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Mookodi Integration Project Social Impact Assessment Report – First Draft

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PROJECT TITLE

Draft Social Impact Assessment Report for the Proposed Mookodi Integration Project

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Mookodi Integration Project – Social Impact Assessment – First Draft
Revision No.2
October 2011 (revised September 2012)

prepared by: MasterQ Research

I, **J.W. Nonka Byker**, declare that --

General declaration:

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.



Signature of the specialist

MasterQ Research (Pty) Ltd

Name of company (if applicable)

2011-11-03

Date

EXECUTIVE SUMMARY

Eskom Distribution proposes the construction and operation of a total of 145km of 132kV distribution power lines around the Vryburg area in the Northwest Province. The bulk of the proposed distribution lines will be located around the Vryburg area and between Vryburg and Kalplats, whereas a new line is also proposed between Kalplats and the Edwardsdam. In addition to the distribution power lines, two new substations are required – one in the Vryburg area and one in the Kalplats area. Refer to Section 2 for more detail on the technical aspects of the proposed project, collectively known as the Mookodi Integration Project.

The proposed project is required to improve electricity supply for future developments which are planned by the Naledi Local Municipality as well as to provide electricity for proposed developments to the north of Stella. By providing a link between the existing distribution network feeding Vryburg from Delareyville and the electricity supply network to the area to the north of Stella from the Watershed Transmission Substation near Lichtenburg, the project will strengthen the electricity supply network in the project area and minimise the potential for electricity supply problems.

A number of alternative route corridors and substation sites have been proposed. Each power line route has a 300m-wide corridor (that is wider in some places to accommodate technical constraints) to allow Eskom to negotiate a registered servitude of 31m (for each power line) and for allowing some flexibility during construction should an unforeseen obstruction be encountered, and to take account of site-specific environmental sensitivities.

The proposed project consists of a number of components:

Newly proposed Distribution (Dx) Substations:

- Bophirima 132/88kV Dx Substation (Alternatives 1 & 2 situated south-east of the R34 (Vryburg-Schweizer Reneke road) in close proximity to the existing Eskom Woodhouse Dx Substation in the Bernauw Smallholdings area
- Two site alternatives for the proposed Kalplats 132kV Dx Substation to the east of Stella (east of the R377 Piet Plessis road) on the Farm Gemsbok Pan.

Newly proposed 132kV Dx power lines:

- Bophirima Substation to Kalplats Substation 132kV servitude power line (~89km)
- Bophirima Substation to existing Vryburg Municipal Substation 132kV servitude power line (~7km)
- Mookodi Transmission (Tx) Substation to Bophirima Dx Substation 132kV servitude power line (~14km)
- the proposed Bophirima Substation to existing Woodhouse 132kV servitude power line (~0.1km – temporary line until the decommissioning of Woodhouse Substation)
- Kalplats Dx Substation to the existing Edwards Dam substation 132kV servitude power line (~35km)*

* It should be noted that the Mookodi Transmission Substation does not form part of the scope of this project, as environmental authorisation for the substation has been obtained as part of a separate EIA process. However, a single alignment for the Mookodi Transmission Substation site to the proposed Bophirima Substation Alternatives is included as part of the component of this proposed project.

The findings of the SIA can be summarised as follows:

Pre-Construction Phase

The main issue during the pre-construction phase is that of the relocation of households and other structures. A number of households and structures have been identified that are either within or in very close proximity to the route corridors as they currently stand, which would place these households and structures at 'risk' for relocation. However, given the fact that an alignment still has to be found within the 300m wide corridor, relocation can be avoided as per Eskom's policy and that of the IFC.

The recommendation in this regard would therefore be that cognisance is taken of the sensitive and flagged areas marked in this report and to use this as a guideline in planning a final route alignment. As there are scattered households and sensitive and flagged areas on the entire alternative route corridors, there is not a preferred route corridor from a social perspective.

Construction Phase

The construction phase brings with it a number of social impacts that range across all spheres of society. The significant change processes and resultant impacts during this phase of the project can be summarised as follows:

Geographical processes: A temporary loss of land will occur within the servitude and construction laydown areas, restricting the landowner access to these and leading to possible loss of crops within the 31m strip. It is expected that the loss of land would be restricted to isolated pockets as the construction team moves along the line, and confined to the servitude and construction laydown areas. The same would hold true for the substation sites, but in this regard the land loss is expected to be of a more permanent nature and would therefore be more applicable to the operations and maintenance phase. Although temporary land loss will have a negative economic impact on the landowner in question, landowners are normally compensated for the loss of production and this is considered during the negotiation process.

Demographical processes: The largest group faction of the construction team that will move into the area is estimated at around 470 people during the peak of construction, which will not have a significant bearing on the size of the population of the local municipal area as a whole. However, it is expected that the *presence* of construction workers in areas such as Huhudi and Thakwaneng (where construction workers are likely to spend their free time) can lead to an increase in conflict situations, a rise in the HIV/AIDS rate, an increase in opportunistic crime, etc. Their presence also signals the presence of a project taking place in the area leading locals to believe that jobs might be available, which in turn might lead to the further conflict situations and the in-migration of jobseekers from elsewhere, which could intensify conflict points. The presence of unemployed jobseekers can lead to

the expansion of the informal settlements at Huhudi, which would increase the housing backlog and place additional strain on the local municipality (cumulative effect).

Economic Processes: Due to the skilled nature of constructing a distribution power line and a substation, it is unlikely that large numbers of local job opportunities will be created. Some informal opportunities might be created in the form of food stalls, laundry services, etc., but these would largely depend on the entrepreneurial skills of the locals themselves and not on the contractor.

Institutional and Legal Processes: The contractor will supply accommodation, normally in the form of a construction camp. Although the construction camp in itself does not pose a social impact, it does lead to a number of social ills, which in turn can then lead to social impacts. Some of the more well-known problems associated with construction camps include a rise in prostitution around the camp, conflict with locals, and pollution where camps are not maintained.

Socio-cultural processes: During the construction phase changes would mostly relate to possible conflict situations between local residents and newcomers to the area, most notably where there is a marked dissimilarity in social practices. In addition the presence of migrant workers in the form of a male-dominated construction team can fuel a 'macho-culture' with strong peer pressure, which often causes these individuals to engage in risky (sexual) behaviour. As the HIV/AIDS epidemic and Sexually Transmitted Infections (STI) continue to advance worldwide, it is becoming clear how they affect individuals, households, families, communities, organisations and nations. The impact of AIDS is seen in family and community structures and relationships and in sectors as varied as education, employment, health care, social welfare, agriculture, human rights, etc.

Operations and Maintenance Phase

Social impacts experienced during the operations and maintenance phase will last over the longer term and can be summarised as follows:

Geographical processes: During the operations and maintenance phase there will be a long term loss of cultivated and grazing land, but this loss of land will mostly be centred on the distribution line towers. Apart from high growing crops, most cultivation practices can continue unhindered underneath the power line, as can grazing. The agricultural land on which the Kalplats substation alternatives are located will be lost, but the land surrounding the substation can still be utilised for cultivation and grazing. The land surrounding the Bophirima substation is characterised by distribution power infrastructure, in the form of the Woodhouse substation and distribution power lines, all of which makes it safe to assume that the site area does not derive its value from a pristine character, but rather from its ability to enable economic activity through power generation and distribution. An economic impact due to permanent land loss as a result of the presence of additional distribution power infrastructure in the form of the Bophirima substation in this specific location is thus unlikely. Through the decommissioning of the Woodhouse substation the land on which it is located will be restored as opposed to lost.

No further impacts are foreseen as part of demographical processes during the operations and maintenance phase as the maintenance teams are too small to warrant a significant change to the size and composition of the local community.

Economic processes: During the operations and maintenance phase some property owners might experience a negative impact on their property value, but this is dependent on where the line is located on their property and the visibility of the line. It is also expected that the proposed substations and the associated distribution power lines will enhance the electricity supply, 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, but this impact is difficult to rate due to its nationwide implications and the fact that it does not represent a manageable impact or one that can be enhanced.

No further impacts are foreseen as part of the institution and legal change processes during the operations and maintenance phase.

Socio-cultural processes: The most important socio-cultural factor during the operations and maintenance phase has to do with the physical presence of the line and how it affects people's sense of place. In this regard four groups of people were identified who would all have a different sense of place experience: 1) Unemployed people living in poverty who experience the project as positive as it brings development and job opportunities; 2) Business owners in the industrial area of Vryburg who might initially be affected, but who can be accommodated through mitigation and compensation; 3) Residents of Vryburg who might not even notice the presence of the line and who would therefore be indifferent to its presence; and 4) Directly affected landowners on agricultural land who regard their land as pristine who would experience the project as extremely negative on their daily lives and whose sense of place would be severely affected. In addition to considering the psychosocial and emotional aspects, an assessment of sense of place also considered the physical placement of a substation within a demarcated site area and a preferred route that would affect as few people as possible. Problem areas in this regard were highlighted as part of geographical change processes during pre-construction impacts.

Recommendation

Overall the SIA did not identify any areas that can be classified as fatal flaws. Although there are a number of alternative route corridors proposed, these corridors all affect similar land uses and therefore it is not expected that any of the social impacts would be more severe on one corridor as opposed to another corridor. In light of this, the social study does not have a preferred route corridor, but again stresses the fact that the alignment of the power line within the corridor must be done in consultation with the affected landowners to minimise the impact on the property and surrounding land use. The social study also has no preferred alternative for either the Bophirima site or the Kalplats site as the respective alternatives of these two substation sites are located in close proximity to each other, resulting in no change in the severity of impacts between alternatives.

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MOOKODI INTEGRATION PROJECT
SOCIAL IMPACT ASSESSMENT REPORT

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1. INTRODUCTION

Eskom Distribution proposes the construction and operation of a total of 145km of 132kV distribution power lines around the Vryburg area in the Northwest Province. The bulk of the proposed distribution lines will be located around the Vryburg area and between Vryburg and Kalplats, whereas a new line is also proposed between Kalplats and the Edwardsdam. In addition to the distribution power lines, two new substations are required – one in the Vryburg area and one in the Kalplats area. Refer to Section 2 for more detail on the technical aspects of the proposed project, collectively known as the Mookodi Integration Project.

The proposed project is required to improve electricity supply for future developments which are planned by the Naledi Local Municipality as well as to provide electricity for proposed developments to the north of Stella. By providing a link between the existing distribution network feeding Vryburg from Delareyville and the electricity supply network to the area to the north of Stella from the Watershed Transmission Substation near Lichtenburg, the project will strengthen the electricity supply network in the project area and minimise the potential for electricity supply problems.

A number of alternative route corridors and substation sites have been proposed. Each power line route has a 300m-wide corridor (that is wider in some places to accommodate technical constraints) to allow Eskom to negotiate a registered servitude of 31m (for each power line) and for allowing some flexibility during construction should an unforeseen obstruction be encountered, and to take account of site-specific environmental sensitivities.

The proposed construction and operation of these distribution power lines and new substations will be considered within an Environmental Impact Assessment (EIA) study. In this instance, the EIA process consists of three phases, namely:

- Environmental Scoping Study (completed in December 2010);
- Environmental Impact Assessment (current phase); and
- Environmental Management Plan.

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.

1.1. Scope of Study

The proposed project consists of a number of components:

Newly proposed Distribution (Dx) Substations:

- Bophirima 132/88kV Dx Substation (Alternatives 1 & 2 situated south-east of the R34 (Vryburg-Schweizer Reneke road) in close proximity to the existing Eskom Woodhouse Dx Substation in the Bernauw Smallholdings area

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* It should be noted that the Mookodi Transmission Substation does not form part of the scope of this project, as environmental authorisation for the substation has been obtained as part of a separate EIA process. However, a single alignment for the Mookodi Transmission Substation site to the proposed Bophirima Substation Alternatives is included as part of the component of this proposed project.

1.2. Preliminary Findings of the SIA Scoping Report

The overall business objective of the Scoping Phase (completed in October 2010) 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 identified during the Scoping Phase, and the expected social impacts as a result of these change processes taking place, are as per Table 1.3 below. 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 (October 2010) to gain a better understanding of these change processes and expected impacts.

Table 1.1: Summary of the SIA Scoping Report Social Change Processes

ISSUE	Geographical Change Processes
DISCUSSION	A 31m-wide servitude is required for the distribution power lines, which imply a temporary and/or permanent loss of agricultural land, which in turn can have an economic impact on the landowner in question. Private landowners and commercial farmers will be affected by the servitude acquisition process as outlined above. The presence of the substations and distribution power lines can alter development layout plans to ensure the safe operation of these installations. Conversely, development cannot take place if there is a lack of sufficient service such as electricity.
EXISTING IMPACT	Large segments of the project area appear to be utilized for agricultural purposes. A number of scattered households have also been identified throughout the study area. At this stage it is assumed that large

	segments of the study area are privately owned. At the time of the study it was unclear whether any parts of the study area was tribal land or whether land claims existed on any of the affected portions. Detailed information on future infrastructural developments was not available at the time of the study.
PREDICTED IMPACT	Temporary loss of cultivated and grazing land due to the construction activities, which leads to a decreased area for cultivation and grazing that result in an economic impact. Land will be permanently lost to accommodate the substation and distribution power line towers.
ISSUE	Demographical Change Processes
DISCUSSION	<p>The proposed development will lead to an increase of a certain section of the population, i.e. an influx of migratory workers in the form of the construction team. The presence of the construction team and the prospect of employment might reverse the outflow of people, e.g. an influx of unemployed work seekers might be expected. It is difficult to predict what the impact would be as a result of this, as it is coupled to the number of people who enter the area, which can range from a handful of people to literally hundreds of people. The influx of unemployed work seekers is an uncontrolled process and therefore the size of this group is near impossible to predict.</p> <p>The proposed development might necessitate the relocation of households along the various route corridor alternatives, depending on the flexibility of the route alignment. It is not expected that the relocation of households would affect the size and composition of the local population as relocation normally takes place within the same area. At this stage the need for relocation is not foreseen at any of the substation sites. However, both sites are located in close proximity to scattered households.</p>
EXISTING IMPACT	The current total population within the affected area is close on 145,100 people with an average population density of 4.1 people per km ² . However, it is expected that the population density would be denser in urban areas such as Vryburg. There are a number of households and/or structures within each of the route corridor alternatives.
PREDICTED IMPACT	A change in the number and composition of the local area can lead to economic, health, safety and social-wellbeing impacts. The impact is expected to be mostly confined to the construction phase. It should also be noted that a construction team consisting of 400 construction workers at the height of construction will not yield a significant impact on a total population of 145,100 as it represents a temporary average increase of 0.9% on the population size. The impact is further expected to

	<p>significantly decrease during the operation and maintenance phase as the size of the maintenance team will be considerably smaller than that of the construction team.</p> <p>The relocation of a household impact on the affected households' way of life – but this is to a large degree influenced by the affected family's level of attachment to their environment, which in turn is influenced by the family history, years spent in the area, etc.</p>
ISSUE	Economic Change Processes
DISCUSSION	<p>The proposed development can enhance economic opportunities for vulnerable communities by creating and affording job opportunities to local community members. However, it is not foreseen that such opportunities would be sustainable as most of the jobs will be restricted to the construction phase. It is furthermore unlikely that vast numbers from the local community will find employment during the construction phase due to the skills levels required and the sensitivity of the construction material used (e.g. in the past temporary staff from local communities were responsible for copper theft, which resulted in time delays and cost implications for Eskom¹).</p> <p>Even if local community members are not utilised as part of the construction team, it is important to note that 1 112 positions will still be created, which means that there will still be 1 112 contractual employment opportunities available on a national level. These individuals will still gain financially from employment on the project, whether they are local or not. The proposed project can furthermore lead to a boost in the local formal and informal trade market as it is likely that some local services can be utilised, albeit on a temporary basis.</p> <p>Depending on the size of the area affected and how it affects the surrounding land use (e.g. whether farming activities can continue mostly unhindered or not), the property value can be affected due to the presence of a power line that will visually intrude on the farm.</p> <p>The expansion of the municipal services network can take place if more electricity becomes available. This means that more households can be connected to the electricity grid, which would enhance their quality of life.</p>
EXISTING IMPACT	<p>The affected area is to a large extent characterised by a fairly low employment rate (just over half of the economically active population is formally employed). Due to this low employment rate, the area is characterised by low household income levels – in 2001 just over a quarter of all households earned an income above the acceptable</p>

¹ Personal communication with Mr Sarel van Zyl, Eskom representative, 9 December 2009

	<p>minimum standard of \geq R 20,000 per annum.</p> <p>The baseline municipal profile suggests that municipal services are currently lacking in some parts of the study area. Where such services are lacking, it can be expected that it would hinder economic growth.</p>
PREDICTED IMPACT	Where land loss occurs, this can also bear an economic impact on the affected farmer. The expansion of the electricity grid could stimulate economic growth in the area, which in turn would have a positive economic impact on the area as more jobs become available.
ISSUE	Institutional and Legal Change Processes
DISCUSSION	It is foreseen that the proposed development could enhance the equal access of households to at least some basic services such as electricity as a result of the broadening of the local network. The availability of additional services in turn can lead to economic growth. Construction workers will require housing. In the past large segments of this group was housed successfully within the local community to avoid the use of a residential construction village as the presence of such a village brings with it its own set of socio-cultural change processes and resultant impacts. The need for housing is normally addressed by the contractor(s). The influx of job seekers might lead to an increase in opportunistic crime. The health and emergency services in the area might not be able to cope with accidents and emergencies, which will have obvious health impacts.
EXISTING IMPACT	The existing baseline municipal profile suggests that most of the basic municipal services are adequately supplied throughout the area. The quality of services might diminish towards the more rural areas and in informal settlements. The baseline municipal profile further suggests that all households do not have equal access to municipal services – usually it is the outlying areas and informal settlements that mostly lack these services.
PREDICTED IMPACT	Additional demand on municipal services, such as water, sewerage and roads could impact on health and safety if such services are not available. An influx of unemployed job seekers can lead to the expansion of the informal settlement. This can impact on health (as services are not provided or further taxed) and safety (an increase in crime is possible as people do not find employment and become frustrated with their living conditions).
ISSUE	Socio-Cultural Change Processes
DISCUSSION	It is possible that construction workers and job seekers have a different cultural background and dissimilar social practices than local residents,

	<p>which can lead to the development of conflict situations that impact on community cohesion and social well-being. The substations and distribution power lines might affect people's relationship with their environment (their sense of place) as the presence of such infrastructure changes the landscape from unspoilt to 'spoilt'.</p> <p>Although it is not foreseen that the development per se will alter family cohesiveness and the traditional role played by families, the introduction of strangers to the area might have this affect. This can happen when social integration is hindered (through conflict) and also because migratory workers have a certain legacy when it comes to establishing relationships that can increase the risk of spreading HIV and other contagious infections.</p>
EXISTING IMPACT	At the time of the study information was not available on the cultural dynamics of the affected local area. Also the level of place attachment that local residents have to the area was not known. The family structure and how families from the area function and the roles ascribed to each family member was not known.
PREDICTED IMPACT	Apart from the obvious health implications, HIV infection in particular also has an economic impact. Conflict situations can impact on community cohesion and social well-being.

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.

1.3. 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 construction and operation of the proposed transmission power lines and substations).

The PPP commenced during the scoping phase and continues into the Impact Assessment phase (which is the current phase of the study). The process is only concluded once the competent authority 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 competent authority (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 1.4 below provides a summary of the issues and/or concerns raised during

the scoping phase (limited to social issues²). Also included in Table 1.4 is a cross reference to where these issues were considered in the SIA. 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 1.2: Summary of Social Issues/Concerns raised during the Scoping Phase

Issue/Concern	Reference in SIA
Concerns raised regarding damaging to property, unauthorised access to property and illegal hunting of game on property during construction. Gert Cilliers, Landowner	Section 6
With reference to the unique locks and keys mentioned by Eskom, it was mentioned that Eskom Distribution has erected gates along existing servitudes in the area without informing farmers and there are no locks on these gates. Theo Cilliers, Landowner	Section 6
Enquired whether Eskom will have 24-hour access to the servitude or will landowners be informed, in writing, that access is required. It was mentioned that there are incidents where Eskom accesses the farmers' properties without prior warning and this could be seen as a security issue. Stompie Mynhardt, Landowner	Section 6
Mistrust was expressed regarding Eskom's access to property process, their gate, keys and locks as this is not the landowners' experience with existing procedures. Laetitia Scholtz, Landowner	Section 6
Question was raised to as the impacts of radioactive fields on the surrounding community. Mpho Talane, Technical Services: Naledi Local Municipality	Section 5.1.1
Stated that local farm labourers usually seek work during the construction phase and return upon completion, but often the farmer has made alternative arrangements and these people are left unemployed, which often results in crime. Petrus van Rensburg, Pieter Vorster, James le Roux – Landowners	Sections 5.2.2 and 5.2.3 and 6

² Issues/concerns pertaining to other specialist fields are addressed by the relevant specialist for that particular topic/issue/concern.

Issue/Concern	Reference in SIA
<p>Stated that power lines already exist on our land under which they travel every day and could therefore increase the health risks even more.</p> <p>Petrus van Rensburg, Pieter Vorster, James le Roux – Landowners</p>	Section 5.1.1
<p>It was enquired whether a power line will go through a farm yard or will it go around it.</p> <p>Sarel Bester, Landowner</p>	Sections 5.1.1, 5.2.1, 5.3.1, 6.2, 6.3 and 7.2
<p>After assessing the two proposed routes leading to the existing Edwards Dam substation that were presented in the meeting, the question was posed as to the possibility of installing a new 132kV power line with monopole towers on the border line of his property as he would not prefer having an additional power line crossing his farm. The current lines are obstructing his access and free movement on the property and also devalue his property.</p> <p>James Le Roux, Landowner</p>	Sections 5.1.1, 5.2.1, 5.3.1, 5.3.2, 6.2, 6.3 and 7.2
<p>It was enquired whether the 300m corridor includes the proposed substation site as currently the proposed substation site is located in the middle of a field which is used for cultivation. This would thus negatively affect the cultivation activities. It would be preferred if the substation could be built next to the road.</p> <p>Theo Cilliers, Landowner</p>	Sections 5.1.1, 5.2.1, 5.3.1, 6.2, 6.3, and 7.2
<p>There are two existing lines crossing the property on which the existing Edwards Dam Substation is located which cause much inconvenience to the landowner. It was stated that it is unfair that another power line be placed on this farm.</p> <p>James Le Roux, Landowner</p>	This issue should be addressed directly with Eskom during the negotiation process, refer to Sections 1.7 and 5.1.2
<p>The new access roads created for the power lines would allow readily/easy access to farms. This will result in increase in crime. Poaching and stock theft will be increased as the roads will allow undesirable access which will lead to an increased security risk.</p> <p>Petrus van Rensburg, Pieter Vorster, James le Roux – Landowners</p>	Access road will be established through recurring use (i.e. there will be no blading or scraping of a new road)
<p>On the farm Theiler there are agricultural fields on the eastern side of the N18 and on the farm Moscow, west of the N18 the farm house is situated in close proximity to the N18.</p> <p>Gert Scheepers, Landowner</p>	Sections 5.1.1, 5.2.1, 5.3.1, 5.3.2, 6.2, 6.3 and 7.2
<p>Farm house is approximately 500m east of the N18.</p>	Sections 5.1.1, 5.2.1,

Issue/Concern	Reference in SIA
Neels Scheepers, Landowner	5.3.1, 5.3.2, 6.2, 6.3 and 7.2
<p>Stated that the Naledi Local Municipality Town Planning section does not have any objections to the DSR and is subject to the following: • That Alternative 2 (Bophirima Substation to Existing Vryburg Substation Alt2) not be considered because of the limitations on future extensions of the Vryburg Industrial area to the North and future development east of Colridge.</p> <p>Werner van Geer, Naledi Local Municipality</p>	Sections 5.1.1, 5.2.1, 5.3.1, 5.3.2, 6.2, 6.3 and 7.2
<p>This is a rural area with little technological development. The area has remained relatively undeveloped compared to other agricultural areas. As a result of the above, there has been more conversion to game farming. This also makes the area very attractive for tourism such as for birding and hunters. The area is exploited by various land uses. The presence of high voltage power will destroy the amenity of a relatively pristine area which is the reason landowners live in this area.</p> <p>Petrus van Rensburg, Pieter Vorster, James le Roux – Landowners</p>	Section 5.3.3

1.4. Specialist Qualifications

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 4 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 11 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 Social and Socio-Economic Impact Assessments that MasterQ Research have been involved with as social and economic specialists, include amongst others, the following projects:

Date	Project	EAP
July 2009 ongoing	- Social Impact Assessment for the proposed Trekkopje Mine access road in the Arandis area, Erongo Region, Namibia	Turgis Consulting for AREVA Resources

Date	Project	EAP
<i>July 2009 ongoing</i>	– Social Impact Assessment and Micro Economic Impact Assessment for the proposed 140MW Open Cycle Gas Turbine (OCGT) demonstration plant and associated Underground Coal Gasification (UCG) plant in the Amersfoort area, Mpumalanga Province	Bohlweki-SSI Environmental for Eskom Generation & Transmission
<i>March 2009 ongoing</i>	– Socio-Economic Impact Assessment on the Bus Rapid Transport (BRT) system, section 6 along Oxford Road in the City of Johannesburg, Gauteng Province	Bohlweki-SSI Environmental for Eskom Generation & Transmission
<i>February 2009</i>	Socio-Economic Impact Assessment for the proposed town development with associated infrastructure and services in Steenbokpan, Limpopo Province	Enviro-Solution for the Steenbokpan Development Consortium
<i>January 2009 ongoing</i>	– Social Impact Assessment for the establishment of a Coal Fired Power Station, and its associated infrastructure (a substation and transmission power lines) in the Musina area, Limpopo Province	Arcus Gibb for Mulilo Power
<i>January 2009 ongoing</i>	– Social Impact Assessment for the proposed upgrading of the existing Welgedacht Water Care Works to facilitate a capacity extension of up to 100ml/d, in the Ekurhuleni Metropolitan Municipality area, Gauteng Province	Savannah Environmental for ERWAT
<i>January 2009 ongoing</i>	– Social Impact Assessment for the proposed provision of wastewater infrastructure to improve quality of effluent discharge from the Hartebeesfontein Water Care Works, in the Ekurhuleni Metropolitan Municipal area, Gauteng Province	Savannah Environmental for ERWAT
<i>November 2008 – January 2009</i>	– Economic Impact Assessment for the proposed Kyalami Transmission Project	Savannah Environmental for Eskom Generation & Transmission
<i>October 2008 – November 2008</i>	– Social Impact Assessment for the proposed Bravo Integration Project, Govan Mbeki Local and Delmas Local Municipalities, Mpumalanga Province; Kungwini Local Municipality, City of Tshwane, Ekurhuleni Metro and City of Johannesburg, Gauteng Province	Cymbian Socio-Environmental Consultants for Eskom Generation & Transmission
<i>April 2008 – April 2009</i>	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, City of Cape Town, Western Cape	Bohlweki-SSI Environmental for Eskom Generation & Transmission

1.5. Limitations and Assumptions

- This study was carried out with the information available to the specialists 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 might exist. Due to the limited budget available for this study, the specialists were unable to conduct a site visit.

- It was assumed that the alignments received from the project proponent were the central line of the alternative route corridors.
- 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 (EAP) and the public participation consultant was accurate.
- Areas that might yield socio-economic sensitivities have been identified through a desktop study in Google Earth™. The areas that have been marked are the sensitive areas visible to the socio-economic specialists at the time of the study, which are in close proximity to the proposed three sites under investigation. However, the sensitivity map is not meant as a final, all-inclusive indication of sensitive areas, as it is possible that more sensitive areas might be found during the EIA Phase when a more detailed assessment will be undertaken.
- The statistics that informed this report were primarily taken from Census 2001 and the more recent Community Survey 2007 (CS). The comparative analyses of these sets of data should only be regarded as an indication of broad trends in the area, because of the South African Statistics Council's (SASC) concerns about data integrity in CS. The SASC was concerned about the following regarding CS:
 - Institutional population is merely an approximation to 2001 numbers and not new data;
 - Unemployment in the Community Survey is higher and less reliable because of questions that were asked differently;
 - Income includes unreasonably high income for children – presumably misinterpretation of the question, listing parents' income for the child; and
 - Distribution of households by province has very little congruence with the General Household Survey or last census.
- A number of systematic errors were observed in the statistical data, which included:
 - An underestimate of men relative to women;
 - An underestimate of children younger than 10 years;
 - An excess of those aged 85+, in particular among men;
 - Missing women aged 20–34 from the Coloured population;
 - Misdistribution of the population by province;
 - Excess of people aged 10–24 in Western Cape and Gauteng;
 - A shortfall of women aged 20–34 in Free State, KwaZulu-Natal and Limpopo.

The SASC states (2008): *“In the absence of a comprehensive sampling frame, it is difficult to determine whether the differences are due to sampling error, biases or the reality that has changed beyond our expectations. There may be other variables that will require similar warnings after further interrogation.”*

1.6. Legislative Context

The following legislation and regulatory documents are relevant to the SEIA:

- Constitution of the Republic of South Africa (Act No. 108 of 1996);
- The Occupational Health and Safety Act (Act No. 85 of 1993);
- Extension of Security of Tenure Act (Act 62 of 1997) (ESTA);
- National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended;
- The Environmental Impact Regulations of 21 April 2006;
- Relevant Labour Relations legislation.

1.6.1. Constitution of the Republic of South Africa (Act No. 108 of 1996)

The Constitution mostly relates to human rights with the intention of establishing “a society based on democratic values, social justice and fundamental human rights”, which should be achieved through the promotion of human dignity, equality and the advancement of human rights and freedoms. Some of the human rights that are explicitly stated in the Constitution are a person’s right to equality, freedom of expression and association, political and property rights, housing, healthcare, education, access to information, and access to courts.

The Constitution is made up of a preamble, fourteen chapters each relating to a specific topic, and seven schedules. Of these fourteen chapters, chapter 2 (The Bill of Rights) is mostly applicable to the implementation and management of social mitigation measures.

The Bill of Rights outlines detailed provisions on civil, political, social and economic rights. According to the Bill of Rights, it is therefore illegal to discriminate against any person on any of the following grounds:

- Race and colour;
- Sexual orientation (be that heterosexual, homosexual or transsexual);
- Marital status (be that single, married, divorced or widowed);
- Gender in terms of social and cultural ascribed gender roles, e.g. not permitting women to work on a construction team because she is a woman;
- Sex, relating to the physical differences between men and women;
- Pregnancy;
- Age;
- Disability;
- Ethnic origin;
- Culture, e.g. traditional practices;
- Language;
- Religion, conscience, belief; and
- Birth.

1.6.2. The Occupational Health and Safety Act (Act No. 85 of 1993)

The occupational health and safety act outlines the clear responsibilities of employers and employees alike in ensuring that a safe work environment is created and maintained at all times. The creation of a safe work environment also applies to any and all work equipment that is required in carrying out assigned duties.

Noteworthy to consider is the fact that this act stipulates that a health and safety representative has to be appointed where a workforce consists of 20 or more people. A health and safety representative has to be a fulltime employee and there should be at least one such a representative per every 50 employees or part thereof, either per workplace or per section of the workplace. Where a workplace has more than one health and safety representative, a health and safety committee should be formed that meets at least once every 3 months. Health and safety representatives should carry out the following functions in terms of this act:

- Review the effectiveness of health and safety measures;
- Identify potential hazards at the workplace that could lead to potential major incidents;
- Examine the causes of incidents at the workplace, in collaboration with the employer;
- Investigate any complaints made by employees in terms of health and safety aspects at the workplace;
- Provide feedback to the health and safety committee on the aspects mentioned above;
- Provide feedback to the employer on matters relating to the health and safety of employees at the workplace; and
- Inspect all aspects relating to the safety of the workplace, including the workplace itself, any plants, machinery, articles, health and safety equipment, etc. at intervals agreed upon with the employer.

1.6.3. Extension of Security of Tenure Act (Act 62 of 1997) (ESTA)

This act provides for measures to facilitate the long-term security of land tenure, and also regulates the conditions of residence on certain land, the circumstances under which a person's right to reside on a particular piece of land may be terminated, and to provide for regulatory matters where persons have been evicted from a particular piece of land or land portion.

Chapter 4 of this act relates to the measures that have to be implemented when right of tenure is terminated on any lawful ground (e.g. in the case of relocation), provided that such a termination is just and has regarded the following factors:

- The fairness of the agreement on which the owner relies;
- The conduct of the parties giving rise to the termination;
- The interests of the parties involved in relation to the comparative hardship of the owner and/or occupier of the land;
- The existence of a reasonable expectation for the renewal of an agreement; and

- The fairness of the procedure leading to termination, including whether or not the owner/occupier had been granted a reasonable opportunity to make representations before termination became effective.

Section 14 under Chapter 4 outlines the procedures for the restoration of residence, the use of land, and compensation for damages. A person who was the rightful owner of the land may institute proceedings in a court of law, where after the court may make the following orders:

- The restoration of residence and land use;
- The repair, reconstruction or replacement of any building, structure or any other installations that the owner/occupier have enjoyed on his land prior to the removal and/or eviction;
- The restoration of any services that the owner/occupier has a right to;
- The payment of compensation;
- The payment of damages, including but not limited to, damages inflicted by the removal process; or
- Any other compensation the court may see fit.

1.6.4. National Environmental Management Act (NEMA), No. 107 of 1998, as amended

The National Environmental Management Act (NEMA) promotes citizens' right to an environment that is not harmful to their health and wellbeing. This right is closely linked to the Constitution where clause 32 of the Bill of Rights stipulates that current and future generations have a right to a healthy environment. NEMA defines the environment as the natural environment as well as the physical, chemical, aesthetic and cultural properties that influences a person's health and well-being.

1.7. EIA Project Processes

During the EIA the public will encounter various project processes as part of the EIA phases (Scoping and Impact Assessment). Although the various processes are always clear about its respective intend and purpose, there is often confusion about processes that might look similar, but that have different outcomes. Most notably Interested & Affected Parties (I&APs) often confuse the **Social Impact Assessment** specialist study with the **Public Participation Process** and vice versa. Oftentimes I&APs expect the SIA to address servitude negotiation matters, which is an additional process (the **Servitude Negotiation Process**) that takes place apart from the EIA. In an attempt to clear up some of this confusion, table 1.1 below provides a comparative overview of the above-mentioned processes.

Table 1.1: Comparative overview of the SIA, PPP and SNP

	Social Impact Assessment	Public Participation Process	Servitude Negotiation Process
Practitioner	MasterQ Research	SIVEST	Eskom Land Use & Rights
Definition	<i>"The process of analysing (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."</i> (Vanclay, 2002).	The "...process leading to a joint effort by stakeholders, technical specialists, the authorities and the proponent who work together to produce better decisions than if they had acted independently" (Greyling, 1999). The process aims at improving "...communication between stakeholders – including the proponent – in the interest of facilitating better decision-making and/or sustainable development" (DEAT, 2002).	<i>"A process in which two or more entities come together to discuss common and conflicting interests in order to reach an agreement of mutual benefit."</i> ³
Objectives	The overall business objective of the SIA is to assess the probable/potential social impacts on the human environment that can occur because of the design, construction, operation and decommissioning of a proposed project for consideration by the competent authority and the project proponent in their decision-making process. Part of the process is to identify and describe measures to mitigate against negative impacts and to enhance positive impacts.	The main objectives of the public participation process are to: <ul style="list-style-type: none"> • Inform all identified I&APs with sufficient information on a proposed project in such a way that the I&APs are empowered to actively participate in the decision-making process; and • Create an entry point for I&APs to raise their viewpoints (issues, comments and concerns) with regard to potential impacts, benefits and drawbacks related to a proposed project. 	Eskom's policy is to compensate the landowner for the strip of land that is required for a servitude. In order to do so, Eskom enters into a negotiation process with the affected landowner, with the aim to reach a servitude agreement.
Timing & Activities	The SIA is undertaken in parallel to the overall EIA process and is normally subjected to the same timeframes as that of the EIA. The SIA consists of two distinct phases, namely a Scoping Phase and an Impact Assessment Phase. During the Scoping Phase, the baseline social context is determined, potential social impacts identified and, based on these results, the terms of reference/scope of work for the next phase is developed. Depending on the scope of works, an SIA consist of varying activities, including: <ul style="list-style-type: none"> • Literature reviews and review of existing databases 	The PP process spans across all the phases of the EIA process (scoping, EIA, etc.) and normally includes the following activities: <ul style="list-style-type: none"> • Identify stakeholders; • Disseminating project information; • Managing incoming correspondence regarding the project and follow ups with other project team members; • Responding to stakeholder queries; 	The negotiation process is independent of the EIA process. Eskom has the right to engage with a landowner at any time, though they do so at risk if environmental authorisation has not yet been awarded. <p>The following process represents the steps that are followed in registering the servitude:</p> <ul style="list-style-type: none"> • The route is usually finalised before negotiation starts. • Negotiators determine which properties are affected by the final route. The Survey-General is contacted to verify and confirm the legal landowners that will

³ http://wps.pearsoned.co.uk/ema_uk_he_hollensen_globalmark_4/64/16425/4205002.cw/content/index.html#N

Social Impact Assessment	Public Participation Process	Servitude Negotiation Process
<p>(secondary data sources);</p> <ul style="list-style-type: none"> • Baseline profiling; • Site visit(s); • Social Research, including the use of surveys, interviews and/or focus group meeting discussions (primary data sources); • Data assessments of primary and secondary data sources • Data modelling; • Impact Assessment; • Identifying mitigation and/or enhancement measures; • Development of a Construction Social Management Plan. <p>Qualitative and quantitative research methods are used to inform the SIA. Both these methods use a systematic approach to collect information. Quantitative methods focus on the “why” and quantitative methods focus on “how many.”</p> <p>A focus group is a qualitative social research method, which is one of the methods used when the social specialist wants to gain a depth understanding of specific issues, concerns and/or recommendations that I&APs raised. The results of these discussions are confidential to allow participants to freely participate, although a summary of issues and concerns might be made public. The results of the discussions are used in the assessment of social impacts with consideration of other data sources, e.g. structured interviews, literature. These inputs are not seen as representative of the whole population but are regarded as indicative of the range of sentiments/viewpoints/feelings etc. present in the population. Ideally, a group should not consist of more than 12 people – ordinarily the whole population, e.g. farmers in a corridor, has to be invited to ensure adequate numbers.</p>	<ul style="list-style-type: none"> • Organising and facilitating public events such as open days, public meetings, etc.; • Inform specialists about issues raised by stakeholders; and • Reporting on the process itself as well as the outcomes of the process. <p>The public participation consultant also makes use of focus group discussions and these are usually aimed at gathering issues, concerns and opinions from a targeted group of I&APs. Minutes, issues and concerns are reflected in the public participation report and specialists are informed about issues and concerns pertaining to their field of expertise. Specialists have to address these in their assessments.</p>	<p>be affected.</p> <ul style="list-style-type: none"> • The services of an external property valuator are procured. Properties are valued by doing a strip valuation for which price ranges for the different properties are submitted. • Maps are drafted for each property indicating the proposed route for the power line. • Eskom draws up an option to secure the servitude. The option indicates that the owner will accept that the line will cross his property, subject to conditions to be finalised in the negotiation of the servitude agreement. An option is valid for one year. • Eskom’s negotiators visit the landowners to start negotiations. The documentation, including the map of the affected area and the option are used to start negotiations. • Special conditions are negotiated and added to the standard option form. The landowner signs the option. • 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.

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	Social Impact Assessment	Public Participation Process	Servitude Negotiation Process
Applicable Legislation	<p>Cognisance is taken of the following legal requirements and regulatory documents during the execution of an SIA:</p> <ul style="list-style-type: none"> • Constitution of the Republic of South Africa, Act No. 108 of 1996; • Construction regulations under the Occupational Health and Safety Act; • Extension of Security of Tenure Act (Act 62 of 1997) (ESTA); • National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended; • The Environmental Impact Assessment Regulations of 21 April 2006; • Relevant Labour Relations legislation; • Development plans in the relevant IDP/s and SDF/s; and • Applicable local by-laws. 	<p>The approach and methodology as well as the legal framework for the PPP are based on the principles embodied in the following legal framework:</p> <ul style="list-style-type: none"> • The Constitution of the Republic of South Africa, Act No. 108 of 1996; • National Environmental Management Act (NEMA), Act No. 107 of 1998; and • Specific regulations, notably Regulation 28 and Chapter 6 of GN 385. 	<p>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:</p> <ul style="list-style-type: none"> • The Electricity Regulation Act (Act 4 of 2006), section 27(1); • The Expropriation Act (Act 63 of 1975), subsection 12. <p>The landowner's rights are described in the following legislation:</p> <ul style="list-style-type: none"> • Extension of Security of Tenure Act (Act 62 of 1997) (ESTA); • Constitution of South Africa; and • Prevention of Illegal Eviction from and Unlawful Occupation of Land (Act 19 of 1998).
Deliverable(s)	<ul style="list-style-type: none"> • Social Scoping Report as part of the Environmental Scoping phase; • Social Impact Assessment Report as part of the Environmental Impact Assessment phase; and • In some cases, a Social Management Plan as part of the Environmental Management Plan. 	<ul style="list-style-type: none"> • Public documentation, such as Background Information Documents, meeting minutes, an issues register, I&AP database, etc.; and • Public participation reports as part of the Scoping and EIA phases. 	<ul style="list-style-type: none"> • Servitude agreement allowing Eskom to access that portion of land for routine and emergency maintenance procedures.
What is it NOT?	<p>It is not the official body with which to formally raise issues and concerns, i.e. it is an independent specialist study that is separate process from the public participation process, although the public participation can often be used as a vehicle to undertake public consultation.</p>	<p>It is not a marketing tool to 'sell' a particular project to the public or to gain public support for such a project.</p> <p>It is not an assessment tool, i.e. comments and issues received by the public participation practitioner will not be addressed or assessed by them, but will be communicated to the relevant specialist.</p>	<p>It is not a specialist study and does not form part of the EIA.</p>

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	Social Impact Assessment	Public Participation Process	Servitude Negotiation Process
Your responsibilities	<ul style="list-style-type: none"> Attend and participate in social research activities when invited to do so. Although you are welcome to contact and/or submit written comments, questions, or concerns directly to the social specialist, formal submissions should also be directed to the public participation consultants to ensure that your comments are formally registered on a project's issues register. The public participation consultants will in turn direct your comments to the appropriate specialist for consideration in their assessment, at times requesting the specialist to formally respond to your comments. At times it might be necessary that you disclose sensitive information, e.g. future development plans, financial information, etc., so that such information can be considered during the assessment. Information gathered in the research process is analysed as part of the group of respondents' input and is usually not linked to your name in a report. Should you wish your name to be linked to information, you should indicate to the specialist how the information should be handled. 	<ul style="list-style-type: none"> Respond to invitations to participate in projects that might affect you by registering on the project database. EIA processes are normally advertised in the local and/or regional press and in some cases, even in the national press; Complete and return project comment sheets if you are asked to do so; Attend public participation events that are held throughout an EIA process. Registered I&APs normally receive personal invitations to such events; Feel free to contact the public participation consultants with your comments and queries; and Review and comment on reports that are placed in the public domain within the stipulated public review periods. 	<p>If you are involved in a servitude negotiation process:</p> <ul style="list-style-type: none"> Familiarise yourself with your rights and responsibilities as outlined in the legislation mentioned above; Landowners have the right, within reason, to negotiate special conditions that, once accepted by both parties, will form part of the formal servitude agreement. Come prepared. The Eskom negotiator will explain the process, feel free to ask questions and make sure that you are clear about your role and responsibilities in the process. Special conditions cannot be re-negotiated once a formal agreement has been signed. Therefore, ensure that you stipulate your conditions clearly from the outset.

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2. TECHNICAL ASPECTS OF THE PROJECT

This section describes the information relevant to the study area and the project.

2.1. Site Location and Description

The bulk of the infrastructure associated with the proposed project is located within the Naledi Local Municipality, with the infrastructure in the northwest of the project area located across the Kagisano and Molopo Local Municipalities. All of these municipalities form part of the Dr Ruth Segomotsi Mompati District Municipality of the North West Province. An indication of the study area within the province is reflected in figure 2.1 below, whereas the EIA alternatives on a local municipal level are reflected in figure 2.2.

Figure 2.1: Location of the study area in the North West Province

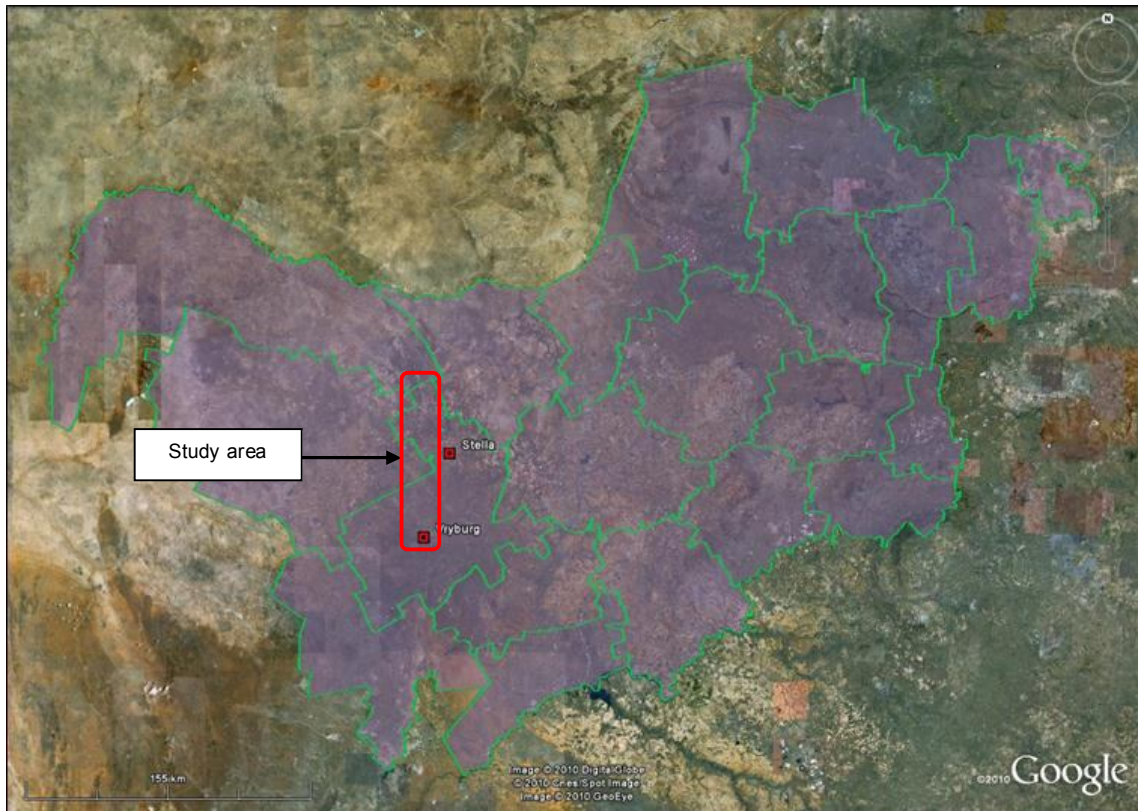
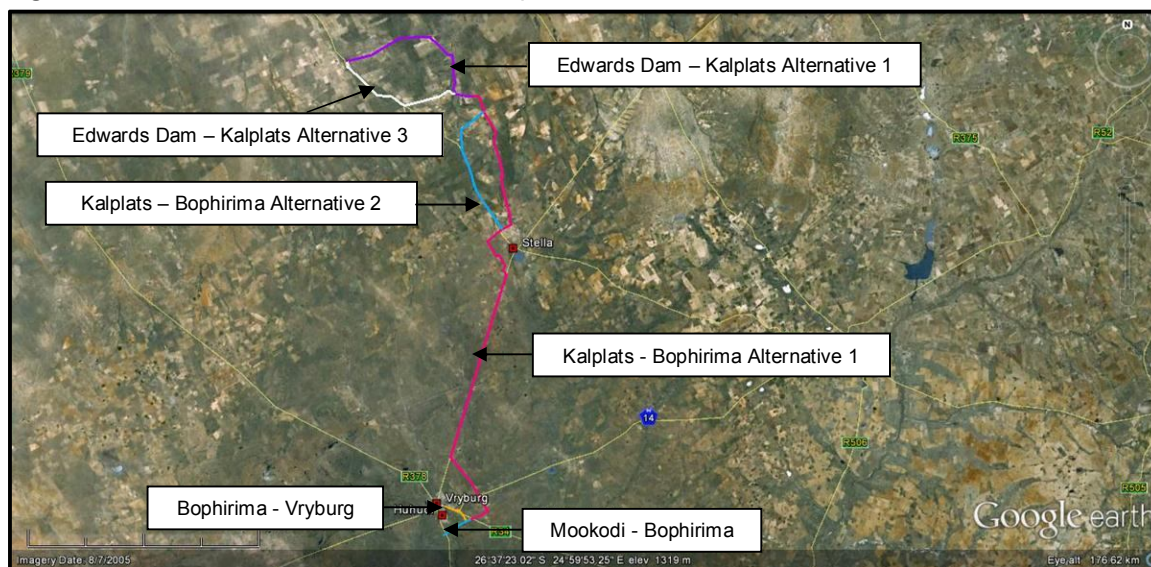


Figure 2.2: EIA Alternatives on a Local Municipal Level



The Northwest Province (NWP) is located on the northern border of South Africa and has land surface area of approximately 116,180.3km², which represents approximately 9.5% of South Africa's total land surface. The province is bordered by the Northern Cape to the southwest, the Free State to the south, Gauteng to the southeast, and the Limpopo Province to the northeast.

According to Community Survey 2007, the province is home to 3,271,948 people, which represents approximately 6.8% of the total population within South Africa. The average population density within the NWP stands at approximately 28.2 people per km².

Significant towns within the province include Brits, Klerksdorp, Lichtenburg, Potchefstroom, Rustenburg, Vryburg, and the capital, Mafikeng. Initially these towns were agricultural centres, but later evolved into mining centres. Rustenburg is reportedly the fastest growing urban centre in Africa due to increased mining activities along the Bushveld Igneous Complex. This situation gave rise to a steady increase in the urbanisation rate within the province over the past 10 years: in 2006, 11% more of the province's total population lived in urban areas than in 1996, and close on 9% more than was the case in 2001. Despite this increase, the province's urbanisation rate is still approximately 10% lower than that of the country as a whole, for which the urbanisation rate is estimated at around 56%.

The province's economy is largely based on the mining industry, which generates more than half of the province's revenue. This sector also employs approximately 23% of the economically active population. Platinum, vanadium and a host of other minerals are mined in the province, most notably along the Merensky Reef (between Brits and Rustenburg), from which approximately 94% of the country's platinum is extracted. Other noteworthy minerals being mined in the province include granite (46% of South Africa's granite) in the Brits area and gold (25% of the country's gold) in the Klerksdorp/Potchefstroom area. According to the province's environment outlook (2008) the main minerals being mined in the Northwest include:

- Gold, mined in the Orkney, Klerksdorp and Carltonville areas;

- Uranium, mined in the Klerksdorp area;
- Platinum Group Metals and Chrome, mined in the Rustenburg and Brits areas; and
- Diamonds, mined in the Lichtenburg, Christiana and Bloemhof areas.

Although agriculture is not viewed as the major contributor to the province's economy from a purely financial perspective, this sector remains the largest employer in the province. According to Statistics South Africa (StatsSA) (in the Northwest Environment Outlook, 2008), over 40% of the province's total population are considered to be 'not economically active', while a further 21% are unemployed. This means that only approximately 38.5% of the province's total population are formally employed, which leaves the province with a fairly high unemployment rate. It would furthermore appear as if unemployment amongst females is much higher than amongst males.

With such a high unemployment rate it follows that, in 2006, approximately 53% of the province's total population lived in poverty. This means that the poverty level in 2006 was approximately 8% higher than it was in 1996. For this reason the provincial government developed a poverty relief programme with the aim to:

- Provide basic service delivery;
- Reduce poverty by helping the poor to help themselves;
- Formulate human capital to assist the poor; and
- Improve institutions and management systems.

As could be expected, the largest concentration of people living in poverty are found close to major urban areas and other centres of potential employment, such as mines and industrial areas.

As is the case with all the provinces in South Africa, the Northwest's spatial pattern is characterised by a system of segregation, which means that large segments of the population still have limited access to economic and social opportunities. The settlement patterns in the province are described as 'unsustainable', contributing to the fact that human development progress has been hampered by a lack of basic infrastructure, such as water, sanitation and electricity. Currently settlement patterns are therefore shaped by the availability of water and land, and the proximity of the area to minerals, markets, and social and economic opportunities.

During the 2007/08 financial year, the province spent approximately R 785.5 million with which they delivered in excess of 19,000 new housing units. However, despite the improved performance in housing delivery, it is estimated that the housing backlog currently stands in excess of 168,000 households in need of formal housing.

According to the Northwest Province Growth and Development Strategy (PGDS), other challenges facing the province include the following:

- The rural nature of the province;
- The low population density and the resultant inadequate infrastructure, most notably in remote rural areas;
- An enormous backlog in basic service delivery and maintenance;

- A predominantly poor population with high levels of illiteracy and dependency that affects people's productivity and ability to compete for jobs;
- Inequalities between the rich and the poor, including disparities between urban and rural areas;
- The HIV/AIDS prevalence rate; and
- The availability of resources that is unevenly distributed, which means that it offers limited potential for improved service delivery and growth.

Of these challenges, employment creation and poverty eradication as a result of low levels of expertise and skills are deemed to be the greatest challenges faced by the provincial government. These challenges are regarded as both immediate and long term challenges that require primary goals for sustained growth and economic development. The primary goals have been classified as follows:

- The Economic Goal, which requires an average economic growth rate of at least 6.6% per annum to enable the province to half the unemployment rate over a 10-year period. In order to achieve this, the investment required from both the private and public sector is estimated at around R 6.3 billion per annum;
- The Poverty Eradication Goal with the aim to clear the basic needs backlog. It is estimated that approximately R 854 million per annum would be required to achieve this goal.

The Dr Ruth Segomotsi Mompati District Municipality (DRSMDM) (previously known as the Bophirima District Municipality) consists of 6 local municipalities and is located on the western border of the NWP where it borders on the Northern Cape. The district covers an area of 47,478.2km² and in 2007 was home to a population of approximately 354,550 people. This brings the population density in the district to an average of 7.5 persons per square kilometre, which is indicative of the fact that the district is largely rural in nature.

Of the 6 local municipalities within the DRSMDM, three are relevant to this study, namely the Naledi Local Municipality (NLM), the Kagisano Local Municipality (KLM) and the Molopo Local Municipality (MLM). The NLM lies on the eastern border of the district. The KLM is located to the northwest of the NLM, with the MLM located to the west.

So What?

- In line with the PGDS, local economic development should be enhanced by affording local businesses, service providers and/or local individuals with job and supply opportunities;
- Although the agricultural sector does not contribute significantly to the economic growth of the province, it remains the largest employment sector and therefore agricultural land should be preserved as far as possible to minimise the potential for job losses;
- The mining industry is the major contributor to the province's local economy and therefore any current and future mining activities should be considered during route selection; and
- Service delivery to rural areas remains a challenge, which might be further affected by the presence of the construction workforce.

2.2. Technical Project Description

The project will consist of two components:

- 132kv distribution power lines; and
- Substations.

The construction of these components will be briefly discussed in the following sub-sections.

2.2.1. Distribution Power Line Construction Process

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 distribution power line.

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 2m x 2m and under normal soil conditions, is usually also 2m 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 (as depicted by figure 2.5) by the assembly team (which is the case for every tower site). The tower's steelwork is fitted and assembled on the ground at the site, and therefore site clearance is required around the foundation pit. Once the tower has been assembled, it is painted with a non-corrosive paint and then erected with a crane and placed in the foundation pit.
- Once all the towers have been put up, the stringing team will commence with stringing the cables between the towers (refer to figure 2.6). 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. 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.
- 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.

2.2.2. Substation Construction Process

This section which deals with general information and criteria for design, engineering, supply, fabrication, construction, testing and commissioning of civil and structural work of a substation. The general civil works that has to be carried out during the construction of the proposed substation includes the following components:

- **Terrace Earthworks:** This includes 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.
- **Access Roads:** This includes the construction of an access road from the main road to the proposed substation site. As a minimum requirement, the road is required to be at least a 6m wide compacted gravel road.
- **Terrace Drainage:** The installation of storm water drainage on the surface to dispose of such storm water on the terrace.
- **Control Building:** The construction of the control building includes the laying of foundations, and other construction activities such as walls, masonry work, flooring, roofing, electrical installation, air conditioning, painting, architectural works, water supply, sanitary works, drainage, etc.
- **Supports and Foundation:** Pre-engineered galvanised structures from reputed manufacturers are used at the substation. The plinth level of tower foundations and equipment will be a minimum of 200mm above ground level.
- **Cable Trench (yard):** This consists 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.
- **Fencing:** 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.
- **Water Supply:** Provision will be made for a borehole, pump, and head tank with booster pump and reticulation pipes to ensure the supply of potable water to the substation.

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

The detailed design includes, but is not limited to:

- Verification of all data, criteria and information contained in the Employer's Requirements;
- Generation of all criteria and information required for the completion of work including liaison with the Employer and other Authorities;
- Design and analysis of all substation structures;
- Design and stress analysis of foundation for all towers and equipment support structures, plinth foundations, cable trenches, lighting poles etc., and preparation of all construction drawings (layout, general arrangement, and structural) required for the complete execution of the work. Material selection and material take-off, necessary layouts and details etc. shall be developed keeping in view of functional requirements. Sufficient detailing shall be done in all drawings so that the site engineers face no difficulty during execution;
- Design and preparation of all construction drawings, bar bending schedules, material selection and material take-off etc., required for the execution of the work;
- Preparation of field quality control plan;
- Safety factors for towers /gantries and foundations are considered; and
- 3D analysis is carried out for towers, girders & building. Truss work analysis is carried out in 2D.

The light sources shall have a suitable colour index to enable personnel to differentiate between, in particular, coloured phasing disks. For the above minimum average illumination levels refer to:

- The Occupational Health & Safety Act: 1993, 'Environmental Regulations For Workplaces'; and
- The SABS 0114-Part 1: 1996 'Artificial lighting of interiors'.

The illumination level 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.

To ensure the safety of maintenance personnel, the Operational F/lighting installations will be mounted on high masts having a maintenance platform and caged ladder.

3. ASSESSMENT METHODOLOGY

3.1. Methodology for Impact Assessment

The EIA Methodology assists in evaluating the overall effect of a proposed activity on the environment. The determination of the effect of an environmental impact on an environmental parameter is determined through a systematic analysis of the various components of the impact. This is undertaken using information that is available to the environmental practitioner through the process of the environmental impact assessment. The impact evaluation of predicted impacts was undertaken through an assessment of the significance of the impacts.

3.1.1. Determination of Significance of Impacts

Significance is determined through a synthesis of impact characteristics which include context and intensity of an impact. Context refers to the geographical scale i.e. site, local, national or global whereas Intensity is defined by the severity of the impact e.g. the magnitude of deviation from background conditions, the size of the area affected, the duration of the impact and the overall probability of occurrence. Significance is calculated as shown in Table 3.1.

Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

3.1.2. Impact Rating System

Impact assessment must take account of the nature, scale and duration of effects on the environment whether such effects are positive (beneficial) or negative (detrimental). Each issue / impact is also assessed according to the project stages:

- planning
- construction
- operation
- decommissioning

Where necessary, the proposal for mitigation or optimisation of an impact should be detailed. A brief discussion of the impact and the rationale behind the assessment of its significance has also been included.

- Rating System Used To Classify Impacts

The rating system is applied to the potential impact on the receiving environment and includes an objective evaluation of the mitigation of the impact. Impacts have been consolidated into one rating. In assessing the significance of each issue the following criteria (including an allocated point system) is used:

Table 3.1: Description of Impacts

NATURE		
Include a brief description of the impact of environmental parameter being assessed in the context of the project. This criterion includes a brief written statement of the environmental aspect being impacted upon by a particular action or activity.		
GEOGRAPHICAL EXTENT		
This is defined as the area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment of a project in terms of further defining the determined.		
1	Site	The impact will only affect the site
2	Local/district	Will affect the local area or district
3	Province/region	Will affect the entire province or region
4	International and National	Will affect the entire country
PROBABILITY		
This describes the chance of occurrence of an impact		
1	Unlikely	The chance of the impact occurring is extremely low (Less than a 25% chance of occurrence).
2	Possible	The impact may occur (Between a 25% to 50% chance of occurrence).
3	Probable	The impact will likely occur (Between a 50% to 75% chance of occurrence).
4	Definite	Impact will certainly occur (Greater than a 75% chance of occurrence).
REVERSIBILITY		
This describes the degree to which an impact on an environmental parameter can be successfully reversed upon completion of the proposed activity.		
1	Completely reversible	The impact is reversible with implementation of minor mitigation measures
2	Partly reversible	The impact is partly reversible but more intense mitigation measures are required.
3	Barely reversible	The impact is unlikely to be reversed even with intense mitigation measures.
4	Irreversible	The impact is irreversible and no mitigation measures exist.

IRREPLACEABLE LOSS OF RESOURCES		
This describes the degree to which resources will be irreplaceably lost as a result of a proposed activity.		
1	No loss of resource.	The impact will not result in the loss of any resources.
2	Marginal loss of resource	The impact will result in marginal loss of resources.
3	Significant loss of resources	The impact will result in significant loss of resources.
4	Complete loss of resources	The impact is result in a complete loss of all resources.
DURATION		
This describes the duration of the impacts on the environmental parameter. Duration indicates the lifetime of the impact as a result of the proposed activity		
1	Short term	The impact and its effects will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase (0 – 1 years), or the impact and its effects will last for the period of a relatively short construction period and a limited recovery time after construction, thereafter it will be entirely negated (0 – 2 years).
2	Medium term	The impact and its effects will continue or last for some time after the construction phase but will be mitigated by direct human action or by natural processes thereafter (2 – 10 years).
3	Long term	The impact and its effects will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter (10 – 50 years).
4	Permanent	The only class of impact that will be non-transitory. Mitigation either by man or natural process will not occur in such a way or such a time span that the impact can be considered transient (Indefinite).
CUMULATIVE EFFECT		
This describes the cumulative effect of the impacts on the environmental parameter. A cumulative effect/impact is an effect which in itself may not be significant but may become significant if added to other existing or potential impacts emanating from other similar or diverse activities as a result of the project activity in question.		
1	Negligible Cumulative Impact	The impact would result in negligible to no cumulative effects
2	Low Cumulative Impact	The impact would result in insignificant cumulative effects
3	Medium Cumulative impact	The impact would result in minor cumulative effects

4	High Cumulative Impact	The impact would result in significant cumulative effects
INTENSITY/ MAGNITUDE		
Describes the severity of an impact		
1	Low	Impact affects the quality, use and integrity of the system/component in a way that is barely perceptible.
2	Medium	Impact alters the quality, use and integrity of the system/component but system/ component still continues to function in a moderately modified way and maintains general integrity (some impact on integrity).
3	High	Impact affects the continued viability of the system/ component and the quality, use, integrity and functionality of the system or component is severely impaired and may temporarily cease. High costs of rehabilitation and remediation.
4	Very high	Impact affects the continued viability of the system/component and the quality, use, integrity and functionality of the system or component permanently ceases and is irreversibly impaired (system collapse). Rehabilitation and remediation often impossible. If possible rehabilitation and remediation often unfeasible due to extremely high costs of rehabilitation and remediation.
SIGNIFICANCE		
<p>Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. This describes the significance of the impact on the environmental parameter. The calculation of the significance of an impact uses the following formula:</p> <p>(Extent + probability + reversibility + irreplaceability + duration + cumulative effect) x magnitude/intensity.</p> <p>The summation of the different criteria will produce a non-weighted value. By multiplying this value with the magnitude/intensity, the resultant value acquires a weighted characteristic which can be measured and assigned a significance rating.</p>		

Points	Impact Significance Rating	Description
6 to 28	Negative Low impact	The anticipated impact will have negligible negative effects and will require little to no mitigation.
6 to 28	Positive Low impact	The anticipated impact will have minor positive effects.
29 to 50	Negative Medium impact	The anticipated impact will have moderate negative

Points	Impact Significance Rating	Description
		effects and will require moderate mitigation measures.
29 to 50	Positive Medium impact	The anticipated impact will have moderate positive effects.
51 to 73	Negative High impact	The anticipated impact will have significant effects and will require significant mitigation measures to achieve an acceptable level of impact.
51 to 73	Positive High impact	The anticipated impact will have significant positive effects.
74 to 96	Negative Very high impact	The anticipated impact will have highly significant effects and are unlikely to be able to be mitigated adequately. These impacts could be considered "fatal flaws".
74 to 96	Positive Very high impact	The anticipated impact will have highly significant positive effects.

Table 3.2: Rating of impacts

IMPACT TABLE FORMAT	
Environmental Parameter	<i>A brief description of the environmental aspect likely to be affected by the proposed activity e.g. Surface water</i>
Issue/Impact/Environmental Effect/Nature	<i>A brief description of the nature of the impact that is likely to affect the environmental aspect as a result of the proposed activity e.g. alteration of aquatic biota The environmental impact that is likely to positively or negatively affect the environment as a result of the proposed activity e.g. oil spill in surface water</i>
<i>Extent</i>	<i>A brief description indicating the chances of the impact occurring</i>
<i>Probability</i>	<i>A brief description of the ability of the environmental components recovery after a disturbance as a result of the proposed activity</i>
<i>Reversibility</i>	<i>A brief description of the environmental aspect likely to be affected by the proposed activity e.g. Surface water</i>
<i>Irreplaceable loss of resources</i>	<i>A brief description of the degree in which irreplaceable resources are likely to be lost</i>
<i>Duration</i>	<i>A brief description of the amount of time the proposed activity is likely to take to its completion</i>
<i>Cumulative effect</i>	<i>A brief description of whether the impact will be exacerbated as a result of the proposed activity</i>

IMPACT TABLE FORMAT		
<i>Intensity/magnitude</i>	<i>A brief description of whether the impact has the ability to alter the functionality or quality of a system permanently or temporarily</i>	
<i>Significance Rating</i>	<i>A brief description of the importance of an impact which in turn dictates the level of mitigation required</i>	
	Pre-mitigation impact rating	Post mitigation impact rating
Extent	4	1
Probability	4	1
Reversibility	4	1
Irreplaceable loss	4	1
Duration	4	1
Cumulative effect	4	1
Intensity/magnitude	4	1
Significance rating	-96 (high negative)	-6 (low negative)
Mitigation measures	<i>Outline/explain the mitigation measures to be undertaken to ameliorate the impacts that are likely to arise from the proposed activity. Describe how the mitigation measures have reduced/enhanced the impact with relevance to the impact criteria used in analysing the significance. These measures will be detailed in the EMPR.</i>	

The 2010 regulations also specify that alternatives must be compared in terms of impact assessment.

4. CURRENT STATUS QUO

In order to address the overall objective of this study, it was necessary to compile a detailed description of the study area. The subsections below presents the baseline profile (status quo) of the receiving environment in terms of various socio-economic change processes (cf. Vanclay, 2002). It is believed that the baseline profile would be maintained to a large degree (not taking into account variables outside of the project) in the event that a 'no go' option was implemented.

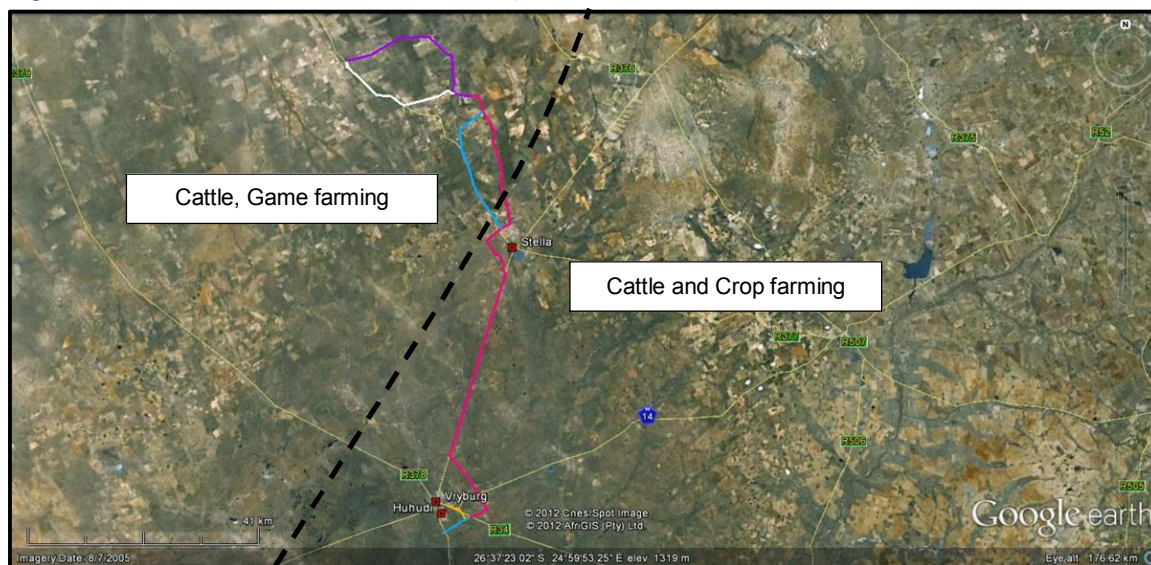
The baseline profile mostly focused on the local municipal area, but reference was made to the district and the province, where deemed necessary. The profile was structured according to the following social change processes:

- **Geographic processes:** land use patterns;
- **Demographic processes:** the composition of the local community;
- **Economic processes:** the way in which the local people make a living and the economic activities in the society;
- **Institutional and Legal processes:** the role and efficiency of the local authority and other service providers in the area in terms of their capacity to deliver services to the local area; and
- **Socio-cultural processes:** How the local population behave, interact and relate to each other, their environment, and the belief and value systems that guide these interactions.

4.1. Geographical Processes

As an overview of the study area in terms of land use, reference is made to the Northwest Province's Spatial Development Framework. According to this SDF the main land use is agriculture, which can be divided into mainly cattle and game farming in the north-western quadrant of the study area, and extensive agriculture (crops, cattle and game farming) in the north-eastern quadrant of the study area. This general overview in terms of the Northwest SDF is presented in Figure 4.1 below.

Figure 4.1: General overview of Land use as per Northwest SDF



4.2. Demographical Processes

Demographical processes relate to the number of people and the composition of a community. This includes an overview of the population size, the race, age, gender and educational profile of a population as well as household compositions.

Unless otherwise stated, the baseline social profile was compiled based on data obtained from Census 2001 and the more recent Community Survey (CS) 2007. It is important for readers to note that CS data does not replace Census data, but that the CS merely attempted to adjust measurements to a best estimate. In this regard, Statistics South Africa stated the following: *“Any adjustment done [in CS 2007] has maintained the profiling of the community in terms of the people and households while compensating and correcting the undercounted bias by different projections on national, provincial and municipalities level.”*⁴ Therefore, please bear in mind that the following data should only be viewed as indicative of the broad demographical trends within the area and not as a rigid representation of the area.

4.2.1. Population Composition

As previously mentioned, three local municipalities within the Dr Ruth Segomotsi Mompati District Municipality (DRSMDM) of the Northwest Province will be affected by the proposed construction and operation of the infrastructure developments associated with the Mookodi Integration Project. These municipalities are the Naledi Local Municipality (NLM), the Kagisano Local Municipality (KLM) and the Molopo Local Municipality (MLM). Together these municipalities cover a geographical area of approximately 34,542km², of which the KLM is the largest area at 14,690km² followed by the MLM at 12,588km². The NLM is the smallest of the municipalities at 7,264km².

⁴ Statistics South Africa: Community Survey 2007: Key Municipal Data: ix.

In 2007 these municipalities had a combined total population of 140,385 people, of which just little over a half (75,946 people or 54.1%) were from the KLM, followed by the NLM with 57,931 people (41.3%) and the remainder 6,508 (4.6%) in the MLM. The average population density of the affected areas was around 4.1 persons per km², which is indicative of the rural nature of these municipalities. However, the population density is based on the overall municipal profile and therefore it can be expected that the population density in urban areas would be much higher than that of the rural areas.

The economically active population group (defined by StatsSA as the ages between 15 and 65) accounts for approximately close on two thirds in Naledi (61.2%) and Molopo (60.5%). Although this is also the predominant group in Kagisano, it only accounts for slightly over half of the population (52.6%). There are slightly more females than males in Naledi (54.5%) and Kagisano (51.9%), while the reverse is true in Molopo where there is slightly more males (50.6%) than females. The Black African is the most dominant population group in all areas (81.2% in Naledi, 86.0% in Molopo and 97.1% in Kagisano).

In 2007 these municipalities had a combined total of 36,735 households, of which 19,888 were in Kagisano, followed by Naledi with 13,675 households and Molopo with 3,675 households. The average occupancy rate across all municipalities was 3.8 persons per household.

Table 4.1 below provides an overview summary of the population demographics of the study area in relation to South Africa and the Northwest province.

Table 4.1: Summary of Population Characteristics

	South Africa	North West	Dr Ruth Segomotsi Mompoti District		Naledi		Kagisano		Molopo	
	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
Area size (km²)	1,219,912	116 180.3 (9.5% of SA)	47 478.2 (40.9% of NWP)		7 264 (15.3% of the DM)		14 690 (30.9% of the DM)		12 588 (26.5% of the DM)	
Total population	48,502,063	3 271 948 (6.8% of SA)	32,016	354 554 (10.8% of NWP)	58,095 (13.4% of the DM)	57 931 (16.3% of the DM)	96 387 (22.3% of the DM)	75 946 (21.4% of the DM)	11 690 (2.7% of the DM)	6 508 (1.8% of the DM)
Population density (people per km²)	39.8	28.2	9.1	7.5	8.0	7.9	6.6	5.2	0.9	0.5
Total households	12,500,610	911,119 (7.3% of SA)	104,877	100 073 (11.0% of NWP)	15,251 (14.5% of the DM)	13,675 (13.7% of the DM)	23 000 (21.9% of the DM)	19 888 (19.9% of the DM)	3 632 (3.5% of the DM)	3 172 (3.2% of the DM)
Avg. persons per household	3.9	3.6	4.1	3.5	3.8	4.2	4.2	3.8	3.2	2.1
Predominant Population Group	Black African (79.5%) ⁹	Black African (90.8%)	Black African (92.2%)	Black African (92.2%)	Black African (74.2%)	Black African (81.2%)	Black African (97.2%)	Black African (97.1%)	Black African (90.1%)	Black African (86.0%)
Predominant Gender	Female (50.8%) ⁹	Male (50.3%)	Female (52.1%)	Female (53.1%)	Female (51.3%)	Female (54.4%)	Female (53.1%)	Female (51.9%)	Male (50.2%)	Male (50.6%)
Predominant Age Group	Working age (62.9%)	Working age (64.4%)	Working age (57.6%)	Working age (56.8%)	Working age (63.2%)	Working age (61.2%)	Working age (54.1%)	Working age (52.6%)	Working age (63.1%)	Working age (60.5%)

⁹ Census 2001 data

So What?

- The baseline demographic profile provides an overview of the local area that will be affected to ensure proper planning that will affect the least amount of people during both construction and operation.

4.3. Economic Processes

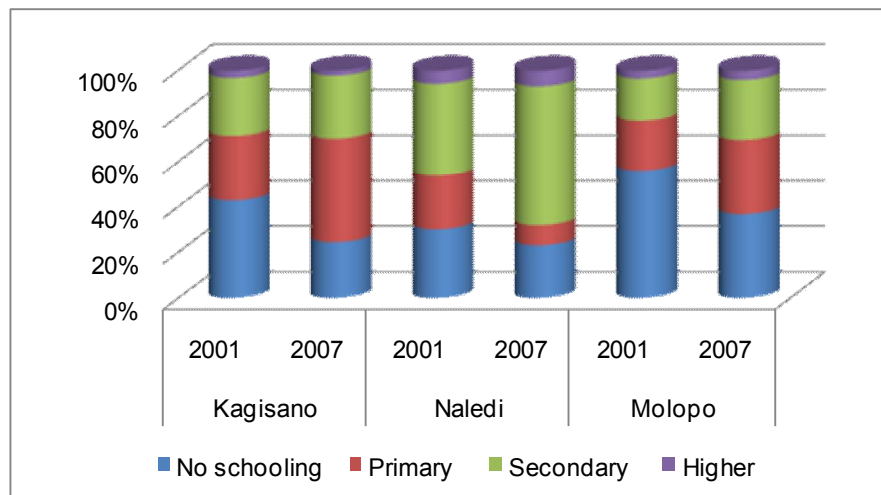
Economic processes relate to the way in which people make a living and the economic activities within that society. The employment status within any given area gives an indication of the economic stability of such an area and also serves as an indicator of such an area's general well-being.

4.3.1. Educational Attainment

One of the driving forces behind social change is educational attainment, which in turn is linked to poverty levels as there appears to be a correlation between the level of educational attainment and income levels. People with higher educational levels tend to be economically better off, and therefore contribute more to the reduction of the unemployment rate. Educational attainment is also linked to poverty in the sense that funds are required to further studies, therefore people living in less favourable economic conditions tend to be unable to further their education, which in turn holds them in a downward poverty spiral.

An overview of the educational profile for the local municipal areas is provided in Figure 4.2.

Figure 4.2: Overview of the Education Profile of the affected municipalities (2001 and 2007 compared)



In 2001, between a third and a half of the population had no form of schooling (30.3% in Naledi and as high as 56.2% in Molopo). Coupled with those individuals who only completed some form of primary education, this means that, in 2001, on average two thirds of the population (67.9%) within the affected municipal areas had limited educational skills, which in turn would hinder their employability on the general job market. On average, just over a quarter (28.0%) of the population completed some

form of secondary education, which could enhance their employability, but only slightly. Only 4.0% on average went on to obtain a tertiary or higher qualification.

The situation only improved marginally between 2001 and 2007: Although the number of people who had no form of education decreased drastically from an average of 43.2% to 28.3%, those who completed some form of secondary education now accounted for just over a third of the adult population (38.3% compared to 2001's 28.0%). The number of individuals who obtained some form of tertiary education remained relatively unchanged from an average of 4.0% in 2001 to an average of 4.3% in 2007.

4.3.2. Local Employment

Table 4.2 below provides an overview of the employment and economic sectors of the study area in relation to South Africa, the affected province (Northwest), and the district. From this table it is clear that the study area is characterised by a fairly low employment rate where, on average, just over half of the working age population (excluding the not economically active population) within the study area were formally employed in 2007.

Table 4.2: Overview of Employment and Economic Sectors

	South Africa	North West	Dr Ruth Segomotsi Mompoti District		Naledi		Kagisano		Molopo	
	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
Employed*	33.7%	38.5%	23.1%	22.3%	38.5%	32.4%	18.0%	14.9%	48.2%	45.2%
Unemployed*	24.0%	20.9%	21.7%	16.3%	20.9%	28.6%	15.6%	12.8%	4.4%	5.0%
Not economically active	42.3%	40.6%	55.2%	61.4%	40.6%	39.0%	66.4%	72.3%	47.3%	49.8%
Employment rate**	58.4%	64.8%	51.6%	57.8%	64.8%	53.1%	53.7%	53.9%	91.6%	90.0%
Predominant industry	Community services	Mining and quarrying	Unspecified	Unspecified	Unspecified	Community services	Agriculture	Community services	Agriculture	Agriculture

* This is the percentage employed/unemployed of the entire working age population and should not be read as the unemployment rate, i.e. the not economically active population is included in this segment.

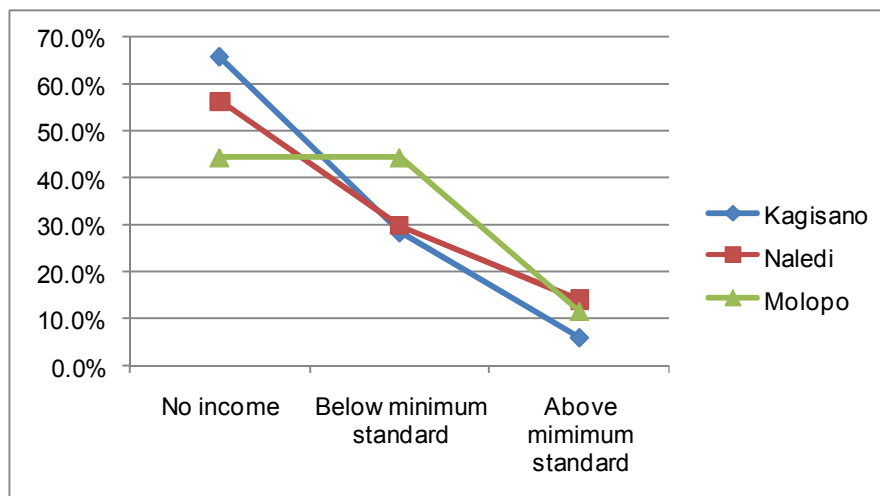
** In order to reflect a more accurate employment rate, the not economically active population has been excluded from this segment.

When local employment figures are considered in the context of provincial and district information it seems that employment levels in the Naledi and Kagisano areas are more or less on par with that of the district and the province, whereas the employment rate in the Molopo area is much higher than the provincial and district average. Interesting to note is that the agricultural sector employs more than two thirds (67.2%) of those employed within the MLM.

4.3.3. Personal Income Profile

The graph below (Figure 4.3) provides an overview of the personal income levels for the affected municipal areas (no data could be obtained on household income levels).

Figure 4.3: Overview of Personal Income (2007)



The majority of individuals within the affected municipalities do not earn any form of income (65.8% in Kagisano, dropping to 56.3% in Naledi and 44.3% in Molopo). However, it should be noted that the personal income category also included individuals who are not economically active and who would therefore have no income. Despite the fact that Molopo has the least amount of people who earn no income, it is also the area where an equal segment of the population (44.3%) earns below the acceptable minimum standard, nationally defined by government as an income of R 1,600 or less per month. Within the other two municipal areas, approximately a quarter of the population earn less than the acceptable minimum standard. Kagisano is the area with the smallest population who earn above the acceptable minimum standard (\geq R 1,601 per month).

So What?

- The baseline educational profile provides the project proponent with an indication of the skills levels that might be available in the area in an attempt to predict whether or not it would be possible to source labour and services from the local community.
- The baseline economic profile gives an indication of how people in the area make their living and the economic activities within a given society. This is required in an attempt to minimise any potential negative impacts on people's livelihoods.

- Despite higher employment levels in the local area, unemployment is still high. The project might provide some employment relief, depending on the hiring practices used during the project and the extent to which local employment is prioritised.
- Loss of access to land for cultivation and grazing purposes is likely to be the main local negative economic impact that must be investigated.

4.4. 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 local communities.

4.4.1. Municipal Services

Table 4.3 below provides an overview of the municipal services of the Naledi area in relation to the Dr Ruth Segomotsi Mompati District and the Northwest Province as a whole. No data could be obtained for the overall municipal service delivery in South Africa.

Table 4.3: Overview of Municipal Service Delivery

	South Africa	North West	Dr Ruth Segomotsi Mompoti District		Naledi		Kagisano		Molopo	
	2001	2007	2001	2007	2001	2007	2001	2007	2001	2007
Energy Cooking	-	Electricity (65.8%)	Non-electrical (69.8%)	Electricity (53.9%)	Non-electrical (56.8%)	Electricity (63.2%)	Non-electrical (80.1%)	Non-electrical (64.3%)	Non-electrical (60.6%)	Electricity (51.0%)
Energy Heating	-	Electricity (58.9%)	Non-electrical (69.5%)	Non-electrical (59.0%)	Non-electrical (55.2%)	Electricity (60.6%)	Non-electrical (78.1%)	Non-electrical (75.1%)	Non-electrical (60.6%)	Non-electrical (52.4%)
Energy Lighting	-	Electricity (82.5%)	Electricity (59.9%)	Electricity (81.7%)	Electricity (65.1%)	Electricity (85.3%)	Electricity (67.2%)	Electricity (75.2%)	Non-electrical (50.5%)	Electricity (59.6%)
Refuse	-	Removed once a week (52.6%)	Own refuse dump (62.7%)	Own refuse dump (60.9%)	Removed once a week (63.2%)	Removed once a week (79.9%)	Own refuse dump (84.4%)	Own refuse dump (81.9%)	Own refuse dump (81.2%)	Own refuse dump (75.2%)
Sanitation	-	Equal or above RDP standard (54.6%)	Below RDP standard (50.4%)	Equal or above RDP standard (50.8%)	Equal or above RDP standard (76.0%)	Equal or above RDP standard (83.5%)	Below RDP standard (65.4%)	Below RDP standard (69.6%)	Below RDP standard (54.8%)	Equal or above RDP standard (57.2%)
Water	-	Equal or above RDP standard (89.9%)	Below RDP standard (54.1%)	Equal or above RDP standard (90.3%)	Equal or above RDP standard (67.5%)	Equal or above RDP standard (92.7%)	Below RDP standard (57.7%)	Below RDP standard (83.3%)	Equal or above RDP standard (78.3%)	Equal or above RDP standard (60.0%)

The baseline municipal profile suggests that the area is not well supplied with basic services such as electricity, refuse removal, sanitation services or water supply. Although the overall number of households who make use of electricity for lighting has increased between 2001 and 2007, large segments of the population still make use of non-electrical energy for cooking and heating purposes, most notably in Kagisano and Molopo. Overall refuse removal appears to be lacking in view of the fact that the majority of households make use of their own waste disposal facilities – this is often informal disposal, which means that waste is not properly stored or treated, which in turn can lead to unhealthy living conditions. In terms of water and sanitation services, most of the households within the affected area either do not have access to these services or their access to these services is below RDP standard⁶.

4.4.2. Crime

As far as could be determined during the course of the study, the Naledi Local Municipal area is serviced by 3 police stations, one in Vryburg, one in Huhudi, and one in Stella. According to the South African Police Service's website, the ratio of police officers in the Northwest province as at June 2010 was 1 police official for every 412 citizens. On a population size of 140,385 people, theoretically this means that there are approximately 340 police officers deployed throughout the study area.

Figure 4.4 below provides an overview of the baseline profile on crime in the project area. This profile was based on information obtained from the Crime Information Management Services of the South African Police Service⁷ on crimes reported for the years 2006 – 2009 at the following Police Stations within the study area:

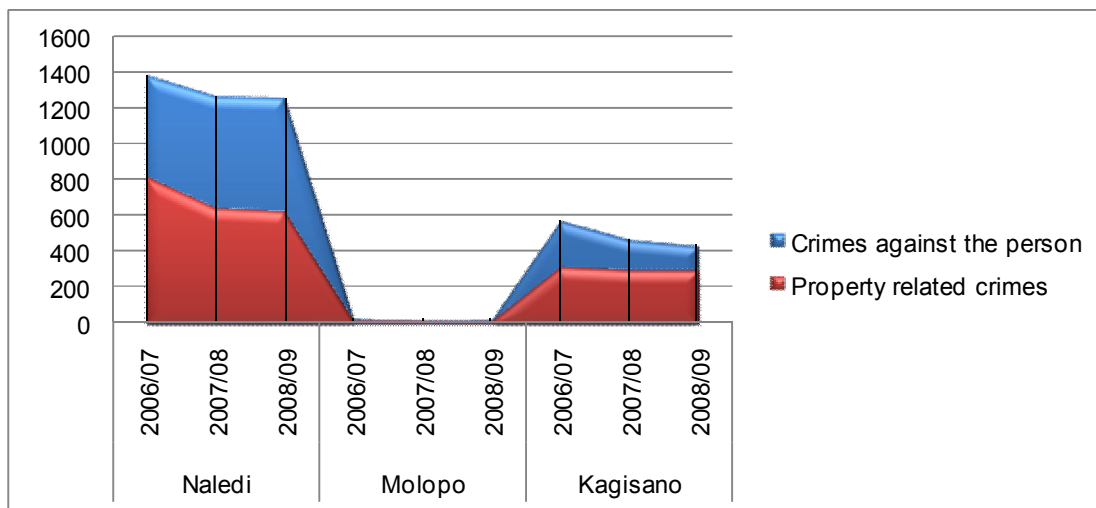
- Vryburg, Huhudi and Stella in the Naledi Local Municipality;
- Bray and Vorstershoop in the Molopo Local Municipality; and
- Ganyesa, Morokweng and Piet Plessis in the Kagisano Local Municipality.

For the purposes of this scoping study only crimes against the person (murder, sexual crimes, attempted murder, assault with grievance bodily harm, common assault, armed robbery and common robbery) and property-related crimes (burglary and theft) were considered.

⁶ RDP standard for sanitation services include toilet facilities that is either connected to a waterborne sewerage system or a ventilated VIP-system. The RDP standard for water supply refers to piped water either within the dwelling or within a 200m radius from the dwelling.

⁷ http://www.saps.gov.za/statistics/reports/crimestats/2009/crime_stats.htm

Figure 4.4: Crime profile of the study area



During the period under review a total of 3,899 crimes against the person were reported in Naledi, a further 71 cases in Molopo and 1,469 cases in Kagisano. As far as property related crimes are concerned, a total of 1,915 cases were reported in Naledi, a further 53 cases in Molopo and 904 cases in Kagisano. In general, the number of property related crimes are much lower than crimes against the person. Molopo has the lowest crime rate by far, whereas Naledi has the highest crime rate. In all areas the crime rate appears to be on the decline.

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

4.4.3. Infrastructure and Services

There are three district hospitals in the study area, one in Kagisano (Ganyena) and two in Naledi (Vryburg and Stella). The area is serviced by a total of 8 police stations, as outlined above.

No information could be obtained on the emergency services servicing the area.

So What?

- The baseline institutional and empowerment profile gives an indication of the municipal services available, the local municipalities' ability to provide for additional connections if required (e.g. removing waste from site), and the capability of the area to provide in health and other emergency services.
- This information enables the project proponent and its appointed contractors to plan ahead by ensuring that they include keys aspects such as emergency management plans in their planning process and costing.

4.5. 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.

4.5.1. Baseline Socio-Cultural Processes

The Vryburg area was established next to the Huhudi stream, which was the original Setswana name for the district, and has been occupied by the baRolong and then the baThlabing from around the 1750s.

The town itself came into existence more than a century later in 1882 following a dispute between the baThhaping of Makurwane and the Kora people under David Mossweu over the relative fertile land that the baThhaping occupied in the greater Taung district. Boer mercenaries came to Mossweu's aid and a low intensity war followed during which the boers, under the leadership of GJ van Niekerk, a landowner and storekeeper from Christiana, established the short lived Stellaland Republic in 1883. The citizens of the Republic of Stellaland referred to themselves as vryburgers, hence the name Vryburg. The independence of the Republic of Stellaland was, however, short lived. First Paul Kruger annexed the area under the Transvaal Government, and then, in February 1884, the London Convention was signed making Vryburg and the Republic of Stellaland a British protectorate.

British colonial control replaced the largely Boer presence of Stelleland and in 1885 Vryburg became part of the Crown Colony of British Bechuanaland, which in turn was annexed by the Cape Colony in 1895. The area earned a reputation as a wild frontier and for a while served as a basecamp to the notorious outlaw Scotty Smith.

Modern day Vryburg forms part of a cattle rich farming area and has been referred to as the "Texas of South Africa". In the 1980s the residents of the nearby township Huhudi objected strongly to being incorporated into the homeland of Bophuthatswana, thus leaving Huhudi a hotbed of political opposition to the then government. To this day the legacy of apartheid remains. Farm areas are almost exclusively owned by white farmers, with a definite divide between the town of Vryburg and townships such as Huhudi and Thakwaneng.

So What?

- The history of an area serves as an indication of local residents' place attachment in terms of their collective past and the value they attach to certain areas or symbols;
- People with similar cultural backgrounds tend to gather and live together in demarcated geographical areas. Outsiders can affect the cultural dynamics of such groups; and
- Sense of place goes hand in hand with place attachment, which is the sense of connectedness a person/community feels towards certain places.

5. IMPACT ASSESSMENT

The following section proceeds to discuss the various change processes and related impacts that could be expected because of the project. The various social impacts have been categorised according to change processes (cf. Vanclay, 2002). A change process is defined as a change that takes place within the receiving environment due to a direct or indirect intervention. Impacts follow because of the change processes 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 various change processes associated with the proposed construction and operation of the two substations and the various distributions power lines include the following:

- Geographical processes, which refer to the processes that affect the land uses of the local area.
- Demographical processes, which refer to the composition and structure of the local community.
- Economic processes, which refer to the movement of money between industries and between industries and consumers.
- Institution and Legal processes, which refer to the processes that affect service delivery to the local area.
- Socio-cultural processes, which refer to the processes that affect the local culture, 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).

The relationship between change processes and social impacts are illustrated in figure 5.1 below, whereas figure 5.2 reflects a more detailed layout of the relationships between change processes.

Figure 5.1: Relationship between change processes and social impacts

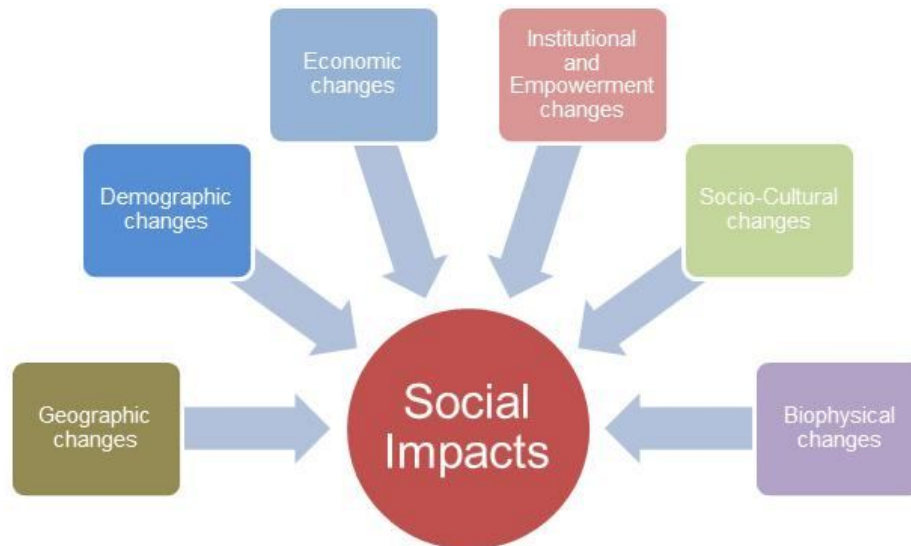
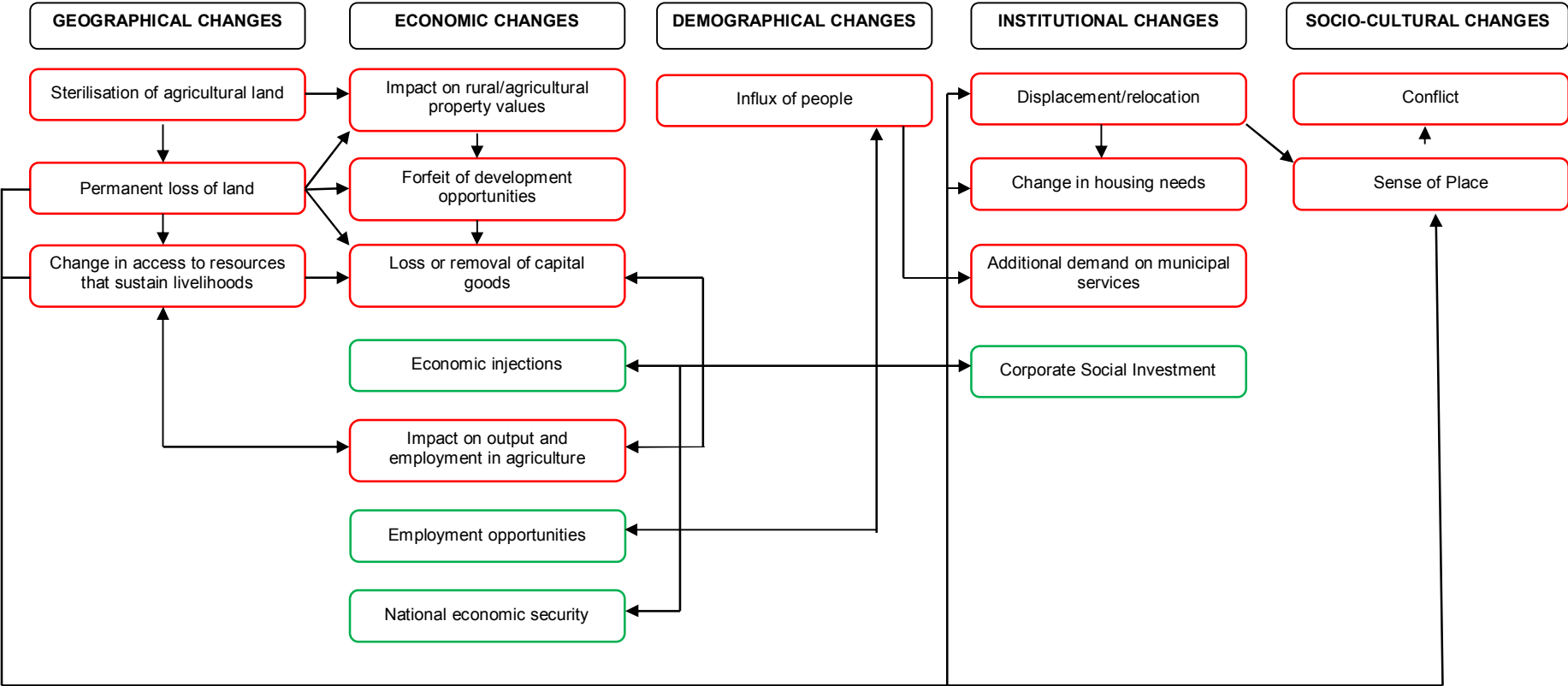


Figure 5.2: Relationships between change processes

Red blocks denote negative changes to the social environment, whereas green blocks denote positive changes.



5.1. Potential Impacts: Pre-Construction

During the pre-construction phase the site location for the substations and the alignment of the distribution line route corridors have to be finalised so that these can be submitted to the relevant department for environmental authorisation and so that negotiations with affected landowners can commence. During the pre-construction phase, two social change processes are likely to occur, namely:

- Geographical processes, i.e. the location of houses and other infrastructure and how this will influence the final siting of the substations and the alignments of the various distribution line route corridors; and
- Institutional and legal processes, i.e. the actual negotiation process between Eskom Land & Rights and the affected landowner. This will include issues of compensation, rehabilitation, etc.

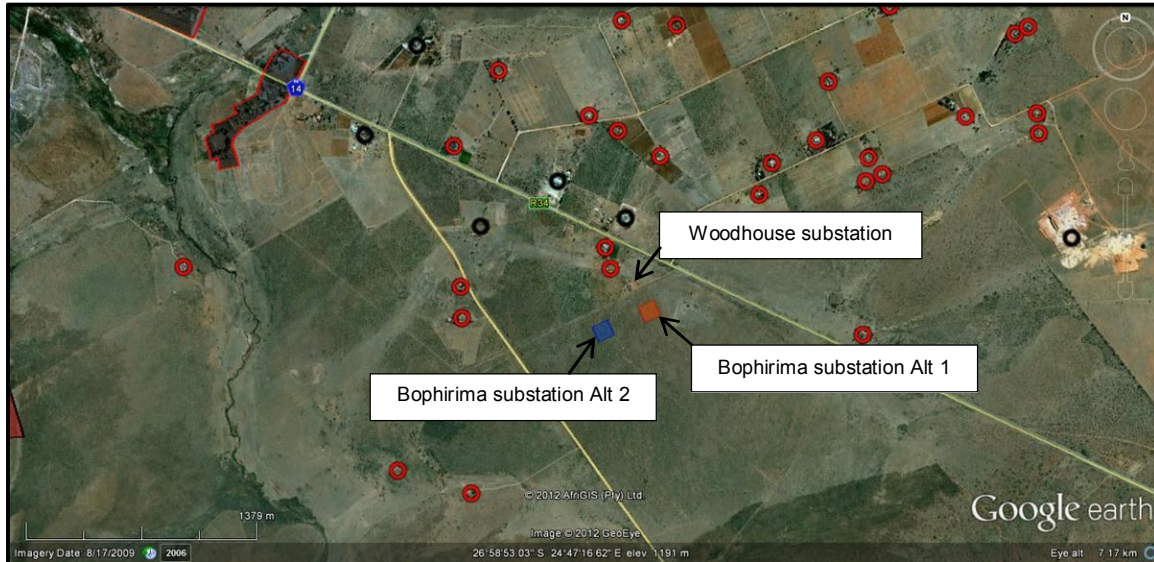
5.1.1. Geographical Change Processes

SUBSTATION SITES

- **Proposed Bophirima Distribution Substation**

The proposed Bophirima Distribution Substation alternatives are located beyond the south-eastern outskirts of Vryburg close to the Bernauw smallholdings. The substation sites are located to the south of the R34 road (refer to figure 5.3), relatively close to the farmstead Constantia and the existing Woodhouse Substation, which will be decommissioned in the near future. According to the Northwest Spatial Development Framework (SDF), the substation sites fall within a zone of extensive agricultural development in the form of maize, cattle, game and wheat farming. From a social perspective the area surrounding the proposed Bophirima substation sites are characterised by smallholdings consisting of scattered residential households and light industrial/commercial mixed land use. No relocation is foreseen and therefore no impacts will occur during this phase of the project in terms of land use changes.

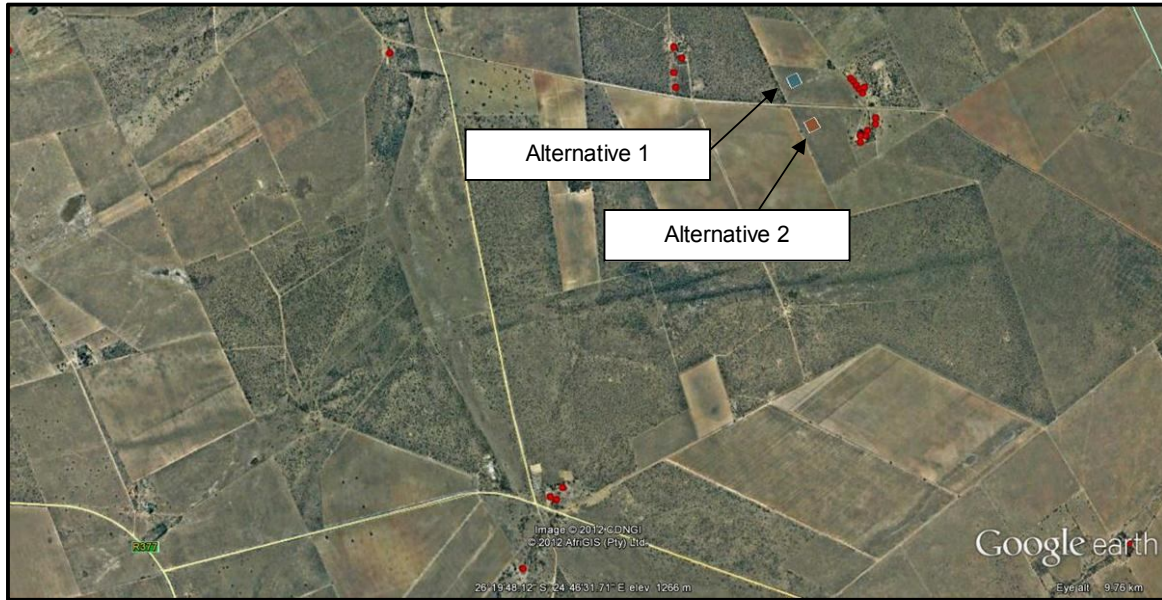
Figure 5.3: Baseline land use surrounding Bophirima substation site alternatives



- **Proposed Kalplats Distribution Substation**

The proposed Kalplats Distribution Substation alternatives are located approximately 28.5km to the north of the town of Stella. The nearest settlement is the hamlet of Papiessvlakte located 8km to the south-east. The substation site alternatives are located on agricultural land on the farm Gemsbokpan, to the west of the M^orester farmstead and to the north of a district road (refer to figure 5.4). To the east and west of the substation sites there are a number of scattered households. According to the Northwest SDF, the site falls within an agricultural zone consisting of cattle and game farming. No relocation is foreseen and therefore no impacts are expected during this phase of the project in terms of land use changes.

Figure 5.4: Baseline land use surrounding Kalplats substation site alternatives

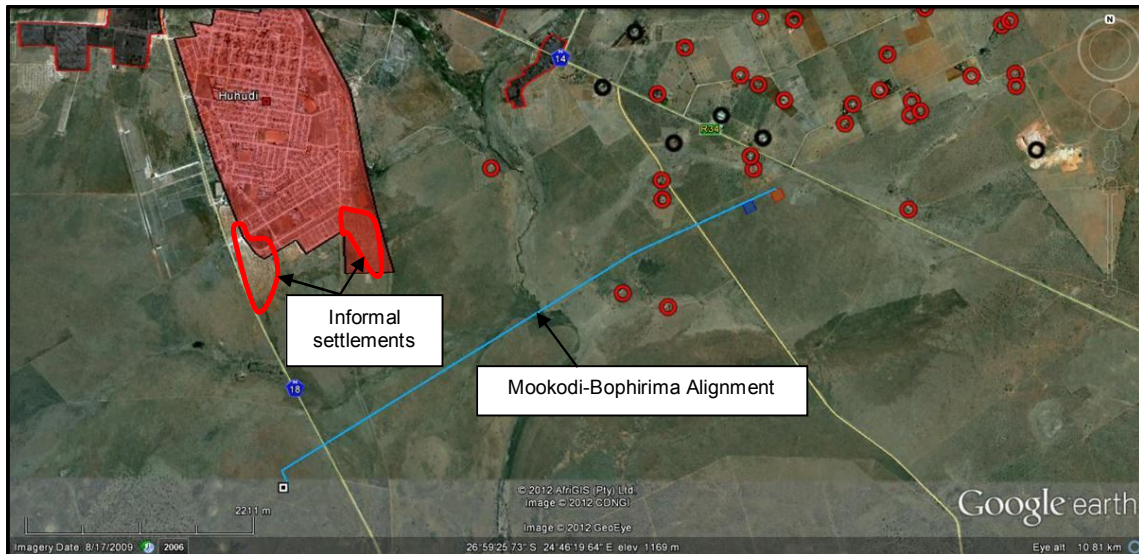


ROUTE CORRIDORS

- **Mookodi – Bophirima (Figure 5.5)**

The Mookodi – Bophirima 300m wide route corridor runs across vacant land within an agricultural zone (according to the Northwest SDF). A number of scattered households can be found, mostly to the north and northeast of the corridors. To the southwest lies Huhudi and of concern are the informal settlements that are expanding southwards towards the route corridor (one of these informal settlement 'legs' runs parallel to the N18).

Figure 5.5: Baseline land use surrounding Mookodi – Bophirima Route Corridor

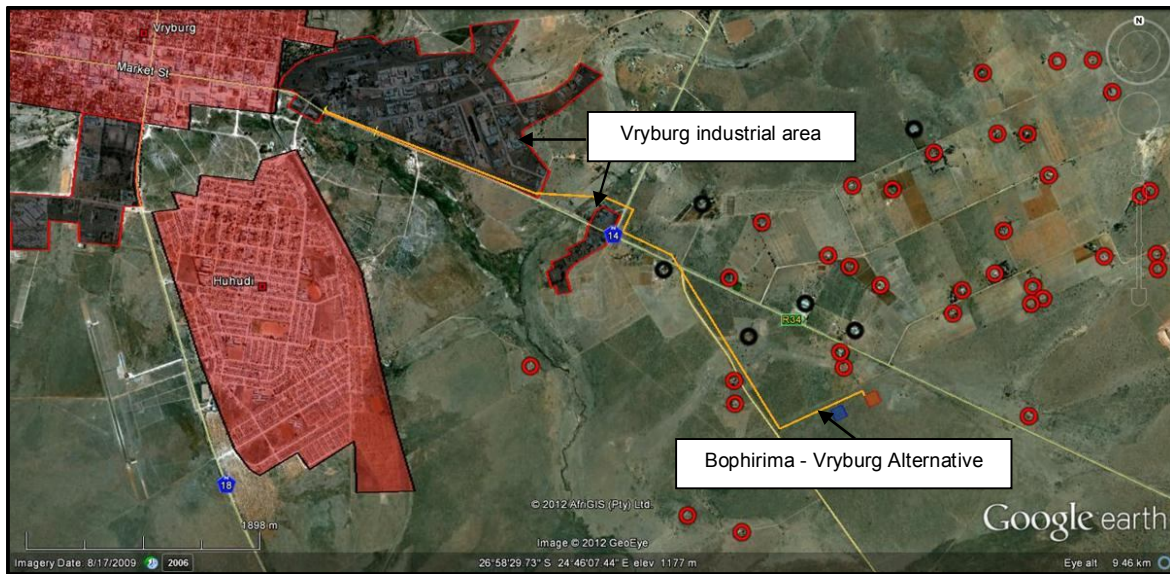


- **Bophirima – Vryburg (Figure 5.6)**

Important to note is that the section of this proposed line close to the Vryburg Municipal Substation that was proposed to be buried underground will no longer be buried. The entire length of the overhead lines will now be overhead lines. This can lead to space constraints between Faktoria Way and the Vryburg Municipal Substation as the required 31m servitude might not be available throughout this section.

This route corridor is largely located within the industrial area of Vryburg and mostly runs parallel to the N14 on its northern border. A number of scattered households can be found along the route corridor around the Bophirima substation site, but these diminish as the corridor enters the industrial area. Huhudi lies approximately 500m southwest of the Vryburg substation, whereas the town of Vryburg lies the same distance northwest of the substation.

Figure 5.6: Baseline land use surrounding Bophirima – Vryburg Route Corridor



- **Bophirima - Kalplats (Figure 5.7)**

Two alternative alignments have been provided for comparative assessment between the proposed Bophirima substation and the proposed Kalplats substation. Both alternatives follow the same alignment between Vryburg (Bophirima) and Stella where it is proposed to run parallel to a set of existing distribution power lines across mostly open vacant grazing land. An overview of the route corridors is presented in figure 5.7, after which it is broken down in sub-sets to illustrate the current land use better.

Figure 5.7: Overview of Bophirima – Kalplats Route Corridors

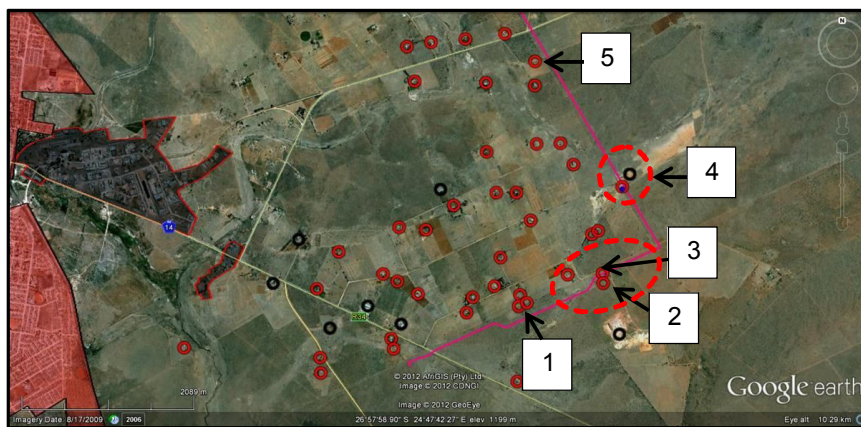
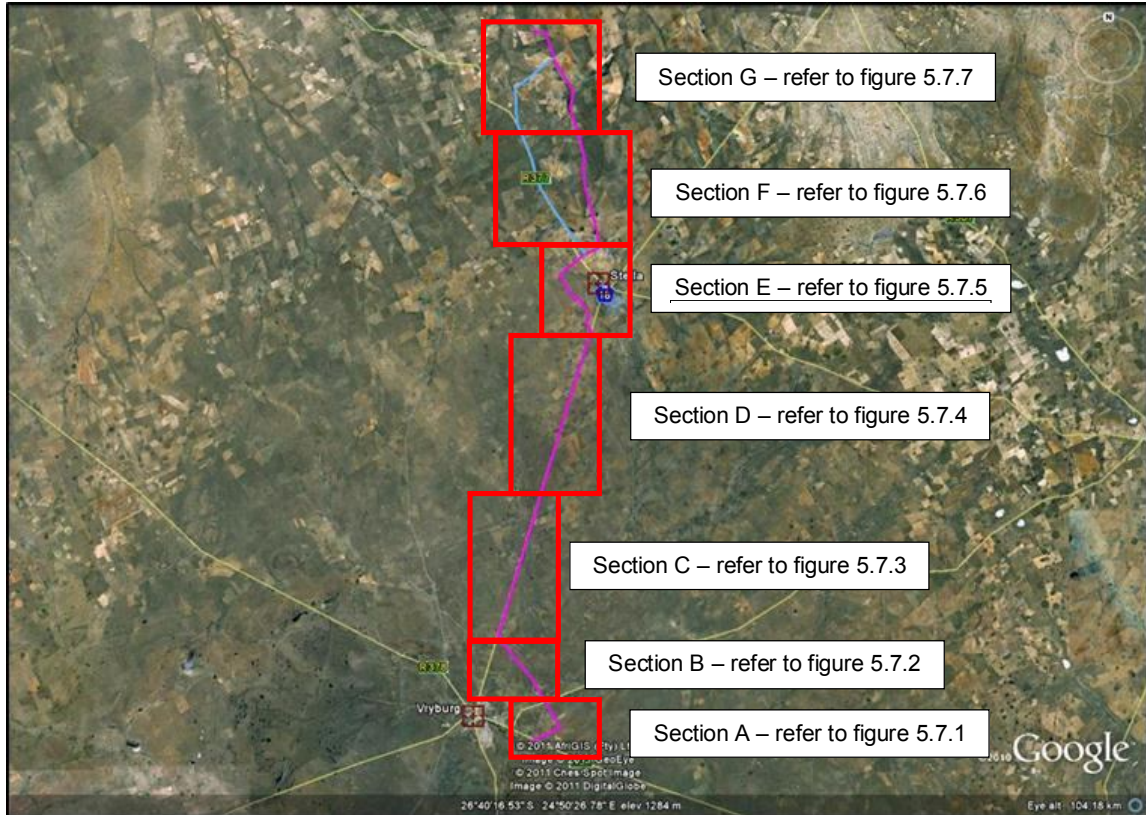


Figure 5.7.1

There are a number of household (red circles) and industrial/business (black circles) structures located within this section. At 133m, the two houses closest to the line (1) fall within the corridor. Structures 2, 3 and 4 falls directly within the corridor with virtually no separation distance. these areas have therefore been flagged as relocation should be avoided as far as possible.

If the line indicated is the central line of the corridor, structure 5 would fall within the corridor at a distance of 142m from the central line. The line might be visible to most structures at distance ranging between 300-2,000m – depending on their vantage point.

Figure 5.7.2

This section contains fewer structures than section A, but again contains structures that can potentially fall within the route corridor. Structure 1 is located 156m from the line. Structure 2 is located 176m west of the line, whereas structure 3 lies closer at 147m. Of concern is the centre pivot that falls either within the corridor or just outside it with a separation distance of 50m.

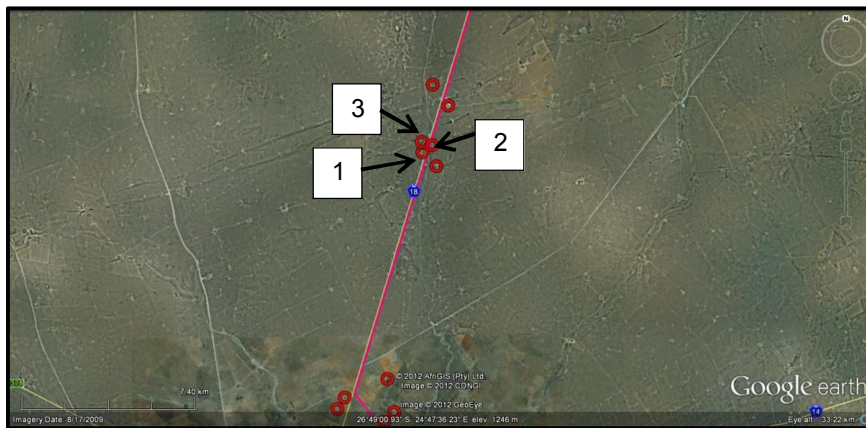
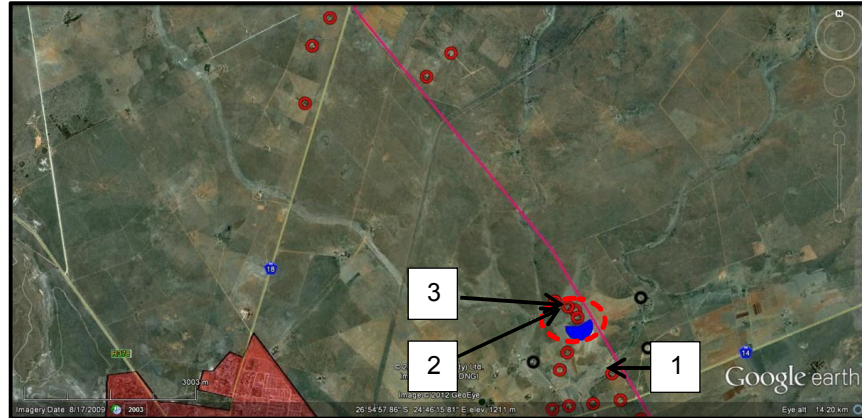


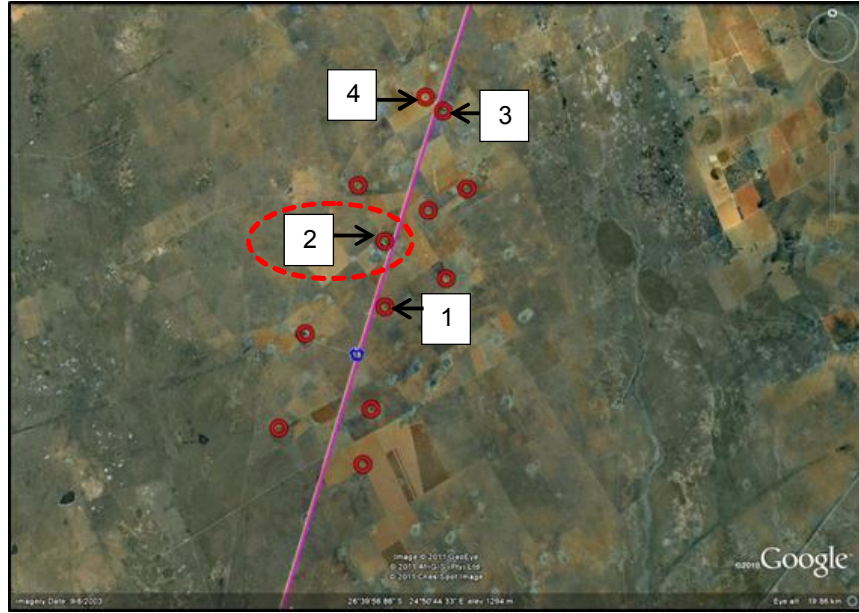
Figure 5.7.3

A number of houses are located within this section, all in close proximity to the N18. If the N18 is taken as the central line of the route corridor, two houses would fall within the corridor: house 1 lies 106m west of the N18 and house 2 lies 151m east of the N18. If the N18 was the eastern border of the corridor, house 3 would be located in the corridor at 266m west of the N18 along with house 1, whereas house 2 would then be excluded from the corridor.

All the other marked houses fall outside the corridor, although the distribution line would be visible to these houses at a distance ranging between 300-600m.

Figure 5.7.4

Again there are a number of scattered household structures along this section. If the N18 was taken as the western border of the corridor, structure 1 would fall just inside the corridor at 299m. At 160m from the N18, the structures and operations at number 2 fall within the corridor whether the N18 is the central line or the eastern border of the corridor. This particular area (2) is therefore flagged from a social perspective, as relocation should be avoided as far as possible.



If the N18 is taken as the western border of the corridor, number 3 would fall within the corridor at 206m east of the N18, and so would the compound of houses at 4 if the N18 was the eastern border (at a distance of 278m west of the N18). Both these points would fall outside the corridor if the N18 was the central point. No other structures would be directly affected in this section, but given the topography of the area, the line might be visible to households at distances ranging between 500-1,200m.

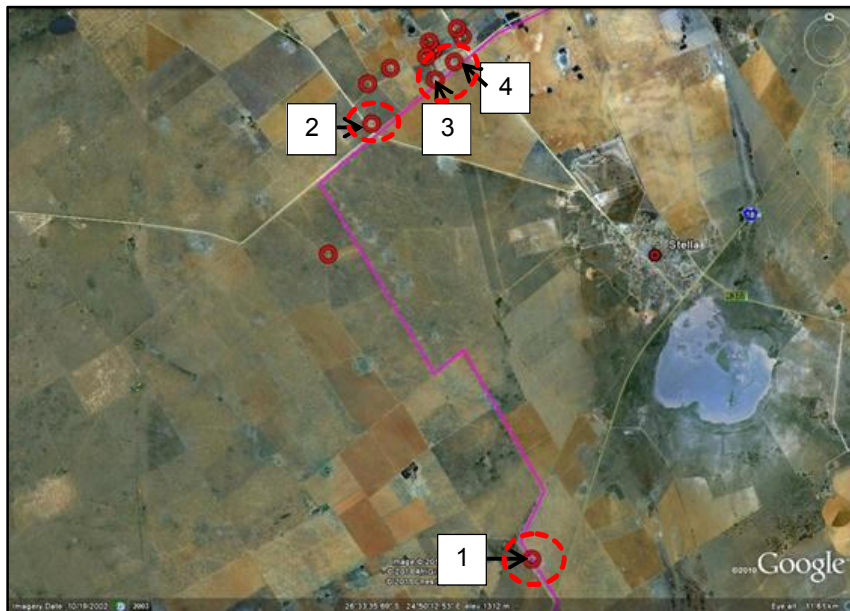


Figure 5.7.5

Structure 1 falls directly within the corridor, with no separation distance. The same holds true for structures 2, 3 and 4, although structure 2 might fall outside the corridor at a distance of 151m from the central line. Structures 3 and 4 are located 40m and 66m from the centre line, respectively. All of these areas have been flagged to avoid relocation.

Figure 5.7.6

Structure 1 is located 150m from the central line and would therefore be located within the corridor. All other structures are located at a distance greater than 150m and would therefore in all probability fall outside the corridor. In this instance, Alternative 1 (pink line) affects fewer households and structures and would therefore be a preferred alternative if other land uses were not taken into consideration.

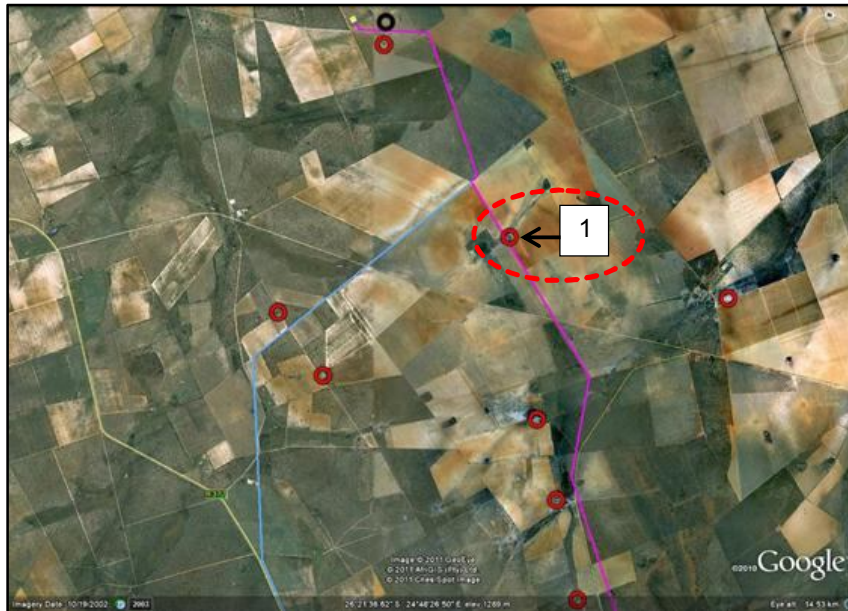
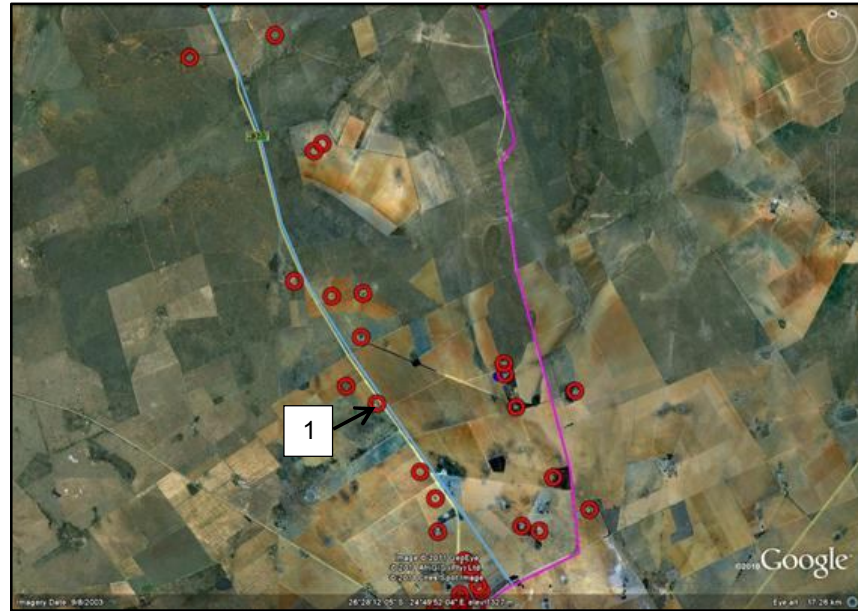


Figure 5.7.7

This section contains a few scattered households, with structure 1 being located within 60m of Alternative 1. This area has been flagged.

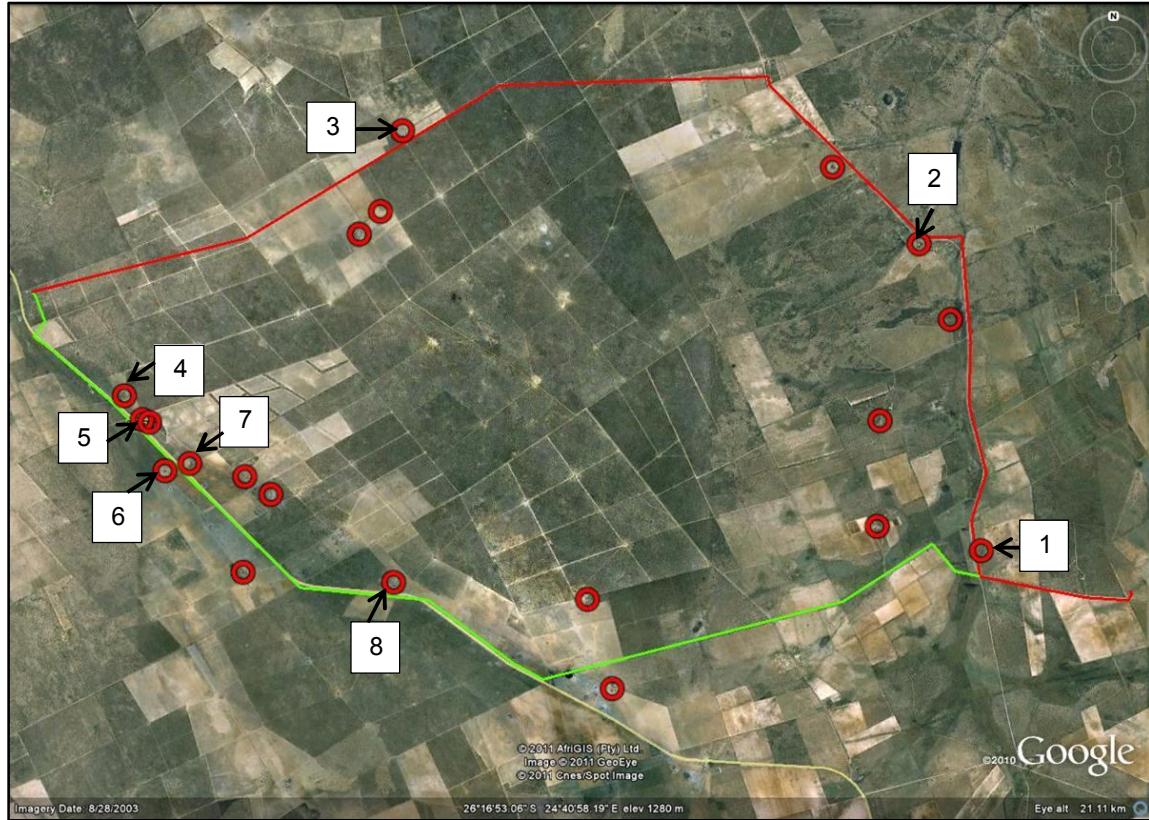
- **Kalplats – Edwards Dam (Figure 5.8)**

Two alternative route corridors are proposed for 132kV distribution power line between the proposed new Kalplats substation and the existing Edwards Dam substation.

Both alternative route corridors cross mostly agricultural/cultivated land. In addition to this land use, a number of scattered households are found along both alternatives. Although the line would be visible

to most of these households (irrespective of the alternative implemented, given the topography of the area), a number of households could be more directly affected by the alternatives as they currently stand (i.e. without variations to the alignments). These are:

Figure 5.8: Overview of Kalplats – Edwards Dam Route Corridor Alternatives



- Structure 1 is 100m within the 300m corridor of Alternative 1;
- Structure 2 is 150m within the 300m corridor of Alternative 1;
- Structure 3 is 190m within the 300m corridor of Alternative 1;
- Structure 4 is 206m within the 300m corridor of Alternative 3;
- Structures 5 are 135m within the 300m corridor of Alternative 3;
- Both structures 6 and 7 are 179m on either side of the 300m corridor of Alternative 3; and
- Structure 8 is 200m within the 300m corridor of Alternative 3.

Displacement and relocation of households due to Health and Safety Concerns

The displacement and relocation of households causes social and psychological disruption to those involved. The need for relocation implies a certain degree of responsibility on the side of the project proponent (Eskom) to ensure that the affected individuals and/or families do not endure the brunt of a project that will benefit others. This means that the affected individuals should enjoy the same standard of living that they have enjoyed before the project.

Apart from formal settlement, the presence of informal settlement poses different problems. National legislation normally only recognises formal, registered title land ownership, but the mere presence of squatters signifies their need for special attention. There are other forms of informal or unregistered title, such as usufruct rights (permanent or temporary), seasonal use rights, and right of access to commons. This means that a lack of legal tenure should not be a criterion for withholding financial compensation or assistance in relocation. It is, however, important to distinguish between households that have settled in the area prior to the project commencing and those who settle in the area simply to benefit from relocation.

A number of households and structures have been identified that are either within or in very close proximity to the route corridors as they currently stand (assuming that the lines indicated in the figures above are the centre lines of the route corridors), which would place these households and structures at 'risk' for relocation. However, given the fact that final route alignments still has to be determined within the 300m wide corridor, relocation can be avoided as per Eskom's policy and that of the International Financing Corporation (IFC).

As relocation can be totally avoided, it has not been assessed as a social impact. However, in the highly unlikely event that relocation is required; the guidelines tabled in table 5.1 below will serve as the mitigation measures required.

Table 5.1: Categories of affected people and proposed action

Category of person by affect	Action required
Owner: loses house and all land	Replace house and lands in new area
Owner: loses house and some land (land not left viable)	Replace house and all lands in new area
Owner: loses house and some land (land not left viable)	Replace house, as proprietor wishes; either on remaining land, with compensation for land lost, or on new plot
Owner: loses house but no land lost	Replace house either on remaining land or on new plot
Landless owner: loses house	Replace house on new plot in original or new area, as proprietor wishes
Tenant: loses house	Assist with housing in old or new area, depending on tenant's wishes
Squatter: loses house	Assist with housing in old or new area, depending on squatter's wishes
Owner: loses all land but not house	Either replace land within a reasonable distance of house, or replace house and lands in new area, as proprietor wishes
Owner: loses some land (land not left viable) but not house	Either replace land within a reasonable distance of house, or replace house and lands in new

Category of person by affect	Action required
	area, as proprietor wishes
Owner: loses some land (land not left viable) but not house	Compensate for loss of land
Owner: loses home-based business income (temporary), but not home	Compensate for loss of income
Owner: loses home-based business and home	Replace house in original or new area, as proprietor wishes, and compensate for loss of income during relocation processes
Tenant, squatter or street vendor: loses effective use of business site	Provide alternative location with equal or better access, services and business potential
All categories: loses neither land nor house	No action
Host community / area	Strengthen resource base and social services stressed by influx of resettled people

Source: Impacts arising from land acquisition and resettlement (World Bank)

The International Financing Corporation (IFC) states that relocation should be avoided as far as possible.

The main social concerns which arise when considering the presence of a power line close to human settlement and potential settlement in the 31m wide servitude (15.5m on either side of the central line) for a 132kV distribution line are health and safety aspects. The intention is that the servitude mitigates these potential health and safety related impacts. Risks are related to Electro and Magnetic Fields (EMF), electrocution, fire and collapse. A line could cause fatal/traumatic accidents because of collapse of a tower and/or lines because of mechanical failure, fire and mining activities. Fire can be caused by of electrical malfunction or human error.

Utilities in South Africa involved in the generation and distribution of electrical energy, are bound by the Occupational Health and Safety (OHS) Act [63] to provide such services in a safe manner. There are currently no regulations (under the Hazardous Substances Act) in terms of exposure to power frequency EMF in South Africa and the International Commission for Non-Ionising Radiation Protection (ICNIRP) guidelines are used for assessing human exposure to these fields. The guidelines for electric and magnetic field exposure set by the ICNIRP, an organisation linked to the World Health Organisation (WHO), receive world-wide support (Pretorius 2006). To manage the risks, the line runs in a servitude in which buildings, and crops higher than 2-4 meters are not allowed (depending on voltage of the line).

The results of a study commissioned by ESKOM Holdings Limited (Pretorius 2006) on the possible health effects of EMF noted the following:

- The main focus of research has been on a possible association between long term exposure to magnetic fields and childhood leukaemia.

- Based on the epidemiological findings, the risk of EMF being a health hazard is small.
- Based on current understanding of the topic, EMF is regarded as possible, but not proven cause of cancer.
- The suggestion for this health outcome stems mainly from a fairly consistent pattern of the increased but small risk observed from some epidemiological studies. This finding has not been confirmed by (notably all) controlled laboratory studies.
- No evidence of a causal relationship between magnetic field exposure and childhood leukaemia has been found and no dose-response relationship has been shown to exist between EMF exposure and biological effects.
- A possible explanation for the epidemiological findings may be confounding (a factor other than EMF) or bias (subjects studied are not representative of the target population for which conclusions are drawn) which render the data inconclusive and prevent resolution of the inconsistencies in the epidemiologic data.
- In general, studies of animal reproductive performance, behaviour, milk production, meat production, health and navigation have found minimal or no effects of EMF. The literature published to date has shown little evidence of adverse effects of EMF from overhead power lines on farm animals and wildlife.

It was concluded that electric and magnetic fields with levels typical of a power line environment, complying with the requirements for proper servitude management as prescribed by the electric utility, are unlikely to affect plants in terms of growth, germination and crop production.

Considering electrocution, transmission lines could pose a safety risk. Induced charges can build up on fence wires mounted on wood posts near power lines.⁸ This phenomenon is generally restricted to higher voltage lines (200 kV or greater). However, the magnitude of the build-up depends on a variety of factors:

- The size of the power line;
- The length of fence paralleling the line;
- The distance between the line and the fence;
- The amount of moisture in the fence posts and the ground; and
- The presence of grounding devices such as metal fence posts or weeds growing next to the fence.

5.1.2. Institutional and Legal Change Processes

- **The Negotiation Process**

As per Eskom's standard operating procedure, 132kV distribution power lines are operated within a 31m-wide servitude. The servitude basically entails a restriction on a property by registering the servitude at the Deeds Office. The servitude permits Eskom to access that part of the property to ensure the safe operation of the power line. Important to note is the fact that the servitude conditions are transferable in the event that an affected property is sold on the open market.

⁸ www.greatriverenergy.com/community/power_line_safety.html

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 themselves once authorisation has been granted by the competent authority (i.e. the process does not form part of the EIA process nor is it undertaken by consultants).

The negotiation process is as follows:

Once the route of the transmission power line has been finalised and environmental authorisation received, Eskom negotiators will identify the affected properties and verify the information with the 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 required. As soon as Eskom has acquired all the necessary information, an Eskom negotiator will meet with the affected landowner to commence 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 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;
 - An amount to compensate for any actual financial loss as a direct result of the expropriation; and
 - 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.

Land acquisition and compensation through the negotiation process

Eskom pays a once-off amount to landowners for right of way in the servitude of 31m per 132kV line. Compensation is also paid for the potential loss of livelihood as a result of the servitude. Normally compensation is calculated based on current market related land values, after which Eskom would offer 100% of the value of the land. Should the lines take up more than 50% of the land, Eskom will offer to buy the farm out (personal communication, Eskom). The value of the servitude to be negotiated is calculated by multiplying the area of the servitude required from the land owner with the valuator's unit price. The impact of financial gain should be long-term, because although a once-off amount is paid, this amount is deemed to reflect the lifelong economic effect. However, land owners are increasingly insisting on an annual access fee, which should be revised annually.

The financial gain is seen as a positive impact. The servitude is negotiated within a corridor (in this case of up to 300m wide) approved by the relevant environmental authority. Some modification of the proposed line is possible within this approved corridor, but significant modification in the alignment will be subject to additional environmental review. Effective mitigation measures could result in a servitude which satisfies both parties.

The status of the impact is dependent on the negotiation process. A transparent negotiation process that leads to a positive outcome (i.e. both parties are satisfied with the agreement) will have a positive impact. A breakdown in negotiations would lead to a negative impact in terms of a lengthy legal process that can either lead to an alternative route for the distribution power line or the expropriation of land for the servitude. In this instance the project will be severely delayed. If there is a breakdown in the negotiation process, the potential impact would be high levels of frustration as a result of the litigation process and the resultant delay in construction, as well as the potential for a perceived economic loss for both parties.

A detailed assessment of this issue was not undertaken as part of the Impact Matrix under Section 5.4., as the potential impact of the negotiation process is highly dependent on the individual outcome thereof between the landowner and Eskom, as described above.

5.2. Potential Impacts during Construction

The categories of expected change processes and resultant impacts during the construction period are as follows:

- **Geographical** processes refer to the processes that affect the land uses of the local area, of which most would be temporary in nature, in isolated pockets as the construction team moves along the line, and confined to the servitude and construction laydown areas. The same would hold true for the substation sites, but in this regard the land loss is expected to be of a more permanent nature and therefore has been assessed in more detail under the operational phase of the project.
- **Demographical** processes refer to the structure of the local community, of which most impacts would be due to the influx of people to the area in the form of the construction team and the immigration of unemployed job seekers, if any.
- **Economic** processes refer to the livelihood of people in the area, and could entail a number of impacts, but during the construction period this would mostly be limited to employment opportunities.
- **Institution and Legal** processes refer to the processes that affect service delivery to the local area and could entail a change in housing needs, which in turn could cause an additional demand on municipal services.
- **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). During the construction phase changes would mostly be limited to possible conflict situations between local residents and newcomers to the area, most notably where there is a marked dissimilarity in social practices.

5.2.1. Geographical Change Processes

As a result of the physical space required for the construction activities associated with a distribution power line, a temporary loss of cultivated and grazing land can be expected during the construction phase of the project. This implies that a farmer would not have access to a part of his/her land for the cultivation and/or harvesting of crops for the duration of the construction activities, which in turn could result in a temporary loss of income associated with the affected portion of the land. Where crops are cleared for the servitude, this would have an economic impact on the farmer as a result of a reduced harvest. However, normally the loss of cultivated land is considered during the negotiation process and included in the compensation amount payable to the landowner.

5.2.2. Demographical Change Processes

It is expected that the construction of the substations and the transmission power lines would lead to a temporary change in the number and composition of the population within the affected local area during the construction period, which in turn could lead to economic, land use, and socio-cultural change processes. In line with the results of the Scoping study, the following demographical change processes are expected:

- Influx of construction workers; and
- Increase of in-migration of job seekers.

Influx of construction workers

Based on Table 5.2 and 5.3 in Section 5.2.3, it is expected that there will be a steady inflow of construction workers up to a maximum of 169 on the distribution power lines, and 240 at the peak of construction on the substations. The distribution line construction team will move along the line, while the substation construction teams will be stationary at the substation construction sites – approximately 80 at the Bophirima site and 80 at the Kalplats site.

On a total population of around 58,000 people, the in- and outflow of an additional 339 people on the *size* of this population would hardly be noticed as it represents a temporary increase of 0.58% on the population size. Their *presence*, however, can lead to a number of changes within the community, such as an unintentional increase in housing needs if their presence attracts jobseekers, a rise in conflict situations, and health issues such as an increase in the HIV/AIDS infection rate. These have been discussed and assessed under the appropriate change processes.

Increase of in-migration of job-seekers

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.

Unfortunately, projects in the public domain often unintentionally create unrealistic expectations, especially amongst communities where unemployment is high and poverty is rife. 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. Job seekers then become a burden to the host community, as they do not have the means to sustain themselves, thereby becoming dependent on others (usually people who themselves only have limited resources). It is likely that the presence of job seekers could lead to the further expansion of the informal settlements at Huhudi. To prevent situations like these, it is therefore vital that local communities are informed upfront that it is most unlikely that any jobs will be offered to locals or where jobs are offered, that these would be minimal and for a very short period of time.

As is the case with the influx of construction workers, the actual in-migration of unemployed jobseekers might not yield a significant change to the community (although that is dependent on the uncertain number of jobseekers), but their *presence* can lead to a number of change processes and impacts, such as the expansion of informal settlements giving rise to an additional demand on municipal services, conflict situations over job opportunities and other limited resources, etc. These have been discussed and assessed alongside the presence of construction workers under the various relevant change processes as cumulative impacts.

5.2.3. Economic Change Processes

Economic change processes relate to the changes brought about to the employment and general economic profile of an area as a result of the introduction of any development. For example, job opportunities might be created as a result of the construction and maintenance of the proposed substation, distribution power lines, and associated infrastructure. During the construction period this would mostly be limited to employment opportunities.

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.

To understand the possibility of job creation, it is first necessary to have a basic understanding of the distribution power line construction process. The construction process normally starts at one point of the line and then follows a linear approach where one activity follows on the other with different teams involved at different points along the line, thereby forming a chain of events. On average there are some 35 days of construction at any point, but there might also be days in between where there are no construction activities taking place. In total the whole process can take up to year before the line is ready for commissioning.

Table 5.2 below details the following information per construction activity:

- The approximate team size per contractor, i.e. the number of people that are likely to be involved per construction activity;
- The approximate duration that will be spent at a construction point, i.e. an indication of the time that the construction team will spend at a given point (typically a tower location) as they move along the route. It must be noted that these times may vary depending on the local conditions of the area; and
- The skills required for each activity and the likelihood of local employment.

Table 5.2: Power Line Construction Process

Activity	Team Size	Duration	Skills Level	Local employment
1. Pegging of the centre line	3	1 day	Skilled	No
2. Access negotiations	1	1 day	Skilled	No

Activity	Team Size	Duration	Skills Level	Local employment
<ul style="list-style-type: none"> a. Develop access plan in consultation with landowner b. Agree on rehabilitation measures with landowner c. Photographs are taken of status quo 				
3. Pegging of the tower points <ul style="list-style-type: none"> a. Surveyor appointed by contractor b. Footing of towers are set out c. Contractor reports back to Eskom if tower location is unsuitable for whatever reason so that tower can be moved accordingly 	5	1 day	Skilled	No
4. Installation of new gates along the servitude	5-10	1 day	Unskilled	Yes
5. Nominations for the foundations of main structures and anchors <ul style="list-style-type: none"> a. Soil types are tested to determine foundation requirements b. Trial pits are dug at main foundation points - usually mechanically, but in some instances manual labour might be used 	5	2 days	Skilled	No <i>(But possible if manual labour is required on pits)</i>
6. Foundation excavation <ul style="list-style-type: none"> a. Foundations of approximately 2m x 2m x2m deep are excavated, depending on the local soil conditions - usually mechanically, but in some instances manual labour might be used b. The foundation pit is the covered and fenced off until the foundation concrete can be poured 	10	2 days	Semi-skilled	No <i>(But possible if manual labour is required on excavation)</i>
7. Foundation steelwork <ul style="list-style-type: none"> a. The steelwork is normally made up at the base camp and trucked to the site b. All fitting and wiring is done on site 	10	2 days	Skilled	No
8. Foundation laying (concrete pouring) <ul style="list-style-type: none"> a. A normal concrete truck is used, but if it is difficult for the truck to access the site, concrete can might be mixed on 	20	2 days	Skilled	No

Activity	Team Size	Duration	Skills Level	Local employment
<p>site</p> <p>b. A 28-day period is required after the concrete has been laid for it to set</p>				
<p>9. Delivery of the steelwork for the tower</p> <p>a. Every tower is individually designed for its specific location and transported directly from the factory to the site</p> <p>b. The steelwork is delivered in sections and assembled on site</p> <p>c. The access roads are clearly marked to ensure that the correct tower is delivered to the correct location</p>	5	1 day	Skilled	No
<p>10. Tower assembly</p> <p>a. The tower steelwork is assembled on the ground</p> <p>b. Nuts are punched into the steelwork and painted with non-corrosive paint</p>	10	3 days	Skilled	No
<p>11. Erection</p> <p>a. The tower are lifted with cranes to complete the assembly</p>	20	2 days	Skilled	No
<p>12. Stringing</p> <p>a. Cable on the back of small trucks are placed next to each other within the servitude</p> <p>b. A pilot tractor places the pilot cable on the ground and is pulled up through the use of a pulley. The conductors can never touch the ground.</p> <p>c. Stringing can take place in both directions from each drum – up to 4km can be strung in both directions</p>	50	7 days	Skilled	No
<p>13. Sag and tension</p> <p>a. The line is tensioned from each of the cable stations to ensure minimum ground clearance</p>	10	3 days	Skilled	No
<p>14. Rehabilitation</p> <p>a. Rehabilitation takes place continuously throughout the construction process</p>	5-15	2-10 days, depends on site	Unskilled	Yes

Activity	Team Size	Duration	Skills Level	Local employment
b. It will typically commence after the first few towers have been strung c. The contractor must offer a one year guarantee and will only be paid in full once rehabilitation has been concluded		conditions		

Source: Generic Environmental Technical Notes – Power Line Construction Process (PBA SA, 2006)

As illustrated by table 5.3 above, the unskilled job opportunities that might be directly created by the distribution power lines would be in the order of 25 at most.

Larger, stationery teams will be utilised at the substations sites. Although less information was available at the time of the study on the construction process of a substation (and with decommissioning in the case of Woodhouse it was assumed that more or less the same process would be followed as the construction process, but only in reverse), table 5.4 details the following:

- The approximate team size per contractor, i.e. the number of people that are likely to be involved per construction activity; and
- The skills required for each activity and the likelihood of local employment.

Table 5.3: Substation Construction Process

Activity	Team Size	Skills Level	Local Employment
Vegetation clearance	40	Unskilled	Possible
Bulk earthworks	150	Skilled	No
Foundation team	120	Skilled	No
Assembly team	120	Skilled	No
Erection team	90	Skilled	No
Stringing team	90	Skilled	No
Commissioning team	30	Skilled	No
Rehabilitation team	45	Unskilled	Possible

In the case of the substations, 85 temporary job opportunities might therefore be available during the construction phase. As Woodhouse is being decommissioned, it might be possible that the size of the rehabilitation team might be bigger than 15 people.

The presence of the construction team and construction camp often also leads to the development of informal self-employment businesses such as domestic services, food stalls, etc. at either the construction camp or the construction site. Construction workers purchase goods and services from

nearby towns, in this case Vryburg, thereby enhancing the local economy on a small scale for a short while.

5.2.4. 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, the power relationships between groups and how people are able to negotiate through situations that might affect their lives. During the construction phase the most significant expected change to occur is the need to **accommodate construction workers** as it is expected that the servitude negotiation process with landowners would have been concluded in the pre-construction phase.

The contractor is responsible for supplying accommodation to the construction team, normally in the form of a construction camp. The location of the construction camp is selected by the contractor in consultation and per agreement with the landowner and based on factors such as access to the construction site(s), access to municipal services, and access to materials, etc. As the construction progresses down the line, the distance increases that the construction team has to travel to site (based on the assumption that the construction camp will be located somewhere in the vicinity of Vryburg as the closest urban area with easy access to municipal services). All the construction material is also stored at the construction camp, except the steel towers and concrete. It is expected that there will be only one construction camp on this project.

Contractors have to supply method statements to Eskom at the tender stage that details the layout of the construction camp, including key infrastructure and services including but not limited to offices, overnight vehicle parking areas, stores, workshops, stockpile and laydown areas, hazardous storage areas, designated access routes, equipment cleaning areas, staff accommodation areas, cooking and ablution facilities, and waste and wastewater management.



Figure 5.9: A typical construction camp

It should be noted that the construction camp in itself does not pose a social impact, but rather that its presence tends to lead to a number of potential socio-cultural problems, which in turn then causes social impacts. Some of the most common problems associated with construction camps are:

- Disempowered and desperate local women often view construction workers as financially well-off. This can lead to an increase in prostitution, usually at the construction camp. Other women just enter into normal (sexual) relationships with construction workers believing that they will be supported financially. These situations have the potential to lead to an increase in pregnancies within the local community and eventually single parent households without financial support.
- In addition, casual sexual relationships can also pose health implications such as an increase in sexually transmitted infections, including HIV. Humans are transportable; therefore these infections can be spread when the construction worker migrates to a new area and perpetuates old behaviour (i.e. engage in a new casual sexual relationship).
- Infrastructure and services (e.g. water and sanitation) that are not managed and maintained properly within a construction camp can lead to waterborne diseases such as cholera. Within concentrated living conditions, diseases are easily spread - not only within the confines of the camp, but also to surrounding communities.
- Construction workers seldom spend their free time in the camp, but would rather venture into town in search of entertainment, which normally results in alcohol abuse leading to an increase in conflict and violence, as well as an increase in causal sexual relationships as outlined above.

Unfortunately the contractor has very little control over most of the social problems mentioned above, apart from ensuring a healthy and safe environment within the camp and advocating safer sexual

behaviour through preventative campaigns at the camp (and possibly extending these to local communities where construction workers will likely spend their free time).

The issues mentioned above have largely been discussed and assessed as part of socio-cultural change processes.

5.2.5. Socio-Cultural Change Processes

Socio-cultural change processes in turn looks at the way in which the proposed developments can alter the interactions and relationships within the local community. In line with the results of the scoping study, the following socio-cultural change processes might be expected:

- Conflict situations on various levels, of which the most notable would be:
 - Between construction workers and local community members; and
 - Between private landowners and the project proponent (Eskom).
- Health issues, most notably life threatening infections such as HIV/AIDS.

Conflict

Between construction workers and local community members: Alcohol abuse among construction workers seems to be a problem during construction, especially after workers have received payment and where they spent their money in local *shebeens* amongst local community members. The issues relate to alcohol's effect on behaviour – sometimes causing irresponsible behaviour that could escalate to violence or conflict between individuals or groups. Alcohol is likely to be the major cause of conflict.

Between private landowners and the project proponent: Attitudes are formed by people's take on a specific issue, coupled with their past experience associated with either the issue itself or, more likely, the way it has been dealt with in the past. A person's attitude towards a certain issue or situation can strongly influence the way in which that person views subsequent issues/situations of a similar nature. In this regard a number of landowners during the Scoping phase have conveyed their distrust in how Eskom manages their existing servitudes on their (the landowners') properties (refer to Section 1.3, table 1.2). Some of the issues mentioned were that Eskom cause damages to properties, that they access the properties unauthorized, that gates were erected along servitudes without informing the landowners in question and that these gates were not locked as per the undertaking of Eskom Distribution. All of these issues seem to cause security issues on the part of the landowners and if such current issues are not resolved, it can be expected that the current project will add 'fuel to the fire' and cause additional conflict with landowners.

HIV/AIDS

Construction activities bring with them drastic changes to local communities, albeit mostly on a temporary basis. Rapid change to local communities often has a negative impact on these communities, especially in isolated and more traditional communities. Young, poor, rural women who live in close proximity to construction sites are one of the most vulnerable groups of people as they

can be lured into sex work, casual sexual relationships, and other forms of relationships in the hope of securing more financial stability.

The findings of a baseline research study that was conducted in 2005 on a large road development project highlights the risk profile of construction workers:

- Although most construction workers knew the three HIV transmission routes, significant knowledge gaps were found amongst almost half of the workforce (e.g. believing that a mosquito can transmit HIV);
- About a quarter of the construction team workforce reported having sex with commercial sex workers;
- Very few of those who reported having sex with a commercial sex worker used a condom;
- Local casual relationships between construction workers and community members were commonplace;
- Again condom use was very low – close on a half of the construction workers reported that they did not use a condom during their last casual sexual encounter; and
- The number of Sexually Transmitted Infections was quite high, and on average less than half of those infected sought proper medical treatment.

Migrant workers are often young males in the prime of their sexual life. As such they are open to exploring and experimenting. A male-dominated construction team further fuels a 'macho-culture' with strong peer pressure. Compared to the local communities, construction workers are well paid - often in cash, which makes spending easier. But it would be unfair to assume that all construction workers have the same wants and needs, which means that their risk profiles would also differ. Some would seek long-term relationships, while others might prefer to go out, socialise, drink and have 'a good time'. Some might become involved in drug use. All of these behaviours increase the individual's risk of HIV infection and therefore an effective HIV prevention programme should form a vital part of the worksite's health and safety plan.

5.3. Potential Impacts during Operations and Maintenance

The categories of expected change processes and resultant impacts during the construction period are as follows:

- **Geographical** processes refer to the processes that affect the land uses of the local area, and in this case would be the restoring of agricultural land on the one side through the decommissioning of the Woodhouse substation, and a permanent change in cultivated and grazing land on the other hand through the presence of the newly commissioned substations and distribution power line towers.
- No further impacts are foreseen as part of **demographical** change processes during the operations and maintenance phase as the maintenance teams are too small to warrant a significant change to the size and composition of the local community.
- **Economic** processes refer to the livelihood of people in the area, and could entail a number of impacts. During the operations and maintenance phase this would mostly relate to a change in property values (micro impacts for private landowners along the distribution lines and on

substation sites) and on a more regional scale it would speak to economic growth through an enhanced electricity supply.

- No further impacts are foreseen as part of the **institution and legal** change processes during the operations and maintenance phase.
- **Socio-cultural** processes refer to the way in which the local community live and therefore the visual presence of the substations and the distribution lines can affect their sense of place, especially where the landscape of an area went from 'pristine' to 'spoilt'.

5.3.1. Geographical Change Processes

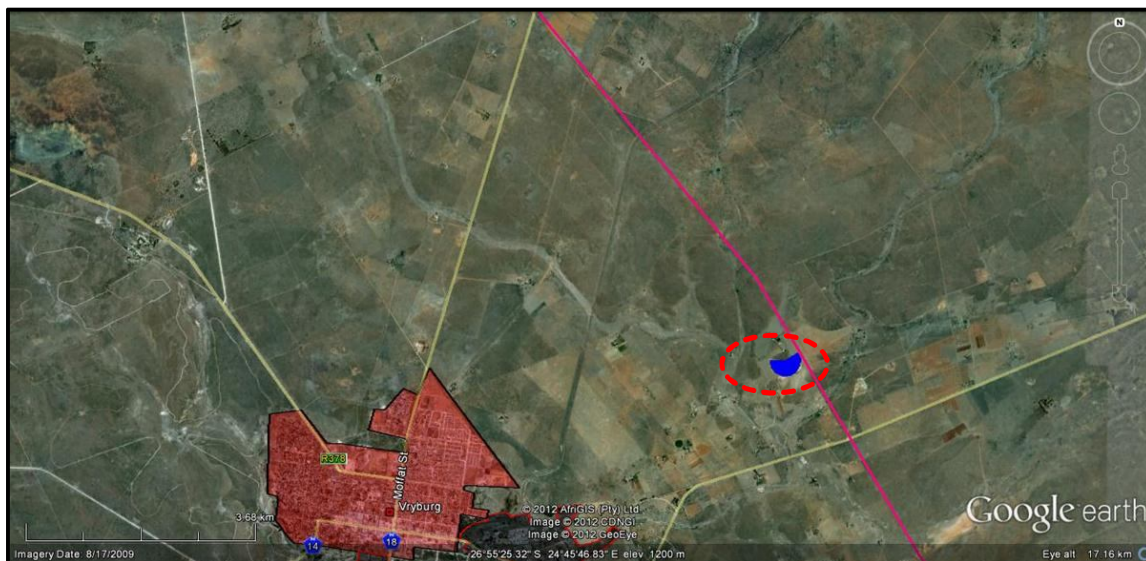
The identification and assessment of social impacts arising from geographical change processes within a social context, focuses on how the proposed development might impinge on the behaviour and/or lives of landowners and/or land users in the affected area. In line with the results of the Scoping Report, the following geographical change processes are expected during the operations and maintenance phase:

- Sterilisation of agricultural land; and
- Permanent loss of land to accommodate substations.

Sterilisation of Agricultural Land

Previous studies by MasterQ Research (2009b) have shown that the placing of a distribution power line on agricultural land does not impact significantly on farming activities. This is due to the fact that both dry land agriculture and certain types of irrigated agriculture (crop cultivation and grazing) can continue underneath power lines. Some farmers did report a hassle factor associated with the presence of the lines and crop cultivation as the towers tend to interrupt the continuous cultivation of fields, but no loss of revenues were reported. It is recognized that while construction is underway, utilisation of the land will be disrupted, but as construction progresses fairly rapidly (a single tower section of power line is built in about 35 days) this will not occur for a significant period of time. The exception to this is irrigated crops and grazing utilising moving infrastructure, such a central pivot system, of which one was found that falls within the Bophirima-Kalplats Alternative 1 route corridor and would therefore pose a problem (refer to figure 5.10).

Figure 5.10: Location of Centre Pivot on Bophirima-Kalplats Alternative 1



Due to the height and surface coverage of central pivot systems, such systems often cannot operate underneath distribution power lines. Any power line corridor that crosses both existing pivot areas as well as area with strong future potential will cause the loss thereof for central pivot irrigation purposes. Although options may exist for other irrigation systems to be implemented, it is considered likely that dry land farming may be the only option for a significant portion of land affected as such. Although the value of power supplied by a power line for its operational life will be substantial, it is likely that the total agricultural productive loss due to a loss of irrigated land over the same period must also be considered.

Although it is still possible to cultivate land around towers during operation, the presence of a tower does complicate the cultivation process which in some instances could lead to a loss of available land for cultivation. The presence of a distribution power line complicates crop spraying by aeroplane and in some instances makes crop spraying from the air impossible due to the fact that the distribution power lines are in the way. Furthermore, the presence of Electromagnetic Fields (EMF) seems to interfere with Global Positioning System (GPS) equipment and other advanced electronic equipment that is used when ploughing. It has also been reported that distribution power lines or the resultant EMF interferes with two-way radio systems when these are used in the vicinity of a power line.

The presence of the distribution power lines (and associated infrastructure such as towers) on grazing land pose fewer problems, as cattle can move around towers and therefore less land is lost.

Increased concerns regarding food security and the loss of agricultural land have been highlighted by the Department of Agriculture (2002) as important issues when dealing with rural development. It is likely that there will be some impact on productive agricultural land (with central pivot potential), but these can be mitigated through careful routing of the corridor or the alignment within the corridor.

Permanent Loss of Land to Accommodate Substations

The proposed Bophirima substation sites are located close to the developed areas of Vryburg and Huhudi. The area surrounding these sites are characterised by distribution power infrastructure, in the form of the Woodhouse substation and distribution power lines, all of which indicates to the fact that the site area does not derive its value from a pristine character, but rather from its ability to enable economic activity through power generation and distribution. An economic impact due to permanent land loss as a result of the presence of additional distribution power infrastructure in the form of the Bophirima substation (or which might also be viewed as a 'replacement' of the Woodhouse substation) in this specific location is thus unlikely. Through the decommissioning of the Woodhouse substation the land on which it is located will be restored as opposed to lost.

The Kalplats substation on the other hand is located on agricultural land that derives economic value from crops and cattle and its pristine character as a greenfields site. Due to the physical space required for the substation, it will not be possible to continue with the agricultural activities as is the case with the distribution power lines, although these activities can continue around the substation site.

5.3.2. Economic Change Processes

Economic processes refer to the livelihood of people in the area, and could entail a number of impacts. During the operations and maintenance phase this would mostly relate to a change in property values (micro impacts for private landowners along the distribution lines and on substation sites) and on a more regional scale it would speak to economic growth through an enhanced electricity supply.

Change in Property Values

An impact on property values would apply where the lines are located close (within approximately 75m to 200m depending on visual aspects such as topography) to residential settlements, or where lines cross smallholdings/agricultural properties where value is derived from a natural setting.

An international study undertaken by Sims and Dent (2005) to determine the relations between property values and transmission/distribution power lines, found that the loss in value due to the proximity of a power line to be between 10% and 17.7% for semi-detached properties and between 6% and 13.3% for free standing houses.

An American survey conducted by Delaney and Timmons (1990) indicated residential property value loss due to power lines to be an average of 10.1% based on the opinions of property appraisers. They also indicated that there was a general belief amongst appraisers that the impact of power lines in proximity to a property would be to detract from property value.

Bolton and Sick (1999) conducted a legal review of American property value compensation issues caused by the presence of power lines. In the review, they cited a range of sources and studies conducted between 1990 and 1997. The range of property value impacts stated across studies was

wide. Some indicated only slight value reductions of 6% average, while a California, USA-based study displayed possible value reductions of between 18% and 55.8%.

It therefore appears that international studies are inconclusive and vary significantly based on location. Comparison between countries is also difficult as laws governing construction near a power line differ, with some using servitudes and others not. In the UK, for example, cleared servitudes are not used and the government allows construction directly under a power line in some cases, as long as applicable building regulations are met.

Interviews conducted with property valuations experts in South Africa (MasterQ Research, 2009a) indicates a wide impact range (from 10% to 90%) for residential properties based on a number of considerations. These include:

- General uses of property in the area;
- The land use rights associated with a property;
- The location of the line on the property (i.e. through the middle, along one side or cutting a corner of the property);
- Whether a supporting tower is situated on the property;
- Height of the power line;
- Whether the line is located on a slope, and the line runs higher up or lower down relative to the rest of the property thereby increasing or reducing any visual impact;
- The orientation of the main structures facing away from or onto the power line; and
- The location of vegetation or topographic features that may lessen visual impact.

There are also strong indications from previous research conducted by MasterQ Research that any property value impacts are cumulative for the construction of multiple lines in a servitude, especially where smaller agricultural smallholdings and residential properties are concerned.

The impact of these considerations is illustrated in the examples below:

Figure 5.11.1: Example of high likelihood and intensity of impact on residential property values (approx. 30-50%)

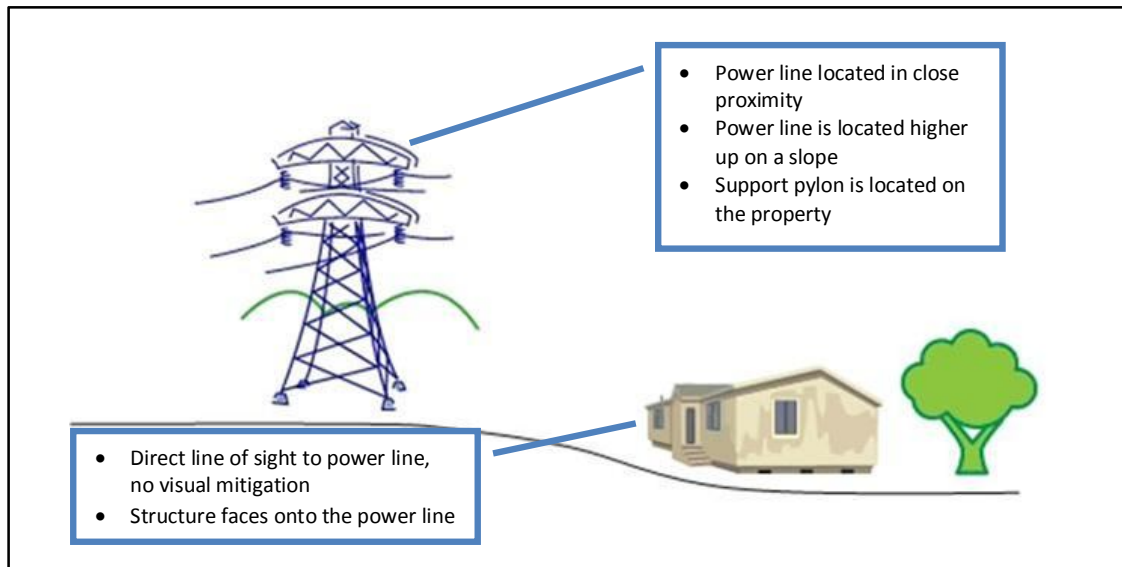


Figure 5.11.2: Example of medium likelihood and intensity of impact on residential property values (approx. 15-30%)

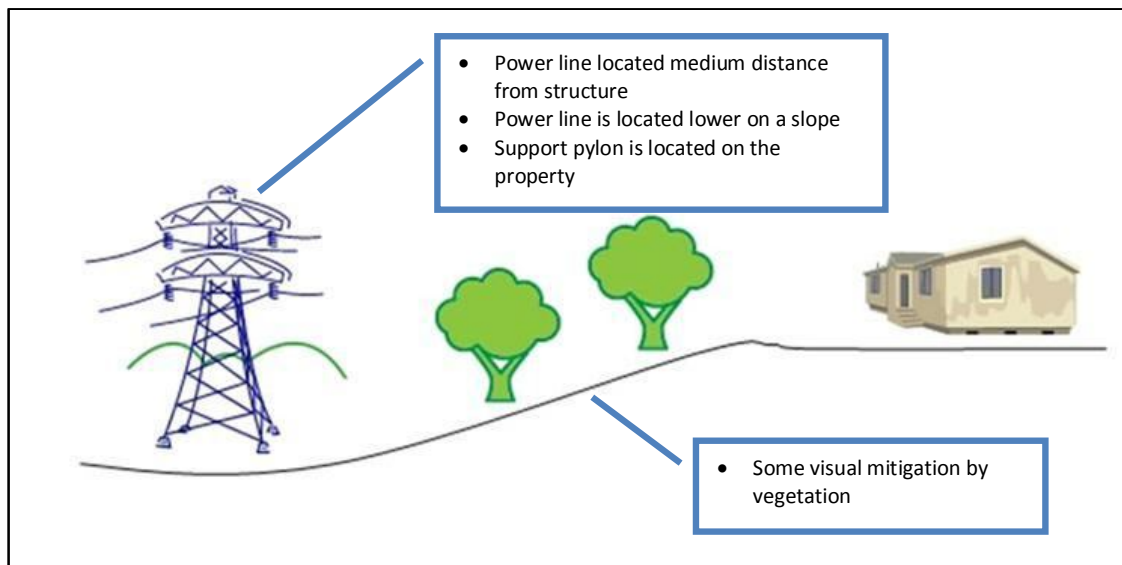
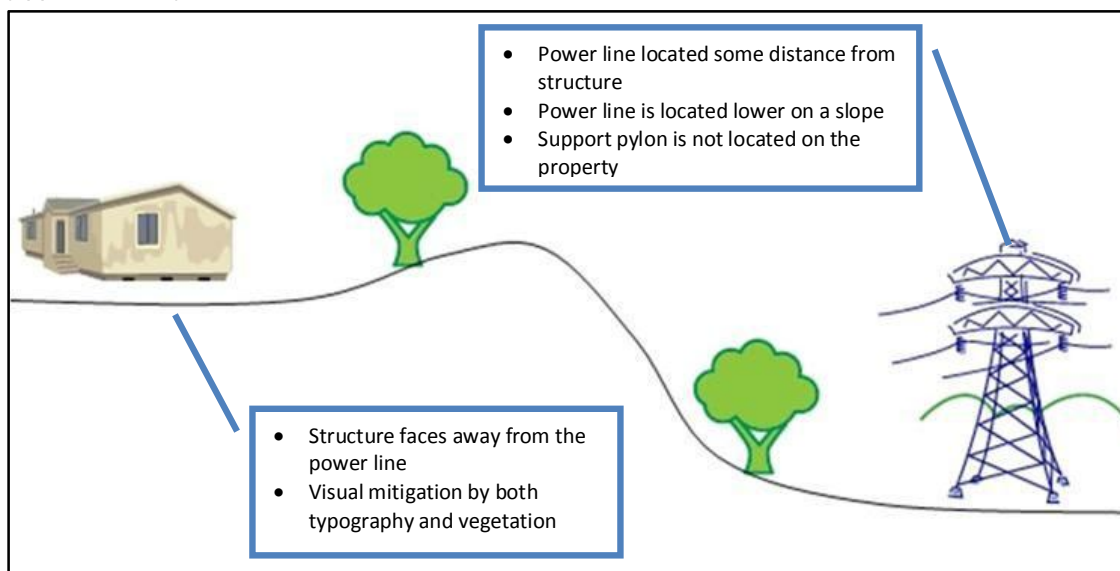


Figure 5.11.3: Example of low likelihood and intensity of impact on residential property values (approx. 0-15%)



Limited research has been done on the impact of transmission/distribution power line on large agricultural properties both in South Africa and abroad. Previous research by MasterQ Research (2007a, 2007b and 2009b) indicates that rural/agricultural property that derives its primary value from having a pristine or natural character may suffer some reduction in value when developments of an industrial nature (specifically transmission/distribution power lines) occur. Often this would involve properties on which conservation and nature related tourism is conducted and where a natural “sense of place” is an important characteristic. There is a growing body of evidence to suggest that pristine environments or natural landscapes are universally strongly preferred above human impacted landscapes across cultures (J. Farnum, T. Hall, Troy and L. E. Kruger, 2005). Economically this may translate into a lower desirability and therefore a lower valuation of a property.

Due to the size of agricultural properties, any impact of a power line would most often mean that a transmission/distribution power line is constructed on or bordering a property, therefore within relatively close visual range. This impact would not however, normally extend to commercial agriculture where the primary value of the property is derived from the productive capacity of the farm. Cases where the power line route would result in the loss of a material amount of land used for central pivot irrigation systems, therefore dramatically reducing the productive capacity of the property and thus its value, would be an exception.

In order to refine ranges to exact likely values it is recommended that professional valuations are done when the route becomes more clearly defined. As the impact is determined by the exact routing relative to sensitive receptors, the wide corridors specified at this stage means that differences in property value impacts between routing options within each corridor cannot be effectively determined.

National economic security or dependency due to project activities

Most, if not all, economic activities are dependent on a reliable electricity supply. This and other resources such as water and fuel enable normal economic growth. Normal economic activities, e.g. industry and businesses, are affected when electricity is not available. The economic impact on such services increases the longer services such as electricity 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 substations and the associated distribution power lines will enhance the electricity supply, 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.

This impact is difficult to rate using the standardised rating scale due to its nationwide implications and the fact that it does not represent a manageable impact or one that can be enhanced.

5.3.3. Socio-Cultural Change Processes

The most important socio-cultural change during the operation and maintenance phase relates to a change in sense of place.

Sense of Place

Much of what is valuable in a culture is embedded in place, which cannot be measured in monetary terms. It is because of a sense of place and belonging that some people loath to be moved from their dwelling place, despite the fact that they will be compensated for the inconvenience and impact on their lives.

Place attachment is a construct that is used to determine and/or explain sense of place. Kyle et al. (2003b page 250) stated that place attachment “is the extent to which the individual values or identifies with a particular environmental setting.” It has to do with meaning and value, an intimate connection with an environment.

Place attachment is generally recognised as having two components: *Place Identity* and *Place Dependence*. According to Proshansky et al. (1983) place identity refers to the way in which a person views the self in relation to the environment. It refers to the way in which a person uses a place to construct or maintain self-identity (e.g. a conservationist). In contrast, place dependence refers to the way in which the environment is able to fulfil the intentions of the user (e.g. hunt, farm, relax).

Stedman (2003b) presented research that has found that repeated experience led to strengthening of attachment, including developing emotional ties and self-identity. The familiarity with an area may therefore differ between visitors and local people, leading to differences in attachment. However, research findings indicate that direct contact with a place is not necessary for place attachment to develop. Proponents of the socio-cultural perspective on sense of place support this research. Blake

(2002) argued that places could have symbolic and cultural meaning for groups of people, which leads to place attachment even though they have never been there.

Stedman (2003a) uses the term *place meanings* to describe the dimension of sense of place which is more cognitive than emotional (place attachment is more emotional). It has to do with evaluative and symbolic beliefs. For example: "The bushveld is a place favoured by hunters" refers to place meaning, whereas place attachment is communicated by: "My favourite place is the bushveld." According to Stedman, place meaning can change over time, independently of place attachment. Levels of attachment may not change despite the presence of a power line, but the meanings that people attach to it may change. Levels of attachment might not change because place attachment may be based on social relationships, rather than the physical appearance of a landscape.

Research on the psychological experience of sense of place suggests that people rapidly discount a landscape as soon as the first scar occurs, rather like a stain ruining a favourite garment (Petrich 1993). Thereafter, any additional impacts on the landscape have a correspondingly smaller effect. Hence, the aesthetic impact of placing a transmission line in a landscape that already bears the marks of development would be less than that of placing it in a relatively unspoilt environment. In discussing the diverse research showing that people overwhelmingly prefer "nature scenes" to urban and built environments, Zadik (1985) explains "*people seem to respond to environments as natural if the areas are predominantly vegetation and do not contain human artefacts such as roads or buildings.*"

The assessment of sense of place then from a social perspective relates to people's perception of the project in relation to the area. Typically a study area such as the one for the Mookodi Integration Project can consist of four distinct (public) interest groups: (1) unemployed people living in poverty in informal settlements around Huhudi; (2) middle-class residents of Vryburg and Stella; (3) business owners in the industrial area of Vryburg; and (4) upper middle-class to wealthier landowners on farms along the Bophirima-Kalplats and Kalplats-Edwards Dam route corridors. These groups are all affected in different ways by the project and therefore it follows that their interest in the project would differ because their interests are different, hence their sense of place would be affected in different ways. This can be explained by the following examples:

- On the one end of the spectrum are the unemployed living in poverty in informal settlements who would expect positive impacts from the project (that of being employed) with little to no regard for long term impacts (visual impacts, the presence of the line, EMFs, etc.). For them the placement of the substations and lines in close proximity to their areas of residence would most probably have a positive impact on their sense of place as it would create a sense of development in their area that could improve the quality of their lives, and at the same time enable them to easily access perceived job opportunities.
- On the other end of the spectrum are the private landowners who are more aware of the potential negative impacts that the substations and lines might have on their quality of life (impacts on agricultural land, property values, etc.). In all likelihood their sense of place would be negatively affected as they are accustomed to a different way of life, which can often be described as 'pristine' and 'unique', with a greater sense of conserving natural areas for future generations.

Research has shown that these locals have a higher degree of place attachment and that those who had more to lose financially also displayed stronger place attachment (Bonaiuto et al. 2002).

- In between these two ends of the spectrum are the two groups in the middle - residents of Vryburg and Stella, and business owners – who might be more indifferent to the project in general and therefore their sense of place would not be as adversely affected one way or the other (this does not imply that no one from these two groups did not take a keen interest in, and/or objected to the project or that they did not actively participated in the project processes). For example: a resident of Vryburg will most probably not notice a power line on the outskirts of town within the industrial area as it blends in with the surrounding land use and is located away from the residential area – more so if there is an existing line, as the area is already disturbed and people are already used to the current landscape. The same argument might hold true for business owners within the industrial area, with the exception of those businesses between Faktoria Way and the Vryburg Municipal Substation where space constraints might be experienced, which would directly affect these businesses. However, these space constraints would be located to the back of these businesses and would not block their entrances. To avoid limitations on business activities and movement within the business yard, it might be necessary to elevate the lines higher than usual, but these would have to be discussed with individual business owners during the negotiation process.

In addition to considering the psychosocial and emotional aspects, an assessment of sense of place also has to consider the physical placement of a substation within a demarcated site area and a preferred route that would affect as few people as possible. Problem areas in this regard were highlighted as part of geographical change processes during pre-construction impacts (refer to Section 5.1).

5.4. Impact Matrix

5.4.1. Construction Phase

TEMPORARY LOSS OF AGRICULTURAL LAND	
Environmental Parameter	Restrict the area of temporary loss of agricultural land to the servitude width and pre-agreed laydown areas.
Issue/Impact/Environmental Effect/Nature	<p>During the construction phase a temporary loss of agricultural land will occur due to the construction activities taking place along the servitude on farms. Loss of land will occur due to servitude clearance and restrictions placed on the land within the immediate construction area. This implies that the landowner cannot access that portion of his/her land while construction takes place on his/her property.</p> <p>The temporary loss of agricultural land is only applicable to the distribution line corridors, as land loss associated with the substation sites are more permanent and would therefore fall under the operations and maintenance phase of the project.</p>
<i>Extent</i>	If managed properly, the impact should be restricted to the construction site.

<i>Probability</i>	As the bulk of the route corridors are located on agricultural land, there is a greater than 75% chance that the impact will occur.									
<i>Reversibility</i>	The impact is completely reversible, but will require more intense mitigation measures to ensure that the land is restored to the same standard as before the construction of the line.									
<i>Irreplaceable loss of resources</i>	If managed properly, the construction process should only lead to a marginal loss in resources, i.e. the crops that was cleared as part of the servitude and not any land loss beyond that.									
<i>Duration</i>	The loss of agricultural land will only be temporary in nature and will last for the duration of the construction phase. It will however require direct human action to restore the land.									
<i>Cumulative effect</i>	No cumulative effects foreseen									
<i>Intensity/magnitude</i>	Although the servitude area will be affected, the remainder of the farming activities will be able to continue unabated.									
<i>Significance Rating</i>	Negative Low									
Although the temporary loss of agricultural land is strictly speaking a category 2 impact, the difference in the severity of the impacts along the various route corridors are not expected to vary extensively as all of the route corridors traverse agricultural land. The issue has therefore been assessed as if it were a category 1 impact.										
	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Probability	n/a	n/a	n/a	n/a	4	4	4	4	4	4
Reversibility	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Irreplaceable loss	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Duration	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Cumulative effect	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Intensity / magnitude	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Significance rating	n/a	n/a	n/a	n/a	-22	-22	-22	-22	-22	-22
Mitigation measures	<ul style="list-style-type: none"> Build a 'good neighbour' relationship with landowners by informing them upfront of when and where construction will take place on their property and stick to agreed timeframes and places. To avoid taking up too much space and causing unnecessary damage to crops or harm to game and cattle, the construction area should be restricted to the servitude and laydown areas and properly fenced off. 									

	<ul style="list-style-type: none"> Construction teams, construction vehicles and construction material should only access the construction site via demarcated access roads and should not be allowed to cut across fields or vacant (agricultural) land. Where this does occur, damages should be restored immediately. 									
POST-MITIGATION										
Extent	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Probability	n/a	n/a	n/a	n/a	3	3	3	3	3	3
Reversibility	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Irreplaceable loss	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Duration	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Cumulative effect	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Intensity / magnitude	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Significance rating	n/a	n/a	n/a	n/a	-10	-10	-10	-10	-10	-10

TEMPORARY EMPLOYMENT	
Environmental Parameter	Where possible unskilled temporary employment should be afforded to locals. Locals are regarded as permanent residents from Huhudi, Dithakwaneng, Vryburg or Stella.
Issue/Impact/Environmental Effect/Nature	Although most of the construction activities on the substations and distribution power lines require semi-skilled to highly skilled individuals, certain work packages might require unskilled labour. Where such labour is required, it should be sourced from within one of the four local communities closest to the construction site as employment creates income, albeit on a temporary basis.
<i>Extent</i>	The extent of employment cannot be measured on a geographical scale as it would mostly relate to a few individuals in as far as temporary employment is concerned.
<i>Probability</i>	Due to the mechanical nature of the construction process and the skills required, it is highly unlikely that large numbers of unskilled jobseekers from local communities will find employment on the project.
<i>Reversibility</i>	Not applicable.
<i>Irreplaceable loss of resources</i>	Not applicable.
<i>Duration</i>	In the unlikely event that unskilled labour is required, these will only be utilised for very short periods of time and would therefore be in a span shorter than the construction phase. Temporary employment might be offered post construction in the rehabilitation of the servitude.

<i>Cumulative effect</i>	The perception or expectation (even if it is unrealistic on the part of locals) that the project will offer employment often results in locals informing family and friends from elsewhere that there are jobs available in the area, which in turn then leads to the in-migration of jobseekers. This can make it difficult to distinguish between a permanent resident and an opportunistic jobseeker, which in turn can complicate a fair job allocation system should unskilled labour be required – even more so where there is very little demand, but an oversupply of labour.									
<i>Intensity/magnitude</i>	Very few local job opportunities will be created, if any.									
<i>Significance Rating</i>	Positive Low									
The creation of temporary local employment opportunities is a category 1 impact, as these impacts will occur regardless of the alternative chosen. The impact table below therefore reflects the same numerical value for each of the impact variables as no distinction was made between alternatives.										
	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	1	1	1	1	1	1	1	1	1	1
Probability	1	1	1	1	1	1	1	1	1	1
Reversibility	1	1	1	1	1	1	1	1	1	1
Irreplaceable loss	1	1	1	1	1	1	1	1	1	1
Duration	1	1	1	1	1	1	1	1	1	1
Cumulative effect	2	2	2	2	2	2	2	2	2	2
Intensity / magnitude	1	1	1	1	1	1	1	1	1	1
Significance rating	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7
Mitigation measures	<ul style="list-style-type: none"> Local communities should be informed upfront and in no uncertain terms that the possibility of local employment is most unlikely so that unrealistic expectations are not created in terms of job opportunities – this would also aid in minimising the in-migration of jobseekers from elsewhere. Where unskilled labour is required, it should be sourced from the local communities. Locals should be permanent residents from either Huhudi, Dithakwaneng, Vryburg or Stella, whichever is the closest to the construction site. As so far that it is within the contractors' control, unskilled jobs should not be allocated to jobseekers from elsewhere. Where project activities lead to the creation of informal job opportunities such as food stalls, contractors should be encouraged to allow such activities as long as it does not interfere with the construction activities itself or the safety of the construction site, the informal vendor and/or the construction workers. 									
POST-MITIGATION										

ESKOM DISTRIBUTION

Mookodi Integration Project – Social Impact Assessment – First Draft
Revision No.2
October 2011 (revised September 2012)

prepared by: MasterQ Research

Extent	2	2	2	2	2	2	2	2	2	2
Probability	1	1	1	1	1	1	1	1	1	1
Reversibility	1	1	1	1	1	1	1	1	1	1
Irreplaceable loss	1	1	1	1	1	1	1	1	1	1
Duration	1	1	1	1	1	1	1	1	1	1
Cumulative effect	2	2	2	2	2	2	2	2	2	2
Intensity / magnitude	2	2	2	2	2	2	2	2	2	2
Significance rating	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16

CONFLICT	
Environmental Parameter	<p><i>Note: As it would be difficult for the contractor to control conflict situations where they occur when construction workers spend their free time in the local community, this assessment focusses on conflict situations that the contractor can control.</i></p> <p>Conflict between Eskom (or its contractors) and landowners should be avoided by abiding to terms and conditions set out during negotiation process, especially in terms of current problem areas such as access to properties, fencing and security.</p>
Issue/Impact/Environmental Effect/Nature	Conflict situations that can delay the project and prolong the duration of impacts, which in turn would affect local residents' quality of life and result in economic impacts.
<i>Extent</i>	Where conflict occurs with regard to the issues mentioned above, Eskom (or its contractors) should aim to restrict it to the landowner in question to prevent problems from extending along the length of the construction servitude.
<i>Probability</i>	The chance of occurrence is dependent on how the construction servitude is managed, which is difficult to predict – it might therefore be possible that the impact will occur, just as it might be possible that it will not occur.
<i>Reversibility</i>	Conflict situations are for the most part completely reversible if problems are rectified.
<i>Irreplaceable loss of resources</i>	A loss of resources might be the cause for conflict (e.g. a gate left open lead to missing cattle) – again this will be difficult to gauge at this stage and therefore the safest option would be to say that there might be a marginal loss of resources.
<i>Duration</i>	Conflict situations for the most part will be limited to the construction phase.

<i>Cumulative effect</i>	<p>One conflict situation with a particular landowner can spread to other landowners so that they are antagonistic against the contractor even before they arrive on site.</p> <p>Other conflict situations can also arise in other areas as outlined in the body of the report, i.e. between jobseekers and construction workers, between construction workers and the local community and between the local community and Eskom. Although all of these conflict situations might have small centralised points, collectively the local community as a whole can start resenting the presence of the construction team.</p>
<i>Intensity/magnitude</i>	<p>Conflict can range from barely perceptible (e.g. a contained conflict situation with one landowner that gets resolved quickly) to dispersed conflict situations that lead to high costs of remediation (e.g. community members refusing to further house construction workers out of protest thereby forcing the contractor to erect a construction village).</p>
<i>Significance Rating</i>	<p>Negative Low impact on the Kalplats substations and all route alignments</p> <p>Negative Medium impact on the Bophirima substations</p>

Apart from the Woodhouse and Bophirima substations, there is an equal chance for conflict situations to occur on any one of the alternative route alignments and at the Kalplats substation site and therefore it has been assessed as a category 1 impact. It is not expected that conflict situations will occur at the Woodhouse substation as the substation is being decommissioned. It is highly likely that conflict will occur at the Bophirima substation as there is already conflict with the particular landowner on another Eskom project which has resulted in expropriation.

	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
PRE-MITIGATION										
Extent	1	1	1	1	1	2	1	1	1	1
Probability	3	3	2	2	2	2	2	2	2	2
Reversibility	3	3	2	2	2	2	2	2	2	2
Irreplaceable loss	2	2	2	2	2	2	2	2	2	2
Duration	2	2	1	1	1	1	1	1	1	1
Cumulative effect	3	3	2	2	2	2	2	2	2	2
Intensity / magnitude	3	3	2	2	2	2	2	2	2	2
Significance rating	-42	-42	-20	-20	-20	-20	-20	-20	-20	-20
Mitigation measures	<ul style="list-style-type: none"> Problem areas that are brought under the attention of the contractor should be rectified immediately. If the contractor is unable to do so, this should be communicated to the landowner along with a plan on how and when the problem will be addressed. The landowner should be given regular feedback on 									

	<p>the matter.</p> <ul style="list-style-type: none"> Locals should be informed upfront that it is unlikely that the project will directly employ community members to work on the project so that there are no unrealistic expectations on the part of the community or situations created where they demand jobs as it was promised to them on previous occasions. All mitigation measures contained in the EMP should be implemented and monitored by an ECO. Remedial action should be taken where the contractor fails to comply with the EMP. 									
POST-MITIGATION										
Extent	1	1	1	1	1	1	1	1	1	1
Probability	2	2	1	1	1	1	1	1	1	1
Reversibility	2	2	1	1	1	1	1	1	1	1
Irreplaceable loss	1	1	1	1	1	1	1	1	1	1
Duration	1	1	1	1	1	1	1	1	1	1
Cumulative effect	2	2	2	2	2	2	2	2	2	2
Intensity / magnitude	2	2	2	2	2	2	2	2	2	2
Significance rating	-18	-18	-14	-14	-14	-14	-14	-14	-14	-14

HEALTH AND SAFETY IMPACTS	
Environmental Parameter	Reduce the risk spreading Sexually Transmitted Infections including HIV.
Issue/Impact/Environmental Effect/Nature	HIV/AIDS has numerous impacts ranging from the obvious health impacts to the less obvious economic impacts as result of a reduced workforce, loss of breadwinners resulting an alteration in family structures.
<i>Extent</i>	For the duration of the project the impact of HIV infections might be restricted to the local area, but as people move to other areas, so too does the virus.
<i>Probability</i>	The probability that construction workers will engage in sexual relationships with locals is quite high. This is beyond the control of the contractor, but the contractor can supply condoms and information material to reduce the probability of HIV and other STI infections.
<i>Reversibility</i>	Once infection has occurred, the impact is irreversible. It is therefore important to develop and implement a Health and Safety Plan, including a HIV/AIDS prevention plan during the construction phase.
<i>Irreplaceable loss of resources</i>	HIV/AIDS will eventually lead to the loss of human resources, which would have an economic impact on the contractor who would have to spend time and money on training new employees

<i>Duration</i>	Until such time that a cure is found, HIV infection is permanent									
<i>Cumulative effect</i>	<p>Humans are transportable; therefore these infections can be spread when the construction worker migrates to a new area and perpetuates old behaviour (i.e. engage in a new casual sexual relationship).</p> <p>The death of parents and breadwinners alters family structures so that children become heads of households, restricting them from completing their education, holding them in downward poverty cycles.</p>									
<i>Intensity/magnitude</i>	HIV infections can severely impair the functionality of the construction process due to illness and absenteeism.									
<i>Significance Rating</i>	Negative High impact (pre-mitigation) to Negative Low impact (post-mitigation)									
<p>The health and economic impacts as result of STI and HIV infection is a category 1 impact, as these impacts will occur regardless of the alternative chosen. The impact table below therefore reflects the same numerical value for each of the impact variables as no distinction was made between alternatives.</p>										
	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	4	4	4	4	4	4	4	4	4	4
Probability	3	3	3	3	3	3	3	3	3	3
Reversibility	4	4	4	4	4	4	4	4	4	4
Irreplaceable loss	3	3	3	3	3	3	3	3	3	3
Duration	2	2	2	2	2	2	2	2	2	2
Cumulative effect	4	4	4	4	4	4	4	4	4	4
Intensity / magnitude	3	3	3	3	3	3	3	3	3	3
Significance rating	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
Mitigation measures	<ul style="list-style-type: none"> Eskom or its contractor should appoint a service provider or local NGO to develop, implement and manage an HIV/AIDS prevention programme. The service provider or NGO should specialise in the field of HIV/AIDS. The HIV/AIDS prevention programme should extend to the local community and should pay special attention to vulnerable groups such as women and youth. 									
POST-MITIGATION										
Extent	2	2	2	2	2	2	2	2	2	2

Probability	2	2	2	2	2	2	2	2	2	2
Reversibility	3	3	3	3	3	3	3	3	3	3
Irreplaceable loss	2	2	2	2	2	2	2	2	2	2
Duration	2	2	2	2	2	2	2	2	2	2
Cumulative effect	3	3	3	3	3	3	3	3	3	3
Intensity / magnitude	2	2	2	2	2	2	2	2	2	2
Significance rating	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28

It should be noted that, due to the standard format of the impact rating system, it is not possible to accurately reflect the irreversibility of infection (negative impact) once it has occurred alongside the implementation of an effective HIV/AIDS prevention plan (positive impact) in the table above. Overall the impact therefore appears negative, but the reader should bear in mind that there are positive components in terms of advocating healthier and safer sexual practices that can bear positive impacts within communities.

5.4.2. Operations and Maintenance Phase

STERILISATION OF AGRICULTURAL LAND	
Environmental Parameter	Restrict the sterilisation of agricultural land to the distribution line towers.
Issue/Impact/Environmental Effect/Nature	The sterilisation of agricultural land implies a reduced crop, which in turn will have an economic impact on the landowner in question. Most agricultural activities can continue underneath the power line, with the exception of high growing crops – where these occur a 31m wide strip in the form of the servitude will be cleared for which the landowner will be compensated. Grazing can continue unhindered underneath power lines and around towers.
<i>Extent</i>	Apart from the fact that the sterilisation of agricultural land should be restricted as far as possible to the distribution line towers, the land surrounding the line should be left viable as far as possible. It is therefore preferable to place lines on farm boundaries or within existing corridors as opposed to cutting across farms. The amount of land loss will be determined by the number of towers on a particular farm and therefore it is difficult to determine the extent of the impact on a particular farm as the location of the towers will only be known during the pre-construction phase when the central line is pegged.
<i>Probability</i>	It is quite likely that some land loss will occur to accommodate the distribution line towers, but the alignment can be planned in such a way that land loss is restricted to a minimum.

<i>Reversibility</i>	The economic impact of land loss will be partly reversible as the landowner will receive a once-off amount for compensation. As part of rehabilitation, the construction servitude also has to be restored to its previous standard, which would imply that crops would be replanted if such crops are permitted in the servitude.
<i>Irreplaceable loss of resources</i>	There might be some permanent loss of land around the towers, but this should be minimal.
<i>Duration</i>	The landowner will not be able to use the immediate area around the towers for the entire operational lifespan of the project.
<i>Cumulative effect</i>	The presence of a distribution line can set an unintended precedent for further land use change. If additional lines are required in future it is oftentimes preferred to place such lines next to existing lines as the corridor area is already regarded as disturbed.
<i>Intensity/magnitude</i>	The significant of the extent of land loss is dependent on the number of towers on the farm, the location of the line on the farm, whether or not there are other lines present, and the type of farm (crop cultivation, grazing, etc.)
<i>Significance Rating</i>	Negative Medium impact (pre-mitigation) to Negative Low impact (post-mitigation)

Although the sterilisation of agricultural land is strictly speaking a category 2 impact, the difference in the severity of the impacts along the various route corridors are not expected to vary extensively as all of the route corridors traverse agricultural land. The issue has therefore been assessed as if it were a category 1 impact. The impact only relates to the distribution lines, as the substation will lead to more permanent land loss (assessed in the following table).

	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Probability	n/a	n/a	n/a	n/a	3	2	3	3	3	3
Reversibility	n/a	n/a	n/a	n/a	2	2	2	2	2	2
Irreplaceable loss	n/a	n/a	n/a	n/a	3	2	3	3	3	3
Duration	n/a	n/a	n/a	n/a	3	1	3	3	3	3
Cumulative effect	n/a	n/a	n/a	n/a	4	2	4	4	4	4
Intensity / magnitude	n/a	n/a	n/a	n/a	3	2	3	3	3	3
Significance rating	n/a	n/a	n/a	n/a	- 48	-20	- 48	- 48	- 48	- 48
Mitigation measures	<ul style="list-style-type: none"> Lines should be placed on farm boundaries as far as possible, away from productive farm land. The placement of the line should be done in consultation 									

	with the affected landowner during the negotiation process.									
	<ul style="list-style-type: none"> • Compensation should be paid to landowner for production losses during the construction phase and to enable landowner to replant crops in the servitude, where such crops are permitted. Again this should be agreed upon with the landowner during the negotiation process. 									
POST-MITIGATION										
Extent	n/a	n/a	n/a	n/a	1	1	1	1	1	1
Probability	n/a	n/a	n/a	n/a	2	1	2	2	2	2
Reversibility	n/a	n/a	n/a	n/a	2	1	2	2	2	2
Irreplaceable loss	n/a	n/a	n/a	n/a	2	1	2	2	2	2
Duration	n/a	n/a	n/a	n/a	3	1	3	3	3	3
Cumulative effect	n/a	n/a	n/a	n/a	4	1	4	4	4	4
Intensity / magnitude	n/a	n/a	n/a	n/a	2	1	2	2	2	2
Significance rating	n/a	n/a	n/a	n/a	- 28	-6	- 28	- 28	- 28	- 28

PERMANENT LOSS OF AGRICULTURAL LAND	
Environmental Parameter	Plan the siting of the substation so that the loss of agricultural land brings the least amount of disruption to the farming activities as a whole.
Issue/Impact/Environmental Effect/Nature	The physical space required for the substation will lead to a permanent loss of agricultural land for the duration of the operational life of the project. This means a reduced farming area which will have an economic impact on the farmer.
<i>Extent</i>	The impact will be restricted to the farm on which the substation is located.
<i>Probability</i>	The impact will definitely occur.
<i>Reversibility</i>	It will only be possible to restore the land once the substation is decommissioned, which will now happen in the case of Woodhouse.
<i>Irreplaceable loss of resources</i>	The loss of resource is dependent on the total size of the farm on which the substation will be located. The smaller the farm, the more significant the loss of agricultural resources.
<i>Duration</i>	The impact will last for the operational lifetime of the project.
<i>Cumulative effect</i>	Apart from the substation, distribution power lines will also feed into and out of the substation and therefore these installations will also be located on the farm. In addition to the loss of agricultural land to the substation, the farmer will also experience some sterilisation of agricultural land as discussed in the table above.
<i>Intensity/magnitude</i>	The impact will be restricted to one landowner.

Significance Rating	<p>Negative Low Impact in the case of the Bophirima substations, as the area is characterised by power generation and distribution infrastructure rather than pristine agriculture.</p> <p>Negative Medium Impact (pre-mitigation) in the case of the Kalplats substations, as the area is characterised by productive agricultural land ('greenfields' site) to a Low Medium Impact.</p>									
<p>As there are no alternative site locations proposed for the substation sites, the permanent loss of land has been assessed as a category 1 impact. In the case of the Woodhouse substation, the impact has been assessed as a 'reverse' impact, i.e. 'restoration of land'.</p>										
	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
Probability	2	2	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Reversibility	2	2	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Irreplaceable loss	2	2	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Duration	3	3	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Cumulative effect	3	3	4	4	n/a	n/a	n/a	n/a	n/a	n/a
Intensity / magnitude	2	2	2	2	n/a	n/a	n/a	n/a	n/a	n/a
Significance rating	-26	-26	-34	-34	n/a	n/a	n/a	n/a	n/a	n/a
Mitigation measures	<ul style="list-style-type: none"> The final siting of the substations should be done in consultation with the respective affected landowners, to prevent fragmentation of farmland. 									
POST-MITIGATION										
Extent	1	1	1	1	n/a	n/a	n/a	n/a	n/a	n/a
Probability	2	2	2	2	n/a	n/a	n/a	n/a	n/a	n/a
Reversibility	1	1	2	2	n/a	n/a	n/a	n/a	n/a	n/a
Irreplaceable loss	2	2	2	2	n/a	n/a	n/a	n/a	n/a	n/a
Duration	3	3	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Cumulative effect	2	2	3	3	n/a	n/a	n/a	n/a	n/a	n/a
Intensity / magnitude	1	1	2	2	n/a	n/a	n/a	n/a	n/a	n/a
Significance rating	-11	-11	-15	-15	n/a	n/a	n/a	n/a	n/a	n/a

CHANGE IN PROPERTY VALUES	
Environmental Parameter	Minimise the impact that the presence of the distribution lines and substations can have on rural/agricultural and residential property values.
Issue/Impact/Environmental Effect/Nature	Previous research by MasterQ Research (2007a, 2007b and 2009b) indicated that rural/agricultural property that derives its primary value from having a pristine or natural character may suffer some reduction in value when developments of an industrial nature (specifically transmission/distribution power lines) occur. This has an economic impact on the landowner in question.
<i>Extent</i>	<p>It can be expected that the impact will occur along the length of the distribution line and at the Kalplats substation sites as a greenfields area.</p> <p>It is unlikely that the impact will occur around the Bophirima site as the area surrounding this site is characterised by distribution power infrastructure, which makes it safe to assume that the site area does not derive its value from a pristine character, but rather from its ability to enable economic activity through power generation and distribution.</p>
<i>Probability</i>	The probability for land devaluation is dependent on the distance from the line, the topography of the area and the visual landscape as discussed and depicted under Section 5.3.2. This will differ from property to property.
<i>Reversibility</i>	In some instances the impact might be partly reversible, whereas in others even intense mitigation measures would not improve the value of the property. The latter are houses within a short distance from the line that directly face the line with no visual screening.
<i>Irreplaceable loss of resources</i>	The loss of resources depends on the increment of devaluation experienced.
<i>Duration</i>	The impact will continue for the operational lifetime of the project.
<i>Cumulative effect</i>	None foreseen
<i>Intensity/magnitude</i>	Again the intensity of the impact is dependent on the location of the house in relation to the line as discussed above. The positioning of the line on the farm boundary will also reduce the intensity of the impact to some extent as opposed to the line cutting across a farm which would heighten the intensity of the impact.
<i>Significance Rating</i>	<p>Negative Low impact on the Bophirima substations as land is already characterised by power generation and distribution infrastructure</p> <p>Negative Medium impact (pre-mitigation) on all alternative route corridors, but this will only be applicable to houses in direct line of sight and within a short distance from the line, to negative low impact (post-mitigation) – also see the explanatory note below</p>

Apart from the Bophirima-Vryburg line, all the other distribution lines mostly traverse agricultural land characterised by scattered households. The scope of this study precludes a detailed assessment of property devaluations on each of these houses and/or farmlands in relation to the route corridors as an accurate assessment can only be done once a final route alignment has been pegged. Even then a property valuer would be required to do a valuation on the property. This assessment therefore only serves as a possible indication of the economic impact that the presence of the distribution line might have on a property given the visibility of the line and the way in which it affects the land use of the property. As such, the impact has been assessed as a category 1 impact on a macro level.

	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
PRE-MITIGATION										
Extent	1	1	1	1	1	1	1	1	1	1
Probability	1	1	2	2	2	2	2	2	2	2
Reversibility	1	1	2	2	2	2	2	2	2	2
Irreplaceable loss	1	1	3	3	3	2	3	3	3	3
Duration	1	1	3	3	3	3	3	3	3	3
Cumulative effect	1	1	1	1	1	1	1	1	1	1
Intensity / magnitude	1	1	3	3	3	2	3	3	3	3
Significance rating	-6	-6	-36	-36	-36	-22	-36	-36	-36	-36
Mitigation measures	<ul style="list-style-type: none"> Route distribution power lines as far away from homesteads, buildings and irrigation system as possible. Route distribution power lines close to farm boundaries. Minimise visual profile of the distribution power line by choosing routes where topography allows for visual reduction. Make maximum use of undeveloped routings to place towers and avoid intensively developed properties when possible. Stay at least 200m away from residential areas within the urban zone whenever possible. Compensate at market rates for property value loss as indicated by an independent valuations expert once exact route is known. 									
POST-MITIGATION										
Extent	1	1	1	1	1	1	1	1	1	1
Probability	1	1	2	2	2	2	2	2	2	2
Reversibility	1	1	2	2	2	1	2	2	2	2
Irreplaceable loss	1	1	2	2	2	1	2	2	2	2

Duration	1	1	1	1	1	1	1	1	1	1
Cumulative effect	1	1	1	1	1	1	1	1	1	1
Intensity / magnitude	1	1	1	1	1	1	1	1	1	1
Significance rating	-6	-6	-9	-9	-9	-7	-9	-9	-9	-9

SENSE OF PLACE	
Environmental Parameter	Much of what is valuable in a culture is embedded in place, which cannot be measured in monetary terms.
Issue/Impact/Environmental Effect/Nature	The presence of substations (particularly the Kalplats substation) and the distribution power lines would change the landscape of the area from open spaces to 'spoilt' which could affect the way in which people related to the land and the sense of connectedness they have with the area, in short, their sense of place.
<i>Extent</i>	The impact on sense of place should be considered in the context of the study area as a whole, as the impact on sense of place per farm portion will depend on a number of variables, such as the visual impact, the biodiversity impact, the placement of the line in relation to dwellings, the activities on the land, the attachment of the landowner to the land, etc.
<i>Probability</i>	Apart from the southern quadrant, most of the study area is currently 'unspoiled' with vast open spaces; the negative impact on sense of place is highly probable.
<i>Reversibility</i>	The impact on sense of place can be reversed after decommissioning, provided that rehabilitation is done to a satisfactory level.
<i>Irreplaceable loss of resources</i>	It is not foreseen that an impact on sense of place would lead to any loss of resources.
<i>Duration</i>	The impact will be experienced during the lifetime of the project, but it can be expected that the lines will eventually become part of the landscape and absorbed as part of the cultural landscape.
<i>Cumulative effect</i>	The presence of such infrastructure can also set an unintended precedent for further land use change in future, which could further alter people's sense of place.
<i>Intensity/magnitude</i>	The impact on sense of place will be different for different people and will also depend on the way the land is utilised.
<i>Significance Rating</i>	<p>Positive Low impact for the Woodhouse, Bophirima and Bophirima-Vryburg line as these are located within areas that share the same characteristics and close to groups that will experience the development and job opportunities as positive</p> <p>Negative Medium impact for the Kalplats substation and all other route corridors as these are all located in undisturbed areas that will scar the landscape and bear economic impacts on landowners.</p>

As discussed in the body of the report, sense of place differs for different groups. This is reflected in the significant rating above and below. Apart from the Bophirima-Vryburg line, all route corridors traverse agricultural open land; therefore the impact on sense of place is expected to be the same along these corridors.

	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
PRE-MITIGATION										
Extent	1	1	2	2	2	1	2	2	2	2
Probability	1	1	3	3	3	1	3	3	3	3
Reversibility	1	1	3	3	3	1	3	3	3	3
Irreplaceable loss	1	1	2	2	2	1	2	2	2	2
Duration	3	3	3	3	3	3	3	3	3	3
Cumulative effect	1	1	4	4	4	1	4	4	4	4
Intensity / magnitude	1	1	2	2	2	1	2	2	2	2
Significance rating	+8	+8	-38	-38	-38	+8	-38	-38	-38	-38
Mitigation measures	<ul style="list-style-type: none"> • Implement mitigation measures detailed in the Visual Impact Assessment • The impact on livelihoods should be monitored and evaluated before and after the construction of the line. • As far as possible, the distribution power line should follow existing infrastructure, such as roads and existing transmission power lines as this type of environment is already regarded as “stained.” • A pre- and post-valuation should be conducted for properties during the negotiation process. 									
POST-MITIGATION										
Extent	1	1	2	2	2	1	2	2	2	2
Probability	1	1	2	2	2	1	2	2	2	2
Reversibility	1	1	2	2	2	1	2	2	2	2
Irreplaceable loss	1	1	2	2	2	1	2	2	2	2
Duration	2	2	2	2	2	2	2	2	2	2
Cumulative effect	1	1	1	1	1	1	1	1	1	1
Intensity / magnitude	1	1	2	2	2	1	2	2	2	2
Significance rating	+7	+7	-22	-22	-22	+7	-22	-22	-22	-22

5.5. Confidence in Impact Assessment

Most of the impacts identified and assessed in this report have been rated as either possible (between a 25% to 50% chance of occurrence) or as probable (between a 50% and 75% chance of occurrence). Very few impacts within the social realm can be regarded as definite (greater than 75% of occurrence) as this would discount people's ability to adapt to new environments or new infrastructure within their environment. Most people are able to adapt and continue with their lives even if it is in a modified way. The assessment was therefore based on the specialist's past experience with similar installations where certain social impacts occurred due to project interventions. Most social impacts are based on a 'worst case scenario' as it is deemed more important to overestimate an impact rather than underestimate. Public consultation would not necessarily increase the confidence in the social impact assessment, as individuals can never represent the views of an entire community, and to consult with and consider the views of every individual in a community would be near impossible.

5.6. Cumulative Impacts

5.6.1. Construction Phase

- The perception or expectation (even if it is unrealistic on the part of locals) that the project will offer employment often results in locals informing family and friends from elsewhere that there are jobs available in the area, which in turn then leads to the in-migration of jobseekers. This can make it difficult to distinguish between a permanent resident and an opportunistic jobseeker, which in turn can complicate a fair job allocation system should unskilled labour be required – even more so where there is very little demand, but an oversupply of labour.
- If a simultaneous in-migration of unemployed jobseekers occurs, this can intensify the temporary increase in need for housing. Some of the jobseekers might find shelter with friends or family while others are left destitute. This can then lead to the expansion of the informal settlement around Huhudi, which in turn can place additional strain on already limited resources (municipal services, available land, job opportunities, etc.). The expansion of the informal settlement puts the local municipality under pressure as it increases the housing backlog with more and more people requiring formal housing and municipal services on par with RDP standards.
- One conflict situation with a particular landowner can spread to other landowners so that they are antagonistic against the contractor even before they arrive on site. Other conflict situations can also arise in other areas as outlined in the body of the report, i.e. between jobseekers and construction workers, between construction workers and the local community and between the local community and Eskom. Although all of these conflict situations might have small centralised points, collectively the local community as a whole can start resenting the presence of the construction team.
- If a HIV/AIDS prevention plan is implemented effectively within the local communities on a level that they understand, and if the necessary resources are easily available and accessible to the community (e.g. condoms, information posters, VCT centres, support groups) for the duration of

the construction phase, this would leave an informed and empowered community behind who would be able to continue to prevent HIV infections by informing and empowering others.

5.6.2. Operations and Maintenance Phase

- The presence of a distribution line can set an unintended precedent for further land use change. If additional lines are required in future it is oftentimes preferred to place such lines next to existing lines as the corridor area is already regarded as disturbed.
- Apart from the substation, distribution power lines will also feed into and out of the substation and therefore these installations will also be located on the farm. In addition to the loss of land to the substation, the farmer will also experience some sterilisation of agricultural land.

5.7. Reversibility of Impacts

Most of the impacts that occur during the construction phase will be completely reversible as these impacts are for the most part only temporary in nature. Some impacts might require minor mitigation measures whereas others would require more intensive mitigation measures. In all instances the project proponent or its appointed contractors should be committed to and held accountable for the implementation of mitigation measures, failing which it can be expected that social impacts would intensify and eventually lead to conflict between landowners and/or local communities and Eskom over the long run.

Although most of the impact during the operations and maintenance phase are also reversible, the impacts would occur over the lifetime of the project and it is therefore likely that such impacts would only be reversed when the lines and substations are decommissioned.

6. MITIGATION MEASURES

This section outlines the social mitigation measures for managing the anticipated social impacts as outlined in this report. The social mitigation measures are applicable to the construction and operations and maintenance phases.

6.1. Pre-Construction

Construction activities have the potential to largely impact on the social environment. Thus social mitigation measures ensure that construction activities are managed in such a manner that the positive impacts may be enhanced and the negative impacts are minimised as far as possible.

Relocation

- Cognisance should be taken of the sensitive social areas as detailed under Section 5.1 of this report as these indicate areas where careful attention should be paid to route alignments.
- In general, relocation can be avoided altogether through careful route planning and site selection during the pre-construction phase.

6.2. Construction

Temporary Loss of Agricultural Land

- Build a 'good neighbour' relationship with landowners by informing them upfront of when and where construction will take place on their property and stick to agreed timeframes and places.
- To avoid taking up too much space and causing unnecessary damage to crops or harm to game and cattle, the construction area should be restricted to the servitude and laydown areas and properly fenced off.
- Construction teams, construction vehicles and construction material should only access the construction site via demarcated access roads and should not be allowed to cut across fields or vacant (agricultural) land. Where this does occur, damages should be restored immediately.

Temporary Employment

- Local communities should be informed upfront and in no uncertain terms that the possibility of local employment is most unlikely so that unrealistic expectations are not created in terms of job opportunities – this would also aid in minimising the in-migration of jobseekers from elsewhere.
- Where unskilled labour is required, it should be sourced from the local communities. Locals should be permanent residents from either Huhudi, Dithakwaneng, Vryburg or Stella, whichever is the closest to the construction site. As so far that it is within the contractors' control, unskilled jobs should not be allocated to jobseekers from elsewhere.
- Where project activities lead to the creation of informal job opportunities such as food stalls, contractors should be encouraged to allow such activities as long as it does not interfere with the construction activities itself or the safety of the construction site, the informal vendor and/or the construction workers.

Accommodation for Construction Workers

- Construction workers should only be housed in rooms within formal houses, i.e. no 'backyard shacks' should be permitted – this is to avoid people expanding their houses informally to accommodate construction workers and to ensure that all construction workers enjoy the same standard of living
- A formal application process should be developed whereby households can apply if they wish to house a construction worker. The house must be a formal house and meet certain minimum criteria such as running water, ablution facilities, electricity, furnished room, etc.
- The monthly rent payable to a 'landlord/landlady' must be reasonable and should take a proportion of the utilities service bill into account. A formal rental agreement should be in place that sets out the monthly rent amount and the terms and conditions of the rental agreement.
- Remedial steps must be taken against households that accommodate construction workers but who fail to comply with the minimum requirements of the rental agreement. These households should first be requested in writing to rectify any problem areas within a given timeframe and if they fail to do so, the rental agreement should be suspended and the construction worker moved to a different household.

Conflict

- Problem areas that are brought under the attention of the contractor should be rectified immediately. If the contractor is unable to do so, this should be communicated to the landowner along with a plan on how and when the problem will be addressed. The landowner should be given regular feedback on the matter.
- Locals should be informed upfront that it is unlikely that the project will directly employ community members to work on the project so that there are no unrealistic expectations on the part of the community or situations created where they demand jobs as it was promised to them on previous occasions.
- All mitigation measures contained in the EMP should be implemented and monitored by an ECO. Remedial action should be taken where the contractor fails to comply with the EMP.

Implementation of an HIV/AIDS Prevention Plan

- Eskom or its contractor should appoint a service provider or local NGO to develop, implement and manage an HIV/AIDS prevention programme. The service provider or NGO should specialise in the field of HIV/AIDS.
- The HIV/AIDS prevention programme should extend to the local community and should pay special attention to vulnerable groups such as women and youth.

6.3. Operations and Maintenance

Sterilisation of Agricultural Land

- Lines should be placed on farm boundaries as far as possible, away from productive farm land. The placement of the line should be done in consultation with the affected landowner during the negotiation process.
- Compensation should be paid to landowner for production losses during the construction phase and to enable landowner to replant crops in the servitude, where such crops are permitted.

Permanent Loss of Land

- The final siting of the substation should be done in consultation with the affected landowner, which could entail that the substation be located closer to the road to prevent fragmenting farmland.

Change in Property Values

- Route distribution power lines as far away from homesteads, buildings and irrigation system as possible.
- Route distribution power lines close to farm boundaries.
- Minimise visual profile of the distribution power line by choosing routes where topography allows for visual reduction.
- Make maximum use of undeveloped routings to place towers and avoid intensively developed properties when possible.
- Stay at least 200m away from residential areas within the urban zone whenever possible.
- Compensate at market rates for property value loss as indicated by an independent valuations expert once exact route is known.

Sense of Place

- Mitigation measures detailed in the Visual Impact Assessment and Ecological Assessment must be implemented.
- The impact on livelihoods should be monitored and evaluated before and after the construction of the line.
- As far as possible, the Transmission power line should follow existing infrastructure, such as roads and existing transmission power lines as this type of environment is already regarded as “stained.”
- A pre- and post-valuation should be conducted for properties during the negotiation process.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1. Summary of Impacts

7.1.1. Pre-Construction Phase

The biggest issue during the pre-construction phase is that of relocation, which can be totally negated with the careful planning of the final alignment of the power line to ensure that houses and other structures are avoided.

7.1.2. Construction Phase

A summary of the construction impacts are as per table 7.1 below.

GEOGRAPHICAL CHANGE PROCESSES										
Temporary loss of agricultural land	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
Pre-mitigation	n/a	n/a	n/a	n/a	-22	-22	-22	-22	-22	-22
Post-mitigation	n/a	n/a	n/a	n/a	-10	-10	-10	-10	-10	-10
ECONOMIC CHANGE PROCESSES										
Temporary employment	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
Pre-mitigation	+7	+7	+7	+7	+7	+7	+7	+7	+7	+7
Post-mitigation	+16	+16	+16	+16	+16	+16	+16	+16	+16	+16
SOCIO-CULTURAL CHANGE PROCESSES										
Conflict	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
Pre-mitigation	-42	-42	-20	-20	-20	-20	-20	-20	-20	-20
Post-mitigation	-18	-18	-14	-14	-14	-14	-14	-14	-14	-14

Health and Safety	<i>Bophirima Substation Alt 1</i>	<i>Bophirima Substation Alt 2</i>	<i>Kalplats Substation Alt 1</i>	<i>Kalplats Substation Alt 2</i>	<i>Mookodi-Bophirima</i>	<i>Bophirima-Vryburg</i>	<i>Bophirima-Kalplats Alternative 1</i>	<i>Bophirima-Kalplats Alternative 2</i>	<i>Kalplats-Edwardsdam Alternative 1</i>	<i>Kalplats-Edwardsdam Alternative 3</i>
Pre-mitigation	-60	-60	-60	-60	-60	-60	-60	-60	-60	-60
Post-mitigation	-28	-28	-28	-28	-28	-28	-28	-28	-28	-28
OVERALL CONSTRUCTION IMPACTS										
Pre-Mitigation (average)	-31.6	-31.6	-24.3	-24.3	-23.75	-23.75	-23.75	-23.75	-23.75	-23.75
Post-Mitigation (average)	-10.0	-10.0	-8.6	-8.6	-9.0	-9.0	-9.0	-9.0	-9.0	-9.0

Apart from the possibility of temporary employment, overall (i.e. based on the average significant ratings of impacts as reflected in table 7.1 above) the construction phase is characterised by negative low social impacts – with the exception of the Bophirima substation site alternatives where medium negative impacts are expected. This is largely due to the fact that intensified conflict with Eskom is expected in addition to the existing conflict situation between the landowner and Eskom on another unrelated project, which has resulted in expropriation.

It is expected that all the negative impacts associated with the construction phase can be mitigated to a large degree. In some instances there might be residual impacts that will carry over to the construction and maintenance phase, e.g. the temporary loss of agricultural land that will carry over as sterilisation of agricultural land, but in these instances mitigation measures will also continue into the next phase to reduce the negative effect of such impacts.

In certain instances the implementation of mitigation measures can bring about positive changes. One such case would be the implementation of an effective HIV/AIDS prevention programme that extends to the local communities where construction workers will spend their free time (most likely Huhudi and Thakwaneng), as this can also serve to inform and empower local people to make better and more informed decisions regarding their future (sexual) behaviour. Where Eskom has the opportunity to bring about positive change to local communities they should pursue such opportunities where possible.

The majority of impacts that would occur during the construction phase would affect people's sense of wellbeing and security within their social environment. A number of changes to the socio-economic environment would lead to economic impacts, but for the most part these impacts would be restricted to individuals or individual households and would not extend to the community at large.

7.1.3. Operations and Maintenance Phase

A summary of the operations and maintenance impacts are as per table 7.2 below.

GEOGRAPHICAL CHANGE PROCESSES										
Sterilisation of Agricultural Land (Distribution lines)	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
Pre-mitigation	n/a	n/a	n/a	n/a	- 48	- 20	- 48	- 48	- 48	- 48
Post-mitigation	n/a	n/a	n/a	n/a	- 28	- 6	- 28	- 28	- 28	- 28
Permanent loss of Agricultural Land (Substations) [Gain in the case of Woodhouse]	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
Pre-mitigation	-26	-26	-34	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Post-mitigation	-11	-11	-15	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ECONOMIC CHANGE PROCESSES										
Change in Property Values	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
Pre-mitigation	-6	-6	-36	-36	-36	-22	-36	-36	-36	-36
Post-mitigation	-6	-6	-9	-9	-9	-7	-9	-9	-9	-9
SOCIO-CULTURAL CHANGE PROCESSES										
Sense of Place	Bophirima Substation Alt 1	Bophirima Substation Alt 2	Kalplats Substation Alt 1	Kalplats Substation Alt 2	Mookodi-Bophirima	Bophirima-Vryburg	Bophirima-Kalplats Alternative 1	Bophirima-Kalplats Alternative 2	Kalplats-Edwardsdam Alternative 1	Kalplats-Edwardsdam Alternative 3
PRE-MITIGATION										
Significance rating	+8	+8	-38	-38	-38	+8	-38	-38	-38	-38
Significance rating	+7	+7	-22	-22	-22	+7	-22	-22	-22	-22
OVERALL OPERATIONS AND MAINTENANCE IMPACTS										
Pre-Mitigation	-8.0	-8.0	-36.0	-36.0	-40.7	-11.3	-40.7	-40.7	-40.7	-40.7

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(average)										
Post-Mitigation (average)	-3.3	-3.3	-15.3	-15.3	-19.7	-2.0	-19.7	-19.7	-19.7	-19.7

It is expected that the operations and maintenance phase overall (based on the pre-mitigation averages of significant ratings) will mostly be characterised by negative medium impacts. This is mainly caused by the presence of specifically the Kalplats substation and the distribution power lines in agricultural areas, as this will lead to changes in land use and the landscape of the area, which in turn can affect property values (depending on the location of the line), all of which can impact on people's sense of place.

7.2. Recommendations

As relocation can be totally avoided (and hence any impacts associated with the relocation process), it is recommended that cognisance is taken of the sensitive and flagged areas identified as part of the SIA and as marked in this report under Section 5.1 and to use these as a guideline in planning a final route alignment.

It is expected that the change processes and resultant impacts discussed in this report will occur regardless of which route corridor alternative is implemented and therefore there is no preferred alternative from a social perspective. However, it is recommended that the final alignment of the distribution power line, irrespective of which route corridor is selected, and the siting of the respective substations, is done in close consultation with the affected landowners to ensure that the loss of land is kept to an absolute minimum and to avoid interference with people's livelihoods as far as possible.

It is furthermore recommended that mitigation and enhancement measures as outlined in this report are included in the Environmental Management Plan (EMP) for implementation during the construction phase and that these are monitored by the Environmental Control Officer (ECO), especially impacts that occur on-site, i.e. the manner in which properties are accessed. Off-site impacts would be more difficult to manage, and therefore the contractor should aim to give construction workers as much information as possible on-site so that they can make informed decisions whilst not on site (e.g. HIV prevention material, which should also be extended to the local community).

Even though all of the identified social impacts can be mitigated or enhanced to a large extent, 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. Conversely, the more positive aspects of the projects should be enhanced so that Eskom also brings about a positive change in the area in which they operate, as per the principles of their Corporate Social Investment (CSI) strategy.

Overall the SIA did not identify any areas that can be classified as fatal flaws. Although there are a number of alternative route corridors proposed, these corridors all affect similar land uses and therefore it is not expected that any of the social impacts would be more severe on one corridor as opposed to another corridor. In light of this, the social study does not have a preferred route corridor, but again stresses the fact that the alignment of the power line within the corridor must be done in

consultation with the affected landowner to minimise the impact on the property and surrounding land use. The social study also has no preferred alternative for either the Bophirima site or the Kalplats site as the respective alternatives of these two substation sites are located in close proximity to each other, resulting in no change in the severity of impacts between alternatives.

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