obtain information from the local municipalities (Tshwane Metro and Kungwini Local Municipality) on any existing emergency and health care services (both governmental as well as private) and determine their capacity to handle potential disasters. 	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>In order to address these information gaps, the following studies are recommended:</p> <ul style="list-style-type: none"> » Obtain the issues register or issues report from the public participation consultants to determine the recurrent issues raised from the public's side and how these issues were addressed throughout the process. An analysis of these issues would indicate the risk for social mobilisation » Obtain information from the local municipality on the existing capacity to deliver municipal services and to determine the capacity for an additional demand on municipal services » Discuss issues and concerns regarding the negotiation process and how these issues should be addressed with the project proponent; and » Obtain and analyse information on any existing disaster management plans at similar installations. Also obtain information from the local municipality on any existing emergency and health care services (both governmental as well as private) and determine their capacity to handle potential disasters. <p>To fully assess the potential impacts as a result of socio-cultural change processes, more information is needed on the following aspects:</p> <ul style="list-style-type: none"> » Request information from the project proponent on the construction process and the likely profile of a typical construction worker » Assess the visual assessment report; and » Interviews with municipal officials, non statutory security agencies like neighbourhood watch and other authority figures (such as the South African Police Service) to determine the current extent of social problems in the area and initiatives to combat them. <p>In order to address these information gaps, the following studies are recommended:</p> <ul style="list-style-type: none"> » Request information from the project proponent; and » Interviews with municipal officials and other authority figures (such as the South African Police Service). <p>To fully assess the potential impacts as a result of geographic change processes, more information is needed on the following aspects:</p> <ul style="list-style-type: none"> » The size and number of expected construction and operational vehicles and machinery as well as route(s) that will be used to gain access to the various sites and the construction activities on site 	

Issue	Activities to be undertaken in order to assess significance of impacts	Specialist
	<p>need to be determined. The routes of the proposed Apollo-Verwoerdburg 400kV turn-in transmission power lines and Kwagga-Phoebus 400kV lines as well as Phoebus substation should be determined. Information should be requested from the project proponent, and from the relevant specialist conducting the traffic impact assessment, if any;</p> <ul style="list-style-type: none"> » Planned developments for the area in terms of tourism, infrastructure and agriculture need to be determined. A desktop study of the IDP and SDF of the affected municipalities in terms of future developments. If additional information is required other than that contained in the IDP/SDF, conduct interview(s) with relevant town planners and tourism bodies as well as other relevant reports. » The location of landing strips, centre pivots and dwellings need to be confirmed, as well as the land use of affected farm portions. Participant Community Appraisal should be executed, including one on one interviews and/or focus group discussions with affected land owners (black and white). <p>In order to address these information gaps, the following studies are recommended:</p> <ul style="list-style-type: none"> » Request information from the project proponent, and obtain information from the relevant specialist conducting the traffic impact assessment, if any » Scrutinise the IDP and SDF of the affected district and local municipalities. If additional information is required other than that contained in the IDP/SDF, conduct interview(s) with relevant town planners and tourism bodies; and » Identify and assess other relevant studies. 	

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
- » This information is required to be used as part of the planning and design phase of the Tshwane Strengthening project

8.5. Methodology for the Assessment of Potential Impacts

Direct, indirect and cumulative impacts of the above issues, as well as all other issues identified will be assessed in terms of the following criteria:

- » The **nature**, which shall include a description of what causes the effect, what will be affected and how it will be affected.
- » The **extent**, wherein it will be indicated whether the impact will be local (limited to the immediate area or site of development) or regional, and a value between 1 and 5 will be assigned as appropriate (with 1 being low and 5 being high):
- » The **duration**, wherein it will be indicated whether:
 - * the lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
 - * the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
 - * medium-term (5–15 years) – assigned a score of 3;
 - * long term (> 15 years) - assigned a score of 4; or
 - * permanent - assigned a score of 5;
- » The **magnitude**, quantified on a scale from 0-10, where 0 is small and will have no effect on the environment, 2 is minor and will not result in an impact on processes, 4 is low and will cause a slight impact on processes, 6 is moderate and will result in processes continuing but in a modified way, 8 is high (processes are altered to the extent that they temporarily cease), and 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- » The **probability of occurrence**, which shall describe the likelihood of the impact actually occurring. Probability will be estimated on a scale of 1–5, where 1 is very improbable (probably will not happen), 2 is improbable (some possibility, but low likelihood), 3 is probable (distinct possibility), 4 is highly probable (most likely) and 5 is definite (impact will occur regardless of any prevention measures).
- » the **significance**, which shall be determined through a synthesis of the characteristics described above and can be assessed as low, medium or high; and
- » the **status**, which will be described as either positive, negative or neutral.
- » the degree to which the impact can be reversed.

- » the degree to which the impact may cause irreplaceable loss of resources.
- » the *degree* to which the impact can be *mitigated*.

The **significance** is calculated by combining the criteria in the following formula:

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

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- » < 30 points: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- » 30-60 points: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- » > 60 points: High (i.e. where the impact must have an influence on the decision process to develop in the area).

8.6. Integration and Preparation of the EIA Report

The results of the specialist studies and other available information will be integrated and synthesised by the Savannah Environmental project team. An EIA report will be compiled, and will include:

- » detailed description of the proposed activity
- » a description of the property(ies) on which the activity is to be undertaken and the location of the activity on the property(ies)
- » a description of the environment that may be affected by the activity and the manner in which the physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity
- » details of the public participation process conducted, including:
 - * steps undertaken in accordance with the plan of study for EIA;
 - * a list of persons, organisations and organs of state that were registered as interested and affected parties;
 - * a summary of comments received from, and a summary of issues raised by registered I&APs, the date of receipt of these comments and the response to those comments; and
 - * copies of any representations, objections and comments received from registered I&APs

- » a description of the need and desirability of the proposed project and identified potential alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives may have on the environment and the community that may be affected by the activity
- » an indication of the methodology used in determining the significance of potential environmental impacts
- » a description and comparative assessment of all alternatives identified during the environmental impact assessment process
- » a summary of the findings and recommendations of specialist reports
- » a description of all environmental issues that were identified during the environmental impact assessment process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures
- » an assessment of each identified potentially significant impact
- » a description of any assumptions, uncertainties and gaps in knowledge
- » an environmental impact statement which contains:
 - * a summary of the key findings of the environmental impact assessment; and
 - * a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives
- » a draft environmental management plan
- » copies of specialist reports

The draft EIA Report will be released for a 30-day Public Review period. The comments received from I&APs will be captured within a Comments and Response Report, which will be included within the final EIA Report, for submission to the Authorities for Decision-making.

8.7. Public Participation Process

A Public Participation Process will be undertaken by **Savannah Environmental**. The key objective of public participation during an EIA is to assist I&APs to identify issues of concern or highlight positive aspects of the project and to comment on the findings of the EIA process.

Through experience in social development facilitation and community education and organising, as well as from feedback obtained during the Scoping Phase a range of methods have been identified which will be used during the EIA phase to enable consultation, awareness raising, collaboration and empowerment. These are detailed in Table 8.2.

Table 8.2: Summary of the strategy on how the various groupings of I&APs would be engaged and communicated to:

Stakeholder Grouping	Communication and Involvement Strategy
Landowners / residents	<ul style="list-style-type: none"> • Advertisements

Stakeholder Grouping	Communication and Involvement Strategy
	<ul style="list-style-type: none"> • One-on-one consultation (where necessary) • Focused consultation sessions • Public meetings • Written reports
Governmental departments (National, Provincial, and Local authorities)	<ul style="list-style-type: none"> • Focused consultation sessions • Stakeholder workshop • Written reports
General public (interested parties)	<ul style="list-style-type: none"> • Advertisements • Public meetings • Written reports
Organisations (e.g. SAHRA, NGOs. Agricultural Unions, Magaliesberg Protection Association, Industry, etc.)	<ul style="list-style-type: none"> • Advertisements • Focused consultation sessions • Stakeholder workshop • Written reports

» *Focused communication and consultation sessions*

Focused consultation sessions will include telephonic interviews, one-on-one interviews, focus group meetings, stakeholder workshops and public meetings. The following provides a broad outline of what is envisaged with each focused consultation session during the EIA phase.

Table 8.3: Focused communication and consultation sessions to be undertaken in the EIA Phase of the process

Sessions	Aim of Communication	I&APs Involved
One-on-one consultations	<ul style="list-style-type: none"> • Interaction on a one-on-one basis • Provide detailed technical information and to discuss issues in detail • Clarify any misunderstandings • Assist I&APs to formulate their comments in a manner that will ensure that they can be afforded due attention in the EIA process • Follow up on issues raised • Obtain information as part of the research and assessment process 	<ul style="list-style-type: none"> • Affected landowners • Targeted I&APs
Focus group meetings	<ul style="list-style-type: none"> • Assist I&APs to submit additional comments regarding the proposed project for consideration within the EIA • Follow up on additional issues raised • Obtain information as part of the assessment process 	<ul style="list-style-type: none"> • Affected landowners • Groupings of I&APs with similar interests in project • Organised groupings e.g. NGOs
Stakeholder	<ul style="list-style-type: none"> • Provide detailed information regarding the 	<ul style="list-style-type: none"> • Key

Sessions	Aim of Communication	I&APs Involved
workshops	EIA <ul style="list-style-type: none"> • Clarify any misunderstandings • Provide I&APs the opportunity to comment further on the EIA 	stakeholders, e.g. government department, NGOs
Public meeting	<ul style="list-style-type: none"> • Provide detailed information of the findings of the EIA • Provide I&APs the opportunity to comment on the findings of the EIA Report 	<ul style="list-style-type: none"> • All I&APs

The draft EIA report will be made available for public review for a 30-day period prior to finalisation and submission to DEAT for review and decision-making. In order to provide an overview of the findings of the EIA process and facilitate comments, a public meeting and key stakeholder workshop will be held during this Public Review period.

8.8. Key Milestones of the programme for the EIA

The envisaged key milestones of the programme for the Environmental Impact Assessment (EIA) phase of the project are outlined in the Table 8.4 below.

Table 8.4: Key milestones for EIA phase

Key Milestone Activities	Proposed completion date ¹
Finalisation of Scoping Report	Late-July 2009
Authority acceptance of the Scoping Report and Plan of Study to undertake the EIA	Mid-August 2009
Undertake detailed specialist studies and Public Participation process	October 2009 – November 2009
Public review of draft EIA Report and draft EMP	January 2010 ²
Make draft EIA Report and draft EMP available to the public, stakeholders and authorities	Mid-February 2010

¹ Indicative dates only

² School Holidays – 12 December 2009 to 12 January 2010