



## **PROPOSED HEKPOORT-CASHAN SUBSTATION AND POWER LINE SERVITUDE**



### **SOCIAL IMPACT ASSESSMENT: BASELINE ENVIRONMENT AND ANTICIPATED IMPACTS REPORT**

DRAFT  
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**AMENDMENTS PAGE C**

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## **1 INTRODUCTION**

### **1.1 Objectives of the study**

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Eskom proposes to construct the new Cashan Substation to connect the current Hekpoort Substation in order to expand its electricity supply.

Nemai Consulting has been appointed by SRK Consulting to conduct a Social Impact Assessment: baseline environment and anticipated impacts for the Proposed Hekpoort-Cashan Substation and Powerline Servitude. This study will form part of the Environmental Impact Assessment.

### **1.2 Objectives of the report**

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The detailed objectives of the study are:

- To describe the baseline conditions relating to the regional social and economic structure in and around the area of investigation;
- To describe the anticipated negative and positive impacts on the social structure during the construction phase, operational phase and the closure phase;
- To describe mitigation and management measures for impacts on the social and economic environment caused by the project; and
- To develop and/or define management criteria pertaining to the regional social and economic structure that will be used during the life of the project so that the closure objectives can be achieved.

## 2 BACKGROUND TO THE PROJECT

Eskom is proposing power lines between the two sub-stations with an approximate distance of 12 kilometres using monopoles. Eskom will be required to enter into servitude agreements with landowners of directly affected properties.

### 2.1 Description of Alternatives

There are 2 alternative power line routes proposed which will link the substations. This study will assess both routes and recommend the route which will be least affected by the proposed project.

The two routes can be seen in the Figure 1 below. The proposed route alternative 1 is shown in pink and runs along the R560. The alternative route 2 runs south of route 1 along private properties.



Figure 1: Two power line alternatives



## 2.2 Location of the Project

The project is located where the Gauteng Province in the Mogale City Local Municipality and the North West Province in the Madibeng Local Municipality. The proposed route runs parallel with the R560 route and passes the R563 which links the site to the City of Johannesburg.

The area is close to the Hartbeespoort dam which is the closest economic hub to the study area. **Figure 2** below shows the location of the project.

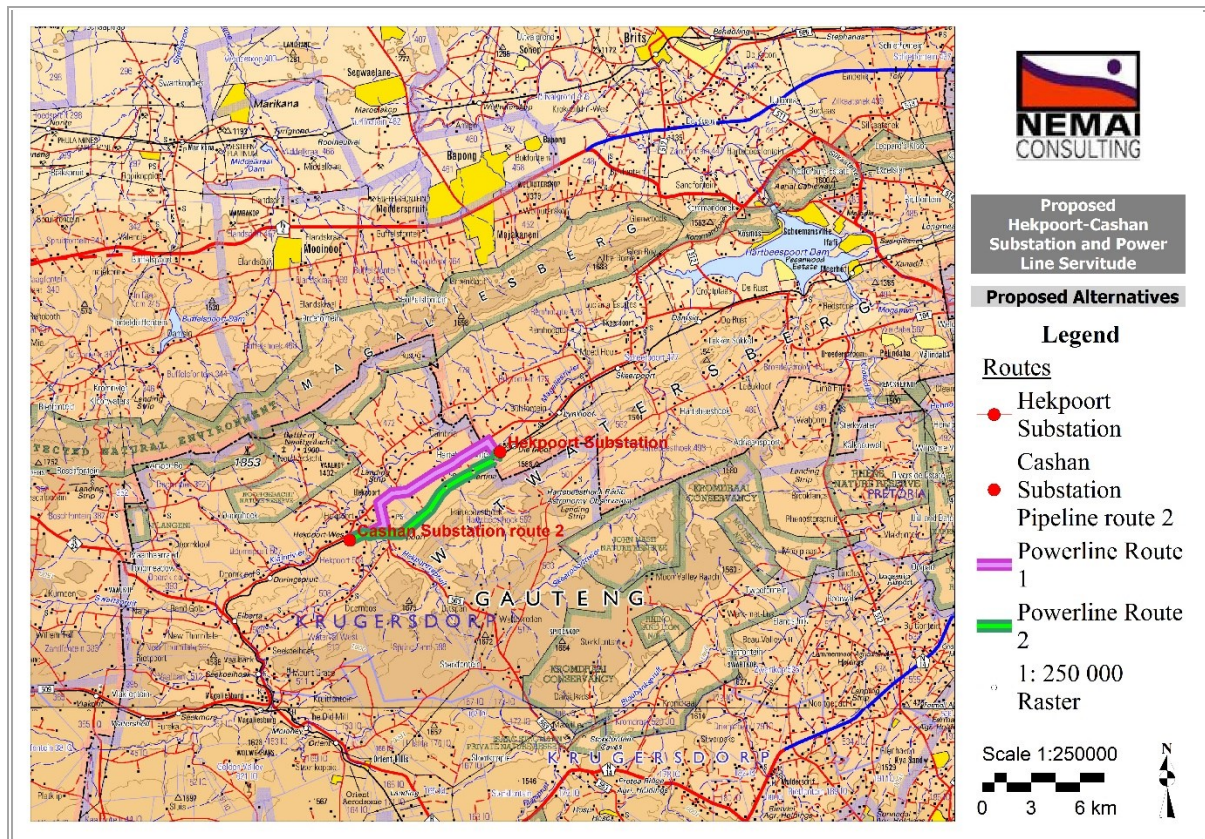


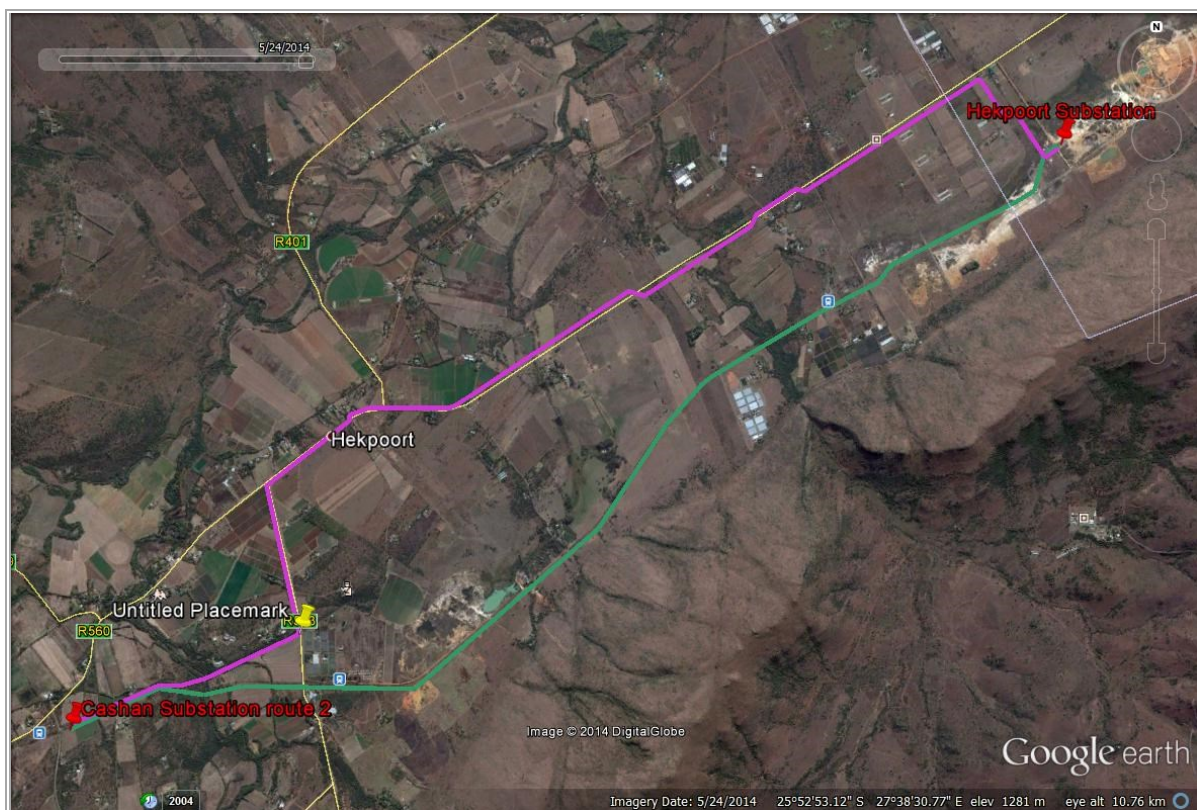
Figure 2: Locality Map

The Hartbeespoort dam is approximately 21 kilometres south west driving distance from the Hekpoort substation. The high population dense areas are shown in yellow and are quite far from the study area.

## 2.3 Surrounding Land Use

The surrounding land use in the area includes farm land, small businesses and residential use. Figure 3 is a Google Earth Image of the study area, shown to highlight the surrounding land use around the project location.





**Figure 3: Google Earth Image of the project area and surrounding land use**

Majority of the land use in the area is commercial agriculture. Route 1 shown in pink is along the R560 thus there are a number of small businesses whose properties are likely to be impacted by the proposed power line. Businesses include a nursery; real estate agent; doctors' offices; pharmacy; food; and health shops. Route 2 however, is not along the main road and surrounded by predominantly farming activities.

The site location falls outside of the Gauteng Urban edge.

### 3 METHODOLOGY

#### 3.1 Review of information/data

The profile of the baseline conditions includes determining the current status quo of the community, including information on a number of social and economic issues such as:

- Demographic factors;
- Socio-economic factors such as income;
- Social Organisation;
- Historical Context;
- Socio-Political Context including relationships between stakeholder groups and political instability; and
- Needs and Values of the community.

The above information will be collected using different methods, including Census data; Quantec Research EasyData; and information obtained from Interviews with relevant stakeholders.

The discussion of the demographics and the development profile of the municipality were carried out using Census 2011 data produced by Statistics South Africa.

The Census 2011 data is the most comprehensive dataset available for the area, and it is currently the best data at hand. The analysis will be conducted using the Census 2011 sub-place as the smallest geographic unit of measure. The sub-places have been extracted using the project GIS, and the data for the affected sub places will be presented in the table and figures below.

Quantec Research (Pty) Ltd is a South African based consultancy which focuses on the marketing, distribution and support of economic and financial data, country intelligence and quantitative analytical software. Quantec Research maintains and distributes a comprehensive set of data collections covering macro and regional socio-economic, industry and international trade data. Data such as gross value added and the unemployment rate were sourced from Quantec Research.

In this section, the Geographic Information System (GIS) is used to conduct a thorough analysis of the area. The use of GIS brings together the demographic and economic data to enable a thorough and more accurate analysis.

### **3.2 Site Visits**

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Social Impact Assessments are an interactive process by nature, and input from the community is crucial. Site visits and engagement with stakeholders inform the decision-making process. It also enables a participatory approach which is informed by the Department of Environmental Affairs and Tourism Integrated Environmental Management Series (Department of Environmental Affairs and Tourism, 2005).

Techniques for public involvement include the use of Focus Groups, Interviews, Hearings, Meetings, Workshops, distribution of Information Brochures and Pamphlets, Informal Small Group Meetings and Polls (Centre for Good Governance., 2006).

Focus groups were the chosen technique for public involvement for use in this study. Focus Group Meetings provide a rapid way to collect comparative data from a variety of stakeholders. They are usually brief meetings lasting one to two hours and can be used to inform stakeholders, identify problems, get ideas/solve problems and obtain feedback. These meetings also provide insight into the shared and different perspectives of specific sectors and groups within a broader, social grouping or community. Social Groupings can include vulnerable groups such as women or the elderly, NGO's, and Political Parties (Barbour, 2007).

### **3.3 Impact Assessment**

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The anticipated impacts associated with the proposed project have been assessed according to SRK's standardised impact assessment methodology which is presented below.

This methodology has been utilised for the assessment of environmental impacts where the consequence (severity of impact, spatial scope of impact and duration of impact) and likelihood (frequency of activity and frequency of impact) have been considered in parallel to provide an impact rating and hence an interpretation in terms of the level of environmental management required for each impact.

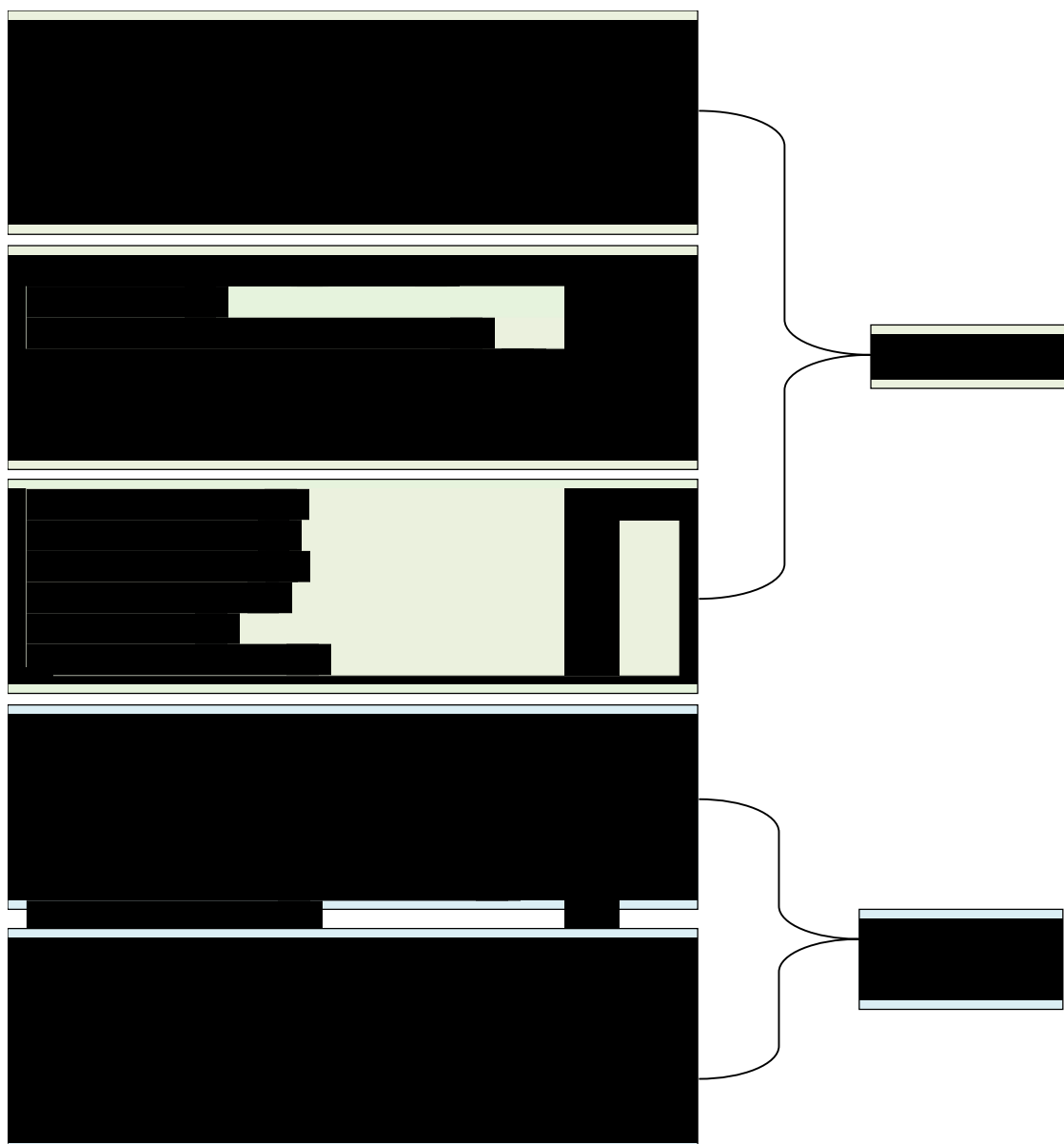
The first stage of any impact assessment is the identification of potential environmental activities, aspects and impacts which may occur during the commencement and implementation of a project and where the following definitions apply:

- An activity is a distinct process or task undertaken by an organisation for which a responsibility can be assigned. Activities also include facilities or pieces of infrastructure that are possessed by an organisation.
- An environmental aspect is an 'element of an organisations activities, products and services which can interact with the environment'. The interaction of an aspect with the environment may result in an impact.

This is supported by the identification of receptors and resources which allows for an understanding of the impact pathway and an assessment of the sensitivity to change. Environmental impacts (social and biophysical) are then identified based on the potential interaction between the aspects and the receptors/resources. The following definitions apply:

- Environmental impacts are the consequences of these aspects on environmental resources or receptors of particular value or sensitivity, for example, disturbance due to noise and health effects due to poorer air quality.
- Receptors can comprise, but are not limited to, people or human-made systems, such as local residents, communities and social infrastructure, as well as components of the biophysical environment such as aquifers, flora and palaeontology. In the case where the impact is on human health or well-being, this should be stated. Similarly, where the receptor is not anthropogenic, then it should, where possible, be stipulated what the receptor is.
- Resources include components of the biophysical environment.

The significance of the impact is then assessed by rating each variable numerically according to defined criteria as outlined in **Figure 10** below.



**Figure 4: Criteria for Assessing Significance of Impacts**

The purpose of the rating is to develop a clear understanding of influences and processes associated with each impact. The severity, spatial scope and duration of the impact together comprise the consequence of the impact and when summed can obtain a maximum value of 15. The frequency of the activity and the frequency of the impact together comprise the likelihood of the impact occurring and can obtain a maximum value of 10. The following definitions apply

- Severity refers to the degree of change to the receptor status in terms of the reversibility of the impact; sensitivity of receptor to stressor; duration of impact (increasing or decreasing with time); controversy potential and precedent setting; threat to environmental and health standards.

- Spatial scope refers to the geographical scale of the impact.
- Duration refers to the length of time over which the stressor will cause a change in the resource or receptor.
- Frequency of activity refers to how often the proposed activity will take place.
- Frequency of impact refers to the frequency with which a stressor (aspect) will impact on the receptor.

The values for likelihood and consequence of the impact are then read off a significance rating matrix table as shown in **Table 2**.

This matrix thus provides a rating on a scale of 1 to 150 (low, medium low, medium high or high) based on the consequence and likelihood of an environmental impact occurring.

Natural and existing mitigation measures, including built-in engineering designs, are included in the pre-mitigation assessment of significance. Measures such as demolishing of infrastructure, and reinstatement and rehabilitation of land, are considered post-mitigation.

		Consequence														
Likelihood	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	
	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	
	4	8	12	16	20	24	28	32	36	40	44	48	52	56	60	
	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	
	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	
	7	14	21	28	35	42	49	56	63	70	77	84	91	98	105	
	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	
	9	18	27	36	45	54	63	72	81	90	99	108	117	126	135	
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	



- Data used for the demographic profile was data from Statistics South Africa 2011, for sub-places. Inaccuracies in this dataset will be reflected in this report; and
- Data used for Gross Value Added was taken from Quantec Research Data 2014. Inaccuracies in this dataset will be reflected in this report.

## 4 LEGAL FRAMEWORK

### 4.1 Constitution of the Republic of South Africa (Act 108 of 1996)

As contained in the Constitution the rights of all South Africans are protected as outlined in Chapter 2: the Bill of Rights. These rights form the basis of democracy in South Africa. The Constitution (including the Bill of Rights) and binds the Legislature, the Executive, the Judiciary and all organs of state and is the overriding legislation of South Africa.

While all items in the Bill of Rights are considered to be of equal importance, key items in the Bill of Rights that have a bearing on social rights and issues in this project include (but are not necessarily limited to):

- Life: Everyone has the right to life;
- Human Dignity: Everyone has inherent dignity and the right to have their dignity respected and protected;
- Equality: Everyone is equal before the law and has the right to equal protection and benefit from the law;
- Freedom of religion, belief and opinion: Everyone has the right of freedom of conscience, religion, thought, belief and opinion;
- Environment: Everyone has the right to an environment that is not harmful to their health or well-being, and to have the environment protected for the benefit of present and future generations, through reasonable legislative and other measures that prevent pollution and ecological degradation, promote conservation and secure ecologically sustainable development and the use of natural resources while promoting justifiable economic and social development;
- Property: No person may be deprived of property except in terms of the law of general application, and no law may permit arbitrary deprivation of property. Property may be expropriated only in terms of the law of general application for a public purpose or in the public interest. The public interest includes South Africa's commitment to land reform and to reforms to bring about equitable access to all South Africa's natural resources. Property is not limited to land;
- Health care, food, water and social security: Everyone has the right to have access to health care services, including reproductive health care, sufficient food and water and social security, including, if they are unable to support themselves and their dependents, appropriate social assistance;

- Language and culture: Everyone has the right to use the language and participate in the cultural life of their choice, but no one exercising these rights may do so in a manner inconsistent with any provision of the Bill of Rights;
- Cultural, religious and linguistic communities: Persons belonging to cultural, religious or linguistic communities may not be denied the right, with other members of the that community to enjoy their culture, practice their religion and use their language, and to form, join and maintain cultural, religious and linguistic associations and other organs of civil society. These rights must be exercised in a manner that is consistent with any provision in the Bill of Rights;
- Access to information: Everyone has the right of access to any information held by the state and any information that is held by another person and that is required for the exercise or protection of any rights; and,
- Just administrative action: Everyone has the right to administrative action that is lawful, reasonable and procedurally fair. Everyone whose rights have been adversely affected by administrative action has the right to be given written reasons. This right has been given effect via the Promotion of Administrative Justice Act ((PAJA) Act 3 of 2000).

#### **4.2 National Environmental Management (Act 107 of 1998)**

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The National Environmental Management Act (NEMA) and the principles contained therein have a significant influence on the need to identify and assess socio-economic impacts. The NEMA principles are based on the basic rights as set out in Chapter 2 (Bill of Rights) of the Constitution.

According to Barber (2007:16) the following NEMA principles have an important impact on social issues:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably;
- Development must be socially, environmentally and economically sustainable;
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option;
- Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons;

- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human well-being must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination;
- The participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and disadvantaged persons must be ensured;
- Decisions must take into account the interests, needs and values of all interested and affected parties, and this includes recognising all forms of knowledge, including traditional and ordinary knowledge;
- Community well-being and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means;
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in light of such consideration and assessment;
- The right of workers to refuse work that is harmful to human health or the environment and to be informed of dangers must be respected and protected;
- Decisions must be taken in an open and transparent manner, and access to information must be provided in accordance with the law;
- The environment is held in public trust for the people. The beneficial use of environmental resources must serve the public interest and the environment must be protected as the peoples' common heritage; and
- The vital role of women and youth in environmental management and development must be recognised and their full participation therein must be promoted.

#### **4.3 National Water Act (Act 36 of 1998)**

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The principles of the National Water Act recognize that sustainability and equity are central guiding principles in the protection, use, development, conservation, management and control of South Africa's water resources.

These guiding principles also recognize the basic human needs of current and future generations and the need to promote social and economic development through the use of water. In this regard the purpose of the NWA is to ensure that South Africa's water resources

are protected, used, developed, conserved, managed and controlled in ways that take into account factors that are central to the assessment of social issues, including (Barbour, 2007):

- Meeting basic needs of current and future generations;
- Promoting equitable access to water;
- Redressing the results of past racial and gender discrimination;
- Promoting the efficient, sustainable and beneficial use of water in the public interest;
- Facilitating, social and economic development; and,
- Providing for the growing demand for water.

#### **4.4 Promotion of Administrative Justice Act (Act 3 of 2000)**

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As stated in the Guideline Document for involving Socio-Economic Impacts Assessment Specialists in the EIA process (prepared in February, 2007, by Tony Barbour for the Department of Environmental Affairs and Development Planning, Western Cape Province, in terms of the Bill of Rights) everyone has the right to administrative action that is lawful, reasonable and procedurally fair. This right has been given effect via the Promotion of Administrative Justice Act (PAJA). Barbour further contends that provisions of the PAJA apply to all decisions of all organs of state exercising public power or performing a public function in terms of any legislation that adversely affects the rights of any person. The Act also prescribes the procedure that must be followed by an organ of state when it takes decisions. If an organ of state implements a decision that impacts on an individual or community without granting them an opportunity to comment, the ultimate decision will be unlawful and therefore may be set aside. The Act also imposes a duty on organs of state to explain and justify the manner in which they have reached their decisions and, in the case of social issues, how these issues were considered in the decision-making process.

#### **4.5 Development Facilitation Act (Act 67 of 1995)**

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The Development Facilitation Act (DFA) outlines various principles concerning land development in Section 3 of the Act. Some of the relevant principles are briefly highlighted below, as contained in the Guideline Document for involving Socio-Economic Impacts Assessment Specialists in the EIA process (prepared in February, 2007, by Tony Barbour for the Department of Environmental Affairs and Development Planning, Western Cape Province (Barbour, 2007)). These principles include (but are not limited to:

- Promoting the integration of the social, economic, institutional and physical aspects of land development;
- Promoting integrated land development in rural and urban areas in support of each other;
- Promoting the availability of residential and employment opportunities in close proximity to or integrated with each other;
- Optimising the use of existing resources including such resources relating to agriculture, land, minerals, bulk infrastructure, roads, transportation and social facilities;
- Promoting a diverse combination of land uses, also at the level of individual erven or subdivisions of land;
- Discouraging the phenomenon of "urban sprawl" in urban areas and contributing to the development of more compact towns and cities;
- Contributing to the correction of the historically distorted spatial patterns of settlement in the Republic and to the optimum use of existing infrastructure in excess of current needs;
- Encouraging environmentally sustainable land development practices and processes;
- Promoting land development which is within the fiscal, institutional and administrative means of the Republic;
- Promoting the establishment of viable communities; and,
- Promoting sustained protection of the environment.

#### **4.6 National Development Plan (2011)**

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The National Development Plan (NDP) of 2010 proposes to “invigorate and expand economic opportunity through infrastructure, more innovation, private investment and entrepreneurialism.

The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:

- Housing, water, electricity and sanitation;
- Safe and reliable public transport;
- Quality education and skills development;
- Safety and security;



- Quality health care;
- Social protection;
- Employment;
- Recreation and leisure;
- Clean environment; and
- Adequate nutrition.

## 5 OVERVIEW OF THE AFFECTED AREA

The following section provides detailed description of the social and economic environment based on a desktop study. In this section, demographics such as population and gender, education, health and utilities are discussed. An economic overview follows with information on employment and industry is also outlined.

Data will be given for both municipal and sub-place level. **Figure 5** below is a map showing that study area falls in the Mogale City NU sub-place and the Madibeng NU sub-place. According to Statistics South Africa, NU is abbreviated of non-urban area.

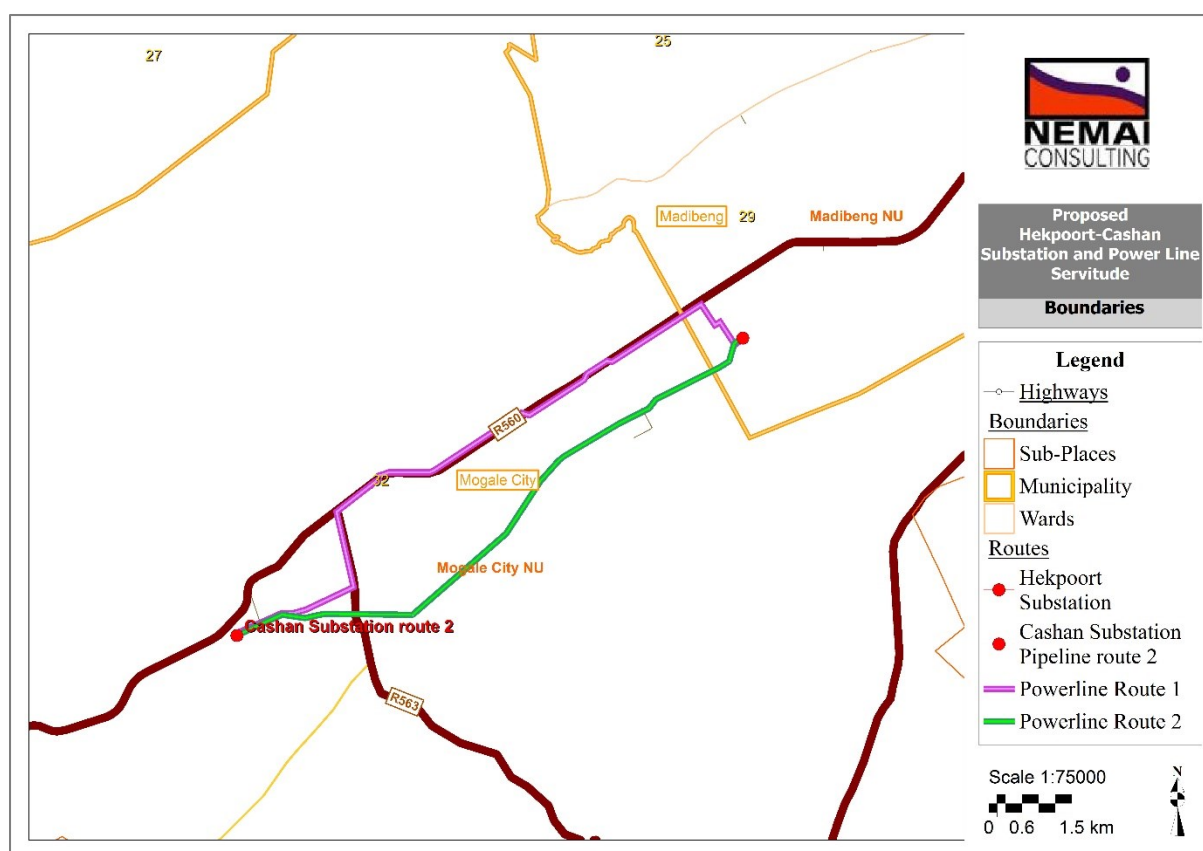


Figure 5: Map indicating the municipality and sub-places

### 5.1 Population; age and gender

The total population in the two Local Municipalities (LM's) is 839 803 while the sub-places have a total population of 54 011. **Table 1** below shows the 2011 population data for each LM and sub-place as taken by Census 2011.

**Table 1: Population, Age and Gender (Statistics South Africa, 2013)**

Population and Age	Madibeng LM		Mogale City LM		Madibeng NU		Mogale City NU	
0 - 14	122 689		86 013		8 384		2 287	
15 - 34	187 049		142 165		19 810		3 538	
35 - 64	143 455		117 753		14 487		3 088	
64+	24 187		16 491		2 048		369	
<b>Total</b>	<b>477 380</b>		<b>362 422</b>		<b>44 729</b>		<b>9 282</b>	
0 - 14	26%		24%		19%		25%	
15 - 34	39%		39%		44%		38%	
35 - 64	30%		32%		32%		33%	
64+	5%		5%		5%		4%	
<b>Total</b>	<b>100%</b>		<b>100%</b>		<b>100%</b>		<b>100%</b>	
Age and Gender	Madibeng LM		Mogale City ML		Madibeng NU		Mogale City NU	
	Male	Female	Male	Female	Male	Female	Male	Female
0 - 14	51%	49%	50%	50%	56%	44%	52%	48%
15 - 34	55%	45%	53%	47%	62%	38%	54%	46%
35 - 64	54%	46%	50%	50%	61%	39%	54%	46%
64+	42%	58%	43%	57%	59%	41%	54%	46%
<b>Total</b>	<b>53%</b>	<b>47%</b>	<b>51%</b>	<b>49%</b>	<b>60%</b>	<b>40%</b>	<b>53%</b>	<b>47%</b>

In Madibeng LM and sub-place, 69% and 76% of the population come from the ages 15 – 64. Similarly in Mogale City LM and sub-place, 71% of the population are ages 15 – 64. The age group 15 – 64 is the working age of South African. Where over 70% of the population falls in this group

There are slightly more males than females in the two municipalities. The gender differences are more evident in Madibeng NU where males account for sixty percent of the population.

The nature of population data being more male and work age is indicative of a transient community of job seekers. This indicator is further supported by the graph in **Table 2** below which shows that the high number of households with just one or two occupants.

**Table 2: Household Size (Statistics South Africa, 2013)**

Household Size	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
1	34%	30%	30%	34%
2	22%	23%	37%	24%
3	14%	16%	16%	15%

Household Size	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
4	12%	14%	9%	12%
5+	18%	17%	7%	15%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

More than fifty percent of households in the study area have 1 or 2 members. Household size provides an indication of family structure and the length of time people population a place. Where the majority of households are only single or double occupancy, the population is more likely to be transient.

## 5.2 Education

Education levels are assessed in order to understand the level of employment as well as livelihood of the community. Furthermore, it indicates the functional literacy and skill level of a community.

The **Table 3** below shows the highest level of education reached by persons over age 20 in the LM's and sub-places in 2011. Education levels have been grouped by Statistics SA to show primary, secondary and higher education.

**Table 3: Highest Level of Education Reached (age 20+) (Statistics South Africa, 2013)**

Highest Level of Education	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
No schooling	6%	4%	3%	0%
Some primary	21%	18%	12%	9%
Complete primary	5%	4%	17%	21%
Some secondary	31%	29%	7%	7%
Grade 12/ Std 10	19%	24%	34%	38%
Higher	5%	9%	20%	19%
Unspecified	0%	0%	7%	6%
Not applicable	13%	12%	0%	0%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

In the Madibeng LM, 31 percent of the population over age 20 reached secondary school and a further 19% completed secondary school. 6 % of the population have no schooling. In Mogale City LM, 24% of the population completed secondary school. In both LM's over 20% of the population have not exceeded primary education.

Majority of the population have some level of education in the two sub-places. In Madibeng NU, 34 percent of people over age 20 have some secondary school and a further 20% have completed secondary school. In Mogale City NU, 38% of the population over 20 have some completed some secondary school with 19% of the population having completed secondary school. Only 7% and 6% for the population in Madibeng NU and Mogale City NU have obtain some level of higher education.

### 5.3 Annual Household Income

Annual income is important to assess as it provides information on the poverty level of the community. Income brackets have been defined to facilitate the analysis. The annual income brackets are defined as follows:

- No Income R0
- Low Income R1 – 76 800
- Middle income R76 801 – R641 400
- High Income R641 401 +

The 2011 percentage annual household income by income bracket is provided in **Table 4** shown below.

**Table 4: Annual Household Income (Statistics South Africa, 2013)**

Annual Household Income	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
No Income	16%	16%	9%	8%
Low Income	65%	56%	73%	76%
Middle income	17%	25%	16%	14%
High income	2%	3%	2%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Majority of the households in the study area are low income earning households. In Madibeng LM 16% of households earn no income while 65% of households earn a low income. In the Madibeng NU sub-place, 73% of households if households earn no income.

In Mogale City LM and sub-place, 73% and 76% of households earn in the low income category respectively.

The data in section 5.1 suggest a transient community. Transient communities are also communities which have a low incomes and often the education level in the communities are low as well.

#### 5.4 Access to Piped Water

Understanding the water supply provides insight into the municipal level of service of a community as well on the standard of living. **Table 5** below shows the 2011 data on household access to piped water services in each LM and sub-place.

**Table 5: Access to piped water (Statistics South Africa, 2013)**

Access to Piped Water Services	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
Inside dwelling/ institution	22%	54%	26%	30%
Inside yard	46%	33%	43%	37%
Community stand < 200m	10%	6%	9%	17%
Community stand 200m - 500m	4%	2%	3%	3%
Community stand 500m - 1km	2%	1%	1%	1%
Community stand > 1km	1%	0%	1%	1%
None	15%	3%	17%	12%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Majority of households in the study area have access to piped water within the basic level of service to be provided for by municipalities.

In Madibeng LM and sub-place, yard connections are the most common at 46% and 43% of households respectively. 15% of households in the Madibeng LM do not have access to piped water.

In Mogale City LM 17% of households have no access to piped water while 9% of households have access to piped water within the 200meters of the home. In Mogale City NU sub-place, 67% of households have access to a yard or dwelling connection while 17% of households of households access water within 200m of the dwelling. 12% of households have no access to piped water.

Access to piped water is important to understand the level of health and standard of living in an area. In both Madibeng and in Mogale City, majority of households have access to piped water in the household or in the yard thus the standard of living is not extremely low.



## 5.5 Access to Sanitation

As with water, access to sanitation services is also an indicator of the standard of living amongst the population in the sub-places. **Table 6** shows the household access to toilet facilities in 2011.

**Table 6: Access to Sanitation Facilities (Statistics South Africa, 2013)**

Access to Sanitation Services	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
Flush toilet with sewerage system	27%	78%	19%	34%
Flush toilet with septic tank	5%	6%	21%	13%
Chemical toilet	1%	3%	0%	5%
Pit latrine with ventilation	9%	3%	6%	13%
Pit latrine without ventilation	48%	5%	26%	28%
Bucket latrine	2%	3%	7%	3%
Other	2%	1%	2%	3%
None	6%	2%	19%	3%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

In Madibeng LM, households do not have access to a basic level of sanitation services. 48% of household's access pit latrines with no ventilation while 6% of households have no sanitation services at all. In Madibeng NU, 19% of households have no access to sanitation services. A further 19% of households have access to a flush toilet with sewerage.

In Mogale City LM and NU, 78% and 34% of households have a sewerage system flush toilet respectively. In Mogale City NU, 28% of households have access to pit latrines with no ventilation.

While majority of the population in the study area have access to some form of sanitation services, the level of service is low and could be improved.

## 5.6 Dwelling

Dwelling types were classified as formal, traditional, informal or other in the Census 2011. Formal housing is classified as follows:

- House or brick/ concrete block structure on a separate stand or yard or on a farm
- Flat or apartment in a block of flats

- Cluster house in complex
- Townhouse (semi-detached house in a complex)
- Semi-detached house
- Room/ flatlet on a property or larger dwelling/ servants quarters/ granny flat
- House/ flat/ room in backyard

Traditional housing is classified as follows:

- Traditional dwelling/ hut/ structure made of traditional materials

Informal housing is classified as follows:

- Informal dwelling (shack; in backyard)
- Informal dwelling (shack; not in backyard; e.g. in an informal/ squatter settlement or on a farm)

Other housing is classified as follows:

- Caravan/ tent
- Other

**Table 7** below shows the percentage of households by the type of dwelling in 2011.

**Table 7: Type of Dwelling (Statistics South Africa, 2013)**

Type of Dwelling	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
Formal dwelling	59%	73%	71%	81%
Traditional	1%	0%	1%	1%
Informal	39%	26%	26%	16%
Other	1%	1%	2%	2%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Formal and informal dwellings account for 59% and 39% of households in Madibeng LM respectively. In Madibeng NU 71% of households are formal dwellings. In Mogale City LM and NU, 73% and 81% of households are formal dwellings. Informal dwellings account for 26% and 16% respectively.

## 5.7 Employment

**Figure 8** below shows the employment data taken from the Census 2011.

**Table 8: Official Employment Status (Statistics South Africa, 2013)**

Employment Status	Madibeng LM	Mogale City LM	Madibeng NU	Mogale City NU
Employed	31%	37%	53%	47%
Unemployed	14%	12%	8%	8%
Discouraged work-seeker	2%	2%	1%	1%
Other not economically active	22%	20%	14%	15%
Not applicable	31%	28%	23%	29%
<b>Total</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

In Madibeng LM 31% of the population is employed while in Madibeng NU, 53% of the population are employed. In Mogale City LM and NU 37% and 47% of the population are employed respectively.

## 5.8 Economy

Gross Value Added (GVA) is defined as the total value of all the goods produced in a specific area during a specific period.

GVA allows for the determining the overall welfare of the population. While it is not a comprehensive measure and provides no indication of the distribution of welfare, it is still important an important indicator to measure the performance of industry.

The GVA was taken from Quantec Research Easy Data. Quantec Research (Pty) Ltd defines the major sectors into Primary Sector, which is extractive, Secondary Sector, made up of manufacturing and the Tertiary Sector, which comprises of services.

**Table 9** shows the 2013 GVA for the Madibeng Municipality and for Mogale City Local Municipality at 2005 constant Prices in R, millions.

**Table 9: GVA at 2005 Constant Prices in R, millions for 2013**

Industry	Local Municipality of Madibeng	Mogale City Local Municipality
Agriculture, forestry and fishing	2%	1%
Mining and quarrying	23%	2%
Manufacturing	15%	19%
Electricity, gas and water	0%	2%
Construction	2%	5%

Industry	Local Municipality of Madibeng	Mogale City Local Municipality
Wholesale and retail trade, catering and accommodation	11%	16%
Transport, storage and communication	12%	10%
Finance, insurance, real estate and business services (FIRE)	19%	23%
Community, social and personal services	7%	4%
General government	9%	18%
<b>Total</b>	<b>100%</b>	<b>100%</b>

Mining and quarrying is the largest sector in Madibeng Local Municipality at 23%, while business service (FIRE) contribute 19% to the local economy. Conversely, FIRE contributes 23% to Mogale City LM while Manufacturing and General Government contribute 19% and 18% respectively.

In both economies, agriculture is not a significant contributing sector to the economy. However in the study area, the land use in the economy agriculture is the dominant sector.

## **6 IDENTIFICATION OF ACTIVITIES, ASPECTS AND IMPACTS**

### **6.1 Identified Activities**

The activities to be undertaken include the construction of the Cashan sub-station and powerlines connecting the new Cashan sub-station to the current Hekpoort sub-station.

*Detailed list of activities to be provided.*

### **6.2 Identified Aspects**

#### **6.2.1 Expansion of electricity supply**

The proposed project will increase electricity supply on a regional level. The expansion of electricity supply will increase the standard of living for residential areas that may now be serviced with electricity. In addition the project ensures security of electricity supply which will lead to investor confidence and trust in the municipal services.

#### **6.2.2 Economic stimulus**

There will be an economic stimulus to economy as a result of increased electricity supply. Electricity supply may lead to an expansion of business in the area which will in turn create employment.

Additional economic stimulus is provided during the construction phase. During the construction phase, there will be an increase in employment opportunities and therefore the surrounding communities will benefit.

Employment will be positively affected by the proposed infrastructure. Employment will contribute to household wealth. Households will spend more money which will stimulate the local economy. This stimulus will generate more wealth and opportunity for the local community during the construction phase.

### **6.3 Identified Impacts**

#### **6.3.1 Economic Impacts**

There is likely to be a short term increase in economic activity as a result of the substation. The construction labour force will not only be earning an income in the area, but consumption will take place this increase the commercial activity and the flow of money in the area.

This may result in short term indirect economic gains, which will be in the form of purchasing construction material and transport.

Through the employment of local labour, skills and knowledge transfer is likely to take place which can increase the employability of these workers. Employment will also increase the income of households and capacity to be more productive.

The project is will ensure stable supply of electricity to this region. The economic and social benefits is having a more secure electricity supply are clear and are felt in areas as diverse as education, health, public infrastructure such as street lighting, heating and cooling and uses in the productive economy.

### **6.3.2 Land value and Servitude**

A servitude on either side of the centre of the power line will need to be purchased. The purpose of the servitude is to ensure public safety, safe construction, maintenance and operation of the line.

Eskom will be entitled to unrestricted access. Negotiation with land owners on access control measures and security issues with regards to locking and unlocking of gates on private properties and damage to fences and gates will need to take place.

The land beneath the overhead lines and within servitude may continue to be used for some activities by the landowners, however, no crops or trees higher than 4m will be allowed along the route, and no structures may be developed underneath the line or within the servitude area.

The proposed power line can negatively impact the development and infrastructure plans for the area. Development within the servitude will be restricted. Certain farming and current land use may need to be stopped completely or altered resulting in potential loss of income.

Provisions in South African law allow the establishment of a servitude for the use of the utility, whilst still preserving the ownership of the land with the landowner. The utility thus has rights over the land that exceeds those claimed by the landowner. This trade-off is generally negotiated between the utility and the landowner and involves the payment to the landowner of a sum of money in compensation for the land rights. In the event that agreement cannot be reached, the state does have the right to expropriate the land. This power exists to ensure that landowners who are in the path of proposed public utilities do not have the power to hold the project to unreasonable ransom and to ensure that the public good trumps individual rights.



Thus the emphasis should be on the value of compensation that is to be paid to the landowner for servitude rights. This value depends on the area of servitude, the land use of the servitude area, the impact on productivity and the alterations to land use that will be required.

Comparable sales are traditionally the method used for servitude valuations, where such values exist. This method will best take into account intangible factors such as the visual impacts of transmission lines.

Research suggests that where there are electricity transmission lines, the land value in close proximity to those transmission lines fall. In the study by Elliot and Wadley (2002) a list of various research papers were provided with the estimated value of the fall in property prices. It was found that the percentage decrease in property values ranges from 1 percent to 27 percent. The degree of depreciation depends upon the value, size and location of the property in question.

Larger properties were less affected than small properties, this applies particularly to farmland. It was also found that the higher the value of the land, the larger the impact on land value.

The literature also suggests that the impact on property prices diminishes over time. The impact of transmission lines on property values is initially high. Over time the visual impact decreases as trees and other developments surround the area. Thus the long term impact on property prices will likely be low.

The literature thus suggests that land values do decrease when servitudes are registered over them, and for this the landowner should be compensated. The legal and operational framework for compensation is well established and the channels for negotiation are open for landowners to follow. In this regard an excellent summary of the complexity of the compensation issue has been prepared by Rode and Associates C.C. (Rhode & Graham, 2007). The study is entitled "Gamma-Grassridge: Compensation Specialist Study" and was conducted for a proposed Eskom transmission line in the Eastern Cape Province.

It is suggested that the guidelines developed for the purposes of this study are used in the payment of compensation during the registering of servitudes over land affected by the routes.

With regards to land values and compensation for the use of a servitude, impacts and mitigation should take into account the following categories of concern:

- the visual impacts on lines;
- maintenance issues during operation;

- multiple lines on a single property;
- larger relative impacts on small properties than on large farms;
- the public relations aspects of Eskom's business; and
- loss of business caused by the servitude.

### **6.3.3 Loss of Production**

The project area is generally rural in nature, with urban and commercial activity increasingly occurring. Agriculture is the most common land use in the study area.

Current farming practices may be disturbed due to the development of the transmission lines. This will be through loss of land available for produce as well as a capital cost on the value of the land. There will be an expected decline in output as agricultural activity in the servitude area will be limited. Thus there is likely to be a loss of potential and existing income.

The biggest loss of productive land is expected to occur during the construction phase of this development. There may be an expected removal of all crops within the servitude land for construction and road purposes.

Furthermore there is an impact on the way in which agriculture can take place. Transmission lines place a restriction on the types of agriculture that can occur on the land. Thus there is a loss of production capacity.

Agriculture contributes to employment in the area which means that land use has a significant economic impact on production and income generation. Thus the impact on the loss of agricultural land and limitation on agricultural activity is likely to be very significant.

The importance of agriculture for the communities cannot be overstated. In general, these communities are located in geographic areas where the economy is not diversified away from agriculture and are generally only able to offer manual labour to the market. Thus these communities are economically vulnerable and disruption to agricultural production will have disproportionately large impacts on those affected.

### **6.3.4 Impacts on the social environment**

With the proposed project which is likely to attract workers, the population growth rate may increase and cause strain on development needs.

When workers come into an area, there is a need to supply municipal services to these workers. The municipality may or may not have the capacity to support a larger number of people. Thus causing strain on social services.

As is common with migrant workers in an area, there may be some social disruption. The relations between locals and new job seekers may not be smooth and lead to conflict in the community.

Workers entering the area will also be competing with locals for employment which may cause tension in the community. Locals and new job seekers will be competing for the same jobs. Thus it is important to deter job seekers and stress on local employment.

Relations between migrant workers and locals can potential cause health problems by rising HIV and AIDS or other sexually transmitted diseases. This is a typically the case when a large number of males enter into an area. Hostel like structures will need to be prevented and awareness campaigns should be conducted.

During construction, the safety and security of labourers around may be at risk when working with transmission lines. Thus effective mitigation measures will need to be in place to avoid loss of life or injury. The safety of farming livestock will also need to be ensured.

#### **6.3.5 Employment**

There is likely to be a positive impact on employment especially during the construction phase. Construction of the power lines will require labour for building the power lines while the operation phase will require labour for maintenance. Labour figures are currently unknown.

Employment can become a sensitive issue, particularly the concern over local labour. However the nature of transmission lines require skilled labour.

Potential secondary employment impacts can result as small business employs more persons to sell goods to labourers.

The project has the potential to positively impact upon household incomes during the construction phase. In the study area, most people are low income earners thus employment of locals will create a positive impact on local communities who can derive some economic benefit from the project.

At least, the contractor should be barred from bringing unskilled labour in from areas outside the immediate area of construction. The contractor should also be encouraged to employ a proportion of their semi-skilled labour requirements from the ranks of the local communities.

In addition, the contractor could be obliged to employ labourers on short term contracts of three months, similar to the government sanctioned Expanded Public Works Programme contracts. This would ensure that the project components create as many work opportunities in the affected areas as possible.

The project also has the potential to positively impact upon the skills levels in local communities during the construction phase. Only 20% of persons over the age of 20 matriculated. Thus the skill level of the community is not very high. Any local training and skills transfer that results from the project will create a positive impact.

### **6.3.6 Roads and Traffic**

During the construction phase there may be traffic disruptions in the area. Heavy construction vehicles may cause damage to the roads. Traffic will however be temporary and local mitigation measures can be undertaken to minimise inconvenience and road damage.

There may be temporary and permanent roads that will need to be built in order to ensure proper maintenance of the power lines.

The economy of route 1 is more diversified and developed given that it is along the main road. Thus there will be a greater need for future traffic accommodation. Having a transmission line placed along this will add restrictions to the future planning of traffic accommodation.

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