

# **APPENDIX O: SOCIAL IMPACT ASSESSMENT**



## **SOCIAL IMPACT ASSESSMENT**

As part of the

## **ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

for the

**UNDERGROUND COAL GASIFICATION PROJECT AND ASSOCIATED  
INFRASTRUCTURE IN SUPPORT OF CO-FIRING OF GAS AT THE MAJUBA  
POWER STATION, AMERSFOORT, MPUMALANGA**

**FEBRUARY 2013**



**Prepared by:**

MasterQ Research

Reg. No.: 2003/002350/07

Revised by RS2 to incorporate changes to the scope of work

**Contact person:**

Ms Nonka Byker

Mobile: 082 940 3694

Telephone: 012 665 2817

Fax: 086 612 8122

Email: [nbyker@rsrisksolutions.com](mailto:nbyker@rsrisksolutions.com)

## EXPERIENCE RECORD

This report was compiled and revised by **Ms Nonka Byker** of **RS2**, previously from **MasterQ Research**.

Nonka holds a B.Psych-degree (specialising in Adult Mental Health) from the University of Pretoria. She is a social specialist with 15 years' experience in the social development field, ranging from public participation to impact assessments, and more lately social management. She is currently employed by RS2 to head up the coordination, development and part implementation of a Community Investment Plan for the Mozambique LNG project.

Her experience with impact assessments included the following (selected) projects:

- Peer Review of the Socio-Economic Impact Assessment for the proposed Lusthof Colliery in the Albert Luthuli Municipal area, Mpumalanga Province (Client: Black Gold Coal Estates, EAP: JMA Consulting).
- Social specialist on the Socio-Economic Impact Assessment for the expansion of the Vametco Vanadium mine in the Brits area, Northwest Province (Client: Vametco, EAP: JMA Consulting).
- Social specialist on the Socio-Economic Impact Assessment for proposed wind farms on three sites in the Northern Cape (Client: Mainstream Renewable Power, EAP: Sivest).
- Social specialist on the Basic Social Assessment for the proposed West Rand Strengthening Project (Client: Eskom Distribution, EAP: Sivest).
- Social specialist on the Social Impact Assessment for the proposed Dedicated Isotope Production Reactor (DIPR) and associated construction laydown area at Pelindaba, Northwest Province (Client: NECSA, EAP: Arcus GIBB).
- Social specialist on the Socio-Economic Impact Assessment for the proposed Thyspunt Integration Project (Client: Eskom Generation/Transmission, EAP: SiVEST).
- Social specialist on the Socio-Economic Impact Assessment for the proposed Concentrated Solar Plants and Photovoltaic Plants in three regions of the Northern Cape (Client: Mainstream Renewable Power, EAP: SiVEST).
- Social specialist on the Social Impact Assessment for the proposed Mookodi Integration Project in the Vryburg area, Northwest Province (Client: Eskom Generation & Distribution, EAP: SiVEST).
- Social specialist on the Social Impact Assessment for the proposed Delareyville-Kopela-Phahameng 132kV distribution power line and the proposed Kopela and Phahameng substations in the Delareyville area, Northwest Province (Client: Eskom Distribution, EAP: SiVEST).
- Social specialist on the Socio-Economic Impact Assessment for the proposed KiPower IPP Power project in the Delmas area, Mpumalanga Province (Client: Kuyasa, EAP: Jones & Wagener).

## DECLARATION OF INDEPENDENCE



### environmental affairs

Department:  
Environmental Affairs  
REPUBLIC OF SOUTH AFRICA


#### DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEAT/EIA/
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2010

#### PROJECT TITLE

**EIA FOR THE UNDERGROUND COAL GASIFICATION PROJECT AND ASSOCIATED INFRASTRUCTURE IN SUPPORT OF CO-FIRING OF GAS AT THE MAJUBA POWER STATION, AMERSFOORT, MPUMALANGA**

Specialist:	Nonka Byker		
Contact person:			
Postal address:	P.O. Box 66207, Highveld		
Postal code:	0169	Cell:	082 940 3694
Telephone:	012 665 2817	Fax:	086 612 8122
E-mail:	nbyker@rsrisksolutions.com		
Professional affiliation(s) (if any)	HPCSA IAIA(SA)		

Project Consultant:	Royal HaskoningDHV		
Contact person:	Prashika Reddy		
Postal address:	PO Box 25302		
Postal code:	0105	Cell:	083 284 8687
Telephone:	012 367 5973	Fax:	012 367 59878
E-mail:	prashika.reddy@rhdhv.com		

4.2 The specialist appointed in terms of the Regulations\_

I, 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:

Name of company (if applicable):

2013/02/07  
Date:

## EXECUTIVE SUMMARY

In order to meet the fuel requirements for optimal power generation at the Majuba Power Station, Eskom proposes the use of synthesis gas (or *syngas*) produced by an Underground Coal Gasification (UCG) process as a supplementary fuel source with the boilers at the power station. Based on the outcomes of this ‘testing’ phase, Eskom may investigate the option of a commercial size power plant based on UCG technology.

The UCG site is located opposite the existing Majuba Power Station, close to the town of Amersfoort in the southern parts of the Mpumalanga Province. The UCG and associated infrastructure will be located on the farm Roodekopjes 67HS (Portions 1, 2, 3 and remaining extent), Portions 17 and 21 of the farm Bergvliet 65HS, and Portions 4 and 5 of the farm Rietfontein 66HS.

This report details the results of the Social Impact Assessment (SIA) specialist study undertaken by MasterQ Research (and revised by RS2 based on scope changes) as part of the overall Environmental Impact Assessment (EIA) process undertaken by Royal HaskoningDHV. The SIA documented in this report builds on the Basic Social Assessment Report (BSAR) compiled as part of the Scoping Phase of the EIA process (completed in August 2009).

The definition of a SIA as defined by Vanclay (2002) gives an understanding of the backdrop against which this SIA was conducted. According to this definition, a **social impact assessment** is *“the process of 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.”*

The various subsections discuss the respective change processes and the potential impacts that could be experienced by the receiving environment because of the construction and operation of the proposed OCGT demonstration plant and its associated infrastructure. The categories of processes are as follows:

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

A summary of the expected impacts are as per the table below.

Change Processes	Expected Change and Resultant Impacts	Project Phase(s)
Geographical	<b>Change in access to resources that sustain livelihoods:</b> It is not foreseen that the proposed UCG plant will lead to a	Construction, extending into



Change Processes	Expected Change and Resultant Impacts	Project Phase(s)
	change in access to resources that sustain livelihoods, as the plant and the bulk of the associated infrastructure will be located on Eskom property.	Operation
	<b>Land acquisition and disposal, including availability of land:</b> No impact foreseen in this regard, as the project is located on Eskom property.	Construction, extending into Operation
Demographical	<b>Arrival of Construction workers:</b> At the time of the study, the estimated size of the construction team was not known. It was therefore difficult to determine the social impact as a result of an influx of construction workers, as the extent and significance of the impact is largely dependent on the number of people.	Construction
	<b>Influx of unemployed work seekers:</b> 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, which would be a natural deterrent to a further influx of job seekers.	Construction, extending into Operation
	<b>Relocation of Households:</b> The relocation process was completed in 2011 and no further relocation will be required.	Pre-construction
Institutional and Legal	<b>Change in community infrastructure (additional demand on services):</b> The additional demand on municipal services is a point of concern, as it would appear that most of the surrounding areas (most notably Vlakplaats and Daggakraal) are poorly developed and characterised by poverty.	Construction, extending into Operation
	<b>Change in housing needs/demands:</b> It seems likely that the construction team will be housed in the existing single quarters at the mining offices. The impact is therefore regarded as negligible and has not been assessed in any further detail.	Construction, extending into Operation
	<b>Corporate Social Investment:</b> The EDF delivers on Eskom's CSI objectives by supporting economic and social projects initiated by registered Small, Medium and Micro Enterprises (SMMEs), with a special focus on communities within which Eskom operates its capital expansion projects.	Construction, extending into Operation
Socio-Cultural	<b>Dissimilarity in social practices:</b> As it is Eskom's intention to house construction workers on-site in the existing single quarters, it is not expected that dissimilarity in social practices would be evident to the degree that it would affect a large segment of the population.	Construction
	<b>Conflict:</b> At the time of the study, there was no apparent conflict within the local community or between the local community and the project proponent (Eskom) over the proposed UCG plant. The situation is unlikely to change if the project processes proceed in an open and transparent manner.	Not applicable



Change Processes	Expected Change and Resultant Impacts	Project Phase(s)
	<p><b>Change in sense of place:</b> It is unlikely that the UCG plant itself will change local residents' sense of place, as the plant will be located in the vicinity of the existing Majuba Power Station. Compared to the existing power station, the plant will be significantly smaller and as it will be placed in an area that is already regarded as 'spoilt', it is not foreseen that it will have a primary impact on sense of place.</p>	<p>Construction, extending into Operation</p>

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

The social specialist recommends the following:

- Ensure that social issues identified during the EIA phase are addressed during construction. This could be done by engaging social specialists where necessary or by ensuring that ECOs used during construction have the necessary knowledge and skills to identify social problems and address these when necessary. Guidelines on managing possible social changes and impacts could be developed for this purpose.
- Always inform neighbouring landowners beforehand of any construction activity that is going to take place in close proximity to their property. Prepare them on the number of people that will be on site and on the activities they will engage in.
- Ensure that Eskom employees are aware of their responsibility in terms of Eskom's relationship with landowners and communities surrounding power lines. Implement an awareness drive to relevant sections to focus on respect, adequate communication and the 'good neighbour principle.'
- Incorporate all mitigation measures in the SIA (Refer to Section 5) that are relevant to the construction phase in the EMP to ensure these are adhered to by Eskom and the contractor.

# 1. INTRODUCTION

In order to meet the fuel requirements for optimal power generation at the Majuba Power Station, Eskom proposes the use of synthesis gas (or *syngas*) produced by an Underground Coal Gasification (UCG) process as a supplementary fuel source with the boilers at the power station. Based on the outcomes of this 'testing' phase, Eskom may investigate the option of a commercial size power plant based on UCG technology.

The UCG site is located opposite the existing Majuba Power Station, close to the town of Amersfoort in the southern parts of the Mpumalanga Province. The UCG and associated infrastructure will be located on the farm Roodekopjes 67HS (Portions 1, 2, 3 and remaining extent), Portions 17 and 21 of the farm Bergvliet 65HS, and Portions 4 and 5 of the farm Rietfontein 66HS.

This report details the results of the Social Impact Assessment (SIA) specialist study undertaken by MasterQ Research (and revised by RS2 based on scope changes) as part of the overall Environmental Impact Assessment (EIA) process undertaken by Royal HaskoningDHV. The SIA documented in this report builds on the Basic Social Assessment Report (BSAR) compiled as part of the Scoping Phase of the EIA process (completed in August 2009).

## 1.1 Key Definitions

The definition of a SIA as defined by Vanclay (2002) gives an understanding of the backdrop against which this SIA was conducted. According to this definition, a **social impact assessment** is *"the process of 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."*

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

## 1.2 Objectives of the Study

The overall business objective of the SIA is to assess the probable social impacts on the human environment as a result of project implementation. In support of the overall study objective, a number of secondary objectives were identified:

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

### **1.3 Approach and Methodology**

To obtain baseline information on the social conditions characterising the study area on individual, community, institutional and organisational level in terms of current and predicted future changes with and without the project, data collection methods took on the following forms:

- Site visits on 15 August 2008 and 2 February 2009, which covered visual observations of the affected area, including structures, land use, and activities;
- A meeting with local government officials in Volksrust on the 22nd of June 2010;
- A desktop study of the sites and surrounding areas through the use of Google Earth;
- Perusing the various locality maps generated through the project process;
- Perusing existing project documentation, e.g. the Majuba CCGT study and any Eskom project details that were made available. This included shape files, project descriptions received from the client, and the minutes of meetings where the project was discussed;
- Information obtained by the economic specialist through telephonic interviews with affected landowners between January and March 2010; and
- Information obtained from landowners during the previous (CCGT) study.

Information that was relevant to the project was identified and assessed from these sources within the context of the pre-construction, construction, operational, and decommissioning phases of the proposed project.

#### **1.3.1 Significance Rating Scales**

To ensure a direct comparison between various specialist studies, six standard rating scales were used to assess and quantify the identified impacts. The rating system used for assessing impacts (or when specific impacts cannot be identified, the broader term issue should apply) is based on three criteria, namely:

- The relationship of the impact/issue to temporal scales;
- The relationship of the impact/issue to spatial scales; and
- The severity of the impact/issue.

These three criteria are combined to describe the overall importance rating, namely the significance. In addition, the following parameters are used to describe the impact/issues:

CATEGORY	DESCRIPTION
Nature	A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
Extent (Scale)	<p>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 phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a <i>local</i> scale, but low at a <i>regional</i> scale.</p> <p><b>Site:</b> The immediate vicinity of the project (radius +/- 100m)</p> <p><b>Local:</b> Within a radius of 2-12km from the project site</p> <p><b>Regional:</b> Provincial (and parts of neighbouring provinces)</p> <p><b>National:</b> The whole of South Africa</p> <p><b>International:</b> Beyond the borders of South Africa</p>
Status	<p>Denotes the perceived effect of the impact on the affected area.</p> <p><b>Positive (+):</b> Beneficial impact</p> <p><b>Negative (-):</b> Deleterious or adverse impact</p> <p><b>Neutral:</b> Impact is neither beneficial nor adverse.</p> <p>It is important to note that the status of an impact is assigned based on the <i>status quo</i> – i.e. should the project not proceed. Therefore, not all negative impacts are equally significant.</p>
Duration	<p>Indicates what the lifetime of the impact will be.</p> <p><b>Short-term:</b> 0 – 10 years</p> <p><b>Medium-term:</b> 11 – 20 years</p> <p><b>Long-term:</b> Between 15 – 30 years</p> <p><b>Permanent:</b> Over 30 years and resulting in a permanent and lasting change</p>
Probability	<p>Describes the likelihood of an impact actually occurring</p> <p><b>Improbable:</b> Possibility of the impact materialising is very low</p> <p><b>Probable:</b> Possibility of impact materialising is low</p> <p><b>Highly probable:</b> Most likely that the impact will occur</p> <p><b>Definite:</b> Impact will occur regardless of any preventative measures (i.e. mitigation)</p>
Intensity	<p>Describes whether an impact is destructive or benign</p> <p><b>Low:</b> Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected</p> <p><b>Medium:</b> Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way</p> <p><b>High:</b> Natural, cultural and social functions and processes are altered to extent that they temporarily or permanently cease</p>
Significance	The significance of an impact is determined through a synthesis of <u>all</u> of the above aspects (i.e. extent, status, duration, probability, intensity)

CATEGORY	DESCRIPTION
	<p><b>Very Low:</b> These impacts are considered negligible</p> <p><b>Low:</b> These impacts will usually result in short-term effects on the social and/or natural environment. These impacts are not substantial and are likely to have little real effect</p> <p><b>Moderate:</b> These impacts will usually result in medium- to long-term effects on the social and/or natural environment. These impacts are real but not substantial</p> <p><b>High:</b> These impacts will usually result in long-term effects on social and/or natural environment. Society would probably view these impacts in a serious light</p> <p><b>Fatal Flaw:</b> The impacts would be considered by society as constituting a major and usually permanent change to the environment, and usually result in severe or very severe effects, or beneficial or very beneficial effect</p>
Cumulative Impact	In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area

## 1.4 Relevant Legislation

The following legislation and regulatory documents are relevant to the SIA process:

- 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.

### 1.4.1 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.

#### **1.4.2 The Occupational Health and Safety Act (Act No. 85 of 1993)**

The occupational health and safety act outlines the 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 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 have 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.

### **1.4.3 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), if 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.

### **1.4.4 National Environmental Management Act (NEMA), No. 107 of 1998, as amended and Environment Conservation Act, No. 73 of 1989, as amended**

Both the National Environmental Management Act (NEMA) as well as the Environmental Conservation Act (ECA) promotes citizens' right to an environment that is not harmful to their health and well-being. 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.



## 1.5 Limitations and Assumptions

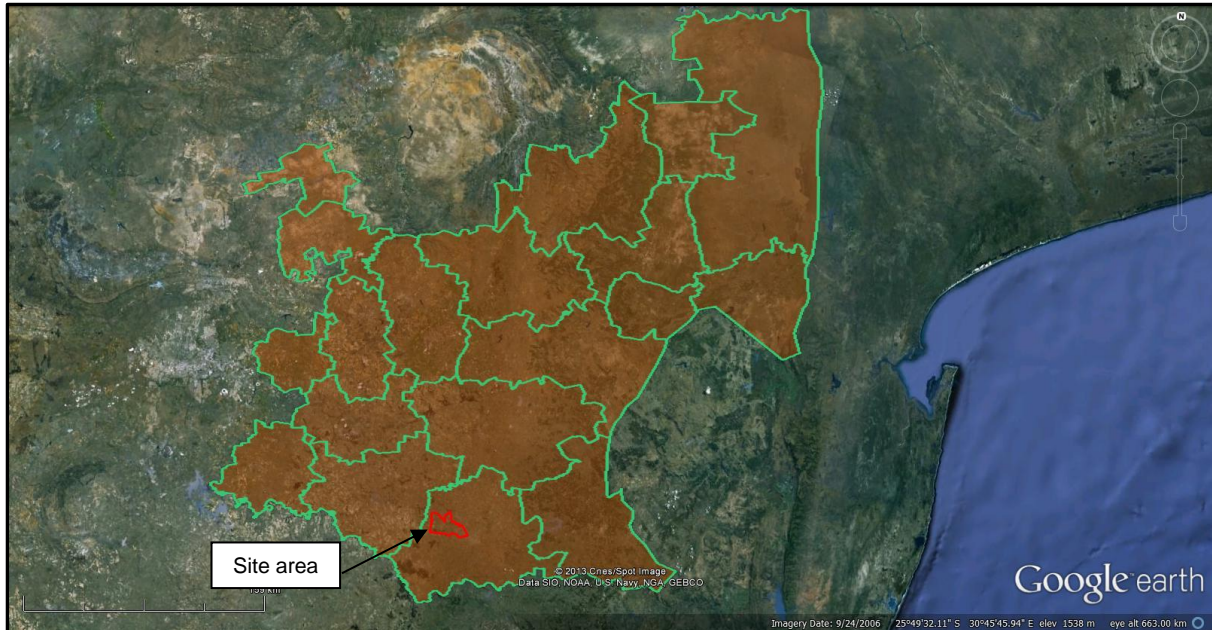
- This report is a revision of the original SIA report that was initially compiled for the OCGT that formed part of the UCG (January 2011) and is based on several scope changes as outlined in the overall Scoping Report compiled by Royal HaskingDHV (January 2013). Due to budgetary and time constraints, it was not possible for the specialist to engage stakeholders in the compilation of this report.
- A Micro-Economic Assessment was undertaken during the previous phase of the project (i.e. before scope change) and therefore this report did not assess any potential economic impacts.
- This study was carried out with the information available to the specialist at the time of executing the study, within the available timeframe and budget. The sources consulted are not exhaustive and additional information, which might strengthen arguments or contradict information in this report, might exist.
- The specialists did endeavour to take an evidence-based approach in the compilation of this report and did not intentionally exclude scientific information relevant to the assessment.
- It was assumed that the motivation for, and the ensuing planning and feasibility studies of the project were done with integrity, and that the information provided to date by the project proponent, the independent environmental assessment practitioner and the public participation consultant was accurate.

## 2. PROJECT BACKGROUND

### 2.1 Regional Overview of the Study Area

The study area is located approximately 2.6km southwest of Amersfoort, adjacent, and northwest of Daggakraal in the Pixley ka Seme Local Municipality (MP304), which in turn falls within the Gert Sibande District Municipality (DC30) of the Mpumalanga Province (MP). Figure 2.1 below provides an overview of the site area in relation to the province.

**Figure 2.1:** Study area within the Mpumalanga Province



Mpumalanga means “place where the sun rises”. The province is located to the north-eastern part of South Africa, and is bordered by Mozambique to the east and the Kingdom of Swaziland to the south and east. On its western border is the province of Gauteng, with the Free State to the southwest and KwaZulu-Natal to the southeast.

Mpumalanga has a land surface area of approximate 79,511.5km<sup>2</sup>, which represents approximately 6.5% of South Africa’s total land surface. According to Community Survey 2007<sup>1</sup>, the province is home to approximately 3,643,435 people, which represents a population growth of approximately 7.6% (or 277,550 people) over the 6-year period between 2001 (when the last census was conducted) and 2007. The population in Mpumalanga accounts for 7.5% of South Africa’s total population of 48,502,063 people as of 2007. The province appears to be largely rural in nature, which is evident in the low population density of 45.8 persons per km<sup>2</sup>.

According to the Mpumalanga Province Growth and Development Strategy (MPGDS), the economic growth within the province averaged around 2.5% between 1996 and 2001, increasing to an average of around 4.3% between 2004 and 2007. This places the province more or less on par with the country’s Geographic Domestic Product (GDP) growth. In 2004, the main economic sectors in the

<sup>1</sup> Statistics South Africa. Community Survey 2007: Key Municipal Data. Report No: 03-01-22 (2007)

province were the mining, energy, and manufacturing industries that, collectively, comprised approximately 60% of the province's Gross Value Addition. Despite these industries being the largest, they only provided employment to around 20% of the province's population. During 2005, the energy sector was replaced by community services as a key industry, contributing approximately 20% to the province's employment rate.

Agriculture is also one of Mpumalanga's largest economic sectors, producing some 15% of South Africa's total agricultural output. Products produced in the province include sugar cane, sunflowers, sorghum, potatoes, onions, cotton and maize. Most of the agricultural activities in Mpumalanga centre on dry farming land, although extensive irrigation schemes can be found in the Loskop area near Groblersdal and in the lowveld area adjacent to the Crocodile and Komati rivers.

Mpumalanga is also home to large coal deposits and for this reason most of the country's coal fired power stations can be found in the province (eight of the eleven operational coal fired power stations are located in Mpumalanga). These power stations contribute approximately 70% of the country's total generated power. Linked to the coal deposits is mining, which contributes approximately one fifth of Mpumalanga's Gross Geographic Product (GGP). The coal resources are mostly situated in the western and south-western parts of the province and are used to sustain the coal-fired power stations between Witbank, Standerton, Piet Retief and Carolina. Coal is further used to sustain the petrochemical plants in the province.

The Gert Sibande District Municipality (GSDM) is located on the eastern border of Mpumalanga and consists of seven local municipalities. The district covers an area of 31,845.9km<sup>2</sup> and in 2007 was home to a population of 890,699 people. This brings the population density in the district to 28.0 persons per square kilometre, which, as is the case with the province as a whole, is indicative of the fact that the district is largely rural in nature. Of the seven local municipalities within the GSDM, only one, the Pixley ka Seme Local Municipality (PSLM) is relevant to this study.

The PSLM lies on the southern border between Mpumalanga and KwaZulu-Natal. The surrounding local municipalities are the Mkhondo Municipality in the east, the Msukaligwa Municipality in the north, and the Lekwa Municipality in the west.

The municipal area consists of approximately 845.9km<sup>2</sup> and includes the following urban areas or towns:

- Amersfoort;
- Ezamokuhle;
- Perdekop;
- Siyazenzela;
- Volksrust;
- Vukuzakhe;
- Wakkerstroom;
- eSizameleni; and
- Other residential areas include Daggakraal and Sinqobile, which accounts for approximately 28% of the municipality's residents.

## 2.2 Project Overview

Eskom commenced with Underground Coal Gasification (UCG) activities on the farm Roodekopjes 67HS in January 2007 as part of a phased development and implementation plan. The phased nature of the project enables Eskom to rigorously test the technology requirements and environmental effects of the UCG operations in South Africa.

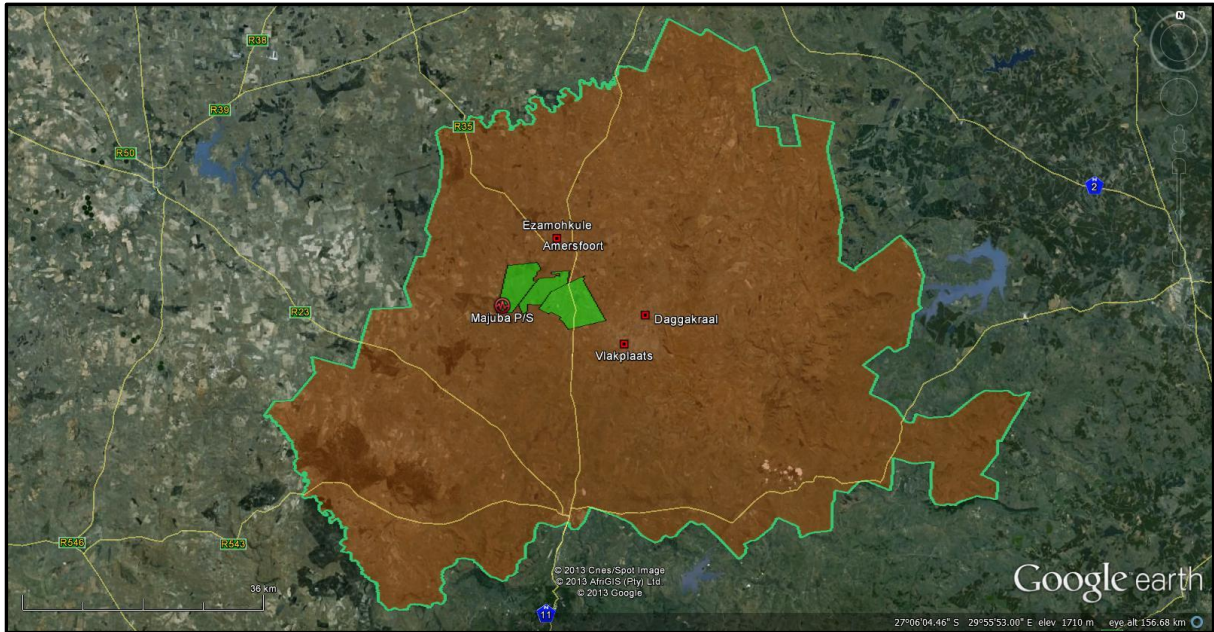
UCG has the potential to extract coal resources previously regarded as either uneconomic or inaccessible due to depth, seam thickness, seam slope, seam fracturing and displacement, or other mining and safety considerations. The ideal requirements for UCG are generally the opposite of the requirements for conventional underground mining, and hence UCG offers opportunity for expanding South Africa's mineable coal reserve base by extracting coal previously regarded as being unmineable. The UCG concept therefore provides promising prospects for future energy supplies.

During the planning process, the initial modus operandi was to co-fire at the Majuba Power Station with 15000 Nm<sup>3</sup>/hr of UCG syngas. This would then allow the Eskom engineering team to determine the characteristics of the gas (i.e. quality, quantity and stability) in order to drive a 40-140MW Open Cycle Gas Turbine (OCGT) demonstration plant. This demonstration plant would have been the basis upon which a decision would be made for a 2100MW Combined Cycle Gas Turbine (CCGT) commercial power station. However, from the gas production so far, the Eskom engineering team has come to the conclusion that the production of 15000 Nm<sup>3</sup>/hr of UCG syngas is not sufficient to determine the characteristics of the gas with sufficient accuracy to continue with the establishment of the 40-140MW OCGT demonstration plant. It was therefore decided to increase the gas production up to 70000 Nm<sup>3</sup>/hr (Phase 1C) and maintain this level of production for at least 12 months to accurately determine the gas characteristics. This increased gas volume will be disposed of through co-firing at the Majuba Power Station. This exercise is expected to be finalised in 2017 and as soon as the results have been evaluated by an Eskom engineering team, a decision will be made on further commercial development.

An overview of the proposed project site in relation to the Pixley ka Seme Local Municipality is reflected in figure 2.2 below.

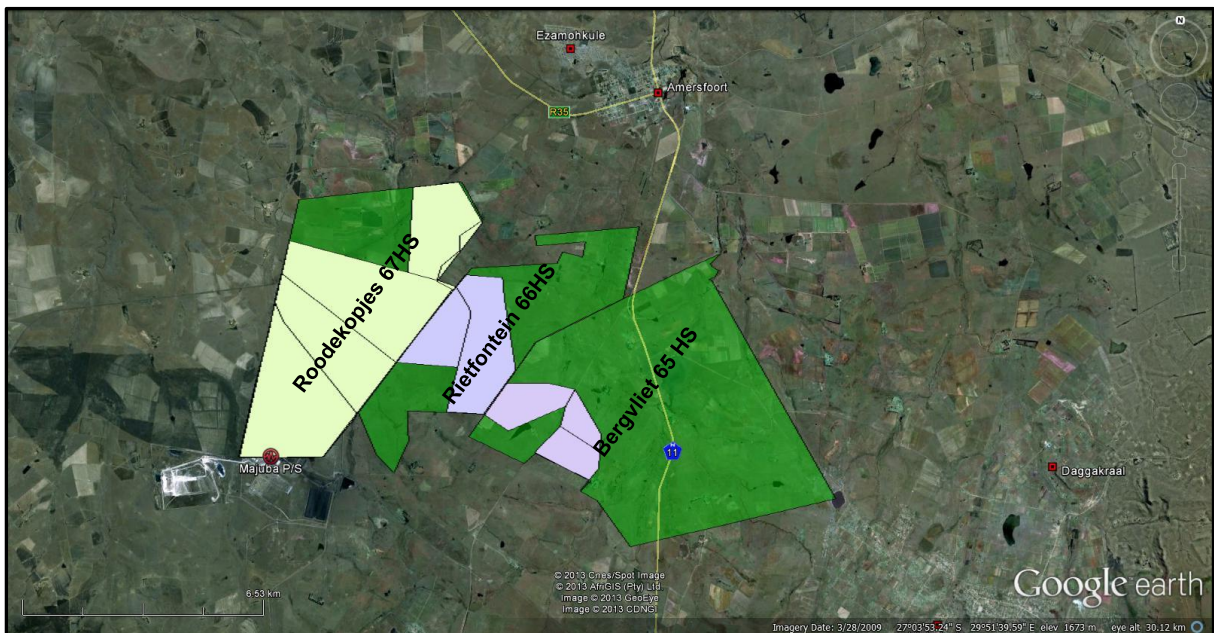


**Figure 2.2:** Location of the project site area in relation to the Pixley ka Seme Local Municipality



As previously indicated, the UCG site is located opposite the existing Majuba Power Station, close to the town of Amersfoort in the southern parts of the Mpumalanga Province. The UCG and associated infrastructure will be located on the farm Roodekopjes 67HS (Portions 1, 2, 3 and remaining extent), Portions 17 and 21 of the farm Bergvliet 65HS, and Portions 4 and 5 of the farm Rietfontein 66HS. Figure 2.3 below reflects the extent of the project within these farm boundaries.

**Figure 2.3:** Extend of the Project within the farms Roodekopjes, Bergvliet and Rietfontein



### 3. SOCIAL CHANGE PROCESSES AND IMPACT ASSESSMENT

The following section proceeds to discuss the various change processes and related impacts that could be expected because of the project. A change process is defined as a change that takes place within the receiving environment because of a direct or indirect intervention. The expected impact follows 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 subsections discuss the respective change processes and the potential impacts that could be experienced by the receiving environment because of the construction and operation of the proposed OCGT demonstration plant and its associated infrastructure. The categories of processes are as follows:

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

This section has been structured as follows:

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

#### 3.1 Geographical Processes

Geographical processes relate to the land use patterns and established and planned infrastructural developments in an area, where land use is defined as "... the human modification of the natural environment or wilderness into a built environment such as fields, pastures, and settlements."<sup>2</sup> This section therefore focuses on current and future land use in the project area itself, as well as in the neighbouring areas, and then proceeds to assess how a change in land use might affect the social environment.

---

<sup>2</sup> [www.wikipedia.org.za/wiki/Land\\_use.html](http://www.wikipedia.org.za/wiki/Land_use.html)

### 3.1.1 **Baseline Geographical Profile**

A general assessment of the land uses in the area indicated the following trends:

- Residential;
- Commercial cattle and crop farming;
- Mining; and
- Energy generation.

According to the Spatial Development Framework (SDF)<sup>3</sup> of the PSLM, the current spatial pattern within the municipal area can be divided into 7 broad categories of land use, namely: Urban land use, rural land use, mines and quarries, conservation areas, agriculture, tourism areas, and the transport network.

- **Urban land use:** The towns of Volksrust and Vukuzakhe are classified as major urban areas whereas other areas such as Wakkerstroom, Daggakraal and Amersfoort are regarded as minor urban areas. An area such as Perdekop is regarded as a declining urban area.
- **Rural land use:** Agricultural activities seem to be dominating rural land use in the area, but most of these activities are regarded as subsistence farming.
- **Mines and quarries:** Operational mines are scattered throughout the PSLM and include sand, dolerite and coal mining. Areas of coal mining are oftentimes also associated with energy generation activities.
- **Conservation areas:** The PSLM is home to a number of important conservation and biodiversity areas, but it would appear if these areas are mostly confined to the southern parts of the municipal area, notably around Wakkerstroom. In addition to the conservation areas, the SDF also states that there are a number of natural heritage sites located around Wakkerstroom and Warburton.
- **Agriculture:** The SDF describes the majority of land within the PSLM as “unimproved grassland” that is mostly used for stock grazing. Other land within the PSLM is described as cultivated dry land used for crop cultivation (mostly maize).
- **Tourism:** The PSLM falls within the Grass and Wetlands Tourism Region, which forms, what is called, a “birding paradise”.
- **Transportation network:** The national road N11 traverses the municipal area and serves as an important north-south transportation link. In addition, several provincial roads also traverse the local area, including the R23, and portions of the R543. Apart from the road network, two railway lines pass through the PSLM, one being the main Johannesburg-Durban rail connection, the other a north-south rail passing through the towns of Amersfoort, Wakkerstroom and Volksrust.

Amersfoort is classified as a small urban centre. The town was initially established because of the coal mining in the area and has since, largely, become dependent on the Majuba power station. Approximately 12.8km to the southeast of Amersfoort lies the town of Daggakraal, which is considered as a very large urban settlement. It is believed that up to a third of the total population of the PSLM resides in Daggakraal. Furthermore, Daggakraal (and most probably neighbouring Vlakplaats) is expanding at a rapid rate which is evident in the fact that the population increased from

---

<sup>3</sup> Undated. <http://pixleykaseme.local.gov.za/>

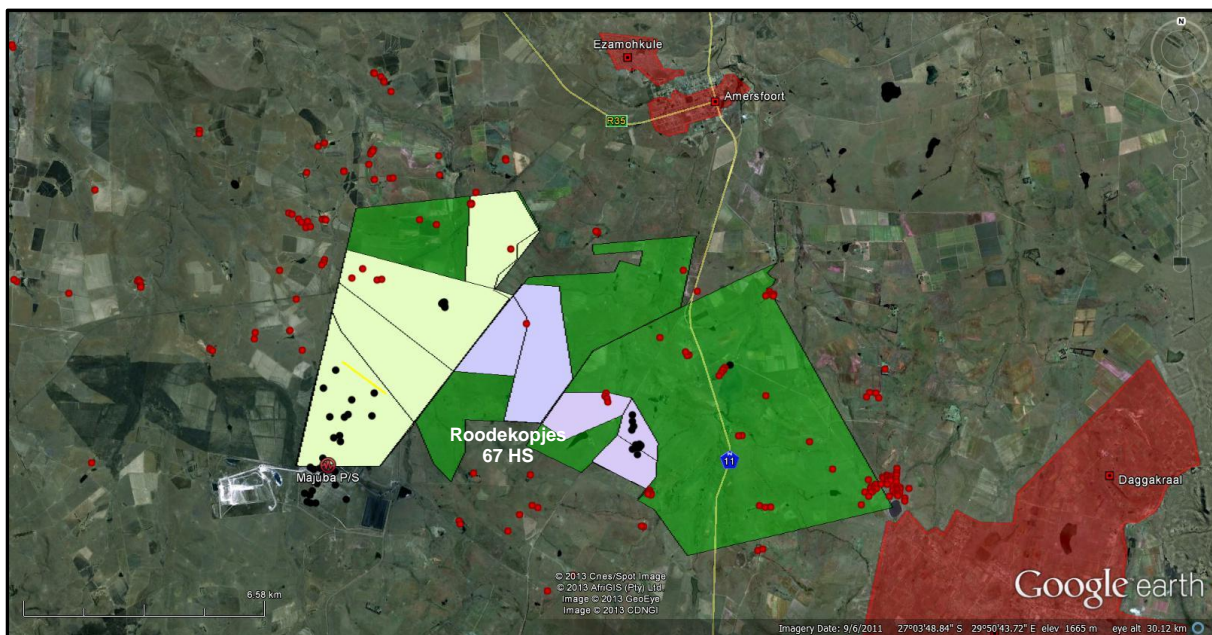


approximately 6 500 in 2001 to an estimated 38 000 people in 2009. Even though the town has a range of social services, there is still a dire need for a range of diversified services to address the needs of Daggakraal's residents, including physical upgrades such as sanitation services, water reticulation and waste removal. The town is economically unsustainable as it has a very limited economic base that showed little to no growth during the past years – probably owing to the fact that the area is very inaccessible.

As could be expected, the upgrading of Daggakraal is one of the biggest priorities for the PSLM. This includes physical, social and economic upgrades. Economic opportunities must be investigated for Daggakraal to determine how local economic development can be achieved. To ensure that such development is sustainable, the PSLM indicated that any economic opportunities that might be to the benefit of Daggakraal should follow a holistic approach and include not only technical skills training, but also portable skills such as life and business skills transfer. The PSLM is considering a dedicated project for Daggakraal to provide a planning and implementation framework for the area.

Figure 3.1 below provides an overview of the social sensitivity of the site area in relation to the surrounding environment (red dots indicate human settlement, whereas black dots indicate industrial/commercial areas).

**Figure 3.1:** Social Sensitivity associated with the UCG site



### 3.1.2 Geographical Change Processes and Resultant Impacts

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. The following geographic change processes are likely to occur:

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

## **Change in access to resources that sustain livelihoods**

*Project Phase: Construction and Operation*

According to the Agricultural Specialist report that was compiled during the scoping phase of the project, the agricultural potential of the site varies depending on the soil conditions. Large parts of the study area are covered by shallow soils that have low agricultural potential. Most of the high potential areas have already been tilled and is currently being used for dry land agriculture. Grazing is the main land use and considered as the most viable land use for the bulk of the area.

The infrastructure associated with the UCG mining infrastructure includes boreholes, injection wells and pipes, gas treatment plants, a water treatment plant, gas collection and transportation pipes, a 88kV distribution power line, auxiliary cooling system in the form of cooling towers, access roads, a centralised control room, ablution facilities, a line evaporation dam, and delivery and collection bays for road transport.

The proposed UCG plant will be located on the farm Roodekopjes 67 HS. The farm is currently being mined and only comprises some 1,500ha of coal resources. This excludes the portions of the farm where the Majuba power station, an airfield and transmission power line servitudes are situated.

It is not foreseen that the proposed UCG plant will lead to a change in access to resources that sustain livelihoods, as the plant and the bulk of the associated infrastructure will be located on Eskom property.

## **Land acquisition and disposal, including availability of land**

*Project Phase: Construction and Operation*

No impact foreseen in this regard, as the project is located on Eskom property.

## **3.2 Demographical Processes**

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

### **3.2.1 Baseline Demographic Profile**

The PSLM covers an area of approximately 845.9km<sup>2</sup>. In 2007 (as per the Community Survey 2007), the PSLM had a total population of 65,932 people. Compared to the population size of 2001, when the population stood at approximately 80,728 people, this means that the population within the PSLM decreased at an average rate of 2,466 people per annum or a total of 14,796 over the 6-year period between 2001 and 2007. This population decline also brought about a change in the population density in the area from 95.4 persons per km<sup>2</sup> in 2001 to 77.9 persons per km<sup>2</sup> in 2007.

As the two closets communities, an overview of Daggakraal and Vlakplaats is also provided. However, the baseline profile of these areas are based on Census 2001 data as Community Survey

2007 stopped at local municipal level and did not go down to ward level. Where information existed from other sources, these have been incorporated into these profiles.

In 2001 Daggakraal has a total population of approximately 5,595 people, living in 1,235 separate households, at an average 4.5 persons per household. The PSLM SDF indicated that the population in Daggakraal has since increased to approximately 38,000 persons, which means that this area is rapidly expanding, this despite the fact that the area is economically unviable with a very high unemployment rate estimated at around 84.3% (2001). It could therefore be expected that people are moving into the area as they have high expectations of development projects in the area (such as the ones undertaken by Eskom) and that they view these projects as means of income through job creation. In 2001, Daggakraal extended over an area of 11.3km<sup>2</sup>, but it can be assumed that the area has expanded as a result of the population influx.

Vlakplaats is located to the east of Daggakraal. In 2001, the area had a total population of 8,553 people, but as with Daggakraal it is safe to assume that the population has also increased significantly between 2001 and 2007.

According to the PSLM IDP (2009-2012), there has been an estimated 2% population growth between 2001 and 2008 within the municipal area. The IDP further states that the HIV infection rate is as high as 42%, which roughly translates to close on one in every two persons are either HIV positive or living with HIV. Without a doubt, such a high infection rate would impact on the population growth rate in the years to come.

When considering the educational levels reported for the total population of the study area between 2001 and 2007, the number of people who attended and/or completed a primary level education, remained relatively on par as reflected in figure 6 above. On the upside, the number of people who have had no schooling decreased by about 7.6%, while at the same time the number of people who completed some form of secondary education increased by between 6.5%.

The number of people who obtained a higher (post-Grade 12) qualification also increased by 1.6%. The increase in the secondary and tertiary educational levels could be as a result of a need to get out of the poverty cycle, whereby people realise that some form of education might be beneficial.

One of the driving forces behind social change is educational attainment, which in turn is linked to poverty levels (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.

### **3.2.2 Demographic Change Processes and Resultant Impacts**

The construction and maintenance of the UCG facility and associated infrastructure could lead to a slight change in the number and composition of the population within the affected local areas, which

in turn could lead to economic, land use, and socio-cultural change processes. The following demographical change processes are expected:

- Arrival of construction workers;
- Possible inflow of unemployed work seekers;
- Relocation of households.

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

### **Arrival of Construction Workers**

*Project Phase: Construction*

It is expected that the construction of the UCG plant and the associated infrastructure will require skilled workers. In all probability the contractor will bring in his own workforce – people who do have the required skills, but who are normally also not from the local area. However, a construction team consists of a certain number of people (the size of the team depends largely on the type of construction required) and they enter the area with a very specific purpose. The time they spend in the area is clearly defined and often controlled as such (e.g. construction workers arrive on site in the morning and depart from the area in the evening), and due the nature of their work, their contact with the local community is limited.

Once the project has been completed, construction workers who form part of a contractor's permanent workforce will move on to a next project and will seldom stay in the area. At the time of the study the estimated size of the construction team was not known. It was also not known where construction workers would be housed, but generally, this is the responsibility of the appointed contractor (in all likelihood they will be housed in the existing single quarters at the mining offices). It was therefore difficult to determine the social impact as a result of an influx of construction workers, as the extent and significance of the impact is largely dependent on the number of people.

A detailed assessment of this issue is contained in table 3.1 below.

**Table 3.1:** *Impact Assessment: Arrival of Construction Workers*

<b>ARRIVAL OF CONSTRUCTION WORKERS</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	Local	Local
<b>Status</b>	Negative to Neutral, depending on flexibility of receiving environment	Negative to Neutral, depending on flexibility of receiving environment
<b>Duration</b>	Short term	Short term
<b>Probability</b>	Highly probable	Probable
<b>Intensity</b>	Medium	Low
<b>Significance</b>	Low	Very low
<b>Cumulative Impact</b>	None expected	

## Possible Inflow of Unemployed Job Seekers

*Project phase: Construction, possible extending into Operation*

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

Given the skills required for the respective construction processes, it is highly unlikely that a job seeker will find formal employment by loitering at the construction camp or site, which would be a natural deterrent to a further influx of job seekers.

A detailed assessment of this issue is contained in table 3.2 below.

**Table 3.2:** *Impact Assessment: Influx of Unemployed Job Seekers*

<b>POSSIBLE INFLOW OF UNEMPLOYED JOB SEEKERS</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	Local	Local
<b>Status</b>	Negative	Negative to Neutral
<b>Duration</b>	Short term	Short term
<b>Probability</b>	Probable	Improbable
<b>Intensity</b>	Medium	Low
<b>Significance</b>	Low	Very low
<b>Cumulative Impact</b>	The simultaneous influx of construction workers and unemployed job seekers can increase the intensity of the impact on the surrounding communities.	

## Relocation of Households

*Project phase: Pre-construction*

The relocation process was completed in 2011 and no further relocation will be required.

## 3.3 Institutional and Legal Processes

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

### 3.3.1 Baseline Institutional and Legal Processes

The years between 2001 and 2007 saw a steady increase in the delivery of municipal services to the households within the study area. Some of the most significant increases have been in the number of households who connected to the electricity network, most notably the fact that, of the majority of households now had access to water that was on RDP standard or above (defined as piped water either within a dwelling or within 200m walking distance of such a dwelling). Furthermore, of the

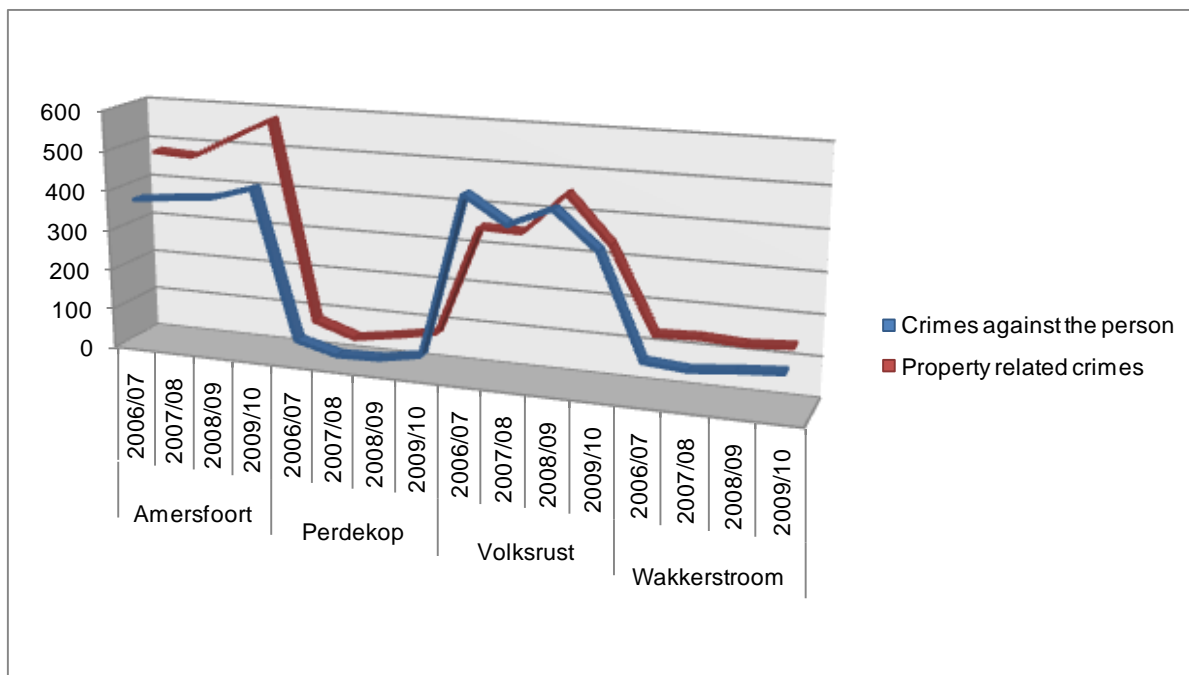
almost half of all households who made use of coal for cooking purposes in 2001, most of them made use of electricity for this purpose in 2007.

However, overall most of households in the affected areas lack efficient municipal services infrastructure and delivery, which further impacts on the already poor living conditions and quality of life for most households in these areas.

Four police stations, one in Amersfoort (approximately 4km from site), one in Perdekop (approximately 14km from site), one in Volksrust (approximately 30km from site) and one in Wakkerstroom (approximately 42km from site) service the local municipal geographic area of 845.9km<sup>2</sup>. According to the South African Police Service’s website, the ratio of police officers in the Mpumalanga province as at January 2013 was one police officer for every 391 citizens.

Figure 3.3 below provides an overview of the baseline profile on crime in the project area. As could be expected, the larger urban areas of Amersfoort and Volksrust have a higher incidence of crime than Perdekop and Wakkerstroom. In all areas there appears to be a slight upraise in the crime rate.

**Figure 3.3:** Crime profile of the study area



Source: South African Police Service

According to the Pixley ka Seme Local Municipality IDP, the municipal area is serviced by two government hospitals, seven primary health care clinics and two mobile clinics. In some instances, the existing communities have to travel over long distances to access these health care services.

### 3.3.2 Institutional and Legal Change Processes

Institutional and Legal Change Processes assesses the way in which a development of this nature could change the face of service delivery in the affected area and how this change in turn could affect

the quality of life of local residents. The following institutional and legal change processes are expected:

- Change in community infrastructure (additional demand on services); and
- Change in housing needs/demands.

In addition to the issues identified in the Baseline Social Study, this SIA also considered Eskom’s Corporate Social Investment (CSI) initiatives as it might impact more positively on the affected communities.

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

**Change in community infrastructure (additional demand on services)**

*Project phase: Construction, possibly extending into Operation*

It would appear that most of the surrounding areas (most notably Vlakplaats and Daggakraal) are poorly developed and characterised by poverty. This is evident in the high population density, low education levels, the very high unemployment rate, the low levels of household income, and the overall lack of proper municipal services in the area.

The physical safety of communities can potentially be endangered as a result of the influx of job seekers and construction workers (e.g. potential increase in crime). There is a perception that crime increases in an area the moment that construction workers arrive on site. Because of this perception on crime, further 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 engages in criminal activities but more likely job seekers who loiter at the site in search of employment.

A detailed assessment of this issue is contained in table 3.5 below.

**Table 3.5:** *Impact Assessment: Change in Community Infrastructure*

<b>CHANGE IN COMMUNITY INFRASTRUCTURE</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	Local	Site
<b>Status</b>	Negative	Neutral
<b>Duration</b>	Short term	Short term
<b>Probability</b>	Probable	Improbable
<b>Intensity</b>	Medium	Low
<b>Significance</b>	Low	Low
<b>Cumulative Impact</b>	In an influx of job seekers to the area can further tax the local services, if not managed.	



## **Change in housing needs/demands**

*Project phase: Construction, possibly extending into Operation*

The contractor addresses the increase in housing needs/demands and at this stage, it seems likely that the construction team will be housed in the existing single quarters at the mining offices. Eskom have indicated that they will not be making use of a construction village during the construction phase. The impact is therefore regarded as negligible and has not been assessed in any further detail.

## **Corporate Social Investment**

*Project phase: Construction & Operation*

The Eskom Development Foundation (EDF), a wholly owned subsidiary of Eskom, manages Eskom's Corporate Social Investment (CSI) initiatives. The EDF delivers on Eskom's CSI objectives by supporting economic and social projects initiated by registered Small, Medium and Micro Enterprises (SMMEs), with a special focus on communities within which Eskom operates its capital expansion projects. The sector focus for social and economic development grants focus mainly on achieving Eskom's strategic objectives, the objectives of ASGISA, and meeting identified social and economic needs within a community. The development grants cover the following areas:

- Education
  - \* Early childhood development in crèches and pre-schools;
  - \* Intermediate and senior phase (Grades 1 to 7);
  - \* Support for Further Education and Training (FET) colleges (excluding bursaries); and
  - \* Special Educational Needs schools
- Health
  - \* Preventative primary health care programmes; and
  - \* Support to care programmes and hospices aimed at people living with HIV/AIDS.
- Potable water
  - \* Assist in the provision of potable water through boreholes, storage tanks and irrigation at centrally located community infrastructures such as pre-schools, primary schools, clinics, hospices and places of safety; and
  - \* Assist in the provision of potable water for agricultural projects.
- Sanitation
  - \* Assist in the provision of sustainable and safe sanitation at pre-schools, primary schools, clinics, hospices, children's homes and places of safety.
- Arts and Culture
  - \* Cultural events are excluded from grants and donations as these activities do not create large volumes of employment.
- Commemorative days
  - \* The EDF decides on an annual basis which commemorative days it will support on behalf of Eskom, based on Eskom's priorities.

A detailed assessment of this issue is contained in table 3.7 below.

**Table 3.6: Corporate Social Investment**

<b>CORPORATE SOCIAL INVESTMENT</b>		
	<b>Pre-Enhancement</b>	<b>Post-Enhancement</b>
<b>Extent (Scale)</b>	Local	Local
<b>Status</b>	Neutral	Positive
<b>Duration</b>	Short term	Long term
<b>Probability</b>	Probable	Highly probable
<b>Intensity</b>	Low	Medium
<b>Significance</b>	Low	Moderate
<b>Cumulative Impact</b>	The support of economic and social developments through Eskom's CSI can create sustainable projects that in turn create employment, reduce poverty levels and enhance the general quality of life of the local residents.	

### **3.4 Socio-Cultural Processes**

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

#### **3.4.1 Baseline Socio-Cultural Profile**

The town of Amersfoort was established in 1888 around a Dutch Reformed Church that was built in 1876. During this time, two farmers who had settled in the area donated land to the church. The newly established village was named after the first two farmers' hometown in the Netherlands, Amersfoort. When the area became too small for all the new settlers, additional land was purchased from the original donors after which the town was proclaimed in 1888. The bridge over the Vaal River was built in 1896 and is now proclaimed as a national monument. The township of eZamokuhle ("to make it beautiful") is located to the west and adjacent to Amersfoort.

During 1912, Pixley Isaka ke Seme bought the three farms Daggakraal (constituting the farms Daggakraal and Vlakplaats), Driefontein and Driepan from the Slazenger Trust. Mr Seme set up a committee and collected 100 pounds from all the people who intended to buy portions of these farms. At the time, there were 60 families involved in the purchase of the land. In 1916, four years after Pixley ka Seme settled in the area, the Makhlokwe tribe, led by Chief Maitse Moloi and his son Popo Moloi, bought land and relocated from the Free State to Daggakraal. However, Chief Moloi only purchased land like everybody else and was not regarded as the community's chief as all the properties in Daggakraal (including neighbouring Vlakplaats) were regarded as fully paid freehold stands. During the 1950s, there was an attempt by the then government to forcibly remove the people of Daggakraal from the area. After a long battle, in 1982, an official from the then Transvaal Provincial Administration announced that the people of Daggakraal could remain in Daggakraal and they would be under the guardianship of a community authority and not a chieftainship. Chief Moloi subsequently sold his land to Senjaka Samson Mlake and as a result, became just a tenant in Daggakraal. In 1985, Moloi was instructed to move back to his homeland as he no longer had the status of landowner, but he remained in the area until his death in 1992. In 1994, his son, Edward Lephatoane Moloi, acquired communal land in Daggakraal with the purpose of settling his Makgolokoe tribe. Around this

time, Edward Moloï started imposing himself on the community of Daggakraal 1, 2 and 3 stating the he is the chief over the area. However, the people of Daggakraal do not recognise his authority. As part of their struggle to be recognised as a community under community authority, Daggakraal landowners are feeling marginalised and side-lined by both Local and Provincial Government. This renders the area quite volatile.

### 3.4.2 Socio-Cultural Change Processes

As socio-cultural processes recount the way in which humans behave, interact, and relate to each other and their environment, socio-cultural change processes in turn looks at the way in which the construction and operation of the proposed OCGT and UCG demonstration plants and associated infrastructure could alter these interactions and relationships by bringing about a change in the socio-cultural environment.

The following socio-cultural change processes are likely to occur:

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

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

#### Dissimilarity in social practices

*Project phase: Construction*

Dissimilarity in social practices is more likely to come to the fore if construction workers are housed in a construction camp and if such a camp is located close to existing formal and informal settlements. As it is Eskom’s intention to house construction workers on-site in the existing single quarters, it is not expected that dissimilarity in social practices would be evident to the degree that it would affect a large segment of the population.

A detailed assessment of this issue is contained in table 3.7 below.

**Table 3.7: Impact Assessment: Dissimilarity in social practices**

<b>DISSIMILARITY IN SOCIAL PRACTICES</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	Local	Site
<b>Status</b>	Neutral	Neutral
<b>Duration</b>	Short term	Short term
<b>Probability</b>	Probable	Improbable
<b>Intensity</b>	Low	Low
<b>Significance</b>	Low	Very low

<b>Cumulative Impact</b>	None expected at this stage
--------------------------	-----------------------------

### **Alteration in family structure**

*Project phase: Construction, possibly extending into Operation*

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

According to the IDP (2009-2012), the HIV prevalence rate within the local municipal area is a very high 42%. Such a high infection rate significantly increases the risk of HIV transmission, as an estimated four in every 10 individuals are HIV positive. It also further increases the dependency rate on grants and support structures and therefore the municipality urges partnerships with project proponents such as Eskom to:

- Create HIV/AIDS awareness campaigns;
- Establish voluntary counselling and treatment campaigns;
- Initiate projects aimed at prevention and caring;
- Identify more sustainable projects for Home Based Care;
- Establish hospices in the municipal area;
- Create sustainable foster-care, step-in facilities and drop-in centres for rape victims; and
- Link sustainable Local Economic Development (LED) projects with National Strategic Programmes.

A detailed assessment of this issue is contained in table 3.8 below.

**Table 3.8: Impact Assessment: Alteration in family structure**

<b>ALTERATION IN FAMILY STRUCTURE</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	National	Local
<b>Status</b>	Negative	Negative
<b>Duration</b>	Long term	Long term
<b>Probability</b>	Probable	Improbable

<b>Intensity</b>	High	Medium
<b>Significance</b>	High	Moderate
<b>Cumulative Impact</b>	Additional infections will increase the HIV infection rate of the country as a whole, further taxing grants and increasing the dependency rate on external agents such as the government and taxpayers.	

### **Conflict**

*Project phase: Construction*

At the time of the study, there was no apparent conflict within the local community or between the local community and the project proponent (Eskom) over the proposed UCG plant. The situation is unlikely to change if the project processes proceed in an open and transparent manner and therefore the issue has not been assessed in further detail.

### **Change in sense of place**

*Project phase: Operation and Maintenance*

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

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

It is unlikely that the UCG plant itself will change local residents' sense of place, as the plant will be located in the vicinity of the existing Majuba Power Station. Compared to the existing power station, the plant will be significantly smaller and as it will be placed in an area that is already regarded as 'spoilt', it is not foreseen that it will have a primary impact on sense of place.

A detailed assessment of this issue is contained in table 3.9 below.

**Table 3.9: Impact Assessment: Change in sense of place**

<b>CHANGE IN SENSE OF PLACE</b>		
	<b>Pre-Mitigation</b>	<b>Post-Mitigation</b>
<b>Extent (Scale)</b>	Local	Local
<b>Status</b>	Negative	Negative to Neutral
<b>Duration</b>	Long term	Long term

<b>Probability</b>	Probable	Improbable
<b>Intensity</b>	Medium	Low
<b>Significance</b>	Moderate	Low
<b>Cumulative Impact</b>	The presence of the existing Majuba Power Station can potentially decrease the impact as a result of change in sense of place.	

## 4. CONCLUSIONS AND RECOMMENDATIONS

A summary of the expected impacts are as per table 4.1 below.

**Table 4.1: Summary of Expected Impacts**

Change Processes	Expected Change and Resultant Impacts	Project Phase(s)
Geographical	<b>Change in access to resources that sustain livelihoods:</b> It is not foreseen that the proposed UCG plant will lead to a change in access to resources that sustain livelihoods, as the plant and the bulk of the associated infrastructure will be located on Eskom property.	Construction, extending into Operation
	<b>Land acquisition and disposal, including availability of land:</b> No impact foreseen in this regard, as the project is located on Eskom property.	Construction, extending into Operation
Demographical	<b>Arrival of Construction workers:</b> At the time of the study, the estimated size of the construction team was not known. It was therefore difficult to determine the social impact as a result of an influx of construction workers, as the extent and significance of the impact is largely dependent on the number of people.	Construction
	<b>Influx of unemployed work seekers:</b> 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, which would be a natural deterrent to a further influx of job seekers.	Construction, extending into Operation
	<b>Relocation of Households:</b> The relocation process was completed in 2011 and no further relocation will be required.	Pre-construction
Institutional and Legal	<b>Change in community infrastructure (additional demand on services):</b> The additional demand on municipal services is a point of concern as it would appear that most of the surrounding areas (most notably Vlakplaats and Daggakraal) are poorly developed and characterised by poverty.	Construction, extending into Operation
	<b>Change in housing needs/demands:</b> It seems likely that the construction team will be housed in the existing single quarters at the mining offices. The impact is therefore regarded as negligible and has not been assessed in any further detail.	Construction, extending into Operation
	<b>Corporate Social Investment:</b> The EDF delivers on Eskom's CSI objectives by supporting economic and social projects initiated by registered Small, Medium and Micro Enterprises (SMMEs), with a special focus on communities within which Eskom operates its capital expansion projects.	Construction, extending into Operation
Socio-Cultural	<b>Dissimilarity in social practices:</b> As it is Eskom's intention to house construction workers on-site in the existing single quarters, it is not expected that dissimilarity in social practices would be evident to the degree that it would affect	Construction

Change Processes	Expected Change and Resultant Impacts	Project Phase(s)
	a large segment of the population.	
	<b>Conflict:</b> At the time of the study, there was no apparent conflict within the local community or between the local community and the project proponent (Eskom) over the proposed UCG plant. The situation is unlikely to change if the project processes proceed in an open and transparent manner.	Not applicable
	<b>Change in sense of place:</b> It is unlikely that the UCG plant itself will change local residents' sense of place, as the plant will be located in the vicinity of the existing Majuba Power Station. Compared to the existing power station, the plant will be significantly smaller and as it will be placed in an area that is already regarded as 'spoilt', it is not foreseen that it will have a primary impact on sense of place.	Construction, extending into Operation

The significance associated with the above-mentioned expected impacts can be summarised as follows:

**Table 4.2:** Summary of the Significance of Expected Impacts

Change Process	Area of Impact	Significance: Pre-Mitigation	Significance: Post-Mitigation
Geographical	Change in access to resources that sustain livelihoods	n/a	n/a
	Land acquisition and disposal, including availability of land	n/a	n/a
Demographical	Arrival of construction workers	Low negative	Very low negative
	Possible inflow of unemployed work seekers	Low negative	Very low negative
	Relocation of households	n/a	n/a
Institutional and Legal	Change in community infrastructure (additional demand on services)	Low negative	Neutral
	Change in housing needs/demands	n/a	n/a
	Corporate Social Investment	Low positive	Moderate positive
Socio-Cultural	Dissimilarity in social practices	Low negative	Very low negative
	Alteration in family structure	High negative	Moderate negative
	Change in sense of place	Moderate negative	Low negative



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

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

In addition, the social specialist recommends the following:

- Ensure that social issues identified during the EIA phase are addressed during construction. This could be done by engaging social specialists where necessary or by ensuring that ECOs used during construction have the necessary knowledge and skills to identify social problems and address these when necessary. Guidelines on managing possible social changes and impacts could be developed for this purpose.
- Always inform neighbouring landowners beforehand of any construction activity that is going to take place in close proximity to their property. Prepare them on the number of people that will be on site and on the activities they will engage in.
- Ensure that Eskom employees are aware of their responsibility in terms of Eskom's relationship with landowners and communities surrounding power lines. Implement an awareness drive to relevant sections to focus on respect, adequate communication and the 'good neighbour principle.'
- Incorporate all mitigation measures in the SIA (Refer to Section 5) that are relevant to the construction phase in the EMP to ensure these are adhered to by Eskom and the contractor.

## **5. SOCIAL MITIGATION/ENHANCEMENT MEASURES**

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

The main objective of the social mitigation measures is to describe the approach and required procedures that the contractor(s) have to implement in order to manage social impacts during the pre-construction and construction phases of the project. This will also provide the contractor(s) with a tool against which they can measure the effectiveness of the intended management measures and to ensure compliance with any applicable policies and/or legal requirements.

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.

### **5.1 Policy**

Eskom's relevant policies and commitments apply to contractors delivering services during the pre-construction and construction phases of the project.

### **5.2 Control Standards**

Control standards for social management during the pre-construction and construction phases of the project have been derived from the following sources:

- National legislation;
- Relevant international policies and guidelines;
- Terms and conditions stipulated in construction contracts between the contractor and the project proponent (Eskom).

### **5.3 Components**

The following components have been addressed as part of the social mitigation measures:

- Arrival of construction workers;
- Possible inflow of unemployed work seekers;
- Relocation of households;
- Change in community infrastructure (additional demand on services);
- Change in housing needs/demands;
- Dissimilarity in social practices;
- Alteration in family structure; and
- Change in sense of place.

### **5.3.1 Influx of construction workers**

#### **Objective**

- Manage the impact that the influx of construction workers might have on the composition and functioning of the local area.

#### **Targets**

- Minimise the potential for conflict between construction workers and local residents.
- Ensure sufficient services are available to sustain an additional demand on these services so that the level of services that the local community is accustomed to is still readily available.

#### **Method Statements**

- Raise awareness amongst construction workers about local traditions and practices.
- Inform local businesses that construction workers will move into the area to enable local businesses to plan for the extra demand.
- Ensure that the local communities communicate their expectations of construction workers' behaviour with them.

### **5.3.2 Influx of job seekers**

#### **Objective**

- Manage the impact that the influx of job seekers might have on composition and functioning of the local community, with particular concern for the impact that these job seekers might have on the local residents' sense of safety and security.

#### **Targets**

- Establish an employment strategy that is known and communicated to potential job seekers.
- Prevent loitering of individuals at the construction site or within nearby residential areas.
- Establish clearly identifiable features between actual construction workers and job seekers.
- Prevent the formation of informal settlements in or close to the construction site or within or close to established residential areas.

#### **Method Statements**

- Ensure that employment procedures/policies are communicated to local stakeholders, especially community representative organisations and ward councillors.
- Have clear rules and regulations for access to the construction site to control loitering. Consult with the local SAPS to establish standard operating procedures for the control and/or removal of loiterers at the construction site.
- Construction workers should be clearly identifiable by wearing proper construction uniforms displaying the logo of the construction company. Construction workers could also be issued with identification tags.
- The contractor should monitor areas where people gather in the field on a regular basis as this is normally the first indication that (informal) settlement might take place in the area. These people should be removed in co-operation with the local SAPS to prevent the formation and/or expansion of informal settlements in the area.

### **5.3.3 Change in Community Infrastructure (additional demand on services)**

#### **Objective**

- Reducing the additional demand on municipal services so that these services are not overloaded, thereby minimising the risk for additional impacts as a result of a lack of proper services.

#### **Targets**

- Implementing and maintaining municipal services to the construction site and construction village (if applicable).
- Installing sufficient and effective sanitation services at both the construction site and the construction village (if applicable).

#### **Method Statements**

- Construction workers should be made aware of the limited capacity of the municipal services network.
- Negotiations with the affected local municipalities must be conducted and a “demand-side management” should be implemented.
- Sufficient portable chemical toilets should be provided on site and at the construction village (if applicable).
- If applicable, contractors should ensure adequate sanitation services (e.g. showers) at the construction village with effective drainage facilities to ensure that used water is carried away from the site.

### **5.3.4 Dissimilarity in Social Practices & Alteration in Family Structure**

#### **Objective**

- Minimising the potential for conflict and health risks to occur between local residents and construction workers.

#### **Targets**

- The development and implementation of an HIV/AIDS awareness campaign.
- Controlled access at the construction village (if applicable) and construction site.
- Empowering local females to reduce their vulnerability.

#### **Method Statements**

- Consult with the local municipality to establish a partnership as outlined in the municipality’s IDP (2009-2012).
- An aggressive STI and HIV/AIDS awareness campaign should be launched, which is not only directed at construction workers but also at the community as a whole.
- Access at the construction site should be controlled to prevent sex workers from either visiting and/or loitering at the construction village or the construction sites.
- Local women should be empowered. This could be achieved by employing them to work on the project, which in turn would decrease their (financial) vulnerability.

### **5.3.5 Change in Sense of Place**

#### **Objective**

- Minimise the impact as a result of a change in sense of place.

#### **Targets**

- Maintain current residents' sense of place as far as possible.

#### **Method Statements**

- New infrastructure should be located in close proximity to existing infrastructure of a similar nature, as far as possible.
- The future placement of pipelines should be done in consultation with affected landowners to minimise the impact on land use.
- Rehabilitation of land to its previous condition should take place as soon as a pipeline is removed from a property.
- Inform neighbouring property owners when construction will take place, including information on the nature and timeframe of the construction activities.

### **5.4 Contingencies**

Provision should be made for the implementation of certain mitigation measures, e.g. a separate budget for managing social issues such as training of employees, supplying municipal services, etc.

### **5.5 Monitoring and Corrective Actions**

The ECO should monitor the implementation of mitigation measures as outlined in this document. Corrective action should take place as soon as possible if mitigation measures are not implemented according to standard.

## 6. REFERENCES

- Engelbrecht, C. People and Places: An overview of Urban Renewal In: State of the Cities Report 2004. Online: <http://www.sacities.net/2004/UrbanRenewalPart2.pdf>
- Pixley ka Seme Local Municipality (2009). Integrated Development Plan 2009-2012.
- Sootweg R, Vanclay F, van Schooten M. Function evaluation as a framework for the integration of social and environmental impact assessment. Impact Assess Project Appraisal 2001; 19(1):19–28.
- South African Police Services (2011). Crime Statistics. Obtained online from [www.saps.gov.za](http://www.saps.gov.za)
- Statistics South Africa. (2001). Census results.
- Statistics South Africa. (2007). Community Survey: Key Municipal Data.
- Statistics South Africa. (2007). Community Survey: Statistical Release: Basic Results Municipalities.
- Vanclay, F. 2002. Environmental Impact Assessment Review 22:183–211.
- [www.wikipedia.org.za/wiki/Land\\_use.html](http://www.wikipedia.org.za/wiki/Land_use.html)