

SOCIAL IMPACT ASSESSMENT
As part of the
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
for the
PROPOSED TSHWANE STRENGTHENING PROJECT PHASE 1:

DEA Ref. No. 12/12/20/1471: *The construction and operation of a new 400kV transmission power line between the existing Kwagga substation and the proposed new Phoebus substation*

&

DEA Ref. No. 12/12/20/1524: *The upgrade of the existing Kwagga substation and the establishment and operation of the new Phoebus substation adjacent to the existing Hangklip substation*

DRAFT SIA REPORT



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EXPERIENCE RECORD

This report was compiled by **Ms Nonka Byker** of **MasterQ Research**.

Ms Byker holds a B.Psych (Adult Mental Health) from the University of Pretoria and is a social impact assessment specialist with approximately 3 years experience in this field. She specialises in the assessment of potential social impacts, which includes the collection and analysis of data and superimposing a proposed project on a baseline social profile to determine the potential social impacts from which mitigation measures can be developed. In total, she has approximately 10 years experience in the social development field, of which 7 years were spent as a public participation consultant. Ms Byker is registered with the Health Professions Council of South Africa (HPCSA) and is a member of the International Association for Impact Assessment South African Affiliate (IAIASa).

Some of the linear Social Impact Assessments that Ms Byker has conducted on behalf of MasterQ Research included, amongst others, the following projects:

- Basic Social Assessment for the proposed Open Cycle Gas Turbine (OCGT) demonstration plant in the Amersfoort area (Client: Eskom Generation, Project Manager: Bohlweki-SSI Environmental).
- Social Impact Assessment for the proposed Trekkopje Mine access road (Client: Areva Resources, Project Manager: Turgis Consulting).
- Social Impact Assessment for the proposed Johannesburg East Strengthening Project, Volumes 1 and 2 (Client: Eskom Generation/Transmission, Project Manager: Bohlweki-SSI Environmental).
- Social Impact Assessment for the establishment of a Coal Fired Power Station, associated infrastructure as well as the associated Transmission Lines and Substation in the Musina area, Limpopo Province (Client: Mulilo Power, Project Manager: Arcus Gibb).
- Social Impact Assessment for the proposed liquid fuels transportation infrastructure from the Milnerton refinery area to the Ankerlig power station in the Atlantis Industrial area (Client: Eskom Generation, Project Manager: Bohlweki-SSI Environmental).
- Social Impact Assessment for the proposed Bravo Integration Project, Volumes 1-5 (Client: Eskom Transmission, Project Manager: Cymbian Socio-Environmental Consultants).
- Social Impact Assessment for the proposed Steelpoort Integration Project (Client: Eskom Generation/Transmission, Project Manager: Savannah Environmental)

DECLARATION OF INDEPENDENCE

The Independent Social Specialist

I, **J.W. BYKER**, declare that I –

- act as the Independent Social Specialist in this application for the Tshwane Strengthening Project;
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2006;
- have and will not have any vested interest in the proposed activity proceeding;
- have no, and will not engage in, conflicting interests in the undertaking of the activity; and
- will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not.



Signature of the Specialist

MasterQ Research (Pty) Ltd.

Name of company

2009-12-08

Date

EXECUTIVE SUMMARY

The Tshwane Metropolitan Municipality applied to Eskom Transmission and Distribution for new supply points and a step load increase. Together these three parties agreed on a 20-year load forecast for the City of Tshwane and concluded that the Eskom transmission networks supplying the municipal area needs to be strengthened.

The proposed Tshwane Strengthening Project will be considered within the Environmental Impact Assessment (EIA) studies. Three separate applications have been lodged with the Department of Water and Environmental Affairs (DWEA), as follows:

- **Tshwane Strengthening Volume 1 (DEA Ref. No. 12/12/20/1470):** The upgrade of the existing Verwoerdburg substation and the construction and operation of two (2) short distance 400kV transmission power lines (one turn-in and one turn-out line running in parallel) from the existing Apollo-Pluto transmission power line to the Verwoerdburg substation extension;
- **Tshwane Strengthening Volume 2 (DEA Ref. No. 12/12/20/1471):** The construction and operation of a new 400kV transmission power line between the existing Kwagga substation and the proposed new Phoebus substation; and
- **Tshwane Strengthening Volume 3 (DEA Ref. No. 12/12/20/1524):** The upgrade of the existing Kwagga substation and the construction and operation of the Phoebus substation.

This particular report focuses on **Tshwane Strengthening Volume 2 & Volume 3 (DEA Ref. Nos. 12/12/20/1471 and 12/12/20/1524)** and details the results of the Social Impact Assessment (SIA) specialist study carried out by MasterQ Research as part of the overall EIA process managed by Savannah Environmental.

The infrastructure development associated with the expansion of the Kwagga substation, the construction and operation of the new Phoebus substation, and the proposed new 400kV transmission power line, are all located within the City of Tshwane of the Gauteng Province. The Kwagga substation and the first part of the transmission power line are located within the metro's Central Western Region, after which it crosses into the Northwest Region just south of the N4.

The change processes that were assessed in this SIA included the following:

- **Geographic processes** refer to the processes that affect the land uses of the local area.
- **Demographic processes** refer to the movement and structure of the local community.
- **Economic processes** refer to the economic activities in the local society, including the peoples' way of sustaining their livelihoods, and to a lesser extent, the macro-economic factors that affected the local community as a whole.

- **Institution and Legal processes** refer to the processes that affect service delivery to the local area.
- **Socio-cultural processes** refer to the processes that affect the local culture of an affected area, i.e. the way in which the local community live (however, sometimes different cultural groups occupy the same geographical area and these groups are seldom homogenous).

Geographic Processes

The presence of a larger substation (Kwagga) and/or a new substation (Phoebus) could potentially set a precedent for further land use changes if additional transmission lines have to feed into the extended/new substation in future. Temporary land use changes can also be expected during construction due to the activities associated with the construction process. The proposed 400kV transmission line will be operated within a servitude of 55m in width. As the servitude gives Eskom right of way on that particular part of the property, the landowner forfeits certain land use rights within the servitude and has to comply with the regulations set forth by Eskom to ensure the safe operation of the lines. Depending on the current land use and the servitude width, this loss of land can affect a landowner's ability to sustain his/her livelihood. The presence of a transmission line can set a precedent for further land use changes if additional transmission lines are required in the same area in future, as it is preferential to keep infrastructure of a similar nature within one 'spoilt' corridor as opposed to wide-spread throughout a 'green fields' area. Temporary land use changes can also be expected during construction due to the activities associated with the construction process.

Demographic Processes

A total of 731 construction workers will enter the area over the lifespan of the construction phase. Important to remember is that there will be three separate construction teams: one team will be working on the Kwagga substation, one team on the Phoebus substation, and one team on the transmission power line. Also bear in mind that the construction processes follow a phased approach so that the full construction team component will never be on site simultaneously. The most people that will be on site at the same time is during the peak of construction, when approximately 250 construction team members will be active on the project, of which 80 will be at Kwagga, 80 at Phoebus and 70 on the transmission line. The remaining 20 people make up the management team consisting of site supervisors, engineers and Eskom staff who will commute between the various sites. Job seekers might also enter the area, but usually the number is restricted to individuals.

Generally speaking, accelerated population growth creates unexpected demands on local resources. However, this will not be the case with the current project, as the size of the construction team is too small and their time spent in the area too limited to have any

real effect on the local population size. Individual job seekers will also not contribute to accelerated population growth.

Economic Processes

The construction and maintenance of the proposed substations and transmission line will create an estimated 731 job opportunities across the lifespan of the construction process. Employment enhances economic equities, even if it is over the short-term. Members of vulnerable groups will have equal opportunity to apply for local positions, but such persons often do not apply as they are 'trapped' within their traditional role of housekeeper, caregiver, etc. A change in occupational opportunities is an indirect result of the project as auxiliary services are required during the construction phase, such as shelter, food, etc. A reliable electricity supply stimulates economic growth. Employment first and foremost has an economic impact on the individual and his/her nuclear family. In addition to securing an income, employment (direct formal or indirect informal) also creates a sense of self-worth and offers the individual the opportunity to extend his/her skills base and to gain some experience – this makes people more 'marketable' for future jobs. On a macro scale, the availability of electricity enhances economic growth, which creates more job opportunities with a positive economic impact. On the whole, negative economic impacts will be confined to single landowners.

Institutional & Legal Processes

Construction workers require housing, either within the community or within a construction camp. Municipal services such as water, sanitation, and waste removal will be required at the construction camp. Existing services can be used if construction workers are housed in the local community. Due to the temporary nature of a construction camp, a number of social problems are associated with a camp, including prostitution, unhygienic living conditions, alcohol abuse, and conflict. Most of the problems will be negated if construction workers are housed in the community.

Socio-Cultural Processes

The arrival of people who are not from the area can lead to conflict if there is dissimilarity in social practices and if such differences are not respected. Family structures can be altered where the breadwinner is absent for prolonged periods of time and in cases of HIV transmission, the family structure can further be altered. The presence the transmission line can change the face of the area where there used to be no infrastructure, and therefore has the potential to alter the way in which people relate to each other and their environment, affecting their sense of place. It is unlikely that the upgrade of the Kwagga substation and the presence of the new Phoebus substation will

bring about a change in sense of place, as it is located next to infrastructure of a similar nature.

Conclusions and Recommendations

As could be expected, the construction phase is characterised by a number of negative social impacts, which is mainly due to the nature of the activities that take place during this phase. Although the expected social impacts associated with the construction phase are mostly negative across all the change processes, these impacts are for the most part only temporary in nature and as such, it is expected to only last over the construction period.

Even though all of the identified social impacts can be mitigated or their positive impacts enhanced successfully, it can only be done if Eskom, or its appointed contractor(s), commit to the responsibility of ensuring that the level of disturbance brought about to the social environment by the negative aspects of the project, is minimised as far as possible.

Overall, based on the conclusions and findings of this report, the expansion of the Kwagga substation, the construction and operation of the new Phoebus substation, and the proposed transmission line do not pose any social impacts that is deemed irreversible, fatally flawed, or severely detrimental to the social environment. However, this finding is subject to the implementation of, and adherence to, the identified mitigation measures contained in this report, and as recommended for inclusion in the EMP. In addition, the social specialist recommends the following:

- Due to the unavailability of pertinent information during the time of the study, the SIA report has to be revised and updated as soon as such information becomes available to ensure that factual information is considered that reflects an accurate assessment of potential social impacts.
- Where possible, accommodate workers in private homes in the surrounding community.
- Ensure that social issues identified during the EIA phase are addressed during construction. This could be done by engaging social specialists where necessary or by ensuring that ECOs used during construction have the necessary knowledge and skills to identify social problems and address these when necessary. Guidelines on managing possible social changes and impacts could be developed for this purpose.
- Always inform landowners on any construction activity to start on their property. Prepare them on the number of people that will be on the property and on the activities they will engage in.

- Ensure that Eskom employees are aware of their responsibility in terms of Eskom's relationship with landowners and communities surrounding power lines. Implement an awareness drive to relevant sections to focus on respect, adequate communication and the 'good neighbour principle.'
- Incorporate all mitigation measures in the SIA that are relevant to the construction phase in the EMP to ensure these are adhered to by Eskom and the contractor.

1. INTRODUCTION

The City of Tshwane Metropolitan Municipality applied to Eskom Transmission and Distribution for new supply points and a step load increase. Together these three parties agreed on a 20-year load forecast for the City of Tshwane and concluded that the Eskom transmission networks supplying the municipal area needs to be strengthened.

In accordance with the National Environmental Management Act (Act No. 107 of 1998, generally referred to as NEMA), all of the components that fall under the proposed Tshwane Strengthening Project (see below) are listed activities and therefore subject to an Environmental Impact Assessment (EIA) process and environmental authorisation before construction can commence. As part of the EIA process, the Environmental Assessment Practitioner (EAP), Savannah Environmental, lodged three separate applications with the Department of Water and Environmental Affairs (DWEA). Each of the applications refer to a different set of infrastructural developments, which together form the Tshwane Strengthening Project (phase 1). Every application requires its own set of EIA reports and as such, every one of the applications has to undergo its own EIA process. The three applications that make up the Tshwane Strengthening Project are as follows:

- **Tshwane Strengthening Volume 1 (DEA Ref. No. 12/12/20/1470):** The upgrade of the existing Verwoerdburg substation and the construction and operation of two (2) short distance 400kV transmission power lines (one turn-in and one turn-out line running in parallel) from the existing Apollo-Pluto transmission power line to the Verwoerdburg substation extension and vice versa;
- **Tshwane Strengthening 1.2 (DEA Ref. No. 12/12/20/1471):** The construction and operation of a new 400kV transmission power line between the existing Kwagga substation and the proposed new Phoebus substation; and
- **Tshwane Strengthening 1.3 (DEA Ref. No. 12/12/20/1524):** The upgrade of the existing Kwagga substation and the construction and operation of the new Phoebus substation.

This particular report focuses on **Tshwane Strengthening Volume 1 & Volume 3 (DEA Ref. Nos. 12/12/20/1471 and 12/12/20/1524)** and details the results of the Social Impact Assessment (SIA) specialist study carried out by MasterQ Research as part of the overall EIA process managed by Savannah Environmental. A separate SIA Report was compiled for the Tshwane Strengthening 1.1 application. An EIA process normally consists of the following components:

- Scoping study and Scoping report (completed in June 2009);
- Impact Assessment and Draft EIA report (current phase);
- Final EIA report and Draft Environmental Management Plan (EMP); and
- Environmental authorisation process.

The SIA documented in this report builds on the SIA Scoping Report (SIASR) that was compiled as part of the Scoping Phase of the EIA process, namely SIASR *Volume 2*.

This report is structured as follows:

- **Section 1** (this section): **Introduction**, consisting of the following subsections:
 - 1.1 Definition of a Social Impact Assessment;
 - 1.2 Objectives of the study;
 - 1.3 Approach and Methodology;
 - 1.4 Preliminary findings of the SIA Scoping report;
 - 1.5 Summary of Issues and Concerns; and
 - 1.6 Limitations and assumptions of the study.

- **Section 2: Project Background**, consisting of the following subsections:
 - 2.1 Project overview;
 - 2.2 General overview of the study area;
 - 2.3 Negotiation process; and
 - 2.4 Construction processes.

- **Section 3: Social Change Processes and Impact Assessment**, consisting of the following subsections:
 - 3.1 Geographic Processes;
 - 3.2 Demographic Processes;
 - 3.3 Economic Processes;
 - 3.4 Institutional and Empowerment Processes;
 - 3.5 Socio-Cultural Processes; and
 - 3.6 Biophysical Processes.

- **Section 4: Conclusions and Recommendations**, consisting of the following subsections:
 - 4.1 Summary of expected impacts; and
 - 4.2 Recommendations.

- **Section 5: Social mitigation/enhancement measures** for inclusion in the EMP

- **Section 6: Sources Consulted**

1.1 Key Definitions

The definition of a SIA as defined by Vanclay (2002) gives an understanding of the backdrop against which this SIA was conducted. According to this definition, a **social impact assessment** is *“the process of analyzing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programmes, plans and projects) and any social change*

processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment."

According to Van Schooten, Vanclay and Slootweg (2003:78-79), "**Social change processes** are set in motion by project activities or policies. They take place independently of the social context. Resettlement, for example, is a **social change process**, set in motion by, inter alia, the activity of land clearing... **social change processes** can lead to several other processes. Depending on the characteristics of the local social setting and mitigation process that are put in place, **social change process** can lead to **social impacts**." Furthermore, "The way in which the **social change processes** are perceived, given meaning or value depend on the social context in which various societal groups act. Some sectors of society, or groups in society, are able to adapt quickly and exploit the opportunities of a new situation. Others (for example, various vulnerable groups) are less able to adapt and will bear most of the negative consequences of change. **Social impacts**, therefore, are implicitly context-dependent."

1.2 Objectives of the Study

The overall business objective of the SIA is to identify and assess the social impacts that are likely to occur in the human environment due to the proposed upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the construction and the proposed construction and operation of a new 400kV transmission power line between these two substations. This SIA Report will inform the EIA Report that is, after public review, submitted to the competent authority (in this case, DWEA) who in turn will scrutinize the documents to decide whether or not to grant environmental authorisation, and if so, subject to which conditions.

In support of the overall business objective, a number of secondary objectives were identified, namely:

- Undertake the detailed studies that were identified during the Scoping Phase, thereby refining the assessment of the probable impacts of the project on the social environment;
- Describe the expected social change processes (see section 3) and identify and describe the associated social impacts associated with the change process;
- Rate the identified impacts along the specific significance rating scales (see section 1.3.1) to obtain an indication of the magnitude of each of the identified impacts prior to the implementation of mitigation or augmentation measures;
- Based on the magnitude of the impact, identify mitigation measures that serve to either prevent or minimise the effect of negative impacts, and augmentation measures that serve to sanction or maximise positive impacts;
- Rerate the identified impacts along the same rating scale to determine the effectiveness of the mitigation / augmentation measures in either preventing / minimising negative impacts or in sanctioning / maximising positive impacts;

- Upon completion of the study, identify and describe any shortcomings (limitations) of the study, and list any assumptions that was made during the course of the study and the reason(s) why it was necessary to make such an assumption; and
- Form conclusions based on the result of the detailed assessments, and based on these; make specific recommendations on the way forward given the social impacts associated with the various phases of the project and the project itself.

1.3 Approach and Methodology

Primary and secondary data sources were utilised to inform the study and in aid of the objectives of the study. Primary data sources included the following:

- An orientation site visit with the Eskom surveyors on 12 and 13 May 2009;
- A desktop study through the use of Google Earth to identify social sensitive points around the substation sites and along the transmission line route alternatives, followed by a site visit on 3 December 2009 to verify and identify further points.

Secondary data collection methods mostly centred on a desktop study, in which the following documents were scrutinised:

- Locality maps;
- A desktop aerial study of the affected area through the use of Google Earth (2007);
- The Tshwane Strengthening Comments and Responses report (Scoping phase);
- The Integrated Development Plans (IDP) of the City of Tshwane Metropolitan Municipality (CoT);
- The Spatial Development Framework (SDF) of the (CoT);
- The Gauteng Province's Growth and Development Strategy (GPGDS).

Information relevant to the proposed upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the construction and operation of the new 400kV transmission power line between these two points, specifically with regards to the setting of these developments, was drawn from these sources. Where applicable, the different frameworks of the various project phases, i.e. pre-construction, construction, operation and maintenance, and decommissioning, was also considered.

1.3.1 Significance Rating Scales

To determine the magnitude of an identified and/or expected social impact, the SIA considered the nature, extent, duration, intensity/severity (referred to as 'magnitude' in the scales below), reversibility, and probability of the impact on the social environment (as per the requirements of the EIA Regulations). Every social change process and its associated impact(s) were further fleshed out according to the various project stages.

The criteria and value applied to the various aspects of the significance rating scale is as follows:

The **nature** of the expected impact, which is a description of what causes the effect, what will be affected, and how it will be affected.

The **extent** of the impact refers to the perimeter of the affected area, classified as:

Site	1	The impact is confined to the construction site and its immediate surroundings (within a radius of 2km from the site).
Local	2	The impact extends further than the construction site and its immediate surroundings, but is mostly confined to neighbouring area(s).
Regional	3	The impact extends further than the neighbouring area(s), but is still confined to the province.
National	4	The impact extends further than the province, but is still confined to South Africa.
International	5	The impact extends further than South Africa's borders.

The **duration** refers to the lifetime of the impact, classified as:

Very Short	1	The impact will last for a very short duration (less than 1 year).
Short	2	The impact will last for a short duration (more than one year, but less than 5).
Medium term	3	The impact will remain over the medium term (more than 5 years, but less than 15).
Long term	4	The impact will remain over a long term (more than 15 years).
Permanent	5	The impact is irreversible and will cause a lasting change.

The **magnitude** of the impact refers to the weight that the impact carries, classified as:

None	0	The impact will have no effect on the receiving (social) environment.
Minor	2	The degree to which the impact affects the natural, cultural, and social processes of the area is so small that it can be regarded as insignificant.
Low	4	The impact will have little effect on the natural, cultural, and social processes of the area.
Moderate	6	The impact will alter the natural, cultural and social process to some extent, but the process show some resilience and are able to adapt and continue in its altered state.
High	8	The impact will alter the natural, cultural and social process to such an extent that the processes will temporarily cease.
Very High	10	The impact will alter the natural, cultural and social process to

such an extent that the processes will permanently cease.

The **reversibility** of the impact refers to the likelihood that the impact can be cancelled out or turned around, classified as:

Reversible	1	The impacted area will mostly restore spontaneously without too much effort or input.
Recoverable	3	Direct intervention is required to alter the effect of the impact.
Irreversible	5	The impact cannot be undone, even when mitigation measures are implemented.

The **probability** of the impact refers to the likelihood or the chances that the impact will occur, and was classified as follows:

Very Improbable	1	It is very unlikely that the impact will occur.
Improbable	2	It is unlikely that the impact will occur.
Probable	3	It is likely that the impact will occur.
Highly probable	4	It is very likely that the impact will occur.
Definite	5	The impact will occur regardless of the implementation of any prevention strategies.

The **significance** of an impact is then determined through a synthesis of the characteristics mentioned above, calculated by using the formula $S=(E+D+M+R)*P$, where:

S = Significance weighting;

E = Extent;

D = Duration;

M = Magnitude;

R = Reversibility; and

P = Probability.

The significance weighting is then classified as follows:

Low	< 30 points	The impact would not have a direct influence on the decision to develop the area.
Medium	30-60 points	The impact could influence the decision to develop the area unless it is effectively mitigated.
High	> 60 points	The impact must have an influence on the decision to develop the area.

The **status** of the impact refers to the effect of the potential impact on the receiving environment and is classified as:

- Positive** + Beneficial impact
Negative - Deleterious or adverse impact
Neutral N Impact is neither beneficial nor adverse

1.4 Preliminary Findings of the SIA Scoping Report

The social change processes that were identified and described in terms of its baseline profile during the Scoping Phase, together with the anticipated social impacts associated with a given change process, are as per Table 1. Please note that this table is a only intended to provide a brief summary of the expected change processes. Ideally, this subsection should be read in conjunction with the SIA Scoping Report (June 2009) to gain a better contextual understanding of these change process and expected impacts.

Table 1: Summary of the SIA Scoping Report Social Change Processes

Process	Expected Change Processes	Expected Impact(s)
Geographic	Locals' access to environmental resources are hindered or changed.	None (it is not foreseen that any of the substations or the transmission power line will impede on people's access to natural resources such as water, wood, etc.)
	Change in access to resources that sustain livelihoods.	The Scoping report identified the temporary and permanent loss of land due to the construction process and the permanent servitude. Both these aspects are associated with the transmission power line. In terms of the substation sites, it is not foreseen that these developments would affect anyone's livelihood.
	Land acquisition and disposal, including availability of land.	Permanent servitude of 55m for 400kV transmission power line will restrict access to that portion of land, although certain land uses will still be permitted within the servitude. No impact is expected on the substations, as Eskom is the legal landowner of both substation sites.
		Contrary to the findings of the SIASR, the developments might set a precedent for land use change, as it is preferential to keep infrastructure of this nature within a single corridor to curb further land disturbances – extensions required in future might then be along the transmission line or next to the substations.
	As far as could be determined, there are no land claims in the area and therefore no impacts are expected in this regard.	
Demographic	Population change	Influx of construction and maintenance workers might lead to a temporary change in the number and composition of the local community, and impact on economy, health, safety, and social well-being.
	In-migration of unemployed work seekers	Influx of job seekers that might lead to a change in the number and composition of the local community, and impact on economy, health, safety, and social well-being.

Process	Expected Change Processes	Expected Impact(s)
	Relocation or displacement of individuals or families	Relocation of households will affect such households' way of life and the standard of life that they have grown accustomed to.
Economic	Increase in division between rich and poor	None (it is not foreseen that the development will exacerbate class inequalities).
	Enhanced/reinforced economic equities	Labour might be sourced from the local area thereby creating job and income opportunities enhancing economic opportunities in the area (positive economic impact). Depending on the skills levels required, it is believed that different skills levels will have differently structured salary packages, thereby creating lower income to higher income opportunities. It is believed that most of the employment opportunities would be restricted to the construction phase.
	Change in the commercial / industrial focus of the community	None (it is not foreseen that the local community's income generating focus will change as a result of the development).
	Change in employment equity of vulnerable groups	Where possible, job opportunities will be provided to local community members, which could include vulnerable groups such as women. Employment can increase vulnerable individuals' functional skills levels, which in turn can have a positive impact on their self-confidence and self-esteem, thereby reducing their dependency on others or the system. Unfortunately, the required skills might not be available in the local area, which means that the appropriate skills might have to be 'imported', thereby causing a reduction in the job and income opportunities available to local residents.
	Change in occupational opportunities	A marginal increase in employment opportunities is expected, nonetheless creating a positive economic impact on affected local households. Employment opportunities will range from unskilled to highly skilled positions.
	Land acquisition and disposal, including cost of land	Landowners affected by the transmission line servitude will receive compensation for the use of that strip of land for the servitude. The presence of a servitude might reduce the value of the property. No impact is foreseen in terms of the substations, as the land is owned by Eskom.
Institutional and Empowerment	Change in / disruption of power relationships	Some landowners might not have experience of the negotiation process. A breakdown in the negotiation process in terms of land acquisition can delay the project and result in an economic impact on both the landowner as well as on Eskom.
	Exclusivity	None (the development will not contribute to a culture of exclusivity).
	Inequality	None (the development will not augment unequal access to resources or opportunities).
	Change in community	The development will not change any aspect of

Process	Expected Change Processes	Expected Impact(s)
	infrastructure	community infrastructure (such as an increased demand for schools). However, an additional demand on municipal services, such as water, electricity, and sewerage will be created on a limited scale and could affect construction workers and the immediate local area's health and safety if such services are not available or inadequate.
	Change in housing needs / demands	Due to the skills levels required, it is likely that the majority of the construction workforce will come from outside the area. They will be in need of accommodation, which can include either a construction camp or housing within the local community. Both options have varying impacts, which will be discussed and assessed in detail in this document.
Socio-Cultural	Disruption of social networks	None (the development will not affect existing social networks).
	Disruption in daily living and movement patterns	Where the transmission power line impinges on pedestrian movement, it is expected that the impact will be confined to the construction phase and limited to a few individuals. No disruption is expected on the substation sites.
	Dissimilarity in social practices	If construction workers have dissimilar social practices than local residents, conflict can be expected, affecting social cohesion.
	Alteration in family structure	Migratory work alters family structures due to prolonged absences from the family. Illnesses such as HIV/AIDS can also bring about a change in the traditional family structure, e.g. children-headed households. For some families this can mean the loss of income, increasing their vulnerability.
	Conflict	If social integration between newcomers and residents is hindered, it can lead to conflict, which in turn delays the construction process and has economic implications for the developer. Where conflict exists, it increases the risk for social mobilization, with resultant delays on the project and an economic impact on both the project proponent and project opponent.
	Safety and crime impacts	Presence of construction workers and job seekers leads people to believe that there will be an increase in crime, which affects surrounding landowners' sense of safety and security.
	Change in sense of place	In terms of the substations, the areas are already characterised by infrastructure of a similar nature, i.e. the existing Kwagga and Hangklip substations. These areas are therefore already regarded as 'spoilt'. Parts of the transmission power line route alternatives follow existing transmission lines. Where it traverses 'green fields', a change in sense of place can be expected.
	Implications for social history	None (no changes are foreseen to the local community's social history,).

Some of the expected social change processes that were identified during the Scoping phase (as tabled above), have been altered to some extent during the Impact

Assessment phase as more detailed information was available during this phase to inform a more accurate assessment. In other instances, additional change processes were identified supplementary to the ones tabled above, e.g. how the change in traffic patterns and volumes could affect (access) roads that are also used by the public.

The category Institutional and Empowerment processes was split in two for the SIA and is now referred to as *Institutional and Legal processes* and *Emancipation and Empowerment processes*.

1.5 Summary of Issues and Concerns

Interested and Affected Parties (I&APs) are afforded the opportunity to become involved in the proposed project by means of the Public Participation Process (PPP). Generally speaking, the PPP facilitates the involvement of people who are either interested in, or who might be affected by, a certain decision (in this case the decision to proceed with, or halt, the proposed upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the construction and operation of the new 400kV transmission power line between these two substations).

The PPP commenced during the scoping phase and continues into the Impact Assessment phase (which is the current phase of the study). The process is only concluded once the competent authority (in this case DEA) has issued an Environmental Authorisation and once the EA has been communicated to all registered I&APs. Parties who wish to object to, or appeal against the Environmental Authorisation must lodge their objections directly with DEA (i.e. such objections are not routed through, or addressed by the public participation consultants).

As part of the PPP, registered I&APs and other stakeholders were invited to comment on the proposed project. Table 2 below provides a summary of the issues and/or concerns raised during the scoping phase (limited to social issues¹). Also included in Table 2 is a cross reference to where these issues were considered in the SIA. Issues/concerns relating to the Tshwane Strengthening 1.1 project were considered in the SIA reports for those developments, and are therefore not included in table 2 below. In most cases, the issue/concern is reflected below as it was received by the public participation office (exceptions are comments recorded by the public participation practitioner at public events, such as the public meeting).

Table 2: *Summary of Social Issues/Concerns raised during the Scoping Phase*

¹ Issues/concerns pertaining to other specialist fields are addressed by the relevant specialist for that particular topic/issue/concern.

Issue/Concern	Reference in SIA
I would like to raise an issue with regards to safety for the affected communities. For this reason, we would appreciate if Savannah and Eskom representatives that are here could go and talk to Eskom management and inform them that Eskom should prioritise us as the affected community in terms of opportunities.	<i>Throughout document</i>
The consultation with the community about the proposed project in the area is appreciated. This shows that Eskom Tx has a respect for communities that are impacted by their developments. The community will want to know which part is going to be affected and if there are families that are going to be relocated If some families are relocated we want to know where are they going to be accommodated.	<i>Section 3.2.2</i>
The area constantly experiences power supply failure. This means the source of electricity for Ward 39 is very weak. Is this new project going to benefit the community in terms of reducing the rates of power cuts.	<i>Section 3.3.2</i>
What is going to happen if the new power line goes through my property? Must I just accept and move out of the way?	<i>Section 3.2.2</i>
From the presentation by both Savannah and Eskom, it appears that the servitudes require that affected community structures be moved to make way for power line servitude of 55m. From the experience with Eskom projects, we know that when the construction begins, there is no time from Eskom to care about people that are being moved and their livelihoods like crops etc. What sort of assurance can we get that this project is going to be different.	<i>Section 3.2.2</i>
We have brothers and sisters who have the required expertise in electricity and are unemployed. How are we going to benefit from the project from job opportunities perspective?	<i>Section 3.3.2</i>
How is Eskom going to relocate people that are in the servitude way.	<i>Section 3.2.2</i>
It is expected that this proposed project must benefit the local community in terms of job opportunities.	<i>Section 3.3.2</i>
I would like to raise an issue with regards to safety for the affected communities. For this reason, we would appreciate if Savannah and Eskom representatives that are here could go and talk to Eskom management and inform them that Eskom should prioritise us as the affected community in terms of opportunities.	<i>Section 3.3.2</i>
The existing power line through our area has pylons and anchors that are in our yards. These structures pose safety hazard and inhibit us from extending our houses.	<i>Section 3.2.2</i>
How many jobs are going to be created by this project?	<i>Section 2.4</i>
It is appreciated that such a project is proposed for construction in the area and we hope jobs will be created. We want to know what is going to happen to families that are in the preferred route/servitude.	<i>Section 3.2.2</i>
We do not understand the project that is presented. You are talking about big pylons. Is this for household use? Is the community still going to experience power failure in our area after the proposed project has been completed? We want to know as to how the additional lines that are proposed going to help us when there is power failure?	<i>Section 3.3.2</i>
As the proposed power lines will be crossing settlements we are concerned about safety issues. We want to know what safety hazard is associated with crossing under the power lines especially during raining days or when the lightning strikes.	<i>Section 3.6.2</i>
The youth of ward 39 is asking Eskom to engage more in social responsibility and create opportunities for the unemployed youth.	<i>Section 3.3.2</i>

Issue/Concern	Reference in SIA
We do not want to see pylons in our area; Eskom Tx is requested to investigate a route somewhere other than the settled space.	<i>Section 3.2.2</i>

1.6 Limitations and Assumptions

- This study was carried out with the information available to the specialist at the time of executing the study, within the available timeframe and budget. The sources consulted are not exhaustive and additional information, which might strengthen arguments or contradict information in this report and/or might exist.
- The specialists did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment.
- It was assumed that the motivation for, and the ensuing planning and feasibility studies of the project were done with integrity, and that the information provided to date by the project proponent, the independent environmental assessment practitioner and the public participation consultant was accurate.

2. PROJECT BACKGROUND

This section provides an overview of the proposed project and the study area on a regional level and has been structured as follows:

- Project overview;
- Regional overview of the study area;
- Negotiation process; and
- Construction processes.

2.1 Project Overview

Eskom proposes the construction and operation of a number of new substations and transmission power lines within the Tshwane municipal area with the aim to reinforce the existing electricity supply, primarily to this municipal area. This proposal forms part of the **City of Tshwane Electricity Supply Plan Scheme (CTESPS)**, and includes the construction and operation of four new substations, transmission power lines, and turn-in lines to and from substations. It is believed that these developments will meet the metropolitan area's increased demand for electricity, whilst at the same time alleviating the current pressure on the existing Minerva and Apollo substations. Phase 1 of the CTESPS includes the following infrastructural developments, known as the Tshwane Strengthening Project:

- Expanding the existing Verwoerdburg substation to the northwest, together with the construction and operation of two short distance 400kV transmission power lines (one turn-in and one turn-out line, running in parallel) from the existing Apollo-Pluto transmission power line into the newly expanded Verwoerdburg substation (DEA Ref. No. 12/12/20/1470);
- The construction and operation of one 400kV transmission power line, approximately 30km in length, between the existing Kwagga substation (located in Kwaggasrand, Pretoria West) and the new Phoebus substation (located in Soshanguve) (DEA Ref. No. 12/12/20/1471); and
- The construction and operation of the proposed Phoebus substation (to the north and adjacent to the existing Hangklip substation) and expanding the existing Kwagga substation to the south (DEA Ref. No. 12/12/20/1472).

This report focuses on the infrastructural developments associated with the proposed **Kwagga and Phoebus substations and associated infrastructure**, which include the upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the construction and operation of a new 400kV transmission power line over a distance of approximately 30km between these two substations.

2.1.1 Kwagga Substation Expansion Site

The existing Kwagga substation is located to the west of Kwaggasrand, south of and along Church Street (R104). The proposed expansions at the substation will take place to the south of and adjacent to the existing substation (refer to figure one below). The substation is located within the City of Tshwane in the Gauteng Province.

Figure 1: Location of the Kwagga substation and substation expansion site



2.1.2 Proposed Phoebus Substation Site

The proposed Phoebus substation site is located to north of and adjacent to the existing Hangklip substation. This substation lies to the south of Soshanguve M Extension 1 and to the east of new residential extensions, known respectively as Soshanguve Extensions 3, 4 and 5 (refers to figure 2 below). Soshanguve is located within the City of Tshwane in the Gauteng Province.

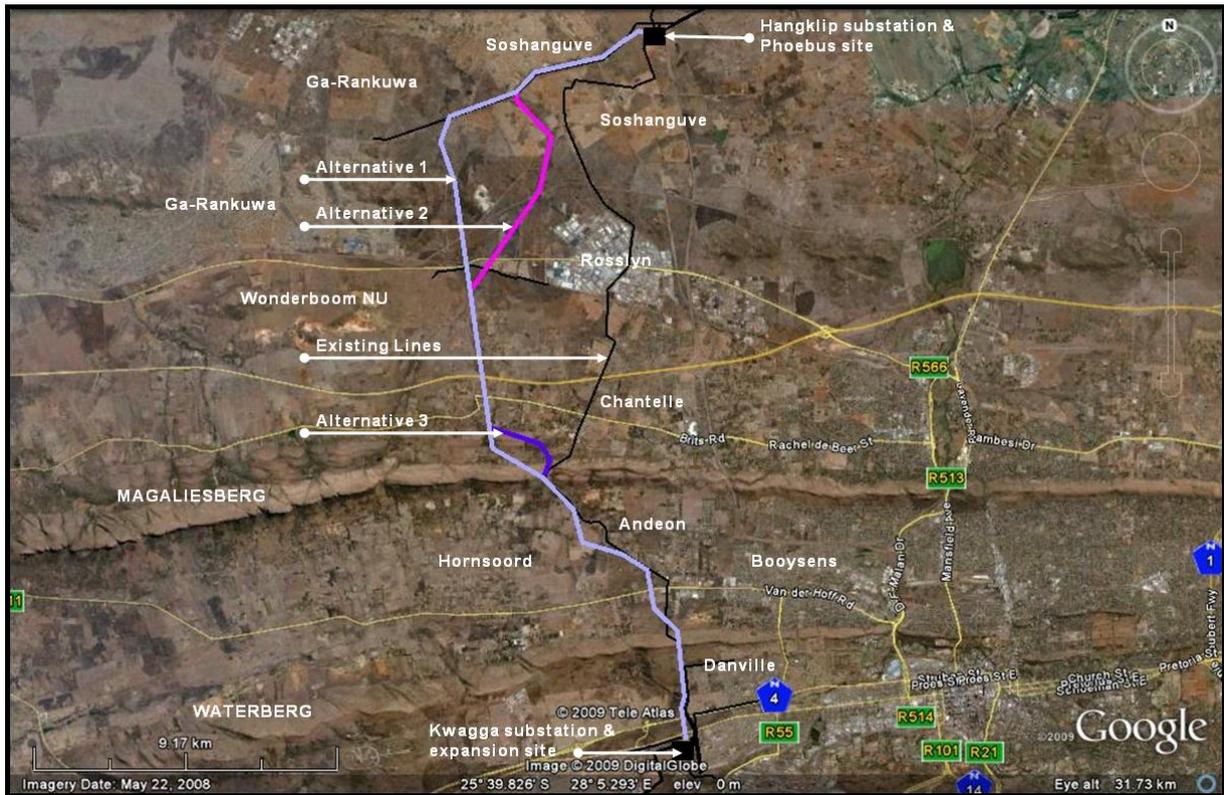
Figure 2: Location of the existing Hangklip substation and the site for the proposed Phoebus substation



2.1.3 Transmission Power Lines Route Alternatives

Three route alternatives were identified and discussed during the Scoping Phase, all of which have been carried over to the Impact Assessment phase for detailed investigations. Figure 3 below provides an overview of the transmission power line route alternatives against the backdrop of the surrounding area.

Figure 3: Overview of the proposed 400kV Transmission Power Line Route Alternatives



Alternative 1 exits the Kwagga substation to the north and continues in a northerly direction up to Hornsnek Road in the Andeon Agricultural Holdings area. The alignment then follows an existing servitude for a short distance along Hornsnek Road before turning in a northwesterly direction along Kenneth Street. The route then turns northwards again and runs parallel to Hornsnek Road up to the R566. The alignment continues in a northerly direction until it meets up with an existing servitude. From there the alignment follows an existing transmission power line within the servitude as it passes through residential areas Itumuleng and Soshanguve SS. The route will enter the Phoebus substation from the southwest. This alternative traverses both the Waterberg as well as the Magaliesberg.

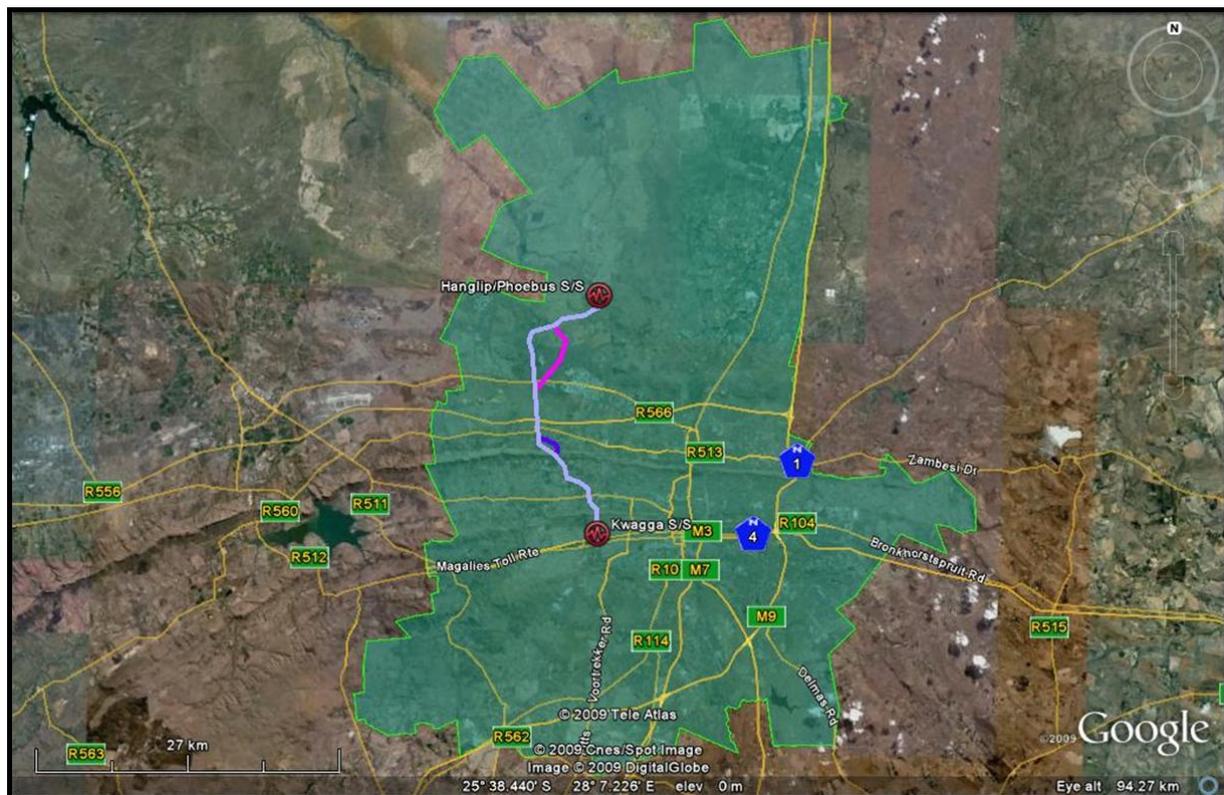
Alternative 2 deviates from Alternative 1 south of the R566. Where Alternative 1 continues north, Alternative 2 turns in a north-easterly direction and passes west of the industrial area Rosslyn. This alternative meets up with Alternative 1 just south of Itumuleng.

Alternative 3 only deviates from Alternative 1 for a short distance. Where Alternative 1 is on the western side of Hornsnek Road, Alternative 3 is on the eastern side through the agricultural holdings area of Fundus. Alternative 3 traverses the Magaliesberg.

2.2 Regional Overview of the Study Area

The infrastructure development associated with the upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the proposed new 400kV transmission power line, are all located within the City of Tshwane of the Gauteng Province. The Kwagga substation and the first part of the transmission power line are located within the metro's Central Western Region, after which it crosses into the Northwest Region just south of the N4. An indication of the study area is reflected in Figure 4 below.

Figure 4: Project location within the City of Tshwane municipal boundaries



Source: Municipal Demarcation Board & Google Earth

The Gauteng Province (GP) is the smallest province in South Africa with a geographical area of approximately 16 927km². The province consists of three District Municipalities (Metsweding, West Rand, and Sedibeng) and three Metropolitan Municipalities (City of Tshwane, City of Johannesburg, and the Ekurhuleni Metropolitan Municipality).

Gauteng is generally perceived as the 'economic hub' of South Africa. According to the Gauteng Provincial Growth and Development Strategy (GPGDS) (2005), the Gauteng Province account for 33% of South Africa's Gross Domestic Product (GDP) and is the largest sub-national African economy. The province generates approximately 49.6% of all employee remuneration in the country and an estimated 52% of all institutional turnover. Despite this fact, the GPGDS also states that there is an ever-increasing divide between the province's rich and poor - the opportunities created to engage meaningfully

in the economic activities and growth of the Province have largely benefited those sectors of the society that are already financially secure and stable and who have the necessary skills, means and resources to participate in the economy.

The GPGDS identified the following disparities still evident in the province, which still needs to be addressed:

- Continued high levels of unemployment and the resultant high levels of poverty;
- Inadequate housing facilities;
- A lack of education, with approximately 8% of the population who has had no education;
- An insufficient electricity network, resulting in approximately 20% of households that are still in need of electricity for lighting, 30% for heating, and 27% for cooking; and
- Providing treated piped water to the remaining 2.5% of households who still have a water supply below RDP standard (defined as piped either inside the dwelling or within a 200m radius of the dwelling).

Gauteng has a growth rate higher than the national average and for this reason the province is attracting unemployed job seekers faster than it is able to absorb these migrants into the labour market. According to the GPGDS, Gauteng receives – on average – more migrants than any other province in the country, not only from other provinces, but also from other SADC countries. The GPGDS estimated that around 5% of the province's total population was made up of migrants, but it is unclear whether this 5% relates to migrants in general, or to migrants from other SADC countries only.

Worldwide, emphasis is being placed on sustainable development by creating awareness of the linkages between the natural environment, economic stability, and general social well-being. This is no different for Gauteng, as the province is characterised by limited available land, a rising industrial congestion, and increased demographic densification. The GPGDS therefore emphasised the importance of sustainable development as a prerequisite in ensuring a flourishing society, a growing but stable economy, and a beneficial natural environment.

2.3 Negotiation Process

As per Eskom's standard operating procedure, the proposed 400kV transmission power line will be operated within a 55m-wide servitude. The registration of a servitude basically entails placing a restriction on a property by registering a right of way at the Deeds Office. The servitude permits Eskom to access that part of a property on which the transmission line is located to ensure the safe operation of the power line.

Eskom's policy is to compensate the landowner for the strip of land that is required for the servitude. In order to do so, Eskom enters into a negotiation process with the affected landowner, with the aim to reach a servitude agreement. The compensation

amount is calculated based on the value that the property would have reached if it was sold on an open market by a willing seller to a willing buyer (property valuations are done by independent valuers and property owners have the right to verify such valuations). In addition to the actual property value, Eskom also compensates the landowner for any actual financial loss (the value of which will be determined by a recognised and qualified property valuer) caused by the acquisition of the servitude. It is important to note that Eskom undertakes the negotiation process directly and outside of the EIA process once the Environmental Authorisation has been received from DEA..

Once the route of the transmission power line has been finalised and Environmental Authorisation received, Eskom negotiators will identify the affected properties and verify the information with the Surveyor-General, after which they will obtain the details of the legal landowner(s) from the Deeds Office. At this stage Eskom will commission independent strip valuations on the affected properties, including pre- and post-valuations if and when required. As soon as Eskom has acquired all the necessary information, an Eskom negotiator will meet with the affected landowner to formally start the negotiation process by presenting the landowner with a formal offer. Landowners have the right, within reason, to negotiate special conditions that, once accepted by both parties, will form part of the formal servitude agreement.

If both parties are satisfied with the terms and conditions set out in the servitude agreement (which includes aspects such as the compensation amount, the special conditions for the operation of the servitude, etc.), they sign the agreement. Once the servitude agreement has been signed, the terms and conditions thereof cannot be re-negotiated – landowners should thus ensure that they take cognisance of the project's pre-construction, construction, and operational phases during the negotiation process. Landowners are expected to sign a "Final Release Certificate" if they are satisfied with the condition of their land upon completion of the construction process, and until such time Eskom remains responsible for the rehabilitation of the land.

If the negotiation process reaches a deadlock, or if the parties failed or were unable to reach an agreement within 90 days after commencement of the negotiation process, Eskom may apply for the expropriation of the land required for the servitude, in accordance with the following legislation:

- The Electricity Regulation Act (Act 4 of 2006), section 27(1): (If Eskom is unable to reach an agreement with a landowner) *the State may, in order to facilitate the achievement of the objectives of this Act, expropriate land, or any right in, over or in respect of land, on behalf of a licensee in accordance with section 25 of the Constitution and section 2 of the Expropriation Act, 1975 (Act No. 63 of 1975).*
- Constitution of South Africa (Act 108 of 1996), section 25: (A property may be expropriated if such an expropriation is *for the greater good of the public at large; and subject to compensation.* In this instance, compensation should be fair and

should create a balance between public interest and that of the affected landowner in respect of: The current use of the property; the history of the property in terms of acquirement and use; and the current market value of the property.

- The Expropriation Act (Act 63 of 1975), subsection 12, stipulates that the compensation amount on any property, excluding properties with registered mineral rights, should be calculated as follows:
 - The amount that the property would have sold for if it was sold on an open market to a willing buyer from a willing seller; and
 - An amount to compensate for any actual financial loss as a direct result of the expropriation.
 - In the case of a registered right on or to a property, excluding registered mineral rights, an amount to compensate for the actual financial loss as a direct result of the expropriation or the obtaining of the right.

However, Eskom aims to avoid expropriation as far as possible, as this process is not only time consuming and tedious, but also damaging to Eskom's relationship with landowners.

2.4 Construction Processes

This section deals with the general information and criteria for the design, engineering, supply, fabrication, construction, testing and commissioning of the civil and structural work associated with that of a substation and a transmission power line, respectively.

2.4.1 Substations

The upgrade of the Kwagga substation entails the construction of extensive expansions at the substation. The construction of these expansions will be similar to the construction of the new Phoebe substation, and includes the following components:

- **Terrace Earthworks** entails the excavation, hauling, dumping, and spreading of soil. Excavated and fill areas will also be compacted during this phase of the project, together with the disposal of unsuitable and excess materials.
- **Terrace Drainage** entails the installation of storm water drainage on the surface to dispose of such storm water on the terrace.
- **Supports and Foundation** consisting of pre-engineered galvanised structures from reputed manufacturers. The plinth level of tower foundations and equipment will be a minimum of 200mm above ground level.
- **Cable Trench (yard)** consisting of a RCC cable trench with RC pre-cast slab covering. The top level of the yard cable trench will be approximately 150mm above ground level.
- **Yard stoning:** A suitable weed killer will be applied to the yard, after which the yard will be covered with stones to a minimum thickness of 100mm.

- A number of **fences** will be installed to secure the substation and the substation site. These fences include a 2.4m high security fence to enclose all assets, a 1.8m high fence around the yards, and a 1.2m high boundary fence on the property line.

The design, manufacturing, fabrication, galvanising, testing, construction, materials, erection of station structures, and the design and construction of the foundations will conform to the relevant South African Bureau of Standards (SABS) codes.

The illumination level at the substation will be sufficient for personnel to observe obstructions and other hazards while moving within the high voltage yards, and to read high voltage apparatus identification labels, mounted at heights not exceeding 2m above the ground level present on this apparatus. The Operational Flood lighting installation is not intended for detailed inspection and/or maintenance work within the high voltage yards. For these purposes, Portable Maintenance Lighting will be used.

2.4.2 Transmission Power Line

The construction process can commence as soon as the servitude has been secured. The following activities form part of the construction process, listed more or less in the chronological order in which the activities take place:

- The selected route is surveyed to determine soil types and other conditions that have to be considered in the final selection of conductor types, towers, insulators, and foundations. This survey is undertaken by foot, but on longer lines, a fly over is often utilised in addition to the walk through.
- Once the technical walk through has been completed, the final design of the line is determined along with the tower positions. This is then followed by the environmental walk through to ensure that all the sensitive areas have been identified and considered for inclusion in the construction Environmental Management Plan (EMP).
- Eskom negotiators start negotiations with landowners to ensure unrestricted access to the servitude, which often involves that construction teams might have to cross over private land and/or make use of existing access points on the affected property. During this negotiation round, all the parties involved (e.g. Eskom, the contractor and the landowner) discuss and agree on the rehabilitation measures that have to be implemented to restore the land to its original condition upon completion of the construction process. Photographs of the applicable infrastructure or land is taken beforehand to ensure that rehabilitation is done to the agreed standards.
- Normally access roads to the construction site(s) form through the recurring use of an existing (gravel) road or track, and seldom through a more formal procedure such

as blading or road scraping. However, the establishment of access road(s) are dependent on the local site conditions. Existing access roads will be used for the current project.

- The first step as part of the actual construction process is the pegging of the central line in the middle of the servitude. During this time, the team will also record the requirements for and locations of new gates.
- Servitude clearance commences which involves clearing vegetation along the length of the servitude. A reputable company is appointed to undertake bush clearance to ensure the conservation of sensitive and/or safe relocation of sensitive flora. Servitude clearance across the width of the line depends on the vegetation and landscape of the area, as well as on the respective landowners' requirements. During vegetation clearance, protected fauna and flora species are relocated while alien species are removed. If required, the installation of new gates also takes place during this activity. The size of the servitude/vegetation clearance team depends on the size of the clearance area(s), but on average consists of 10-20 individuals. Apart from the management of protected species, which requires specialist services, a large segment of this team (10-15) can consist of unskilled labour that can be sourced locally.
- A surveyor is appointed to peg the tower foundations, which involves setting out the footing of the towers. The surveyor also identifies and reports on any obstacles or potential problems associated with any of the towers' positioning, which can result in the consequent moving of a tower.
- Once the final locations of the tower foundations have been pegged, the contractor will establish foundation nominations. At this stage, the various soil types are examined to enable the contractor to comply with the necessary foundation requirements that will ensure the stability of the tower. Trial foundations are then excavated at the main foundation points through the use mechanical back-actors and/or augers. Under certain conditions the use of manual labour might also be required, and if so, unskilled workers might again be employed. A foundation normally represents a square pit of 4m x 4m and under normal soil conditions, is usually also 4m deep. Once the foundation pit has been excavated, it is fenced-off to secure the area until such time that the foundation is cast.
- The foundation steelwork is fitted into the foundation pit not too long after it was excavated. This is done to reinforce the foundations. Although the steelwork is made up at base camp and brought to site by truck, all the actual fitting, and wiring is done on site.
- The concrete for the foundations are poured after the steelwork has been fitted. Shuttering is done and a standard concrete truck is used to cast the concrete. A 28-

day period is required after the concrete was laid to allow it to set. During this stage access or service roads will be used extensively.

- The steelwork for the towers is delivered in sections and assembled on site. The steelwork is transported on a long haul truck, and is delivered directly to the respective foundation pits along the line's route. To ensure that the correct tower is delivered to the correct site, the access road is clearly marked to indicate the routes to the various sites.
- The tower is then assembled on site by the assembly team (which is the case for every tower site). The tower's steelwork is fitted and assembled on the ground at the site, and therefore site clearance is required around the foundation pit. Once the tower has been assembled, it is painted with a non-corrosive paint and then erected with a crane and placed in the foundation pit. Depending on the size of the tower, an assembly team can consist of 10-25 individuals. At the time of the study, it was not clear whether there will be more than one assembly team, and if so, how many assembly teams there would be in total. In any event, tower assembly is regarded as a skilled job and therefore it is unlikely that labour will be sourced from the local areas.
- Once all the towers have been put up, the stringing team will commence with stringing the cables between the towers. Cable drums are placed next to each other and stringing takes place in both directions from these drum stations. The working area at each drum station can be as long as 130m but will be confined to the servitude width. Intensive vehicle movement may take place within this working area. A pilot tractor places the pilot cable on the ground, which is pulled up through the use of a pulley. When all the lines have been strung, the line is tensioned from each cable station to ensure that minimum ground clearance heights are achieved. A stringing team can consist of up to 120 skilled people, so it is unlikely that they will be sourced from within the local area.
- Rehabilitation of the construction site and construction servitude) commences once the lines have been strung and commissioned. Quotations are sourced and a proposal is prepared to reimburse all the respective landowners for damages to their properties. As soon as the rehabilitation process has been completed, the affected landowner must sign a release certificate to indicate that they are satisfied with the condition of the land post rehabilitation. Depending on site conditions, the rehabilitation team consists of 10-15 people, which in part or in whole can be made up of unskilled work, again depending on the type of rehabilitation work that has to be undertaken.
- A final inspection of the line and servitude is done, and if all the parties involved are satisfied, it marks the end of the construction period.

2.4.3 Workforce²

Table 3 below provides an overview of the *estimated* number of people who will be on site at any given time during the various construction phases, i.e. pre-construction, construction, and post-construction. Not all of the people are present on site all day every day. Due to the location of the project area and the project size, it is foreseen that construction team members (on all activities) will move in and out of the area on a daily basis (i.e. arrive on site in the morning and return home in the evening).

² All information related to workforce numbers and timeframes supplied by Mr Sarel van Zyl, Eskom representative. Personal communication, 9 December 2009.

Table 3: Estimated number of people on site per construction phase

ESTIMATED NUMBER OF PEOPLE PER CONSTRUCTION PHASE																
On Site Activities	Pre-Construction Phase				Construction Phase								Post-Construction Phase			
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
SUBSTATION																
Vegetation clearance	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bulk earthworks	-	100	100	100	-	-	-	-	-	-	-	-	-	-	-	-
Foundation team	-	-	-	-	80	80	80	-	-	-	-	-	-	-	-	-
Assembly team	-	-	-	-	-	80	80	80	-	-	-	-	-	-	-	-
Erection team	-	-	-	-	-	-	-	60	60	60	-	-	-	-	-	-
Stringing team	-	-	-	-	-	-	-	-	-	60	60	60	-	-	-	-
Commissioning team	-	-	-	-	-	-	-	-	-	-	-	-	10	10	10	
Rehabilitation team	-	-	-	-	-	-	-	-	-	-	-	-	30	30	30	
Management team	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Subtotal	50	110	110	110	90	170	170	150	70	130	70	70	50	50	50	
TRANSMISSION LINE																
Technical survey	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Environmental survey	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Access negotiations	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

ESTIMATED NUMBER OF PEOPLE PER CONSTRUCTION PHASE																
On Site Activities	Pre-Construction Phase				Construction Phase								Post-Construction Phase			
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Pegging central line	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	
Bush clearance	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	
Gate erection	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	
Foundation team	-	-	-	-	30	30	30	-	-	-	-	-	-	-	-	
Assembly team	-	-	-	-	-	-	40	40	-	-	-	-	-	-	-	
Erection team	-	-	-	-	-	-	-	40	40	40	-	-	-	-	-	
Stringing team	-	-	-	-	-	-	-	-	-	30	30	30	-	-	-	
Commissioning team	-	-	-	-	-	-	-	-	-	-	-	-	10	10	10	
Rehabilitation team	-	-	-	-	-	-	-	-	-	-	-	-	15	15	15	
Management team	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Subtotal	30	26	15	35	40	40	80	90	50	80	40	40	35	35	35	
TOTAL CONSTRUCTION TEAM																
<i>Substation + Line</i>	<i>80</i>	<i>136</i>	<i>125</i>	<i>145</i>	<i>130</i>	<i>210</i>	<i>250</i>	<i>240</i>	<i>120</i>	<i>210</i>	<i>110</i>	<i>110</i>	<i>85</i>	<i>85</i>	<i>85</i>	

Important to remember is that there will be three separate construction teams: one team will be working on the Kwagga substation, one team on the Phoebus substation, and one team on the transmission power line. The total size of the construction team across the lifespan of the project is estimated to be 731, of which 245 will be allocated to the Kwagga substation, 245 to the Phoebus substation, and 241 to the transmission power line.

Also bear in mind that the construction processes follow a phased approach so that the full construction team component will never be on site simultaneously. The most people that will be on site at the same time is during the peak of construction, when approximately 250 construction team members will be active on the project, of which 80 will be at Kwagga, 80 at Phoebus and 70 on the transmission line. The remaining 20 people make up the management team consisting of site supervisors, engineers and Eskom staff who will commute between the various sites.

3. SOCIAL CHANGE PROCESSES AND IMPACT ASSESSMENT

The following section proceeds to discuss the various change processes and related expected impacts that could be expected as a result of the project. A change process can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention. The expected impact follows as a result of the change process taking place. However, a change process can only result in an impact once it is experienced as such by an individual/community on a physical and/or cognitive level. The change processes that were assessed in this SIA included the following:

- **Geographic processes** refer to the processes that affect the land uses of the local area.
- **Demographic processes** refer to the movement and structure of the local community.
- **Economic processes** refer to the economic activities in the local society, including the peoples' way of sustaining their livelihoods, and to a lesser extent, the macro-economic factors that affected the local community as a whole.
- **Institution and Legal processes** refer to the processes that affect service delivery to the local area.
- **Socio-cultural processes** refer to the processes that affect the local culture of an affected area, i.e. the way in which the local community live (however, sometimes different cultural groups occupy the same geographical area and these groups are seldom homogenous).

This section has been structured as follows:

- A summary of the baseline profile per change process as mentioned above, i.e. the status quo of the area without project intervention (refer to the SIA Scoping Report for a detailed description of the baseline profile);
- A detailed discussion of the expected change processes to occur as a result of introducing the project to the area, including a brief discussion on the circumstances that might lead to such change process taking place; and
- An assessment table to determine the significance rating of an impact pre- and post-mitigation as per the criteria listed in section 1.3.1.

As per the SIA Scoping Report, the SIA focused mainly on the City of Tshwane (CoT) itself.

3.1 Geographic Processes

Geographic processes relate to the land use patterns and established and planned infrastructural developments in an area, where land use is defined as "... the human modification of the natural environment or wilderness into a built environment such as fields, pastures, and settlements."³ This section therefore focuses on current and future land use in the project area itself, as well as in the neighbouring areas, and then proceeds to assess how a change in land use might affect the social environment.

3.1.1 Baseline Geographic Profile

As most cities and towns within South Africa, the City of Tshwane's urban pattern was shaped by apartheid policies that was based on racial segregation. In addition, the IDP (2007/08 review) states that market forces and prominent natural features more than urban planning, structured the urban environment pattern of the city. This resulted in a city that has a formal, well developed core that co-exists alongside an extensive, low income and poorly developed periphery that is dependent on the city's core.

Natural features that influenced the city's development pattern are prominent mountain ranges and ridges that follow an east-west alignment through the city of Tshwane. These natural features created valleys that channelled development in an east-west growth path and limited north-south development due to limited accessibility to these areas. The City of Tshwane is also the Administrative Capital of South Africa and as such has many monumental and historic buildings as well as large public spaces within the inner city. In addition, urban expanse has been curbed by large tracts of government and parastatal owned land allocated to the National Defence Force, land that is totally underutilised amidst areas of infill and economic development.

As most South African cities, the settlement pattern within Tshwane is characterised by the location of low-income residential areas on the periphery, away from economic opportunities and other social amenities. This pattern is most dominant in the north (areas such as Ga-Rankuwa, Soshanguve, Temba and Hammanskraal), followed by the west (areas such as Atteridgeville and Lotus Gardens). The pattern is also found to a lesser extent in the south and south-east (Olievenhoutbosch) and the east (Mamelodi, Mahube Valley and Nellmapius).

The City of Tshwane (CoT) has developed a spatial development strategy to guide its Spatial Development Framework (SDF). It is believed that the CoT should not be viewed as a single city, but rather as a polycentric (multi-nodal) metropolitan region. Currently the CoT experiences development pressure in the central, eastern and southern parts of the city. Furthermore, the continued outward urban sprawl hampers the delivery of effective municipal services to these areas, even in cases where such developments are located within existing urban areas. The main aim of the Tshwane Spatial Development Strategy (TSDS) is therefore to integrate the municipal areas to enable an efficient,

³ www.wikipedia.org.za/wiki/Land_use.html

equitable, liveable and sustainable urban environment. In support of this aim, the following objectives have been identified:

- Residential areas should be integrated with areas of economic and social opportunity;
- Those segments of the population who are living in poverty should be integrated in to the mainstream functioning of the city;
- Increase the density in strategic areas within the CoT;
- Areas that are suitable to economic development should be identified;
- Movement networks within the CoT should be identified;
- Direct infrastructure investment should take place within strategic focus areas;
- Human settlements should be sustainable and foster healthy communities;
- The CTMM should play a unique role within the GP; and
- A sustainable metropolitan area should be created in terms of environmental, social and economic aspects.

Furthermore, the CoT has identified the metropolitan open space network as an important structuring element and therefore the presence of such open spaces has a decisive influence on where development would be allowed. Open spaces include rivers, mountains, protected areas, dams, nature reserves, wetlands, etc. These areas are excluded from any future developments to ensure that the ecological integrity of the city is protected. This might become a problem where the transmission power line route traverses over the Magaliesberg Nature Reserve.

The CoT have also identified potential movement corridors and encourages development in relation to these movement corridors. Currently four existing and/or potential corridors have been identified:

- The N1/Ben Schoeman Highway link between Johannesburg/Midrand and Tshwane;
- The R21 link between Tshwane and the O.R. Tambo International Airport;
- The Bakwena-Platinum Highway Corridor (Zone of Choice); and
- The Mabopane-Centurion Corridor around the proposed western bypass.

Apart from the protection of open spaces and the enhancement of developments along movement corridors, certain specialised activity areas have also been identified. A specialised activity area is an area that makes provision for specialised development such as industrial areas, educational areas, high-tech areas, etc. These specialised activity areas are mostly closely interlinked with the development corridors described above. The majority of these specialised activity areas are located within the quadrant between the PWV9, the N1 and the PWV2.

Access Roads

The **Kwagga substation** site is accessed via a tar road of approximately 6m in width (refer to figure 5).

Figure 5: Existing access road to the Kwagga substation site



The access road turns off Church Street (R104). The R104 is an east-west single carriageway (one lane in each direction) regional road with a width of no shoulder. The road has a fairly high traffic volume, consisting of mixed traffic.



Figure 6: Church Street (R104) facing east

In contrast, the existing Hangklip substation and hence the Phoebus substation construction site, is accessed via a single track dirt road that turns off Ruth First Road from John Vorster Drive (R80).

Figure 7: Existing access road to the Hangklip substation and Phoebus substation site



Substation Sites

Both the Kwagga substation expansion site and the site for the new Phoebus substation is located on Eskom property, surrounded by private residential properties.

Transmission Power Line Route Alternatives

Most of the transmission power line route alternatives are surrounded by residential areas. Some of these areas are condensed (e.g. Danville, Soshanguve), whereas others are characterised by scattered households (e.g. Hornsoord, Andeon). Agricultural activities take place on a small scale on the agricultural holdings along Alternative 1, but no large-scale farming activities were observed.

3.1.2 Geographic Change Processes and Resultant Impacts

The identification and assessment of social impacts arising from geographic change processes within a social context, focuses on how the proposed development might impinge on the behaviour and/or lives of landowners and/or land users in the affected areas. The following geographic change processes are likely to occur:

- Change in access to resources that sustain livelihoods; and
- Land acquisition and disposal, including availability of land.

These change processes will be discussed separately together with a detailed assessment of the resultant impact due to the change process taking place.

Change in access to resources that sustain livelihoods

Impact Category: 1 (no difference in land use between alternatives)

Project Phase: Construction, and Operation and Maintenance

Eskom indicated that they owned the land required for both the Kwagga substation expansions as well the new Phoebus substation. Where Eskom is the landowner, the need for a lengthy negotiation process to acquire the land for the substation site from a private landowner is negated. However this only holds true for the respective substation sites as localised development areas.

With the transmission power line the situation changes as the line, as a linear development, span across an area that affects multiple landowners. Certain land uses are still permitted within the servitude, but these mostly relate to agricultural activities (such as grazing and crops with a restricted height). Eskom will compensate the landowner for the servitude, which normally takes on the form of a once-off payment for the land strip required, based on the land's market value at the time of negotiation (also refer to section 2.3).

In general, land uses that are associated with human occupation on either a temporary or permanent basis, are not permitted within the servitude. This measure is taken to ensure the safe operation of the power lines, both in terms of unrestricted access to the lines for routine or emergency maintenance, as well as the health and safety of people in the area.

Land acquisition and disposal, including availability of land

Impact Category: 1

Project Phase: Operation and Maintenance

The presence of a transmission power line can set an unintentional precedent for further land use changes, e.g. the placement of a new transmission power line next to an existing transmission power line. Usually, depending on the results of the various specialist studies, the placement of new infrastructure within an existing 'disturbed corridor' is preferred as it reduces the impact on sense of place by steering clear of green field areas.

GEOGRAPHIC CHANGE PROCESSES (SUBSTATIONS)

Summary of change process: The presence of a larger substation (Kwagga) and/or a new substation (Phoebus) could potentially set a precedent for further land use changes if additional transmission lines have to feed into the extended/new substation in future. Temporary land use changes can also be expected during construction due to the activities associated with the construction process.

Nature of impact: As Eskom already owns the respective sites for the substations, it is expected that the impact of land use changes on these particular properties will be limited.

Site characteristics: Both substations sites are characterised by infrastructure of a similar nature, i.e. the existing Kwagga substation and the Hangklip substation at the Phoebus site.

Mitigation measures:

- Even though both sites belong to Eskom, the land around the substations sites should be rehabilitated upon completion of the construction process so that it does not deter from the surrounding area.

Enhancement measures:

- None.

Rating Scale	Kwagga Substation		Phoebus Substation	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Site [1]	Site [1]	Site [1]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]
Magnitude	Low [4]	Minor [2]	Low [4]	Minor [2]
Reversibility	Reversible [1]	n/a	Reversible [1]	n/a
Probability	Improbable [2]	Very improbable [1]	Improbable [2]	Very improbable [1]
Significance	Low [16]	Low [4]	Low [16]	Low [4]
Status	Negative	Neutral	Negative	Neutral

Cumulative impacts:

- None.

Residual impacts:

- A precedence for land use change has been set.

Links:

- Impacts due to land use (geographic) change processes links to economic change processes (compensation for servitude), emancipation and empowerment processes (negotiations), and socio-cultural processes (change in sense of place).

GEOGRAPHIC CHANGE PROCESSES (TRANSMISSION POWER LINE)

Summary of change process: The proposed 400kV transmission line will be operated within a servitude of 55m in width. As the servitude gives Eskom right of way on that particular part of the property, the landowner forfeits the land use rights within the servitude and has to comply with the regulations set forth by Eskom to ensure the safe operation of the lines. Depending on the land use and the servitude width, this loss of land can affect a landowner's ability to sustain his/her livelihood. The presence of a transmission line can set a precedent for further land use changes if additional transmission lines are required in the same area in future, as it is preferential to keep infrastructure of a similar nature within one 'spoilt' corridor as opposed to wide-spread throughout a 'green fields' area. Temporary land use changes can also be expected during construction due to the activities associated with the construction process.

Nature of impact: A loss of land affects a private landowner financially when he/she has to cease certain land uses within the servitude area.

Site characteristics:

Mitigation measures:

- Land rehabilitation should take place upon completion of the construction process to ensure that the land is returned to the landowner in the same condition as prior to construction, unless otherwise agreed with the landowner in question.

Enhancement measures:

- None.

Rating Scale	Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]	Short [2]	Very short [1]
Magnitude	Very high [10]	Moderate [6]	High [8]	Moderate [6]	Very high [10]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Highly probable [4]	Probable [3]	Highly probable [4]	Probable [3]	Highly probable [4]	Probable [3]
Significance	High [68]	Low [24]	High [60]	Low [24]	High [68]	Low [24]

Status	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:						
•						
Residual impacts:						
• A precedence for land use change has been set.						
Links:						
• Impacts due to land use (geographic) change processes links to economic change processes (compensation for servitude), emancipation and empowerment processes (negotiations), and socio-cultural processes (change in sense of place).						

3.2 Demographic Processes

Demographic processes refer to the characteristics of a human population or part of it, and include factors such as the size, growth rate, density, and distribution of the population within the affected social environment.

3.2.1 Baseline Demographic Profile

The City of Tshwane Metropolitan Municipality (CTMM) covers an area of 2 175km². In 2001, the CTMM had a total population of 1 982 228 people (with a population density of approximately 911.8 people per km²), which increased at an average rate of 60 612 persons per annum to a total population of 2 345 907 people in 2007. This increase in the population size also affected the population density in the area, which grew at an average of 27.9 persons per km² to a population density of approximately 1 079.1 persons per km² in 2007.

According to the CoT IDP (2006-2011), the population growth rate in the Central region (including areas such as Kwaggasrand, Danville, and Lotus Gardens) between the years 1996 and 2001 was estimated at around 18.9%. This represents an increase of approximately 54 184 individuals from a population size of 286 836 in 1996 to 341 020 in 2001. The Northwest region (including areas such as Chantelle, Rosslyn, Soshanguve and Ga-Rankuwa) have a similar profile in terms of population growth, estimated at 18.74% between 1996 and 2001 (from 568 112 individuals to 674 579). The IDP further stated that of the housing in the Central region, only 2.4% was informal in 2008 compared to the 18% informal housing in the Northwest region.

The predominant population group within the City of Tshwane remained the same between 2001 and 2007 and are therefore still Black African (74.6%), followed by White (22.1%). The female population group was only slightly bigger than that of their male counterparts at 50.1%. In 2007, it was estimated that more than two thirds (68.3%) of the total population in the City of Tshwane fall within the working age category, which is defined by Statistics South Africa as the ages between 15 and 64.

3.2.2 Demographic Change Processes and Resultant Impacts

It is expected that the expansion of the Kwagga substation, the construction of the new Phoebus substation, and the construction of the transmission line will lead to a temporary change in the population size of the affected area and also, possibly, to the composition of the local population. In this regard, the following demographic change processes are expected:

- An influx of construction workers;
- An influx of unemployed job seekers; and
- The relocation of households and/or other structures.

These change processes will be discussed separately together with a detailed assessment of the expected impact as a result of the change processes taking place.

Influx of Construction Workers

Impact Category: 1 (size of construction team remains unchanged, irrespective of alternative implemented)

Project Phase: Construction

The construction of the respective substations as well as that of the transmission line requires skilled workers. In all probability, these skills will not be present in the area, which means that the contractor will make use of his permanent workforce – i.e. ‘strangers’ who have to enter the area and who are often viewed as people who ‘stole’ jobs from the locals. However, a construction team consists of a certain number of people (the size of the team depends largely on the type of construction required) and they enter the area with a very specific purpose. The time they spend in the area is clearly defined and often controlled as such (e.g. construction workers arrive on site in the morning and depart from the area in the evening), and due the nature of their work, their contact with the local community is limited during working hours.

At the peak of construction the number of construction workers on site is estimated to be around 170 people (of which about 80 will be at the substation site and the other 90 will be spread out across the length of the transmission line). The construction workers will in all probability commute to site, and therefore it is expected that the influx of construction workers will have a negligible effect on the host community.

Influx of Unemployed Job Seekers

Impact Category: 1 (job seekers is expected, no matter which alternative is implemented)

Project phase: Mostly construction

Unlike the regulated circumstances surrounding a construction team, the influx of job seekers is unregulated and often very difficult to control. It is also very difficult to predict how many job seekers to expect and the extent to which they can change the size and composition of the local population, as the intensity of the effect will be influenced by the actual number of job seekers.

Given the skills required for the respective construction processes, it is highly unlikely that a job seeker will find formal employment by loitering at the construction camp or sites. The unemployed job seekers then become a burden to the host community, as they do not have the means to sustain themselves, and then become dependent on others (usually people who themselves only have limited resources).

The presence of job seekers can also lead to the expansion of the informal settlement located on Hornsnek Road in the Hornsoord area. This settlement has expanded drastically in the past 2 years, from the small area indicated by the solid red circle (2007, when the aerial photograph was taken) to the larger area indicated by the dashed red circle (2009, site visit).

Figure 8: Informal settlement located on Hornsnek Road in Hornsoord area



The following quote was taken from *People and Places: An overview of Urban Renewal* by Carien Engelbrecht, and describes the poor socio-economic conditions in informal settlements, how these conditions give rise to further degradation of its residents' quality of life and social well-being, and how it affects neighbouring areas.

"Informal settlements are often located on marginal land subject to environmental degradation and hazard. The unplanned nature, poor design and incremental growth of informal settlements complicates conventional service provision. Residents often lack basic educational qualifications, and are typically dislocated from the surrounding labour market... The informal nature of settlements, and particularly the absence of formal, demarcated roads and access points creates opportunities for the operation of illegal activities by criminal syndicates, whilst the youthful, unemployed and male demographic profile of informal settlements leads to the emergence of gangs and high levels of violent crime. The extreme social conditions, high unemployment and the absence of social amenities exacerbates social stress, which often manifests in domestic violence, rape and child abuse. The explosion of crime within informal settlements is exacerbated by the institutional vacuum created by the lack of political will and absence of sufficient,

*effective, and credible policing within informal settlements areas. Exclusion, unemployment, and poverty have created environments in which residents have lost their self-esteem, pride, and human dignity.*⁴

The more an informal settlement continues to grow, the more socio-economic conditions will continue to deteriorate (with more people trying to access the same amount of limited resources), and the more the quality of life of other local residents will be affected. As mentioned previously, the IDP stated that approximately 2.4% of housing in the Central region is informal, whereas a very high 18% informal housing has been recorded in the Northwest region (Soshanguve is the largest residential area in the region).

Unfortunately restricting the influx of job seekers and the associated expansion of existing informal settlements is a mammoth task and often beyond the contractors' control. The issue is mentioned here to illustrate the impact that poor living conditions have on an individual's life - job seekers often find themselves in this position when they are lured to the urban life under the impression that the city offers everyone employment irrespective of skills or education. It is therefore vital that local communities are informed upfront that mostly skilled work will be required and that it is highly unlikely that large numbers will be employed from the local community.

Relocation of Households

Impact category: 2

Project phase: Pre-construction

In general, land uses that are associated with human occupation on either a temporary or permanent basis, are not permitted within the servitude. This measure is taken to ensure the safe operation of the transmission line, firstly to ensure unrestricted access to the line for routine or emergency maintenance, and secondly to ensure the health and safety of people in the area. The following structures were identified either within or close to the proposed transmission power line servitude:

On Alternative 1:

- Just north of the R514 (Van der Hoff Road), the route passes 14m east of a household, which would be in the 55m servitude area;
- At the corner of Kenneth and Cornelia Streets in Loeka Villa, the route directly affects at least one household, with a further one household located within the proposed servitude;
- At the foot of the Magaliesberg heading north, this route directly affects approximately 5 households and one communal property that appears to be a school;

⁴ <http://www.sacities.net/2004/UrbanRenewalPart2.pdf>

- On top of the Magaliesberg just west of Hornsnek Road, one house is directly affected;
- East of the R513/M17 junction, the route directly affects what appears to be a residential property;
- North of Mallow Street, the route directly affects a residential property;
- South of Itumuleng, the route directly affects two (scattered) residential households;
- It appears that one household settled within the existing servitude between the areas of Itumuleng and Soshanguve SS;
- The route passes close (approximately 20m) to what appears to be an existing household next to what appears to be an abandoned household;
- Route passes close (approximately 17m) to the far southern corner of Itumuleng; and
- An underground gas pipeline runs west of Elandspoort and is located approximately 50m east and parallel to the proposed transmission power line. It is unclear where the pipeline originates or terminates.

On Alternative 2:

- South of and adjacent to the R566, the route directly affects one household and passes approximately 26.5m from other households in what appears to be a low cost housing development; and
- The route directly affects approximately 7 households on the north-eastern corner of the residential area west of Soshanguve SS.

On Alternative 3:

- The route traverses a sensitive area (Magaliesberg Nature Reserve), but no relocation is foreseen at this stage.

The impacts as a result of relocation might be numerous and will often vary between people, as it depends on the level of place attachment, which in turn is informed by variables such as personality, age and number of years spent in a particular area. Where people have been living in a specific area for years, they are used to their surroundings, e.g. the route they travel to work, the amenities (shops, businesses, leisure) they visit, etc. Apart from their surroundings, one could also expect that they are attached to their homes and what it represents. Relocating such households can have a severe impact on their standard of living and quality of life, which might further impact on a psycho-social level.

On the other hand are people who have no place attachment, i.e. they do not really care for the area and can be easily uprooted without too much concern. Whether they live at point A or B is all the same to them. However, their resilience and adaptability should not be viewed as that relocation comes effortlessly to these people. In all events (whether people resent being moved or not), relocation should be avoided as far as

possible – especially in areas where there is room to manoeuvre the alignment of the line. Moving the line is often less expensive than moving people.

No structures were identified on the substation sites, therefore no relocation and associated impacts are expected as far as the substations are concerned.

DEMOGRAPHIC CHANGE PROCESSES (SUBSTATIONS)

Summary of change process: A total of 490 construction workers will enter the area on a temporary basis across the lifespan of the project, of which 245 will be at Kwagga and 245 at Phoebus. The full work component will never be on site simultaneously – the biggest team expected at the same time is during foundation and assembly when 170 people are expected (85 per site). This will not have a permanent effect on the population size. Job seekers might also enter the area, but usually the number is restricted to individuals.

Nature of impact: Generally speaking, accelerated population growth creates unexpected demands on local resources. However, this will not be the case with the current project, as the size of the construction team is too small and their time spent in the area too limited to have any real effect on the local population size. Individual job seekers will also not contribute to accelerated population growth.

Site characteristics: The local population consists of mostly low to medium income groups. Residents of Soshanguve complained about the irregularity of services during the PPP. I&APs from this area also wanted to know how they would benefit from the project and if jobs will be afforded to locals. The influx of construction workers and job seekers could well lead to conflict in this area.

Mitigation measures:

- Do not create false expectations – inform local job seekers upfront about the skilled nature of the construction and the low likelihood of employing an unskilled and/or inexperienced workforce.
- Also inform local communities that contractors have a permanent workforce and that they will mostly likely make use of this workforce, which will further reduce the possibility of local employment.
- Discourage job seekers to travel to the area by advertising in the local and/or regional press before construction commences to show that all positions have been filled and that there are no further job opportunities available.

Enhancement measures:

- None.

Rating Scale	Kwagga Substation		Phoebus Substation	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]

Magnitude	Moderate [6]	Low [4]	High [8]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Highly probable [4]	Probable [3]
Significance	Medium [39]	Low [12]	High [60]	Low [24]
Status	Negative	Negative	Negative	Negative
Cumulative impacts:				
<ul style="list-style-type: none"> The simultaneous influx of construction workers on the transmission power line. 				
Residual impacts:				
<ul style="list-style-type: none"> Job seekers who remain in the area despite being unable to secure any employment, increasing the dependency ratio on the local authority. 				
Links:				
<ul style="list-style-type: none"> Impacts due to demographic change processes in turn links to institutional and legal change processes (change in housing needs/demands, change in community infrastructure), and socio-cultural processes (dissimilarity in social practices, conflict, and safety and crime impacts). 				

DEMOGRAPHIC CHANGE PROCESSES (TRANSMISSION POWER LINE)

Summary of change process: A total of 241 construction workers will move through the area on a temporary basis across the lifespan of the project, The full work component will never be on site simultaneously – the biggest team expected at the same time is during assembly and erection when 90 people are expected. This will not have a permanent effect on the population size. Job seekers might also enter the area, but usually the number is restricted to individuals.

Nature of impact: Generally speaking, accelerated population growth creates unexpected demands on local resources. However, this will not be the case with the current project, as the size of the construction team is too small and their time spent in the area too limited to have any real effect on the local population size. Individual job seekers will also not contribute to accelerated population growth.

Site characteristics: The area along the transmission line route alternatives is characterised by medium to high income groups. The area itself consists mostly of residential areas, either condensed (areas such as Danville, Booyens, Chantelle and Soshanguve) or scattered (areas like Andeon, Hornsoord and Wonderboom NU).

Mitigation measures:

- Do not create false expectations – inform local job seekers upfront about the skilled nature of the construction and the low likelihood of employing an unskilled and/or inexperienced workforce.
- Also inform local communities that contractors have a permanent workforce and that they will mostly likely make use of this workforce, which will further the reduce the possibility of local employment.
- Discourage job seekers to travel to the area by advertising in the local and/or regional press before construction commences to show that all positions have been filled and that there are no further job opportunities available.

Enhancement measures:

- None.

Rating Scale	Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]	Short [2]	Very short [1]

Magnitude	High [8]	Moderate [6]	Moderate [6]	Low [4]	High [8]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]
Significance	Medium [45]	Low [16]	Medium [39]	Low [12]	Medium [45]	Low [16]
Status	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:						
<ul style="list-style-type: none"> The simultaneous influx of construction workers to the substation sites. 						
Residual impacts:						
<ul style="list-style-type: none"> Job seekers who remain in the area despite being unable to secure any employment, increasing the dependency ratio on the local authority. 						
Links:						
<ul style="list-style-type: none"> Impacts due to demographic change processes in turn links to institutional and legal change processes (change in housing needs/demands, change in community infrastructure), and socio-cultural processes (dissimilarity in social practices, conflict, and safety and crime impacts). 						

3.3 Economic Processes

Economic processes relate to the dominant economic activities within a given society and, more specifically, to the way in which people make a living. Economic indicators such as a community's employment rate and household income brackets, serve as an indication of the community's economic stability and general well-being. Employment is a key driver in economic and social advancement as an income means that money becomes available that can be invested in upliftment commodities such as training and education.

3.3.1 Baseline Economic Profile

The CoT is characterised by a fairly high employment rate where, on average, close just over two thirds of the working age population (excluding the not economically active population) is formally employed. Although the employment rate exceeds the unemployment rate by far, it is still a point of concern that an estimated one in every third person from the working age population is still unemployed as this gives rise to a whole series of social problems such as poverty, crime and a high dependency ratio.

In a country facing a severe unemployment challenge, understanding where jobs have been created and lost in the local economy takes on special significance. Paradoxically, the more successful an area is in creating jobs the more likely it is to attract an inflow of unemployed people looking for work. The result can be an increase in the unemployment rate, even though that local economy is a net creator of jobs, i.e. the skills supply and demand is not aligned. Unemployment and the lack of a supportive social network bring with it poverty and a general decrease in the individual and/or households' socio-economic conditions, and an increase in informal settlements⁵.

3.3.2 Economic Change Processes

This sub-section deals with the expected economic change processes and resultant impacts that can be expected because of the introduction of the project to the affected environment. The Scoping study identified the following economic change processes as likely to occur:

- Enhanced / reinforced economic opportunities;
- Change in the employment equity of vulnerable groups; and
- Change in occupational opportunities.

In addition to the identified change processes mentioned above, the SIA study also considered enhanced electricity supply and economic growth as an additional change processes on a more macro scale. These change processes will be discussed separately

⁵ Van der Walt, 2004

together with a detailed assessment of the expected impact as a result of the change process taking place.

Enhanced / reinforced economic opportunities

Impact category: 1

Project phase: Construction

Contracts between the project proponent and its appointed contractors normally stipulate employment requirements, which usually include gender quotas, youth quotas and quotas for local labour to be employed during the project. In addition, they might also require that a certain proportion of time for which construction workers are paid must be spent on skills development initiatives.

The construction phase of the project for both substations and the transmission line will create an estimated 731 job opportunities over the length of the contract period. Most of these jobs will have an average contract period of 2-3 months. Due to the skilled nature of the construction processes, only experienced/skilled workers are used, usually in the form of the contractor's own permanent workforce. According to an Eskom official, contractors seldom employ casual workers from the local community, mainly because of the skills levels required, and the sensitive nature of the material used in these installations (i.e. the copper wiring often gets stolen).

Change in the employment equity of vulnerable groups

Impact category: 1

Project phase: Construction

Historically, the most vulnerable group in South Africa consists of Black African women who, through the ages have endured suppression on many levels: firstly being black, secondly being poor and female, and thirdly, the traditional role of servant. To this day large segments of the black women population at 'grassroots level' are still marginalised – this despite the fact that South Africa has signed the United Nations' Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1996. The CEDAW stipulates that women must enjoy the same rights as men and that they must be allowed to participate on equal footing with men in all sectors of society. Although there has been a slight increase in women's participation since 1996, the gender division in the labour market is still clearly visible. The traditional role ascribed to the Black African woman is that of housekeeper: cooking, cleaning, childcare, and creating a homely atmosphere (Annecke, 2009)⁶.

⁶ Annecke, W, 2009. Still in the shadows: Women and gender relations in the electricity sector in South Africa. In: McDonald, D.A. (ed). Electric capitalism: Re-colonising Africa on the power grid.

Sadly, due to years of indoctrination and disempowerment, vulnerable women still view their (ascribed gender) role as housekeeper – very few women will apply for direct formal employment on a construction team, but most will not hesitate to cook and clean for a construction worker, often for little or no remuneration. This enforces the women's 'traditional' gender role and does little by way of empowerment.

Change in occupational opportunities

Impact category: 1

Project phase: Construction

In addition to direct employment opportunities, construction activities usually also lead to indirect employment opportunities, which can be either formal or informal. Indirect formal employment refers to direct employment by the contractor but not as part of the actual construction team, e.g. support staff such as messengers and personal assistants. Indirect informal employment refers to entrepreneurial service providers who are not directly employed by the contractor or directly linked with the construction activities, e.g. domestic services, food stalls, etc.

Electricity supply and economic growth

Impact category: 1

Project phase: Operation and Maintenance

Most, if not all, economic activities are dependent on a reliable electricity supply. This and other resources such as water and fuel enable normal economic growth. Normal economic activities, e.g. industry and businesses, are affected when electricity is not available. The economic impact on such services increases the longer services such as electricity is unavailable. Services become unreliable or unavailable when the demand for such services exceeds the supply, resulting in load shedding, as was the case in South Africa in the beginning of 2008.

The proposed extensions to the Kwagga substation, the construction and operation of the new Phoebus substation and the proposed new 400kV transmission line between these two points will enhance the electricity supply to the City of Tshwane, which in turn will indirectly stimulate economic growth as the electricity supply can meet the demand, allowing businesses and industries to expand. Growing businesses and industries create additional employment opportunities, which enhance economic growth, permitting a positive economic impact to filter down to a more grassroots level.

ECONOMIC CHANGE PROCESSES (SUBSTATIONS)

Summary of change process: The construction of the Kwagga substation extensions the construction of the new Phoebus substation will create an estimated 490 jobs (245 jobs at each site over the lifespan of the construction phase). Employment enhances economic equities, even if it is over the short-term. . Members of vulnerable groups will have equal opportunity to apply for local positions, but such persons often do not apply as they are 'trapped' within their traditional role of housekeeper, caregiver, etc. A change in occupational opportunities is an indirect result of the project as auxiliary services are required during the construction phase, such as shelter, food, etc. A reliable electricity supply stimulates economic growth.

Nature of impact: Employment first and foremost has an economic impact on the individual and his/her nuclear family. In addition to securing an income, employment (direct formal or indirect informal) also creates a sense of self-worth and offers the individual the opportunity to extend his/her skills base and to gain some experience – this makes people more 'marketable' for future jobs. On a macro scale, the availability of electricity enhances economic growth, which creates more job opportunities with a positive economic impact.

Site characteristics: The areas surrounding the substations are characterised by low to medium income groups. There appears to be a high expectation for jobs in Soshanguve (Phoebus substation).

Mitigation measures:

- Regarding informal trade: Make use of a permit system and only allow vendors with a valid permit to supply goods and services. Such a system can also assist in controlling access to and from the construction sites and camp by knowing who the vendors are and who the loiterers are, and it can aid in preventing conflict amongst vendors due to an over-supply of the same product.

Enhancement measures:

- House construction workers within the local community, where possible. The 'rent' paid to the home owner should be a realistic boarding & lodging fee (i.e. according to the rental market in the surrounding area).
- Contractors must be contractually obliged to appoint local labour wherever possible.
- Give preferential treatment to local entrepreneurs and/or subcontractors to supply goods and services.
- Females should be encouraged to apply for positions.
- Individuals with the potential to develop their skills further should be afforded training opportunities, where possible.
- Payment should comply with applicable Labour Law legislation in terms of minimum wages.
- Where required, workers must be registered with any and all official bodies as required by law, e.g. Income Revenue Services, Unemployment Insurance Fund, etc. This will enable the worker to claim from the UIF as a means of continuous financial support when his/her position on the construction team either becomes redundant or once the construction phase comes to an end.

Rating Scale	Kwagga Substation		Phoebus Substation	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Site [1]	Local [2]	Site [1]	Local [2]
Duration	Very short term [1]	Short term [2]	Very short term [1]	Short term [2]
Magnitude	Low [4]	Moderate [6]	Low [4]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	Recoverable [3]
Probability	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]
Significance	Low [18]	Medium [30]	Low [18]	Medium [30]
Status	Positive	Positive	Positive	Positive
Cumulative impacts:				
<ul style="list-style-type: none"> None. 				
Residual impacts:				
<ul style="list-style-type: none"> Increased capacity on electricity network resulting in a stable network that can facilitate economic growth. 				
Links:				
<ul style="list-style-type: none"> Economic change processes link to geographic change processes (change in access to resources that sustain livelihoods), and demographic processes (influx of job seekers to an area with a growing economy). 				

ECONOMIC CHANGE PROCESSES (TRANSMISSION POWER LINE)

Summary of change process: The construction of the proposed Kwagga-Phoebus transmission line will create an estimated 241 jobs over the lifespan of the construction phase. Employment enhances economic equities, even if it is over the short-term. Members of vulnerable groups will have equal opportunity to apply for local positions, but such persons often do not apply as they are 'trapped' within their traditional role of housekeeper, caregiver, etc. A change in occupational opportunities is an indirect result of the project as auxiliary services are required during the construction phase, such as shelter, food, etc. A reliable electricity supply stimulates economic growth.

Nature of impact: Employment first and foremost has an economic impact on the individual and his/her nuclear family. In addition to securing an income, employment (direct formal or indirect informal) also creates a sense of self-worth and offers the individual the opportunity to extend his/her skills base and to gain some experience – this makes people more 'marketable' for future jobs. On a macro scale, the availability of electricity enhances economic growth, which creates more job opportunities with a positive economic impact.

Site characteristics: The areas surrounding the transmission line route alternatives are characterised by medium to high income groups. Residents from the Hornsoord informal settlement could expect jobs, as informal settlements are normally characterised by high unemployment rates.

Mitigation measures:

- Regarding informal trade: Make use of a permit system and only allow vendors with a valid permit to supply goods and services. Such a system can also assist in controlling access to and from the construction sites and camp by knowing who the vendors are and who the loiterers are, and it can aid in preventing conflict amongst vendors due to an over-supply of the same product.

Enhancement measures:

- House construction workers within the local community, where possible. The 'rent' paid to the home owner should be a realistic boarding & lodging fee (i.e. according to the rental market in the surrounding area).
- Contractors must be contractually obliged to appoint local labour wherever possible.
- Give preferential treatment to local entrepreneurs and/or subcontractors to supply goods and services.
- Females should be encouraged to apply for positions.
- Individuals with the potential to develop their skills further should be afforded training opportunities, where possible.
- Payment should comply with applicable Labour Law legislation in terms of minimum wages.
- Where required, workers must be registered with any and all official bodies as required by law, e.g. Income Revenue Services, Unemployment Insurance Fund, etc. This will enable the worker to claim from the UIF as a means of continuous financial support when his/her position on the construction team either becomes redundant or once the

			construction phase comes to an end.			
Rating Scale	Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]
Duration	Very short term [1]	Short term [2]	Very short term [1]	Short term [2]	Very short term [1]	Short term [2]
Magnitude	Low [4]	Moderate [6]	Low [4]	Moderate [6]	Low [4]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]
Significance	Low [18]	Medium [30]	Low [18]	Medium [30]	Low [18]	Medium [30]
Status	Positive	Positive	Positive	Positive	Positive	Positive
Cumulative impacts:						
<ul style="list-style-type: none"> • None. 						
Residual impacts:						
<ul style="list-style-type: none"> • Increased capacity on electricity network resulting in a stable network that can facilitate economic growth. 						
Links:						
<ul style="list-style-type: none"> • Economic change processes link to geographic change processes (change in access to resources that sustain livelihoods), and demographic processes (influx of job seekers to an area with a growing economy). 						

3.4 Institutional and Legal Processes

Institutional and Legal processes refer to the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver a quality and uninterrupted service to the local area.

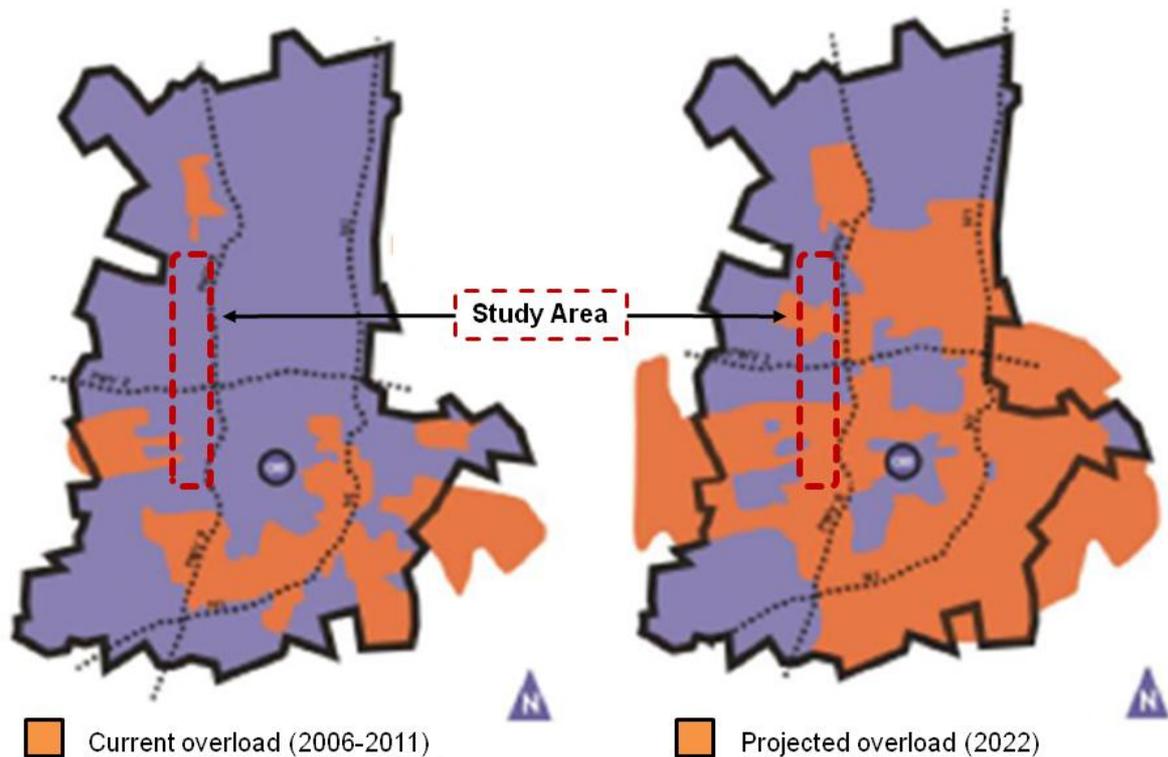
3.4.1 Baseline Institutional and Legal Processes

The years between 2001 and 2007 saw a steady increase in the delivery of municipal services to the households within the CoT. Municipal infrastructure backlogs are mostly confined to the previously disadvantaged township areas, and, as could be expected, in informal settlement areas.

Municipal wide, the majority of households (97.1%) have access to water that is on par or above RDP standard (i.e. piped water either in or within 200m from a dwelling). Even more households in both the Central and Northwest regions of the CoT have access to piped water – in both regions it is estimated at 99% of all households. Overall, it also appears that 97% of all households within the CoT have access to sanitation services that are on par or above RDP standard (i.e. connected to a sewerage system or a VIP system with ventilation). In the Central region it is estimated that 99% of all households have proper sanitation services, but this figure drops significantly in the Northwest region, where it is estimated that 87.4% of all households have access to a proper sanitation service (this percentage corresponds more or less with the 18% informal settlement in the region, so that it can be expected that it would be mostly informal houses that do not have access to RDP sanitation services).

The CoT, in its IDP, illustrated the overloaded areas in terms of the local electricity network (see figure 9). In terms of this illustration, Soshanguve is already experiencing problems in terms of electricity supply (residents also complained of this at the public meeting) – this means that the current electrical supply to the area is unable to keep up with the area's development and subsequent demand for electricity. If a 'no go' option is implemented, the situation will deteriorate significantly over the next 10 or so years so that more areas are affected by 2022.

Figure 9: Current and projected overload areas in the CoT



Source: Adapted from the TIPD 2006-2011 Third Revision

3.4.2 Institutional and Legal Change Processes

Institutional and Legal Change Processes assesses the way in which a development of this nature could change the face of service delivery in the affected area and how this change in turn could affect the quality of life of local residents. The following institutional and legal change processes are likely to occur:

- Change in housing needs / demands; and
- Change in community infrastructure.

These change processes are discussed below followed by a detailed assessment of the expected impact(s) because of the change processes taking place.

Change in housing needs / demands

Impact category: 1

Project phase: Construction

Housing arrangements for formally appointed construction workers is Eskom or its appointed contractors' responsibility. The construction team on a transmission line is normally housed within a construction camp, whereas a substation team is seldom housed in such a facility. A construction camp is a temporary housing set-up within a fenced area that usually includes rooms, bathrooms, a dining hall and, in some cases, recreational areas/facilities. On some projects in the past, transmission line construction

workers were housed within the local community, which is also a feasible option for the current project. The remainder of this aspect focuses on the transmission line construction team, as it was assumed that the substation construction teams will not be housed in a construction camp.

Of the total construction team of 241 people on the transmission line, an estimated 140 will require housing at some point during the construction phase. As few of the construction activities on the transmission line will take place concurrently, the number of people who require housing at any given time will also vary, and is estimated to range between 30 and 80 people, as per table 7 below, of which:

Number of people on site, but not living in the construction camp.

Number of people on site and living in the construction camp.

ESTIMATED NUMBER OF PEOPLE PER CONSTRUCTION PHASE																
On Site Activities	Pre-Construction Phase				Construction Phase								Post-Construction Phase			
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Technical survey	20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Environmental survey	-	15	-	-	-	-	-	-	-	-	-	-	-	-	-	
Access negotiations	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pegging central line	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	
Bush clearance	-	-	-	20	-	-	-	-	-	-	-	-	-	-	-	
Gate erection	-	-	-	5	-	-	-	-	-	-	-	-	-	-	-	
Foundation team	-	-	-	-	30	30	30	-	-	-	-	-	-	-	-	
Assembly team	-	-	-	-	-	-	40	40	-	-	-	-	-	-	-	
Erection team	-	-	-	-	-	-	-	40	40	40	-	-	-	-	-	
Stringing team	-	-	-	-	-	-	-	-	-	30	30	30	-	-	-	
Commissioning team	-	-	-	-	-	-	-	-	-	-	-	-	10	10	10	
Rehabilitation team	-	-	-	-	-	-	-	-	-	-	-	-	15	15	15	
Management team	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	
Total on site	30	26	15	35	40	40	80	90	50	80	40	40	35	35	35	
Total residing in camp	0	0	0	0	30	30	70	80	40	70	30	30	0	0	0	

If a construction camp is utilised, the contractor decides on the location for the camp, based on the distance from the camp site to the construction site(s) and the proximity of the camp to accessible municipal services. Once the contractor has decided on a preferred location, he/she negotiates with the landowner to secure the site, and with the local authority to secure municipal services (water, sanitation, electricity, and waste removal). The Environmental Control Officer (ECO) will inspect the conditions at the construction camp on a regular basis and if a contractor fails to supply sufficient and hygienic living conditions, he/she may be liable to a fine.

Unfortunately, construction camps have earned a certain level of social stigma over the years due to an increase in social problems in the surrounding area for the duration of the camp's presence. Some of the most common problems associated with residential construction camps include the following:

- An increase in prostitution: disempowered and desperate local women often view construction workers as financially well-off and therefore as a source of income to the women who, quite frequently, are the sole breadwinners in the family. Apart from the wilful act of prostitution, other women are willing to enter into sexual relationships with construction workers believing that they will gain financially, which is often not the case. This leads to an increase in pregnancies and teenage pregnancies and more often than not, both woman and child is left behind in the community without any financial support when the construction worker moves out of the area.
- An increase in casual sexual relationships has the obvious health implication of an increase in sexually transmitted infections, including HIV. Human beings are mobile beings which means that these infections are spread further when an infected persons enters a new area and engage in a new casual sexual relationship.
- Infrastructure and services (e.g. water and sanitation) that are not managed and maintained properly within a construction camp can lead to waterborne diseases such as cholera. Within concentrated living conditions, diseases are easily spread within not only the confines of the camp, but also to the surrounding community.
- Construction workers seldom spend their free time in the camp, but would rather venture into town or nearby settlement in search of entertainment, which quite often leads to alcohol abuse. This in turn can lead to an increase in conflict and violence, as well as an increase in risky behaviour, such as drug abuse, unprotected causal sexual encounters, etc.

It is therefore imperative that the position of the construction camp is carefully selected as construction camps are areas where some of the most significant social change processes could take place, as outlined above. On the other hand, housing construction workers in the local community creates economic opportunities for local households,

reduces the additional demand on municipal services (see 'change in community infrastructure' below) as additional connections is not required, and minimises the possibility and extent of problems associated with construction camps.

Change in community infrastructure

Impact category: 1

Project phase: Construction

Additional municipal services (such as water, sewage, and waste removal) will be required at the construction site(s) and, if used, the construction camp. Where contractors do make use of local municipal services, they have to obtain approval from the CoT as the guardian of these services, and once approved, the contractor must install and manage the necessary (temporary) infrastructure to access the municipal services network.

In general, it seems as if the additional demand on municipal services will not pose a problem, but sanitation services in Soshanguve might not be able to sustain additional pressure on the system. As could be expected, informal settlement areas have very little to no sanitation services and operate on a system that is below RDP standard consisting mostly of unventilated pit latrines. If not managed properly, these type of latrines can become a severe health threat. It is often difficult to contain waterborne diseases and diseases associated with poor sanitation, as people move around, spreading diseases to surrounding areas and neighbouring communities.

INSTITUTIONAL AND LEGAL CHANGE PROCESSES (SUBSTATIONS)

Summary of change process: Construction workers require housing, either within the community or within a construction camp. Municipal services such as water, sanitation, and waste removal will be required at the construction camp. Existing services can be used if construction workers are housed in the local community. Due to the temporary nature of a construction camp, a number of social problems are associated with a camp, including prostitution, unhygienic living conditions, alcohol abuse, and conflict. Most of the problems will be negated if construction workers are housed in the community.

Nature of impact: A lack of proper municipal services intensifies unhygienic living conditions, which impacts on health. Other social ills associated with a construction camp (e.g. prostitution) further impacts on health. Alcohol abuse and conflict increase noise levels and impacts on neighbouring areas' quality of life.

Site characteristics: Both substations are located in areas surrounded by residential areas. Experience has shown that communities in Soshanguve are willing to house construction workers, but the same situation might not prevail towards the historically 'white' areas surrounding the Kwagga substation as people in these areas live more isolated from one another and are less 'open' to strangers in their homes.

Mitigation measures:

- Where possible, house construction workers in local communities as this minimises the need for additional municipal connections.
- Contractors must supply and install, at their own cost, all the infrastructure required to access municipal services, e.g. water and sewerage pipelines – at the construction site(s) and the construction camp, if one is used.
- Sufficient portable toilet facilities must be available on site (and the camp) and must be serviced regularly to ensure hygienic conditions.
- Waste removal containers must be supplied on site (and the camp). These containers must be covered to prevent waste being blown around and must be cleared at least once a week. Waste must be disposed of at an official municipal waste site.
- Prohibit the use of alcohol or other substances on site (and in the construction camp). Any person found to be under the influence of a substance should not be allowed on site (or into the construction camp).
- (Only residents should be allowed inside the construction camp. Any other persons seen loitering at or inside the camp should be requested to leave the area).
- (The location of the construction camp should be determined in

Enhancement measures:

-

consultation with the ECO).				
Rating Scale	Kwagga Substation		Phoebus Substation	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short term [2]	Very short term [1]	Short term [2]	Very short term [1]
Magnitude	High [8]	Moderate [6]	High [8]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]
Significance	Medium [45]	Low [16]	Medium [45]	Low [16]
Status	Negative	Negative	Negative	Negative
Cumulative impacts:				
<ul style="list-style-type: none"> None. 				
Residual impacts:				
<ul style="list-style-type: none"> Contamination of local natural resources, if services were not managed properly during construction. 				
Links:				
<ul style="list-style-type: none"> Institutional and legal change processes links to geographic change processes (land acquisition and disposal, including the temporary unavailability of land taken up by the construction camp), economic change processes (change in occupational opportunities as people shift their attention from the construction sites to the construction camp to deliver services to the camp and construction workers) and socio-cultural change processes (conflict inside the camp and crime and safety impacts – people perceive the construction camp with an increase in crime). 				

INSTITUTIONAL AND LEGAL CHANGE PROCESSES (TRANSMISSION POWER LINE)

Summary of change process: Construction workers require housing, either within the community or within a construction camp. Municipal services such as water, sanitation, and waste removal will be required at the construction camp. Existing services can be used if construction workers are housed in the local community. Due to the temporary nature of a construction camp, a number of social problems are associated with a camp, including prostitution, unhygienic living conditions, alcohol abuse, and conflict. Most of the problems will be negated if construction workers are housed in the community.

Nature of impact: A lack of proper municipal services intensifies unhygienic living conditions, which impacts on health. Other social ills associated with a construction camp (e.g. prostitution) further impacts on health. Alcohol abuse and conflict increase noise levels and impacts on neighbouring areas' quality of life.

Site characteristics: It is expected that the households surrounding the transmission line construction area will be less 'open' to strangers in their homes. Construction workers might be able to find accommodation in Soshanguve, but this means that they will require transport to and from the construction site as construction progresses.

Mitigation measures:

- As per the substations' mitigation measures for institutional and legal change processes.

Enhancement measures:

- None.

Rating Scale	Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short term [2]	Very short term [1]	Short term [2]	Very short term [1]	Short term [2]	Very short term [1]
Magnitude	High [8]	Moderate [6]	High [8]	Moderate [6]	High [8]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]
Significance	Medium [45]	Low [16]	Medium [45]	Low [16]	Medium [45]	Low [16]

Status	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts: <ul style="list-style-type: none"> • None. 						
Residual impacts: <ul style="list-style-type: none"> • Contamination of local natural resources, if services were not managed properly during construction. 						
Links: <ul style="list-style-type: none"> • Institutional and legal change processes links to geographic change processes (land acquisition and disposal, including the temporary unavailability of land taken up by the construction camp), economic change processes (change in occupational opportunities as people shift their attention from the construction sites to the construction camp to deliver services to the camp and construction workers) and socio-cultural change processes (conflict inside the camp and crime and safety impacts – people perceive the construction camp with an increase in crime). 						

3.5 Socio-Cultural Processes

Socio-cultural processes relate to the way in which humans behave, interact, and relate to each other and their environment, as well as the belief and value systems, which guide these interactions.

3.5.1 Baseline Socio-Cultural Profile

Pretoria was established in 1855 and in 1910, became the capital of South Africa. The city was developed based on a model of segregation, where white areas were established around the central business district and black townships were placed on the outskirts of town. Initially only four township areas were established, but in later years more township areas were added to north of the municipal area, e.g. Soshanguve. Agricultural holdings (such as Hornsoord and Andeon) were placed between Pretoria and Soshanguve to act as a buffer between 'white' and 'black' areas. The City of Tshwane came into being in 2000 when all these areas were amalgamated under one municipality, the City of Tshwane Metropolitan Municipality.

The southern half of the project (Kwagga substation and the first part of the transmission power line) is located within Pretoria West. Historically this area has been characterised as a lower income 'white' area – during apartheid most of its residents were blue-collar workers. The area started expanding during the 1950s as due to housing demands from industrial workers. The origins of the area can be traced back to a land donation that was made by General Dan Pienaar to alleviate the problem of white homelessness after World War 2. The area used to be home to a leper hospital, which has since been abandoned. Home businesses are commonplace in the area, ranging from auto mechanics, hairdressers, and other services. *Shebeens* are on the upraise in the area. Present day Pretoria West has transformed both racially and structurally – activities that used to be exclusively associated with Blacks, such as tuckshops, backyard industries, etc. are taking place in the area.

The proposed Phoebus substation will be located within Soshanguve and parts of the transmission line, which is a township situated approximately 45km north of Pretoria. Soshanguve was established in 1974 on land that was supposed to be incorporated into a Bantustan bordering on Mabopane in the then Bophuthatswana. The name Soshanguve was derived from the **Sotho**, **Shangaan**, **Nguni** and **Venda** people who were resettled from Atteridgeville and Mamelodi. Soshanguve was incorporated into the CTMM and in January 2006 was the scene of riots due to poor service delivery.

3.5.2 Socio-Cultural Change Processes

As socio-cultural processes recount the way in which humans behave, interact, and relate to each other and their environment, socio-cultural change processes in turn looks at the way in which the upgrade of the Kwagga substation, the construction and operation of

the new Phoebus substation, and the construction and operation of the transmission power line between these two points can alter the interactions and relationships within the local community by bringing about a change in the socio-cultural environment.

As per the results of the scoping study, the following socio-cultural change processes are expected:

- Dissimilarity in social practices;
- Alteration in family structure;
- Conflict;
- Safety and crime impacts; and
- Change in sense of place.

These change processes will be discussed separately together with a detailed assessment of the expected impact as a result of the change processes occurring.

Dissimilarity in social practices

Impact category: 1

Project phase: Construction

Dissimilarity in social practices occurs when there are different values, social standards, religious beliefs, etc. between a large group of newcomers to an area and that of the area's local residents. In theory the existence of two groups with different social practices living alongside each other should not in itself be the cause of problems – it is when the one group attempts to exert power over the other group or where different cultural values are not respected, that conflict situations arise. Such conflict situations can turn violent and often require third party intervention. For example, history has shown that there is a distinct dissimilarity in social and cultural practices between the Xhosa and the Zulu ethnic groups, which has led to severe outbreaks of conflict and violence between these two groups on more than one occasion. To further the example, envisage a construction team consisting only of Xhosas is contracted to work on a development project in an area mostly inhabited by Zulus, and that none of the Zulus were offered any jobs or the opportunity to apply for jobs on the project. The fact that the local community might not have had the necessary skills required for the job then becomes irrelevant as the perception has been created on the local community's side that Xhosas entered their area from elsewhere and in the process took job opportunities away from the local Zulu community. Given the perceptions and circumstances surrounding the situation, conflict is sure to follow.

Dissimilarity in social practices is more likely to come to the fore if construction workers are housed in a construction camp and if such a camp is located close to existing formal and informal settlements. This is because construction workers spend part of their free time at the construction camp and therefore social and cultural practices will be more evident at the camp than on site.

Alteration in family structure

Impact category: 1

Project phase: Construction

A large segment of skilled construction workers form part of South Africa's migrant labour system. Migrant labourers leave their homes and families behind for extended periods as they are continually on the move as part of a construction team. The often-harsh conditions that characterise construction sites and construction camps render them undesirable environments for family life. The prolonged separation from family life systematically robs the migratory worker from his role in the family and his familial identity – on the one hand he has a home and family life where his traditional role is that of husband, father and community leader, and on the other hand he is part of a construction team where his identity shifts to that of a construction worker, working and living amongst strangers, oftentimes in adverse conditions. This system creates and sustains a sense of disconnectedness and so people tend to live a life of 'here and now' without regard for their future. Such an attitude contributes to the spread of HIV, which, in the end, also brings about a change in the traditional family structure, e.g. children-headed households, or children who are forced to leave school in search of employment so that they can care for their siblings and sick parents.

The alteration in family structure becomes more likely the more prolonged an individual's absence from his/her family. Local labour seldom resides in the construction camp, which means that if local labour is employed on the construction team, these individuals will return home every night. It is not known what the situation is concerning a contractor's permanent workforce, i.e. whether or not these individuals return home often. At the time of the study, the timeframes associated with the respective construction processes (substation and transmission lines) was not known.

Conflict

Impact category: 1

Project phase: Construction

At the time of the study, there was no apparent conflict within the local community or between the local community and the project proponent (Eskom) over the proposed substations or the transmission line. The situation is unlikely to change if the project processes proceed in an open and transparent manner. Also refer to 'risk for social mobilisation' under subsection 3.5.2.

Safety and crime impacts

Impact category: 1

Project phase: Construction

There is perception that crime increases in an area the moment that construction workers arrive on site. Because of this perception, occurrences of crime during the

construction phase are likely to be ascribed to construction workers. This has a mental health impact, such as fear. However, it should be noted that in most instances it is not the actual construction worker who engage in criminal activities but more likely job seekers who loiter at the site in search of employment.

Change in sense of place

Impact category: 2

Project phase: Operation and Maintenance

Sense of place goes hand in hand with place attachment, which is the sense of connectedness a person/community feels towards certain places. Place attachment may be evident at different geographic levels, i.e. site specific (e.g. a house, burial site, or tree where religious gatherings take place), area specific (e.g. a residential area), and/or physiographic specific (e.g. an attachment to the look and feel of an area). The concept of sense of place therefore attempts to integrate the character of a particular setting with the personal emotions, memories, and cultural activities associated with such a setting.

The potential impact on socio-cultural behaviour and the related perception of environmental changes can have either a positive or a negative impact on sense of place (e.g. peace of mind vs. frustration/anger). The introduction of a new project to the area can be viewed as a positive impact if people perceive the project as infrastructural and/or economic development that is not intrusive on their lives and do not cause them immediate danger. Potential negative impacts include the visual impact and the resultant intrusion on sense of place.

SOCIO-CULTURAL CHANGE PROCESSES (SUBSTATIONS)

Summary of change process: The arrival of people who are not from the area can lead to conflict if there is dissimilarity in social practices and if such differences are not respected. Family structures can be altered where the breadwinner is absent for prolonged periods of time and in cases of HIV transmission, the family structure can further be altered. It is unlikely that the upgrade of the Kwagga substation and the presence of the new Phoebus substation will bring about a change in sense of place, as it is located next to infrastructure of a similar nature.

Nature of impact: Conflict affects a community's group cohesion and way of life. Apart from the obvious health impacts associated with illnesses such as HIV, it also bears an economic impact when people become too ill to work – on the macro economy as well as the micro economy of the family who loses their source of income, which affects their livelihood. People lose their sense of belonging and place attachment, resulting in a loss of sense of place.

Site characteristics: Both sites are characterised by infrastructure of a similar nature, i.e. the existing Kwagga substation and the existing Hangklip substation.

Mitigation measures:

- Launch a STI and HIV/AIDS awareness campaign to educate construction team members and the local community on this issue. Identify and train peer educators and provide the necessary resources (posters, information booklets, referral sources for VCT, etc.) to ensure an effective campaign.
- Avoid potential conflict situations that can arise from limited employment opportunities by using a fair and transparent recruitment process. Consider implementing the use of a rotary employment scheme, if and where feasible, to extend employment opportunities to more individuals.
- Do not allow idle loitering of job seekers, or other individuals who are not involved with the project, at either the construction site or the construction camp. This is to prevent a potential increase in opportunistic crimes.
- Implement a project information centre at the site offices where local residents can obtain information on the progress of the construction process and on what to expect in future (for example the types of activities that will take place and when and how these will be executed). Also, display and/or inform local residents of current changes and future possibilities associated with the project. The information centre can also serve as a central point where residents can complain or bring

Enhancement measures:

- None.

problem areas associated with the construction process under the project manager's attention. The information centre must be easily accessible to the public and can operate on a part-time basis, but the centre's hours of operation must be clearly displayed and/or communicated to the local community.				
Rating Scale	Kwagga Substation		Phoebus Substation	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]
Magnitude	Moderate [6]	Low [4]	Moderate [6]	Low [4]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]
Significance	Medium [39]	Low [12]	Medium [39]	Low [12]
Status	Negative	Negative	Negative	Negative
Cumulative impacts:				
<ul style="list-style-type: none"> • None. 				
Residual impacts:				
<ul style="list-style-type: none"> • An increase in the HIV infection rate. • Vulnerable families. 				
Links:				
<ul style="list-style-type: none"> • Socio-cultural change processes links to demographic change processes (population growth and decline), economic change processes, and empowerment and emancipation processes (people are disempowered when they are forced to remain in a destructive cycle). 				

SOCIO-CULTURAL CHANGE PROCESSES (TRANSMISSION POWER LINE)

Summary of change process: The arrival of people who are not from the area can lead to conflict if there is dissimilarity in social practices and if such differences are not respected. Family structures can be altered where the breadwinner is absent for prolonged periods of time and in cases of HIV transmission, the family structure can further be altered. The presence the transmission line can change the face of the area there used to be no infrastructure, and therefore has the potential to alter the way in which people relate to each other and their environment, affecting their sense of place.

Nature of impact: Conflict affects a community's group cohesion and way of life. Apart from the obvious health impacts associated with illnesses such as HIV, it also bears an economic impact when people become too ill to work – on the macro economy as well as the micro economy of the family who loses their source of income, which affects their livelihood. People lose their sense of belonging and place attachment, resulting in a loss of sense of place.

Site characteristics: The area has unique characteristics with amenities like the Magaliesberg Nature Reserve close by.

Mitigation measures:

- As per the substations' mitigation measures for institutional and legal change processes.

Enhancement measures:

- None.

Rating Scale	Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]	Short [2]	Very short [1]
Magnitude	High [8]	Moderate [6]	Moderate [6]	Low [4]	High [8]	Moderate [6]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]
Significance	Medium [45]	Low [16]	Medium [39]	Low [12]	Medium [45]	Low [16]

Status	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:						
<ul style="list-style-type: none"> • None. 						
Residual impacts:						
<ul style="list-style-type: none"> • An increase in the HIV infection rate. • Vulnerable families. • A loss of place attachment and sense of place. 						
Links:						
<ul style="list-style-type: none"> • Socio-cultural change processes links to demographic change processes (population growth and decline), economic change processes, and empowerment and emancipation processes (people are disempowered when they are forced to remain in a destructive cycle). 						

4. CONCLUSIONS AND RECOMMENDATIONS

As could be expected, the construction phase is characterised by a number of negative social impacts, which is mainly due to the nature of the activities that take place during this phase. Although the expected social impacts associated with the construction phase are mostly negative across all the change processes, these impacts are for the most part only temporary in nature and as such, it is expected to only last over the construction period.

Even though all of the identified social impacts can be mitigated or enhanced successfully, it can only be done if Eskom, or its appointed contractor(s), commit to the responsibility of ensuring that the level of disturbance brought about to the social environment by the more negative aspects of the project, is minimised as far as possible.

Overall, based on the conclusions and findings of this report, the upgrade of the Kwagga substation, the construction and operation of the new Phoebus substation, and the proposed transmission line do not pose any social impacts that is deemed irreversible, fatally flawed, or severely detrimental to the social environment. However, this finding is subject to the implementation of, and adherence to, the identified mitigation measures contained in this report, and as recommended for inclusion in the EMP. In addition, the social specialist recommends the following:

- Where possible, accommodate workers in private homes in the surrounding community.
- Ensure that social issues identified during the EIA phase are addressed during construction. This could be done by engaging social specialists where necessary or by ensuring that ECOs used during construction have the necessary knowledge and skills to identify social problems and address these when necessary. Guidelines on managing possible social changes and impacts could be developed for this purpose.
- Always inform landowners on any construction activity to start on their property. Prepare them on the number of people that will be on the property and on the activities they will engage in.
- Ensure that Eskom employees are aware of their responsibility in terms of Eskom's relationship with landowners and communities surrounding power lines. Implement an awareness drive to relevant sections to focus on respect, adequate communication and the 'good neighbour principle.'
- Incorporate all mitigation measures in the SIA that are relevant to the construction phase in the EMP to ensure these are adhered to by Eskom and the contractor.

5. SOCIAL MITIGATION/ENHANCEMENT MEASURES

It is recommended that the following social mitigation/enhancement measures are included in the EMP and monitored by the appointed ECO.

5.1 Impacts relating to Geographic Change Processes

Mitigation measures:

- Even though both sites belong to Eskom, the land around the substations sites should be rehabilitated upon completion of the construction process so that it does not deter from the surrounding area.
- Land rehabilitation should take place upon completion of the construction process on the transmission line to ensure that the land is returned to the landowner in the same condition as prior to construction, unless otherwise agreed with the landowner in question.

Enhancement measures:

- None.

5.2 Impacts relating to Demographic Change Processes

Mitigation measures:

- Avoid the relocation of residential households as far as possible. This can be done through route re-alignments in areas where the surrounding area will allow for such deviations.
- Do not create false expectations – inform local job seekers upfront about the skilled nature of the construction and the low likelihood of employing an unskilled and/or inexperienced workforce.
- Also inform local communities that contractors have a permanent workforce and that they will mostly likely make use of this workforce, which will further reduce the possibility of local employment.
- Discourage job seekers to travel to the area by advertising in the local and/or

Enhancement measures:

- None.

regional press before construction commences to show that all positions have been filled and that there are no further job opportunities available.

5.3 Impacts relating to Economic Change Processes

Mitigation measures:

- Regarding the informal trade: Make use of a permit system and only allow vendors with a valid permit to supply goods and services. Such a system can also assist in controlling access to and from the construction sites and camp by knowing who the vendors are and who the loiterers are, and it can aid in preventing conflict amongst vendors due to an over-supply of the same product.
- Payment should comply with applicable Labour Law legislation in terms of minimum wages.
- Where required, workers must be registered with any and all official bodies as required by law, e.g. Income Revenue Services, Unemployment Insurance Fund, etc. This will enable the worker to claim from the UIF as a means of continuous financial support when his/her position on the construction team either becomes redundant or once the construction phase comes to an end.

Enhancement measures:

- Contractors must be contractually obliged to appoint local labour wherever possible.
- Give preferential treatment to local entrepreneurs and/or subcontractors to supply goods and services.
- Females should be encouraged to apply for positions.
- Individuals with the potential to develop their skills further should be afforded training opportunities, where possible.

5.4 Impacts relating to Institutional and Legal Change Processes

Mitigation measures:

- Where possible, house construction workers in local communities as this minimises the need for additional municipal connections.
- Contractors must supply and install, at their own cost, all the infrastructure required to access municipal services, e.g. water and sewerage pipelines – at the construction site(s) and the

Enhancement measures:

- None

construction camp, if one is used.

- Sufficient portable toilet facilities must be available on site (and the camp) and must be serviced regularly to ensure hygienic conditions.
- Waste removal containers must be supplied on site (and the camp). These containers must be covered to prevent waste being blown around and must be cleared at least once a week. Waste must be disposed of at an official municipal waste site.
- Prohibit the use of alcohol or other substances on site (and in the construction camp). Any person found to be under the influence of a substance should not be allowed on site (or into the construction camp).
- (Only residents should be allowed inside the construction camp. Any other persons seen loitering at or inside the camp should be requested to leave the area).
- (The location of the construction camp should be determined in consultation with the ECO).

5.5 Impacts relating to Socio-Cultural Change Processes

Mitigation measures:

- Launch a STI and HIV/AIDS awareness campaign to educate construction team members and the local community on this issue. Identify and train peer educators and provide the necessary resources (posters, information booklets, referral sources for VCT, etc.) to ensure an effective campaign.
- Avoid potential conflict situations that can arise from limited employment opportunities by using a fair and transparent recruitment process. Consider implementing the use of a rotary employment scheme, if and where

Enhancement measures:

- None.

feasible, to extend employment opportunities to more individuals.

- Do not allow idle loitering of job seekers, or other individuals who are not involved with the project, at either the construction site or the construction camp. This is to prevent a potential increase in opportunistic crimes.
- Implement a project information centre at the site offices where local residents can obtain information on the progress of the construction process and on what to expect in future (for example the types of activities that will take place and when and how these will be executed). Also, display and/or inform local residents of current changes and future possibilities associated with the project. The information centre can also serve as a central point where residents can complain or bring problem areas associated with the construction process under the project manager's attention. The information centre must be easily accessible to the public and can operate on a part-time basis, but the centre's hours of operation must be clearly displayed and/or communicated to the local community.

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