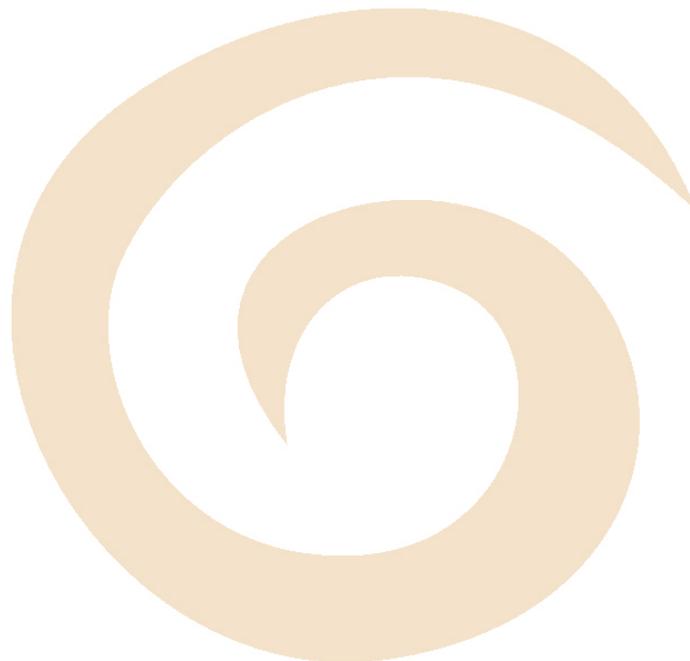


SOCIAL IMPACT ASSESSMENT
As part of the
ENVIRONMENTAL IMPACT ASSESSMENT PROCESS
for the
PROPOSED TSHWANE STRENGTHENING PROJECT PHASE 1:
THE UPGRADE OF THE VERWOERDBURG SUBSTATION AND THE ASSOCIATED
400kV TURN-IN/OUT TRANSMISSION LINES

DRAFT SIA REPORT



REVISED DRAFT
-JANUARY 2010-

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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

2009-12-04

Date

EXECUTIVE SUMMARY

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.

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 Environmental Affairs (DEA), 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 establishment and operation of the Phoebus substation adjacent to Hangklip substation.

This particular report only focuses on **Tshwane Strengthening 1 (DEA Ref. No. 12/12/20/1470)** and details the results of the Social Impact Assessment (SIA) specialist study carried out by MasterQ Research as part of the overall EIA process that is managed by Savannah Environmental.

Apart from the southern-most tip of the turn-in/out transmission line **Alternative 1** (at its bend where it runs parallel to Glen Avenue), which is located within the City of Tshwane Metropolitan Municipality (CoT), the infrastructure development associated with Tshwane Strengthening 1 (Apollo-Verwoerdburg) is located within the Kungwini Local Municipality (KLM) that forms part of the Metsweding District (MD) of the Gauteng Province.

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.

- **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 two proposed 400kV turn-in/out transmission lines will be operated within a servitude of 110m in width. Although most land uses are still permitted within the servitude (except permanent structures and human occupation), the landowner has to comply with the regulations set forth by Eskom to ensure the safe operation of the lines. The landowner therefore has to factor transmission line towers and the servitude into future land use, which changes the way in which the landowner used to use the land, e.g. a row of houses that has to be removed from a development to make way for the servitude. As Eskom already owns the site for the substation extensions, the impact of land use changes on this particular property will be limited.

Demographic Processes

Construction workers enter the area on a temporary basis and will not have an effect on the population size. 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 substation extensions and turn-in/out transmission lines will create an estimated 425 job opportunities. 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 and Legal Processes

The scoping study identified the possibility of a change in housing needs/demands and a change in community infrastructure due to the project. Based on the information received from the project proponent (Eskom) on the number of people involved with a project of this nature across the project's lifespan, coupled with the time they spend in the area, it is unlikely that the project will cause any institutional and legal change processes. Therefore, any possible impacts as a result of these change processes, have been ruled out.

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. Due to the fact that existing infrastructure of a similar nature is already present in the area, it is unlikely that the project will alter the way in which people relate to each other and their environment, and therefore unlikely to affect their sense of place.

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 and 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 Verwoerdburg substation and the construction and operation of the two proposed turn-in/out lines do not pose any social impacts that are 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:

- 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.

Based on the results of the SIA, the use of Alternative 3 is preferred. This alternative is located adjacent to two existing transmission lines and a metropolitan road (M57), which places alternative 3 within a disturbed corridor. The use of a disturbed corridor implies that people living in the area are used to presence of the lines and therefore an additional line is less likely to change their perception of their area as when the line is placed across a previously undisturbed area (as is the case for most of alternatives 1 and 2). The relocation of structures will not be required with the use of alternative 3, whereas there is a distinct possibility that a household would have to be relocated if alternative 1 was implemented. In addition, the affected landowner indicated that alternative 3 will have the least effect on his development plans, as the existing lines have already been factored into the development's site layout plan.

1. INTRODUCTION

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 Phase 1 (Apollo-Verwoerdburg) will be considered and evaluated within the Environmental Impact Assessment (EIA) studies. Three separate applications have been lodged with the Department of Environmental Affairs (DEA), as follows:

- **Tshwane Strengthening 1.1 (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 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 establishment and operation of the Phoebus substation adjacent to Hangklip substation.

This particular report only focuses on **Tshwane Strengthening 1.1 (DEA Ref. No. 12/12/20/1470)** and details the results of the Social Impact Assessment (SIA) specialist study carried out by MasterQ Research as part of the overall EIA process that is managed by Savannah Environmental. Separate Social Impact Assessment (SIA) Reports have been compiled for the Tshwane Strengthening 2 and 3 applications. The EIA process 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.

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. 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.

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 assess the probable social impacts on the human environment that can occur as a result of the proposed upgrade of the Verwoerdburg substation and the construction and operation of the two associated 400kV turn-in lines. The results of the assessment must be reflected in a SIA Report in such a way that DEA can use the report to make an informed decision whether to grant Environmental Authorisation or not, and if so, subject to which conditions.

To accomplish the overall study objective, a number of secondary objectives had to be met, namely:

- Conduct the required detailed studies that were identified during the Scoping Phase, thereby refining the assessment of the probable impacts of the project on the social environment;
- Rate these impacts along specific significance rating scales in order to obtain an overall view of their relative severity and significance;
- Identify measures that can be implemented to prevent or ameliorate any negative impacts, or that can be used to enhance any positive impacts; and
- Present these mitigation/enhancement measures for inclusion in the Environmental Management Plan (EMP).

1.3 Approach and Methodology

Primary and secondary data collection methods were used to fulfil the objectives of the study. Primary data collection included the following:

- An orientation site visit with the Eskom surveyors on 12 and 13 May 2009;
- A fact finding site visit on 28 October 2009;
- E-mail communication with affected landowner on 3 and 4 November 2009;
- Information session with Eskom representatives on 9 December 2009.

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);
- Integrated Development Plans (IDP) of the affected District and Local Municipalities;
- The Spatial Development Framework (SDF) of the Metsweding District Municipality; and

- The Gauteng Province Growth and Development Strategy (GPGDS).

Information that was relevant to the project was identified and assessed from these sources within the context of the pre-construction, construction, operational, and decommissioning phases of the proposed Tshwane Strengthening project Phase 1, and in the instance of this report, with a particular focus on the proposed upgrade of the Verwoerdburg substation and the two associated 400kV turn-in lines.

1.3.1 Significance Rating Scales

This particular SIA also took into account the extent, duration, intensity, and probability of occurrence that a potential impact might have on the social environment (in terms of the requirements of the EIA Regulations). Impacts can be negative, neutral, or positive. The impacts are also categorised according to the various project stages, i.e. construction and decommissioning, and operation and maintenance. Mitigation measures have also been identified with the aim to reduce the potential negative impacts and to enhance the potential positive impacts. Also included in the assessment tables that follow in Section 3 is a rating of the significance of the impact.

To determine the significance of each identified issue, the following criteria were used:

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 range of the impact and was 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 and was 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 significance of the impact and is 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 extent to which an impact can be changed or undone and is 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

To determine a preferred alternative in terms of the turn-in and –out transmission power lines (only one site earmarked for the substation expansions), it was necessary to assess and compare the alternatives in respect of the significance of anticipated social impacts. Therefore, a distinction was made between the following impact categories:

- **Category 1:** Impacts that are not expected to differ between the various alternatives, e.g. the number of employment opportunities created by the proposed project are expected to remain the same, irrespective of the chosen alternative (except in the case of the ‘no go’ option); and
- **Category 2:** Impacts that are expected to differ significantly between the proposed alternatives, e.g. the possibility of resettlement increases proportionately if an alternative traverses densely populated areas as opposed to skirting sparsely populated areas.

1.4 Preliminary Findings of the SIA Scoping Report

The overall business objective of the Scoping Phase (completed in June 2009) was to identify issues and concerns in order to focus the detailed assessment to follow in the Impact Assessment Phase (current phase), and to provide a framework within which the assessment is to be undertaken.

The change processes that were assessed during the Scoping Phase, and the expected social impacts as a result of these change processes taking place, are as per Table 1. Please note that this table is only intended as a summary of the expected change processes and should ideally be read within the context of the SIA Draft Scoping Report (June 2009) to gain a better understanding of these change processes and expected impacts.

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

Process	Expected Change Processes	Expected Impact(s)
Geographic	Access to environmental resources	None (it is not foreseen that the development will impede people's access to natural resources such as water or wood).
	Change in access to resources that sustain livelihoods.	Temporary and permanent loss of land through the land acquisition process. Depending on current or future land use, this can have an economic impact on the landowner. At the time of the (Scoping) study, it was not clear who the landowner was of the affected portion of land.
	Land acquisition and disposal, including availability of land.	Permanent servitude of 55m (110m on a parallel line) on a 400kV turn-in power line, which will restrict access to that portion of land, although certain land uses will still be permitted within the servitude. A loss of land can have an economic impact on the landowner, but this can be mitigated through the negotiation and compensation process. This impact will be negated if Eskom is the landowner of the substation property and the surrounding land.
		In terms of potential land claims, it is not foreseen that a change in ownership would bring about significant changes in land use. Its only implication is that servitude negotiation would have to take place with the new landowner.
Demographic	Population change	Influx of construction and maintenance workers that will lead to a temporary 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)
	In-migration of unemployed work seekers	Influx of job seekers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety, and social well-being.
	Relocation or displacement of individuals or families	None (no relocation required).
Economic	Increase in division between rich and poor	None (it is not foreseen that the development will exacerbate class inequalities).
	Enhanced/reinforced economic equities	<p>Labour might be sourced from the local area thereby creating job and income opportunities enhancing economic opportunities in the area (positive economic impact).</p> <p>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.</p> <p>It is believed that most of the employment opportunities would be restricted to the construction phase.</p>
	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	<p>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.</p> <p>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.</p>
	Change in occupational opportunities	<p>An increase in employment opportunities is expected, leading to a positive economic impact on local households.</p> <p>Employment opportunities will range from unskilled to highly skilled positions.</p>
	Land acquisition and disposal, including cost of land	None (it is not foreseen that the development will increase the cost of property in the area, or that such an increase will exacerbate class or race inequalities).
Institutional and	Change in / disruption of	None (it is not foreseen that the development will impact

Process	Expected Change Processes	Expected Impact(s)
Empowerment	power relationships	on individuals' levels of power or opportunity during, for example, the negotiation process, or that the development is used for political gain to the detriment of the larger social environment).
	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 infrastructure	The development will not change any aspect of 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 could impact on construction workers and the immediate local area's health and safety if such services are not available or inadequate.
	Change in housing needs / demands	The construction workforce will most probably be housed within a construction village. The presence of a construction village can give rise to an increase in prostitution, social conflict, etc, which in turn can affect health, safety, and social cohesion.
Socio-Cultural	Disruption of social networks	None (the development will not affect existing social networks).
	Disruption in daily living and movement patterns	None (the development will not change the lifestyle of residents, or affect their access to communal facilities, or physically divide the community. Where the development impinges on pedestrian movement, it is expected that the impact will be confined to the construction phase and limited to a few individuals).
	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	Casual sexual relationships increase the spread of HIV/AIDS and other STIs. HIV/AIDS brings about a change in the traditional family structure, e.g. children-headed households. Family structures can also be altered in cases where locals secure permanent employment with the contractor, causing them to move out of the area to become part of a migrant workforce. For some families this will mean the loss of a head of household or breadwinner, 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

Process	Expected Change Processes	Expected Impact(s)
		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	The area is already characterised by infrastructure of a similar nature, i.e. the Verwoerdburg substation and a large number of existing transmission power lines. The area is therefore already regarded as 'spoilt'.
	Implications for social history	None (no changes are foreseen to the local community's social history, but this will be cross checked with the heritage study).

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. For example, during the Scoping phase the relocation or displacement of individuals or families was ruled out, whereas in the Impact Assessment phase it became evident that Alternative 1 can potentially affect at least one household as per the current the route alignment of this route corridor. 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 upgrade of the Verwoerdburg substation and the construction and operation of the two short distance (~2 km in length) 400kV transmission power lines). 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 the Environmental Authorisation and once the authorisation has been communicated to all registered I&APs. Parties who wish to object to, or appeal against the authorisation must lodge their objections directly with the Minister of DWEA (i.e. such objections are not routed through, or addressed by the public participation consultants or the Environmental Assessment Practitioner).

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) that pertained specifically to the **upgrade of the Verwoerdburg substation and the 400kV turn-in/out power lines**. 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 2 and 3 projects were considered in the respective SIA reports for these developments, and are therefore not included in table 2 below. In most cases, the issue/concern appears as it was received by the public participation office (exceptions are where the public participation practitioner at a public event, such as the public meeting, recorded a comment). A full Comments and Responses Report is included as part of the main EIA Report.

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

Issue/Concern	Reference in SIA
Although the alternative routes for the project cross-agricultural land, it is well inside the urban edge and most, if not all of the land, already belongs to developers. Furthermore, we don't see any intensive farming operations that could be affected by any one of the two routes. [Freek Tomlinson, AGRIGauteng]	<i>Section 3.1.2: Changes in access to resources that sustain livelihoods</i>
We are keen to understand how landowners within the Doornkloof East area are going to be affected by the proposed loop-in power lines and also the beneficiaries of the project. [Herman Joubert, landowner]	<i>Impacts are assessed throughout the SIA report</i>
Why is the alternative route adjacent to the M57 following the existing power lines not included in the maps and the draft scoping report? This alternative seems a better option if one were to consider that the area along the M57 is already transformed. [David Boshof]	<i>Addressed throughout the SIA as an assessment of Alternative 3</i>
We are currently busy with the designs for the development of light industry on our property along one of the proposed loop-in line alternatives [Herman Joubert, landowner]	<i>Section 3.1.2: Changes in access to resources that sustain livelihoods</i>
Why is the existing line not being considered as an alternative in order to keep impacts within the already transformed areas? [Nico van Wyk]	<i>Addressed throughout the SIA as an assessment of Alternative 3</i>
The potential impact of the proposed development including the upgrade of the substation on the road users is very important and this should be taken into	<i>Section 3.1.2: Change in traffic volumes and</i>

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
account during the design phase of the project. [Nico van Wyk]	<i>patterns on (access) roads</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 ~2 km long 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. 12/12/20/1525).

This report focuses on the infrastructural developments associated with the **Verwoerdburg substation and associated infrastructure**, which include the construction and operation of expansions at the Verwoerdburg substation, as well the construction and operation of the two short distance 400kV transmission power lines from the Apollo-Pluto transmission power line to and from the Verwoerdburg substation.

2.1.1 Substation Expansion Site

The Verwoerdburg substation is located to the northwest of Doornkloof Smallholdings (SH), along Goede Hoop Avenue (M57). The proposed expansions at the substation will take place to the north-west of and adjacent to the existing substation (refer to figure 1 below). Although this substation is mostly used to supply electricity to parts of the City of Tshwane, it is located within the Kungwini Local Municipality that in turn forms part of the Metsweding District of the Gauteng Province.

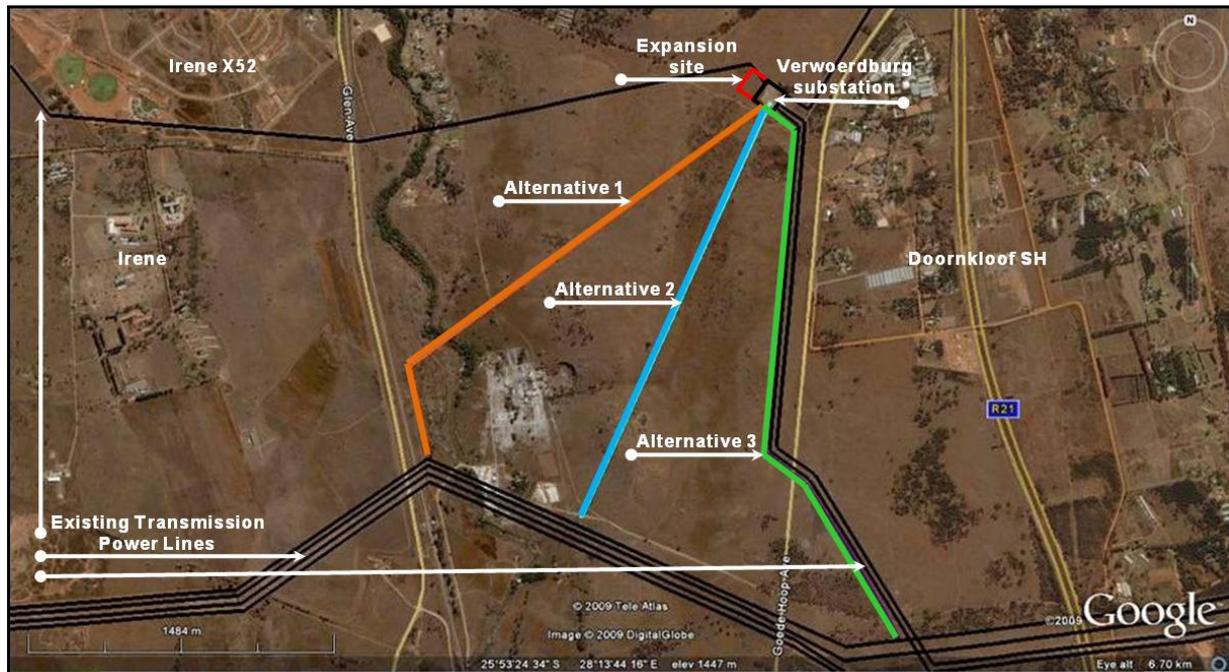
Figure 1: Location of the Substation and Substation Expansion site



2.1.2 Transmission Power Lines Route Alternatives

Initially, two route alternatives were investigated for the two proposed 400kV loop-in/out transmission power lines. During the Scoping study, the avifauna specialist and local I&APs identified a third feasible route alternative that essentially follows an existing transmission power line along the M57. This third route alternative, together with the original two route alternatives, were assessed in detail in the SIA. Figure 2 below provides an overview of the transmission power line route alternatives against the backdrop of the surrounding area.

Figure 2: Overview of the Turn-in/out Lines Route Alternatives



Alternative 1 starts at the bend of the existing Apollo-Pluto transmission power line just east of Glen Avenue (M18). It continues in a north-north-westerly direction for approximately 450m parallel to Glen Avenue, after which it turns and continues in a north-easterly direction for approximately 2.2km up to where it terminates at the Verwoerdburg substation extension. The loop-out line will be constructed parallel to the loop-in line.

Alternative 2 starts approximately midway on the section of the Apollo-Pluto transmission power line that runs between Glen and Goede Hoop Avenues. It is proposed in a straight line in a north-easterly direction for approximately 2.3km up to where it terminates at the Verwoerdburg substation extension. Again the intention is that the loop-out line is proposed parallel to the loop-in line.

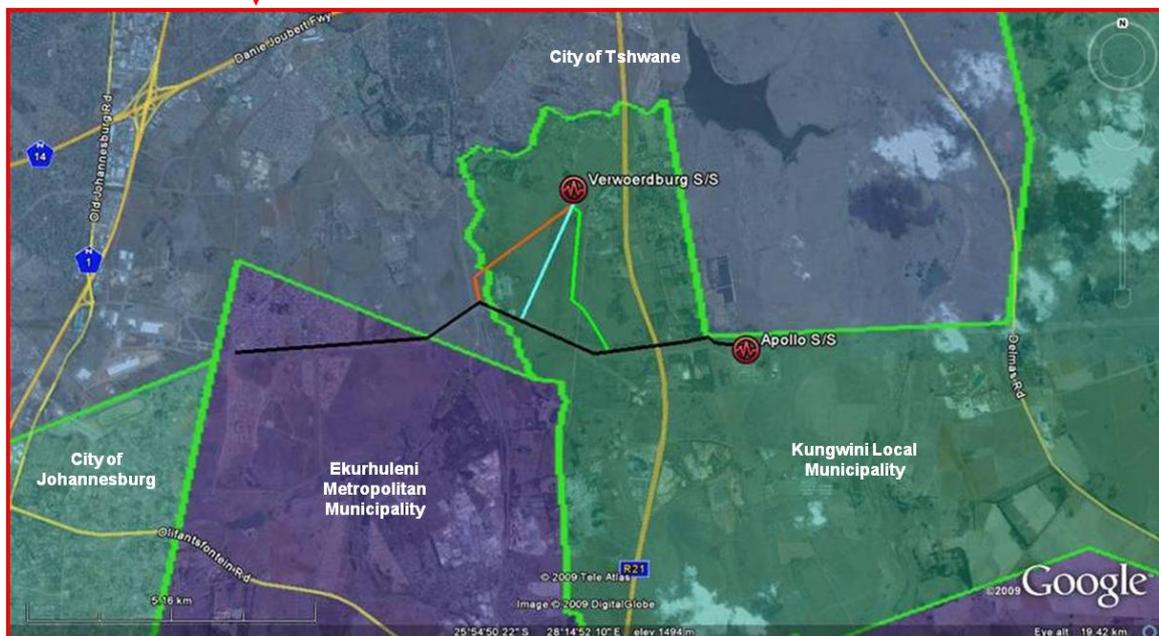
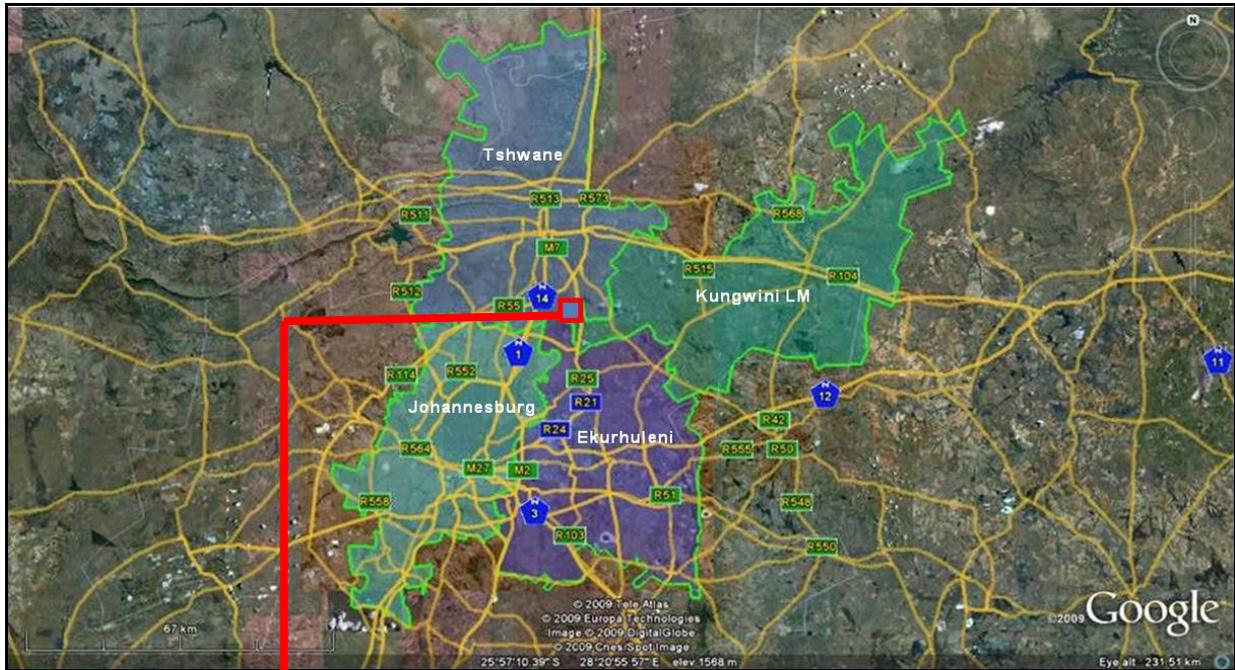
Alternative 3 follows an existing transmission power line and starts to the east of Goede Hoop Avenue (M57). The alignment is proposed in a north-westerly direction for approximately 1.2km. It crosses Goede Hoop Avenue, before turning and continuing in a northerly direction for approximately 1.6km, after which it makes a sharp turn in a north-westerly direction and continues for approximately 250m before terminating at the Verwoerdburg substation extension. As with the other alternatives, the loop-out line is proposed parallel to the loop-in line.

2.2 Regional Overview of the Study Area

Apart from the southern-most tip of **Alternative 1** (at its bend where it runs parallel to Glen Avenue), which is located within the City of Tshwane (CoT) municipal area, the infrastructure development associated with Tshwane Strengthening Project Phase 1

(Apollo- Verwoerdburg) is located within the Kungwini Local Municipality (KLM) that forms part of the Metsweding District (MD) of the Gauteng Province. An overview of the regional study area is reflected in figure 3 below.

Figure 3: Project location within 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 Metropolitan Municipality, 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 – i.e. 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 turn-in power lines will be operated within a 55m-wide servitude. Important to note is that Eskom registers one 55m servitude per 400kV line, which means that in the case of two parallel lines the servitude width increases to 110m, i.e. 55m per turn-in line. The servitude basically entails placing a restriction on a property by registering the servitude at the Deeds Office. In this case the servitude permits Eskom to access that part of the property to ensure the safe operation of the power line. Of importance to note is the fact that these conditions are also transferable with any sale of property.

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 independent land valuer) caused by the acquisition of the servitude. It is important to note that Eskom undertakes the negotiation process directly once authorisation has been granted by DEA and the process does not form part of the EIA.

Once the route of the transmission power line has been finalised and authorisation received, Eskom negotiators will identify the affected properties and verify the information with the Survey-General, after which they will obtain the detail 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 Substation

The upgrade of the Verwoerdburg substation entails the construction of extensive expansions at the substation. The construction of these expansions will be similar to the construction of a new 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.

At the time of the study the project proponent was not in a position to provide information on the size of the construction team. Due to the skilled nature of the work, it is likely that a contractor will utilise his own permanent workforce and therefore local employment opportunities (unskilled work) will be very limited.

2.4.2 Turn-in Lines

There are a number of variables determining the sequence of events in the construction process, the number of people involved in each activity and the time spent on an activity. These variables include the timeframes for completion of the line, the natural environment, and other local conditions. Some activities can take place simultaneously.

When the construction of the line starts, each activity will follow the previous one, so that a chain of events, with different teams involved, will happen over time. On average, there are some 35 active days of construction at any point, but given the time lapses between certain events, the process itself normally takes place over a longer period – anything from a few months to a couple of years, depending on the length of the 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 these 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.
- 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. 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 an 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, every assembly team consists 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 people, but it is highly unlikely that this will be the case for the turn-in/out lines due to the short distance of these lines (on average a total distance of about 1.3km in each direction). A stringing team consisting of 30-60 people seems more likely for this project. Again the stringing team consists of 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 tensioned. 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 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.

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	-	-	-	-	-	-	30	30	-	-	-	-	-	-	-	
Erection team	-	-	-	-	-	-	-	30	30	30	-	-	-	-	-	
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	85	85	40	70	40	40	35	35	35	
TOTAL CONSTRUCTION TEAM																
<i>Substation & Lines</i>	<i>60</i>	<i>86</i>	<i>75</i>	<i>95</i>	<i>70</i>	<i>90</i>	<i>135</i>	<i>145</i>	<i>80</i>	<i>140</i>	<i>80</i>	<i>80</i>	<i>70</i>	<i>70</i>	<i>70</i>	

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.
- **Emancipation and Empowerment processes** refer to peoples' ability to become actively involved in project processes and the degree to which they are able to influence decisions that affect their daily lives.
- **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 Kungwini Local Municipality as contextual study area, because only a small portion of the project falls within the City of Tshwane (CoT) itself. The SIA report that was compiled for the Kwagga-Poebus developments as part of Tshwane Strengthening Phase 1 - focuses on the CoT.

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

The substation and expansion site is mostly surrounded by an undeveloped open area. Neighbouring residential areas include Doornkloof (approximately 1.5km to the west extending north-northwest), Irene Extension 10 (approximately 1.3km to the northwest), Irene Glen Private Estate (approximately 600m to the north), and Sunlawns Agricultural Holdings (AH) (approximately 4km to the south). Doornkloof Smallholdings (SH) lies approximately 350m to the east, which is an area that is characterised by mixed land use including private residential and light industrial. The location of the substation and the proposed expansion site against the backdrop of the surrounding residential areas is reflected in figure 4 below.

Figure 4: Local setting of the Verwoerdburg substation and proposed expansion site



Source: Google Earth & Google Maps

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

Access Roads

The substation site is accessed via a gravel road of approximately 4.5m in width (refer to figure 5), but the road narrows down to approximately 3m further east. A split road leads to the substation itself, which is only a single track (refer to figure 6).

Figure 5: Existing access road to the Verwoerdburg substation site



Figure 6: Single track leading to the substation's entrance gate



The gravel road turns off Goede Hoop Avenue (M57). The M57 is a north-south metropolitan road with a single carriageway (one lane in each direction) with a soft shoulder (i.e. made of gravel, which makes it less safe to use for emergency manoeuvres). The edge of the road is uneven (as can be seen in figures 7 and 8). The road currently carries a fairly high number of heavy vehicles, including construction vehicles, due to the number of construction activities (residential developments) that are

taking place further north along the M57. The photos in figures 7 and 8 have been taken from the vantage point of the substation's access road.



Figure 7: Goede Hoop Avenue (M57) facing North



Figure 8: Goede Hoop Avenue (M57) facing South

A private landowner in the area intends to develop a light industrial area on portions of the farm Doornkloof 391 JR that lies to the south of the substation and substation expansion site. The landowner suggested that the current access road be formalised, which will then provide better access to the intended industrial area and the substation.

Substation Expansion Site

The substation expansion site is located on Eskom property, but is surrounded by private property. The immediate area around the substation and the substation expansion site is mostly undisturbed in terms of any infrastructural development. However, this is likely

to change in future due to increasing development pressure from the Ekurhuleni Metropolitan Municipality (EMM) (which borders on the area, refer to figure 3) who views this southern part of the Kungwini Local Municipality as being within a reasonable distance from the metro's major centres. In support of the EMM's view, the Metsweding District Municipality's SDF (2006) have earmarked the area around the substation and substation site as "high income residential development areas with future opportunities⁴." In addition, during a visit to the substation area in October 2009, deep excavations were found to the northwest of the substation and along the existing transmission power line located north of Alternative 1. These excavations seem to be for a transmission power line's towers, but it was unclear for which power line it is. Refer to figures 9 and 10.

Figure 9: Excavations to the northwest of the Verwoerdburg substation



Figure 10: Excavations along the existing transmission power line



⁴ Metsweding District Municipality Spatial Development Framework (2006: 16)

Turn-in Transmission Power Line Route Alternatives

Alternatives 1 and 2 mostly traverse open field areas, with the exception that **Alternative 1** crosses directly over a house at the point where this alternative links up with the Apollo-Pluto transmission power line. The house in question is located approximately 16.5m north of the Apollo-Pluto transmission power line and is therefore already located within the servitude (refer to figures 11-14). **Alternative 3** follows two existing transmission power lines parallel to Goede Hoop Avenue, first on its western side, switching to the eastern side (refer to figure 15).

The dashed red lines in figures 11-16 are not to scale and are only intended to illustrate the *approximate* location of the two proposed transmission power turn-in and –out lines as per the different alternatives.



Figure 11: *Approximate location of Alternative 1 in relation to the surrounding area in the vicinity of the substation*

The photo was taken in a south-westerly direction from the substation site. This will be the endpoint for the turn-in line and the starting point for the turn-out line.

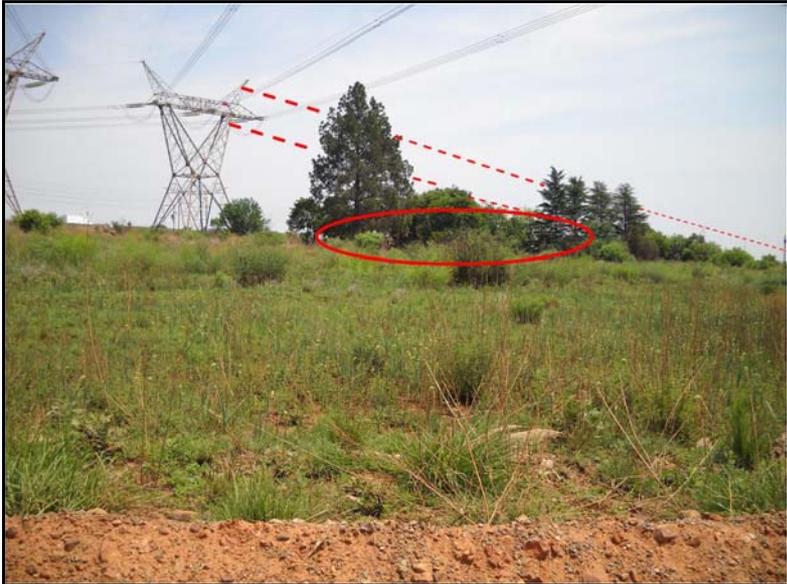


Figure 12: *Approximate location of Alternative 1 in relation to the surrounding area in the vicinity of the Apollo-Pluto transmission power lines, also indicating the position of the affected house (red oval)*

The photo was taken in a north-westerly direction from a vantage point on 10th Avenue in Pinedene. This will be the endpoint for the turn-out line and the starting point for the turn-in line.

Figure 13: *Approximate location of Alternative 2 in relation to the surrounding area in the vicinity of the substation*

The photo was taken in a south-westerly direction from the substation site.



Figure 14: *Approximate location of Alternative 2 in relation to the surrounding area in the vicinity of the Apollo-Pluto transmission power lines*

The photo was taken in a north-westerly from the Apollo-Pluto transmission power lines

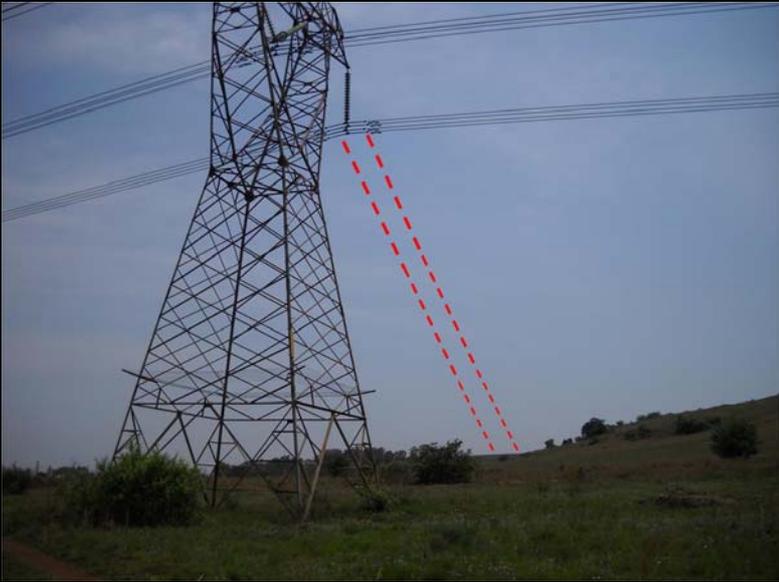




Figure 15: *Approximate location of Alternative 3 in relation to the surrounding area in the vicinity of the substation*

The photo was taken in a north-westerly direction from the M57 facing the substation.



Figure 16: *Approximate location of Alternative 3 in relation to the surrounding area in the vicinity of the Apollo-Pluto transmission power lines*

The photo was taken in a north-easterly direction from a vantage point on 10th Avenue in Pinedene.

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 area. 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

At the public meeting held on 12 August 2009, Eskom indicated that they owned the land adjacent to the Verwoerdburg substation that has been earmarked for the substation extensions. Where Eskom is not the landowner, the need for a negotiation process with a private landowner is negated as is the likelihood that a private landowner will suffer a permanent loss of land.

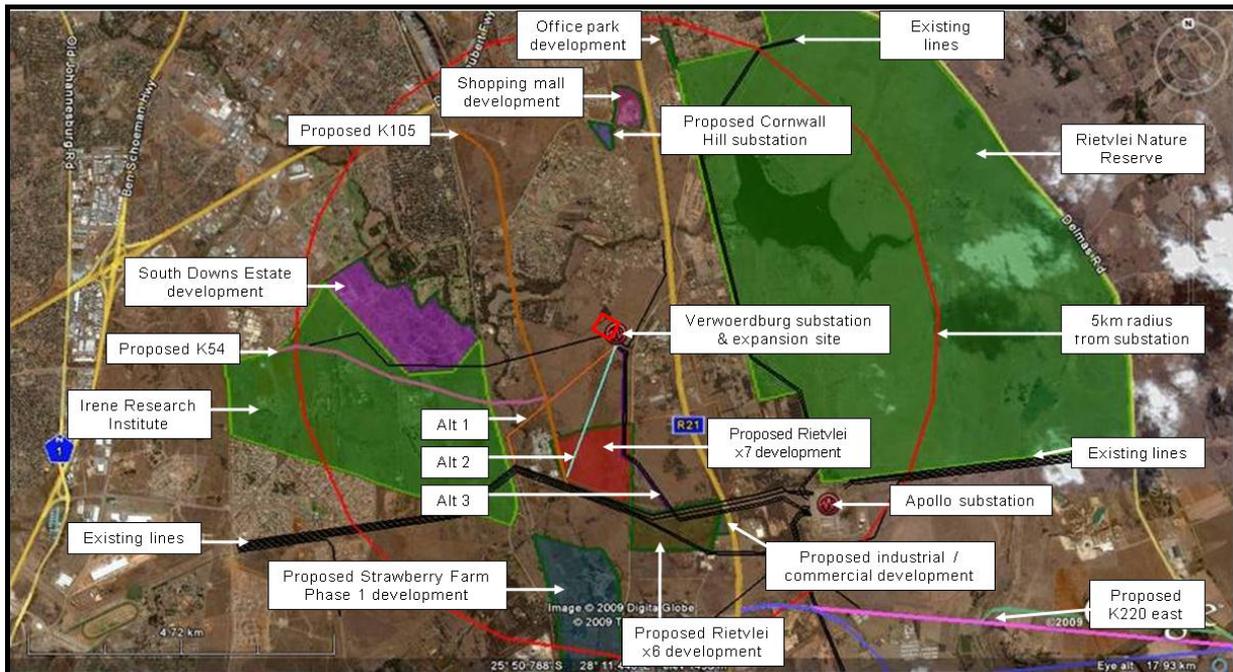
However, the situation as outlined above, only holds true for the substation expansion site since it is a localised development area. With the transmission power turn-in lines the situation changes as the turn-in lines, as a linear development, span across an area and as such affects multiple landowners. Certain land uses are still permitted within the servitude, as long as they do not interfere with the safe operation of the servitude. Although the affected area is currently zoned as agricultural land, agricultural activities are not taking place and in most instances, rezoning applications have been lodged from agriculture to various other land uses, including residential, light industrial, etc. In this regard, a representative from AGRIGauteng stated in an e-mail that *“Although the alternative routes for the project cross agricultural land, it is well inside the urban edge and most, if not all of the land, already belong to developers. Furthermore, we don’t see any intensive farming operations that could be affected by any one of the two routes.”*⁵

In line with the statement about developers owning most of the land, it should be noted that some of these private landowners are planning mixed land use developments, including land uses such as residential, retail, business, storage areas, and distribution points. At the time of the study, these landowners were in the process of finalising their formal application for township establishment.⁶ Apart from developments such as these, a number of other developments are also taking place in the area, as indicated in figure 17 below.

Figure 17: *Known Development Areas within a 5km radius from the Verwoerdburg substation*

⁵ Mr F Tomlinson from AGRIGauteng in an e-mail received on 20 August 2009 via the public participation office. The comment was made during the Scoping phase of the project and therefore Alternative 3 is not mentioned.

⁶ Personal communication (e-mail) with Dr H Joubert (landowner) on 4 November 2009.



Source: EIA notices published on the Doornkloof Owners Association website (<http://salbu.co.za/dkoa>)

As can be seen from Figure 17 above, the surrounding study area is characterised by a number of development projects in varying stages of implementation. This situation also reflects the MDM's statement in their SDF (2006) that this quadrant of the district is experiencing severe development pressure, mostly due to its proximity to the City of Tshwane and the EMM.

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. As most of the infrastructure associated with the developments described above will involve human occupation, certain structures will not be allowed in the servitude. Such a restriction will result in a loss of 110m (servitude required for 2x 400kV lines in parallel) for housing development that is ceded to the servitude.

As far as could be established, only one landowner will be affected by the turn-in lines, and also only by alternatives 2 and 3 (refer to Figure 17). However, given the fact that a developer seldom owns only one piece of development property, it is unlikely that a loss of land will severely affect the developer's *livelihood*, i.e. his primary source of income. Financial losses can be also prevented/minimised if the turn-in/out lines form part of the development within the development's required 'green areas'. Eskom will also compensate the landowner for the servitude, which normally takes on the form of a once-off payment for the servitude required, based on the land's market value at the time of negotiation (also refer to section 2.3). The landowner in question has indicated that Alternative 3 will have the least amount of negative impacts on his proposed

development as this alternative is located next to existing transmission lines that were factored into the development planning.

Land acquisition and disposal, including availability of land

Impact Category: 1

Project Phase: Operation and Maintenance

A change in the surrounding land use of an area associated with a linear development, such as a transmission power line, is often a gradual process that in the end could set an unintentional precedent for further land use changes. Often these additional land use changes are of a similar nature than the original development, e.g. the placement of a new transmission power line next to an existing transmission power line, as is the case with Alternative 3. 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 avoiding green field areas.

	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation
Extent	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Short [2]	Very short [1]	Very short [1]	Very short [1]	Very short [1]	Very short [1]	Very short [1]
Magnitude	Low [4]	Low [4]	Very high [10]	Moderate [6]	Very high [10]	Moderate [6]	Moderate [6]	Low [4]
Reversibility	Reversible [1]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Improbable [2]	Improbable [2]	Highly probable [4]	Probable [3]	Highly probable [4]	Probable [3]	Highly probable [4]	Improbable [2]
Significance	Low [18]	Low [18]	High [64]	Low [24]	High [64]	Low [24]	Medium [48]	Low [12]
Status	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:								
<ul style="list-style-type: none"> Based on the number of development projects in the area, land use change seems inevitable. The loss of land due to the current project is minimal when compared to the other development projects in the area. 								
Residual impacts:								
<ul style="list-style-type: none"> A precedent for land use change has been set. 								
Links:								
<ul style="list-style-type: none"> 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 KLM covers an area of approximately 2 202km² and, according to Community Survey 2007, the area has a total population of 104 150 people. Census 2001 estimated the total population at around 107 543 people. It therefore appears that there is a slight population outflow, even though a review of the KLM IDP of 2006/07 estimated the population growth rate at +5.5%. According to the IDP's calculations, the population in the KLM would have grown from 2001's 107 543 people to approximately 132 848 people by 2006, escalating to approximately 150 507 people by 2011. It therefore appears that the 5.5% population growth rate was a glaring over-estimation on the part of the KLM, as the population size in fact decreased as suggested by the Community Survey 2007 estimation.

The latest HIV prevalence rate for the KLM itself was estimated 11.9% in 2004, which represented a drastic increase from 1996's 3.7%. The National Antenatal Sentinel HIV & Syphilis Prevalence Survey of 2008 estimate the HIV infection rate among antenatal women in Gauteng at 29.9%, which represents a slight decrease in the infection rate of 2007's 30.5%. The HIV prevalence rate in Metsweding was much lower than the provincial average and in 2008 stood at approximately 25.1%. The survey did not sample down to local municipal level and therefore updated statistics are not available for the KLM. The South African National HIV survey (2008) found that the highest HIV prevalence rate is among the 15-49 age group, which represents a large proportion of the country's economically active population.

The local municipal area is regarded as an urban area in view of the fact that, by 2006/07, an estimated 77.6% of the population lived in urban areas, with the remaining 22.4% residing in rural areas. Based on Community Survey 2007 population data, the population density in the KLM is approximately 47.3 persons per km², but it can be even less in areas that are still developing, such as the immediate area surrounding the proposed development.

3.2.2 Demographic Change Processes and Resultant Impacts

It is expected that the expansion of the substation together with the construction of the turn-in/out transmission lines 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 likely to occur:

- An influx of construction workers;
- An influx of unemployed job seekers; and
- In one instance, the possible relocation of an individual household (should Alt 1 be adopted).

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 a substation as well as that of a transmission line requires skilled workers. In all probability, these skills will not be present in the area, resulting in the fact that a contractor will bring in his own workforce – people who do have the required skills, but who are normally also not from the local area. 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 to the nature of their work, their contact with the local community is limited.

Once the project has been completed, construction workers who form part of a contractor's permanent workforce will move on to a next project and will seldom stay in the area. At the peak of construction the number of construction workers on site is estimated to be around 145 people (of which about 60 will be at the substation site and the other 85 will be spread out across the length of the turn-in/out lines). Because the construction workers will commute to site. It is expected that the influx of construction workers will have a negligible effect on the highly urbanised host community.

Influx of Unemployed Job Seekers

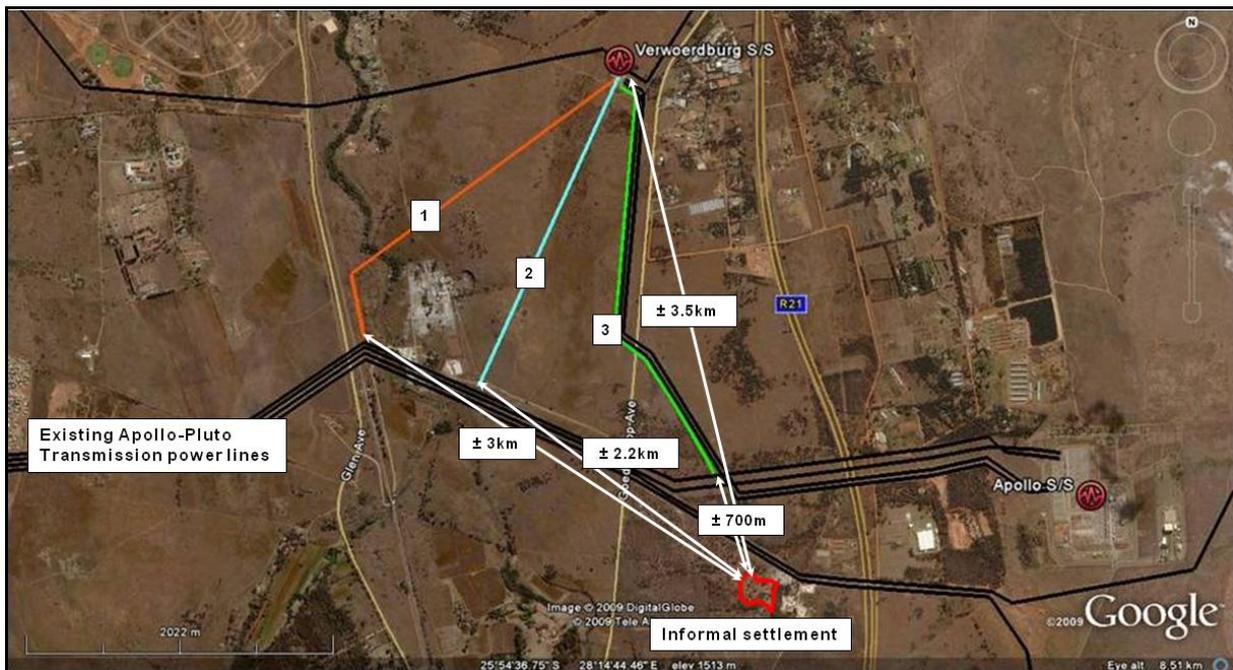
Impact Category: 1 (job seekers is expected, no matter which alternative is implemented)

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 could be expected 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 site. 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 approximately 3.5km south of the Verwoerdburg substation (refer to figure 18). This settlement also appears to encroach upon an existing transmission line servitude, which creates a health and safety risk for people living on the outer edges of the settlement.

Figure 18: Locality of the Informal Settlement south of the Verwoerdburg substation



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.”⁷

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. However, restricting the influx of job seekers and the associated expansion of an existing informal settlement 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 (only one household affected, restricted to Alternative 1)

Project phase: Pre-construction

Subsequent to the SIA Scoping study, which concluded that no relocation was required, the social team identified a residential property located within Alternative 1's route corridor. There appears to be two houses or structures on the property, which is located approximately 360m north of the Pinedene Railway station at the bend of the Apollo-Pluto transmission lines. The houses/structures (at approximately 25m) are located on the boundary of the existing servitude, but the property's boundary wall (at approximately 12m) is located well within the existing servitude. Figure 19 below depicts the location of this property.

Figure 19: Location of Affected Residential Property (red block)

⁷ <http://www.sacities.net/2004/UrbanRenewalPart2.pdf>



The property's access road has deteriorated significantly from the road shown in the Google image above (taken on 2 May 2007), and in all probability is now only accessible by 4x4 vehicle or on foot.

The impact 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. 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. As the necessity to relocate this household is completely negated if either Alternative 2 or 3 is selected as the preferred route, the impact has not been assessed in further detail.

DEMOGRAPHIC CHANGE PROCESS

Summary of change process: Construction workers enter the area on a temporary basis and will not have an 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 medium to high income groups. The area itself is currently undergoing a transformation due to the large number of developments, but this is due to people moving into the area on a permanent basis (e.g. residents in new developments).

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	Substation		Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation						
Extent	Local [2]	Site [2]	Local [2]	Site [1]	Local [2]	Site [1]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]						
Magnitude	Moderate [6]	Low [4]						
Reversibility	Recoverable	n/a	Recoverable	n/a	Recoverable	n/a	Recoverable	n/a

	[3]		[3]		[3]		[3]	
Probability	Improbable [2]	Very improbable [1]						
Significance	Low [26]	Low [7]						
Status	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:								
<ul style="list-style-type: none"> The influx of job seekers to other development projects in the area – job seekers might go around looking for work on all these projects. 								
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 study area is characterised by a high employment rate where the majority (79.4%) of the working age population (ages 15-64, but excluding the not economically active population) is formally employed. This is a significant increase from 2001, when less than half (49.2%) of the economically active population were employed. The majority of those employed (36.1%) are engaged in elementary occupations and is therefore regarded as unskilled to semi-skilled. Although the employment rate exceeds the unemployment rate by far, it is still a point of concern that one in every fifth 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 settlements⁸.

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.

⁸ Van der Walt, 2004

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 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 the substation and the turn-in/out lines will create an estimated 425 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)⁹.

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 relate to entrepreneurial services that are not directly employed by the contractor or linked with the construction activities, e.g. domestic services, food stalls, etc. at either the construction camp or the construction site.

A drawback is that most of the employment opportunities created by the construction of the proposed substation and turn-in/out lines will be temporary in nature and will only last for the duration of the construction period. However, on a more positive note, it means that a group of people have not only acquired a new skill, but have also gained some work experience, which will make them more 'marketable' in future.

In addition, as the lifespan of a substation and transmission line can be anything between 40 and 60 years, periodic maintenance activities will be undertaken on these installations, again creating temporary or ad hoc employment opportunities. However, it is important to note that maintenance on the substation itself as well as that of the turn-in/out lines require the services of highly skilled maintenance workers. Unskilled labour from the local area is normally used on servitude maintenance.

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

⁹ 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.

available. The economic impact on such services increases the longer services such as electricity are 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 substation and the two associated turn-in/out transmission lines will enhance the electricity supply to the City of Tshwane, which in turn will indirectly stimulate economic growth as the 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 PROCESS

Summary of change process: The construction and maintenance of the proposed substation extensions and turn-in/out transmission lines will create an estimated 425 job opportunities. 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. On the whole, negative economic impacts will be confined to single landowners.

Site characteristics: The local population consists of mostly medium to high income groups. According to the latest census results (2001), the surrounding areas are characterised by high employment rates, e.g. 86.2% for Doornkloof and 96.4% for Irene. It can be expected that the employment rate in the informal settlement will be significantly lower.

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.

Rating Scale	Substation		Alternative 1		Alternative 2		Alternative 3	
	Without	With	Without	With	Without	With	Without	With

	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation	Mitigation
Extent	Local [2]	National [4]						
Duration	Very short [1]	Long term [4]						
Magnitude	Low [4]	Moderate [6]						
Reversibility	Recoverable [3]	n/a						
Probability	Improbable [2]	Probable [3]						
Significance	Low [20]	Medium [42]						
Status	Positive	Positive	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 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 some municipal services to the households within the KLM. Despite the fact that, according to official statistics from StatsSA, there was a decrease in the number of households in the KLM (from 33 598 in 2001 down to 31 666 in 2007), there are still large segments of households within the municipal area that have to do without proper municipal services.

A comparison between Census 2001 and Community Survey 2007 revealed an improvement to the following service areas (expressed as a percentage of the total number of households serviced): Electricity for cooking (from 56.3% to 71.3%), for heating (from 53.8% to 59.4%), and for lighting (from 70.3% to 82.8%). The only other service that improved was the delivery of purified piped water to households or within a 200m radius of every household (from 77.7% to 86.2%). All other service areas deteriorated in the quality and consistency of these services: Refuse removal once a week dropped from 46.7% to 45.4%, and sanitation dropped from 68.0% to 67.4%.

According to the KLM IDP (2008/09), there are no water backlogs in formal areas within the municipality and the six sewerage plants servicing the municipal area are functioning properly. In contrast, the IDP also admits that new housing developments placed the existing bulk sanitation services under tremendous strain and that the upgrade of the sewerage plants had become a critical issue. In addition, despite the general improvement in the electricity network, the IDP expresses its concern about the state of electrical infrastructure in the area and felt that the time had come for the infrastructure to be either refurbished or replaced.

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 scoping study identified the possibility of a change in housing needs/demands and a change in community infrastructure due to the project. Based on the information received from the project proponent (Eskom) on the number of people involved with a project of this nature across the project's lifespan, coupled with the time they spend in the area, it is unlikely that the project will cause any institutional and legal change processes. Therefore, any possible impacts as a result of these change processes, have been ruled out.

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

The earliest evidence of human settlement in the Doornkloof area dates back to 1 200 AD when black communities settled in the area. These communities were mostly subsistence farmers who cultivated their lands and roamed through the area to find grazing for their cattle. Many years later, between 1825 and 1826, the Matabele tribe settled along the banks of the Magalies River, after they had defeated the Bakwena tribe. The first white settlers arrived in the area around the year 1841 when the Erasmus family settled in what later became known as Verwoerdburg and still later, Centurion.

The battle for Rooihuiskraal took place in 1881 at the existing historical battle site, in which DJ Erasmus jnr. and his commando defeated the Pretoria Garrison under their commanding officer, Col Gildea. Eight years later, in 1889, AH Nelmapius bought large portions of the farm Doornkloof and named the area after his daughter, Irene, who passed away in 1961.

During the Anglo-Boer war, the Irene Concentration Camp was established on the farm Doornkloof, which also contained the Irene Primary School. The area known as Irene was officially established as a town during 1902 when a Mr van der Bijl demarcated 337 erven on the farm.

The Lyttleton Township followed two years later in 1904, when the township was marked out on the farm Droogegrond. Next to follow was Lyttleton Manor Extension 1 in 1942, and together these townships formed part of the Peri-urban Board in Pretoria. In 1950 these townships acquired a Health Committee that consisted of six members, and in 1955, a small town committee was elected. The town received city council status in 1962, effectively giving the city council control over a geographical area of 777 hectares. Over the years more townships and farming areas were added, increasing the city council's area of jurisdiction to 6 220 ha, and eventually, in 1973, to 20 000 ha. It was also during this period that the town of Lyttleton was renamed to become the City of Verwoerdburg (after the former Prime Minister, Mr Hendrik Verwoerd).

After 32 years of existence, the Verwoerdburg City Council was disbanded after the first democratic elections in 1994. A new local authority was established to replace the old city council, and consisted of the areas Verwoerdburg, Rantesig, Erasmia, Laudium, Christoburgh, and Claudius. The new authority adopted the name Centurion in 1995. Five years later, in December 2000, the Centurion City Council was incorporated into the City of Tshwane Metropolitan Municipality, with parts of the town resorting under the

Kungwini Local Municipality as part of the Metsweding district. Today the Doornkloof and surrounding area is composed of a diverse population with varying degrees of place attachment.

To the north of the substation lies Irene Glen Private Estate, a high-income residential estate on the southern banks of the Hennops River. The estate has strict security measures with only one access road off the R21 with access control measures that limit access to mostly residents and their visitors. The estate has board of directors and a home owners association who regulate the functioning of the estate through enacted rules and regulations, including aspects such as rules of conduct, security measures, rules pertaining to tenants, visitors, contractors and employees, rules pertaining to the letting and reselling of a property, building guidelines, etc. Residents voluntarily abide by these rules, which in turn enhance a sense of community through the practise of 'good neighbourliness' where residents do not live in isolation or detract from the estate's shared wellbeing, but rather contribute to each other's quality of life. The sense of community is further fostered through a monthly newsletter, a local newspaper called "The Glen," and a homeowner's association website.

To the west of the substation site lays the residential area of Doornkloof. This is an 'open' high-income residential area (as opposed to the access-controlled setting of an estate). The area also has a homeowners association and, based on the activity on their website, appears to be a very active community 'watchdog' that is constantly participating in EIA processes and informing residents on new developments in the area and the progress made on local projects. Apart from local development projects, the website also contains other notices and updates of importance to residents and at the time of the study, contained over 100 such notices, dating back as far as 2004.

Doornkloof Smallholdings to the east of the substation site is characterised by mixed land use including residential, light industrial and commercial uses, religious areas and other uses such as a youth/church camping ground. This implies that the area has a constant through flow of people such as groups making use of the camping ground for a weekend, or employees arriving or departing from their place of work, or people attending church or church activities once or twice a week. As such the area does not really have a dominant resident local community, but this does not in any way exclude the possibility that other land-users in the area could still have a sense of 'business community' (although the high walls and locked gates would suggest a certain degree of isolation between the various types of land uses and ultimately the people occupying the properties during certain times of the day/week).

Large portions of the open land surrounding the substation and the proposed turn-in/out route alignments have been earmarked for future mixed land-use developments. As the study area forms part of a bigger geographical area that is currently experiencing huge development pressure, the landowner(s)/developer(s) are in an ideal position to benefit substantially from mixed land-use developments on their properties. It is therefore not

likely that these property owners will have a strong sense of place attachment, as their main aim is not to reside in the area themselves, but rather to develop and sell off the land, after which they will in all probability withdraw from the area.

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 construction and operation of the expanded substation and associated turn-in/out transmission lines could alter these interactions and relationships 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 likely to occur:

- 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 once 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 processes 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. According to an Eskom official, members of a substation construction team almost never reside in a construction camp, which means that these individuals return home every night, or if they are far away from home, they live in hotels or guest houses. The same will most probably hold true for the turn-in/out transmission line construction team on this particular project, due to the location of the project area and the short distance of the lines.

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 expansion of the substation and the associated turn-in/out lines. 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 workers 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

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. Due to the fact that existing infrastructure of a similar nature is already present in the area, it is unlikely that the project will alter the way in which people relate to each other and their environment, and therefore unlikely to affect 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 is characterised by medium to high-income groups, which functions within the traditional family unit. Residents seem to have a strong sense of place attachment due to the unique characteristics of the area with amenities like the Rietvlei Nature Reserve close by. However, it should be noted that the area is undergoing immense development – it therefore appears that the transformation of the area is unavoidable.

Mitigation measures:

- The use of Alternative 3 will reduce the potential impact on sense of place, as it is located next to existing infrastructure of a similar nature (i.e. sense of place on his alternative has already been altered).
- 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

Enhancement measures:

- None

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.

Rating Scale	Substation		Alternative 1		Alternative 2		Alternative 3	
	Without Mitigation	With Mitigation	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]	Local [2]	Site [1]
Duration	Short [2]	Very short [1]	Short [2]	Very short [1]	Short [2]	Very short [1]	Short [2]	Very short [1]
Magnitude	Moderate [6]	Low [4]	High [8]	Moderate [6]	High [8]	Moderate [6]	Moderate [6]	Low [4]
Reversibility	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a	Recoverable [3]	n/a
Probability	Improbable [2]	Very improbable [1]	Probable [3]	Improbable [2]	Probable [3]	Improbable [2]	Improbable [2]	Very improbable [1]
Significance	Low [26]	Low [6]	Medium [45]	Low [16]	Medium [45]	Low [16]	Low [26]	Low [6]
Status	Negative	Negative	Negative	Negative	Negative	Negative	Negative	Negative
Cumulative impacts:								
<ul style="list-style-type: none"> A wide range of development projects is taking place in the area that all contribute to the transformation of the area. 								
Residual impacts:								

- An increase in the HIV infection rate.
- Vulnerable families.
- A loss of place attachment and sense of place.

Links:

- 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 and 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 Verwoerdburg substation and the construction and operation of the two proposed turn-in/out lines do not pose any social impacts that are 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 strongly recommends the following:

- 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.

Based on the results of the SIA, the use of Alternative 3 is preferred. This alternative is located adjacent to two existing transmission lines and a metropolitan road (M57), which places alternative 3 within a disturbed corridor. The use of a disturbed corridor implies that people living in the area are used to presence of the lines and therefore an additional line is less likely to change their perception of their area as when the line is placed across a previously undisturbed area (as is the case for most of alternatives 1 and 2). The relocation of structures will not be required with the use of alternative 3, whereas there is a distinct possibility that a household would have to be relocated if alternative 1 was implemented. In addition, the affected landowner indicated that alternative 3 will have the least effect on his development plans, as the existing lines have already been factored into the development's site layout plan.

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:

- The use of alternative 3 will minimise the extent of the expected impacts as it is located next to existing infrastructure of a similar nature, and preferred by the affected landowner who has factored the existing transmission lines into his development plans.
- The affected landowner has prepared all the required documentation for township establishment and at the time of the study, was in the process of lodging a formal application with the local municipality for township establishment (Rietvlei extensions 6 and 7). It is therefore vital to consult with the landowner on a continuous basis and to communicate any route deviations to the landowner to ensure that the infrastructure does not cause extensive alterations to the development's site layout plan.
- 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.

5.2 Impacts relating to Demographic Change Processes

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.

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 Socio-Cultural Change Processes

Mitigation measures:

- The use of Alternative 3 will reduce the potential impact on sense of place, as it is located next to existing infrastructure of a similar nature (i.e. sense of place on his alternative has already been altered).
- 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

Enhancement measures:

- None

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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