

**BASIC SOCIAL & LAND USE ASSESSMENT**  
As part of the  
**BASIC ASSESSMENT FOR THE PROPOSED MEDUPI WATER RESERVOIR,  
LIMPOPO PROVINCE**

**BASIC ASSESSMENT REPORT**

**March 2008**

**Revised June 2008**



**Prepared for:**

Savannah Environmental (Pty) Ltd.

**Prepared by:**

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## EXPERIENCE RECORD

This report was compiled by **Ms Nonka Byker** and reviewed by **Ms Anita Bron**, both of *MasterQ Research*.

Ms Byker holds a Bachelors degree in Psychology (specialising in Adult Mental Health) from the University of Pretoria and is registered with the Health Professions Council of South Africa (registration number: PRC0000396). She has approximately 9 years experience in the social development field, of which 7 years as a public participation consultant and 2 years as a social specialist.

The EIA regulations (1182 and 1183, as amended) states, amongst other, that an independent consultant must be appointed to act on behalf of the client and to ensure that the public participation process is managed properly. In this regard MasterQ Research submits that it has:

- The necessary required expertise to conduct social impact assessments, including the required knowledge and understanding of any guidelines or policies that are relevant to the proposed activity;
- Undertaken all the work and associated studies in an objective and independent manner, even if the findings of these studies are not favourable to the project proponent;
- No vested financial interest in the proposed project or the outcome thereof, apart from remuneration for the work undertaken under the auspices of the above-mentioned regulations;
- No vested interest, including any conflicts of interest, in either the proposed project or the studies conducted in respect of the proposed project, other than complying with the required regulations; and
- Disclosed any material factors that may have the potential to influence the competent authority's decision and/or objectivity in terms of any reports, plans or documents related to the proposed project as required by the regulations.

## EXECUTIVE SUMMARY

Eskom plans to relocate the proposed new raw water reservoir and associated pipeline at Medupi power station, in order to optimise the operations at the Medupi Power Station Complex. The proposed reservoir is now proposed to be located on the Farm Kuipersbult (owned by Eskom), adjacent to the Medupi Power Station Complex. This new location has been determined in terms of technical criteria and there are no alternative positions for this reservoir. The proposed new water reservoir will have a capacity of 400 000m<sup>3</sup>. Underground pipelines would also have to be constructed from the water source (the Wolvenfontein reservoir, which is supplied from the Mokolo Dam) to the new water reservoir and from there to the Medupi Power Station. In this regard, three alternative pipeline alignments have been identified for investigation in the Basic Assessment process. This report details the results of the Basic Assessment of the Social and Land Use assessment conducted by MasterQ Research as part of the Basic Assessment process managed by Savannah Environmental.

Vanclay (2002) defines social impacts as:

*“The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as physical reality, while other social impacts are perceptual or emotional.”*

In order to determine the potential impacts on the various pipeline alignment alternatives, a distinction was made between the following impacts:

- **Category 1:** Impacts that are not expected to differ between the proposed alternatives, e.g. the number of employment opportunities that might be created by the proposed project are expected to remain the same, irrespective of the chosen alternative (except in the case of the 'no go' option); and
- **Category 2:** Impacts that are expected to cause significant changes between the proposed alternatives, e.g. the need to resettle certain households increases proportionately if the development comes in close proximity to densely populated areas as opposed to skirting sparsely populated areas.

This particular social and land use basic assessment also took into account the extent, duration, intensity and probability of occurrence that a potential impact might have on the social environment. Impacts can either be negative, neutral or

positive. The impacts are also categorised according to the various project stages, i.e. pre-construction, construction, post construction (operation), and decommissioning. Mitigation measures have also been identified with the aim to reduce the potential negative impacts and to enhance the potential positive impacts.

Due to technical criteria, only one site has been identified for the location of the proposed raw water reservoir. This site is located approximately 1.6km to the southwest of the Medupi Power Station currently under construction, at an elevation of approximately 915m amsl. Three alternative pipeline alignments have been identified from the Matimba Power Station to the proposed new reservoir, and one pipeline alternative from the proposed new water reservoir to the Medupi Power Station.

The identified new water reservoir site as well as all of the pipeline alignments all falls within the Lephalale Local Municipality's (LIM362) area of jurisdiction, which in turn falls within the Waterberg District Municipality (DC36) of the Limpopo Province (LP).

For the purposes of this basic assessment the impact variables were categorised in terms of change processes. A **change process** can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention. A **potential impact** follows as a result of the change process. 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 categories of processes are as follows:

- **Demographic Processes:** the number and composition of the local population;
- **Economic Processes:** the way in which people make a living and the economic activities within a specific (affected) area;
- **Empowerment and Institutional Processes:** people's ability to become actively involved and influence the decision making process, and also the efficiency and operation of local authorities and other significant organisations);
- **Socio-Cultural Processes:** the way in which humans interact and relate to each other within the context of their environment, and how this interaction is guided by value systems;
- **Geographic Processes:** the land use pattern within the (affected) area; and
- **Biophysical Processes:** the way in which the physical environment influences a person's experience of their social environment.

As a summary, the potential impacts are grouped per change process in the table below.

**Table:** Summary of Impacts per Change Process

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
<b>DEMOGRAPHIC</b>			
Relocation of household	No relocation of households and/or population segments is foreseen.	n/a	n/a
Influx of construction workers	Influx of construction workers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, since a reservoir has only changed location, it is believed that construction workers would be sourced from the power station construction teams to construct the reservoir and therefore an additional influx of construction workers is not expected.	Low to medium negative	Low negative to neutral
Influx of job seekers	Influx of job seekers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, in view of the number of developments currently taking place in the area, it is expected that labourers would focus their attention on securing employment at one of these construction sites. It is therefore expected that labourers would remain in the area as opposed to moving out of the area in large numbers.	Low to medium negative	Low negative to neutral
<b>ECONOMIC</b>			
Direct formal employment opportunities to local individuals	<p>Direct formal job opportunities for local individuals and/or contractors that create income (economic impact) and enhance social well-being.</p> <p><b>Economy:</b> Labourers who secure employment on the project, also secures an income. Money therefore becomes available to the individual and his/her family that would enable families to</p>	Low positive (economy and social well-being)	<p>Low positive (economy)</p> <p>Medium positive (social well-being)</p>

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
	<p>take care of themselves as they are now, e.g. able to buy food and pay for services.</p> <p><b>Social well-being:</b> Families who become financially independent have a better sense of social well being as they are able to take care of themselves and are therefore less dependant on outside structures to take care of their needs.</p>		
Indirect formal and/or informal employment opportunities to local individuals	Indirect formal and/or informal job opportunities for local individuals and/or contractors that creates income (economic impact). The impacts as a result of indirect formal and/or informal employment opportunities is expected to be of a similar nature to that of direct formal employment opportunities as outlined above.	Low positive (economy and social well-being)	Low positive (economy) Medium positive (social well-being)
<b>INSTITUTIONAL &amp; EMPOWERMENT</b>			
Attitude formation against the project	Attitude formation against the project could have economic impacts and could impact on social well-being. Due to all the developments in the area, it would appear as if stakeholders in the area have been "over participated" to such an extent that very little reaction has been received on the proposed Medupi water reservoir, which is most likely experienced as 'just another small project' in a line of projects. The risk for attitude formation against the project in the form of social mobilisation therefore seems unlikely in this instance.	Medium negative	Low negative
Disaster Management Plan	Disaster Management Plan to enhance safety on site, as well as the safety of the surrounding areas.	Low positive	Medium positive
<b>SOCIO-CULTURAL</b>			
Integration of construction workers into local areas	Socially acceptable integration, including the risk of spreading STIs and HIV/AIDS with an impact on health. Where integration is complicated as a result of different ethnical and/or cultural backgrounds, conflict may arise, impacting on social well-being.	High negative (health) Medium negative (social well-being)	Medium negative (health) Low negative to neutral (social well-being)

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
Noise pollution	Psycho-social impact of construction and operational activities and resultant noise pollution on surrounding landowners' quality of life. However, there are currently no densely populated areas around the reservoir site or along the pipeline routes.	-	-
Sense of place	The location of the proposed reservoir and associated infrastructure (e.g. pipelines) might impact on sense of place of inhabitants.	Low neutral to negative (alternative 1) Medium negative (alternatives 2-3)	Low neutral (alternatives 1-3)
<b>GEOGRAPHIC</b>			
Spatial development	The presence of the Medupi water reservoir and pipelines might prohibit future developments encroaching upon the reservoir footprint or pipeline servitudes, which means that land is lost for development. However, no future development plans for the area were evident. The proposed pipeline also does not pass through any built-up areas, apart from Eskom infrastructure in the area.	-	-
<b>BIOPHYSICAL</b>			
Pollution and fire risk	The impact of pollution and fire risk on construction workers and the surrounding community's health and safety.	Medium negative	Low negative to neutral
Sanitation	Lack of sanitation impacts on the environment, which could affect health of people.	Medium negative	Low negative to neutral



A comparison was conducted among the alternative pipeline alignments by assessing all of the category 2 impacts identified with a certain change process. A summary of the outcome of this brief assessment is as per the table below, where:

<b>1</b>	Sensitive area, not recommended from a social perspective.
<b>3</b>	Acceptable area neither ideal nor flawed from a social perspective.
<b>5</b>	Ideal area, from a social perspective.

*Summary of Assessments (category 2 impacts)*

Process	Change Process	Alternative 1	Alternative 2	Alternative 3
Demographic	No category 2 impacts foreseen.			
Economic	No category 2 impacts foreseen.			
Institutional & Empowerment	No category 2 impacts foreseen.			
Socio-Cultural	Sense of place	5	3	3
Geographical	No category 2 impacts foreseen.			
Biophysical	No category 2 impacts foreseen			
<b>TOTAL</b>		<b>5</b>	<b>3</b>	<b>3</b>

Based on the results of the basic assessment as summarised in the table above, **alternative 1** is the preferred alignment from a social perspective, followed by either **alternative 2** or **alternative 3**. This is based on the fact that **alternative 1** is mostly located in close proximity to existing infrastructure of a similar linear nature, while at the same time it is located on an Eskom property thereby reducing the number of potential social impacts on the surrounding environment.

However, since the completion of this study, Eskom has advised that **Alternative 1** is not regarded as technically feasible and therefore this alternative has been discarded. Due to the fact that no issues emerged on any of the initial three alternatives that could be considered as a fatal flaw from a social perspective, **alternatives 2 and 3** are equally viable. Regardless of which alternative is chosen, careful consideration should be given to the enhancement and/or mitigation measures, both during the construction as well as the operation phases of the project.

The reservoir site posed not fatal flaws from a social perspective, as the site on which the reservoir would be located is owned by Eskom and of a similar nature to the surrounding infrastructure.

## 1. INTRODUCTION

Eskom proposes to relocate the proposed new raw water reservoir and associated pipeline planned at Medupi power station, in order to optimise the operations at the Medupi Power Station Complex. The proposed reservoir is now proposed to be located on the Farm Kuipersbult (owned by Eskom), adjacent to the Medupi Power Station Complex. This new location has been determined in terms of technical criteria and there are no alternative positions for this reservoir. The proposed new water reservoir will have a capacity of 400 000m<sup>3</sup>. Underground pipelines would also have to be constructed from the water source (the Wolvenfontein reservoir, which is supplied from the Mokolo Dam) to the new water reservoir and from there to the Medupi Power Station. In this regard, three alternative pipeline alignments have been identified for investigation in the Basic Assessment process.

This report details the results of the Basic Assessment of the Social and Land Use assessment conducted by MasterQ Research as part of the Basic Assessment process managed by Savannah Environmental. The first subsection below gives a definition of a SIA, followed by the objectives of the study. The third subsection details the approach and methodology that were followed to meet these objectives.

### 1.1 Definition of a Social Impact Assessment

Vanclay (2002) defines social impacts as:

*“The consequences to human populations of any public or private actions (these include policies, programmes, plans and/or projects) that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally live and cope as members of society. These impacts are felt at various levels, including individual level, family or household level, community, organisation or society level. Some social impacts are felt by the body as physical reality, while other social impacts are perceptual or emotional.”*

### 1.2 Objectives of the Study

The objectives of the basic social and land use assessment are as follows:

- Gain an understanding of the proposed project, including the reservoir site and alternative alignments for the pipelines, as well as the nature and timeframe of proposed activities;
- Obtain information on the social profile characterising this area in terms of the following change processes:
  - \* **Demographic processes:** the number and composition of people;

- \* **Economic processes:** the way in which people make a living and the economic activities in society;
  - \* **Geographical processes:** land use patterns;
  - \* **Empowerment and institutional processes:** the ability of people to be involved and influence decision making processes; and the role, efficiency and operation of governments and other organisations;
  - \* **Socio-cultural processes:** the way in which humans behave, interact and relate to each other and their environment and the belief and value systems which guide these interactions;
  - \* **Biophysical processes:** the infrastructure/physical and ecological environment and how it relates to the social environment;
  - \* Potential **health** and **safety impacts** will be assessed for each of the above change processes.
- Broadly identify how these processes might be changed by the proposed project and identify any major concerns;
  - Conduct a baseline comparison among the pipeline alternatives in order to determine which of them is likely to have the fewest and least significant negative impacts on the social environment;
  - Rate these potential impacts in order to obtain an overall view of their relative severity and significance; and
  - Identify measures that could be implemented to prevent or ameliorate any negative impacts; and
  - Make a recommendation with regard to the preferred pipeline alignment.

### **1.3 Approach and Methodology**

The following procedures were implemented to meet the objectives of the study.

#### **1.3.1 Data Collection**

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:

- A site visit on 21 February 2008;
- Perusing the various locality maps generated through the project process;
- Census data (2001);
- Relevant sections of the Integrated Development Plans (IDP) of both the Waterberg District Municipality, as well as the Lephalale Local Municipality;
- Existing project documentation, e.g. the Environmental Impact Assessment Report that was compiled as part of the EIA process for the Matimba B coal fired power station.

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

In order to determine the potential impacts on the various pipeline alignment alternatives, a distinction was made between the following impacts:

- **Category 1:** Impacts that are not expected to differ between the proposed alternatives, e.g. the number of employment opportunities that might be created by the proposed project are expected to remain the same, irrespective of the chosen alternative (except in the case of the 'no go' option); and
- **Category 2:** Impacts that are expected to cause significant changes between the proposed alternatives, e.g. the need to resettle certain households increases proportionately if the development comes in close proximity to densely populated areas as opposed to skirting sparsely populated areas.

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

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

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected.
- The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate (with a score of 1 being low for a local impact and a score of 5 being high for an international impact).
- The **duration**, wherein it is indicated whether:
  - \* the lifetime of the impact will be of a very short duration (0-1 years) - assigned a score of 1;
  - \* the lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - \* medium-term (5-15 years) - assigned a score of 3;

- \* long term (> 15 years) - assigned a score of 4; or
- \* permanent - assigned a score of 5.
- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - \* 0 is small and will have no effect on the environment;
  - \* 2 is minor and will not result in an impact on processes;
  - \* 4 is low and will cause a slight impact on processes;
  - \* 6 is moderate and will result in processes continuing but in a modified way;
  - \* 8 is high (processes are altered to the extent that they temporarily cease); and
  - \* 10 is very high and results in complete destruction of patterns and permanent cessation of processes.
- The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - \* Assigned a score of 1-5, where 1 is very improbable (probably will not happen);
  - \* Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - \* Assigned a score of 3 is probable (distinct possibility);
  - \* Assigned a score of 4 is highly probable (most likely); and
  - \* Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).
- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which is described as positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

$S = (E+D+M) P$ ; where

S = Significance weighting

E = Extent

D = Duration

M = Magnitude

P = Probability

The **significance weightings** for each potential impact are as follows:

- < **30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),

- **30-60 points:** Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **> 60 points:** High (i.e. where the impact must have an influence on the decision process to develop in the area).

The following section describes the project and study area and then proceeds to address the objectives of the basic assessment.

## 2. PROJECT BACKGROUND

This section briefly assesses the information relevant to the study area and the project. The first subsection provides a brief description of the proposed project and alternative sites, followed by a general overview of the study (a more detailed baseline profile of the study area in terms of the identified social processes follows in Section 3).

This section intends to address the following objective:

- Gain an understanding of the proposed project, including the nature and timeframe of the proposed activities.

### 2.1 Project Overview

As mentioned previously, Eskom proposes to establish a proposed raw water reservoir and associated pipeline at Medupi power station. The reservoir is proposed to be located on the Farm Kuipersbult (owned by Eskom) and has been located based on technical criteria. The current proposed location for the reservoir is an alternative to the location that was considered in the Matimba B EIA process that was undertaken by Bohlweki Environmental during 2006. Three alternative pipeline alignments have been identified for investigation in the Basic Assessment process.

Authorisation is therefore required for the following components:

- The construction of a 400 000m<sup>3</sup> capacity water reservoir, which will cover an area of approximately 6.9ha on the Farm Kuipersbult;
- The construction and operation of an underground pipeline, of approximately 10km in length. Water will be sourced from the Matimba B power station's water supply, which in turn is fed from Wolvenfontein, to the proposed new water reservoir, including a pressure-reducing station and a flow meter house; and
- The construction and operation of an underground pipeline, of approximately 5km in length, from the new water reservoir to the Medupi Power Station currently under construction.

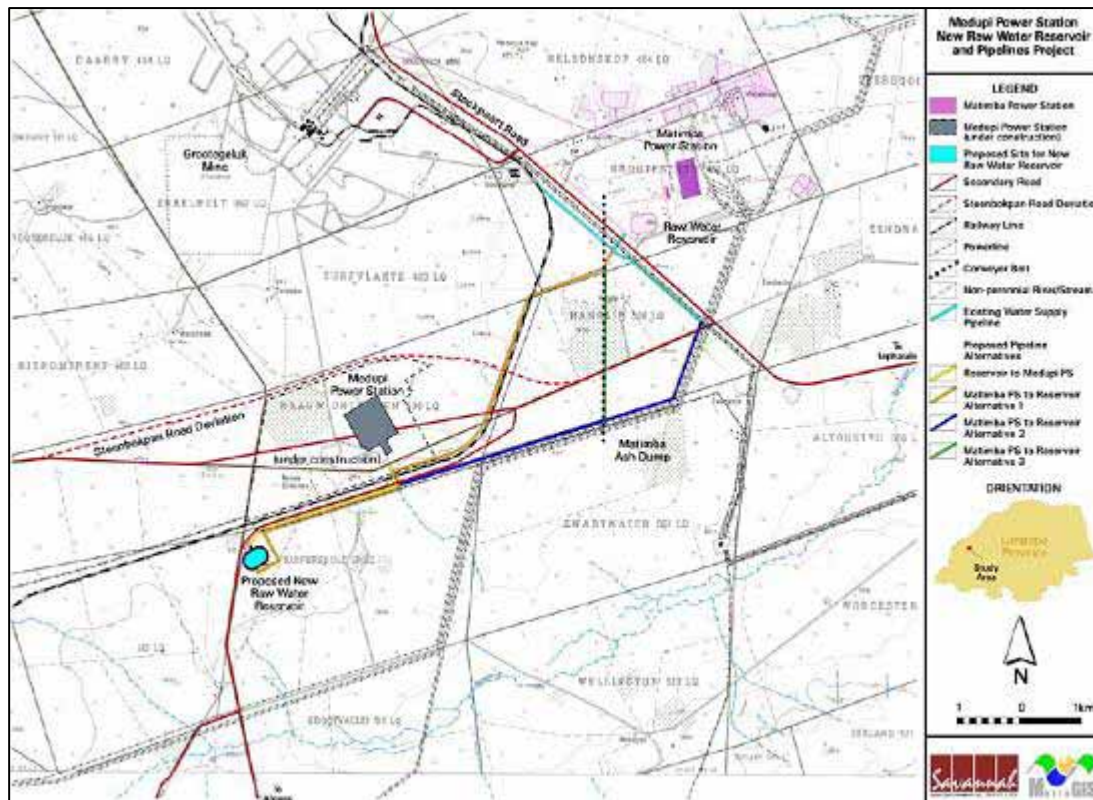
### 2.2 Alternative Alignments

Due to technical criteria, only one site has been identified for the location of the proposed raw water reservoir. This site is located approximately 1.6km to the southwest of the Medupi Power Station currently under construction, at an elevation of approximately 915m amsl.



Three alternative pipeline alignments have been identified from the Matimba Power Station to the proposed new reservoir, and one pipeline alternative from the proposed new water reservoir to the Medupi Power Station. The outgoing pipeline alternative is parallel to the incoming pipeline alternatives. In terms of the pipeline alternatives from the Matimba Power Station, the following alignments have been assessed, as per figure 1:

**Figure 1: Location of the Proposed New Raw Water Reservoir and Pipeline Alternatives**



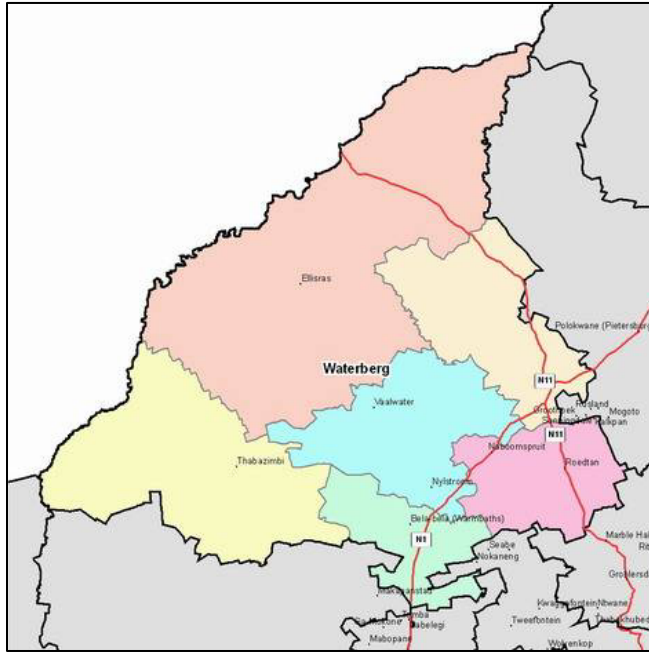
Source: Metro GIS

### 2.3 Regional Overview of the Study Area

The identified new water reservoir site as well as all of the pipeline alignments all fall within the Lephalale Local Municipality's (LIM362) area of jurisdiction, which in turn falls within the Waterberg District Municipality (DC36) of the Limpopo Province (LP) (refer to figure 2).

The following section provides a regional overview of the study area. This is refined in Section 3 to mainly focus on the local context in order to contextualise the potential impacts associated with the construction and operation of the proposed Medupi reservoir and associated underground pipelines.

**Figure 2: Municipal Delineation within the Waterberg Municipality**



**Source:** Municipal Demarcation Board

The Limpopo Province (LP) is the northern-most province of the Republic of South Africa and is bordered by Botswana to the west and north-west, Zimbabwe to the north, and Mozambique to the east. To the south lies the Gauteng Province and this makes the LP the link between South Africa and other African countries. The province is therefore seen as the centre of regional, national and international developing markets. However, despite its location in terms of international trade, the LP is regarded as one of the poorest provinces in South Africa.

The province covers an area of approximately 123 910km<sup>2</sup>, with close on 5.2 million people living within its borders. This brings the population density to an average of 40 people per km<sup>2</sup>. The province is largely rural in nature, with only 11% of its population residing in urban areas.

The years between 1996 and 2001 saw an increase in formal housing within the province. In 1996, only about half a million (567 000) households lived in formal housing, while 312 000 households lived in traditional dwellings and 48 000 households lived in informal housing. It was estimated that in 2001, a total number of 835 000 households lived in formal housing, whilst 233 000 still lived in traditional dwellings. Despite the huge increase in formal housing, there was also an increase of approximately 30 000 households in informal dwellings in 2001, bringing the total to 78 000 households living in informal dwellings<sup>1</sup>.

The LP recorded an economic growth rate of 2.7% during 2004. This follows a growth rate of 2.7% in 2003. In 2004, the largest industries in the economy were

<sup>1</sup> StatsSA, Primary Tables, Limpopo, Census '96 and 2001 compared

the mining and quarrying industry (21.7%), the general government services sector (17.3%); and the finance, real estate and business services (15.6%) in terms of their contribution to the GDP at market prices of the LP. The construction industry had the lowest contribution (1.4%) to GDP at the market prices of the LP.

The main economic sectors in the LP include community, social and personal services; followed by agriculture, hunting and forestry; private households; and wholesale and retail trade. The employment provision in the various sectors can be summarised as per Table 1.

*Table 1: Employment Sectors: Limpopo Province*

<b>Sector</b>	<b>1996</b>	<b>2001</b>
Community, social and personal services	22.3%	24.2%
Agriculture, hunting, forestry and fishing	14.6%	17.8%
Wholesale and retail trade	10.3%	13.9%
Private households	13.6%	11.0%
Manufacturing	4.9%	6.5%
Construction	7.5%	5.6%
Financial, insurance, real estate and business services	3.7%	5.1%
Mining and quarrying	4.8%	4.2%
Transport, storage and communication	4.5%	3.4%
Electricity, gas and water supply	1.2%	1.1%
Unspecified	12.7%	7.1%

Apart from a few sectors there was a decrease in employment (notably amongst others mining and quarrying; and construction), most of the economic sectors showed growth from 1996 to 2001, as can be deduced from the increase in employment rates. The most notable increase in employment rates were in the agricultural sector (3.2%) and the wholesale and retail trade sector (3.6%).

The LP is a fertile agricultural area, producing approximately 75% of South Africa's mangoes, 65% of its papaya, 36% of its tea, 25% of its citrus, bananas and litchis, and 60% of its avocados. The province also produces around two thirds of the country's tomatoes, and 285 000 tons of potatoes. Other products produced in the province include coffee, nuts, guavas, sisal, cotton, tobacco, and timber in more than 170 plantations. Most of the higher lying areas in the Limpopo Province is used for cattle farming and game ranching.

Apart from its rich agricultural resources, the province also has an abundance of mineral resources. Mining is seen as a critical economic sector in the province and contributes 22% of the Gross Geographical Product (GGP). Some of the richest mineral deposits in the province include coal, platinum, chromium, nickel, cobalt, vanadium, tin, and limestone and uranium clay.

The LP is divided into six district municipalities, of which only the Waterberg District Municipality (WDM) is relevant to the study area. The WDM in turn is made up of six separate local municipalities, including the Lephalale Local Municipality (LLM). The WDM is the largest of the six districts and lies to the western side of the LP. The district is mostly rural in nature with a total population of approximately 623 354 people living in 117 659 households (at an average of 5.3 persons per household).

Dwelling types within the WDM includes both formal housing and informal housing, but mainly formal housing. Dwelling types differ by race, with a higher percentage of the Black African population living in single rooms, hostels and traditional dwellings. In general, most of the non-Black African population live in formal housing structures.

The key economic sectors within the WDM are mining, electricity/water, services, trade/catering and agriculture, with mining making the biggest contribution to the GGP. It would be safe to assume that the tourism sector within the WDM also contributes significantly to the GGP. Tourism activities mostly include trade, accommodation and agriculture in the form of game farming.

The predominant economic sector within the WDM is that of agricultural related work (5.8%), closely followed by community services (5.2%). The employment provision in the various sectors can be summarised as per Table 2.

*Table 2: Employment Sectors: Waterberg District Municipality*

<b>Sector</b>	<b>2001</b>
Agriculture, hunting, forestry and fishing	5.8%
Community, social and personal services	5.2%
Wholesale and retail trade	2.9%
Mining and quarrying	2.2%
Manufacturing	1.4%
Construction	1.2%
Financial, insurance, real estate and business services	0.9%
Transport, storage and communication	0.6%
Electricity, gas and water supply	0.2%
Private households	0.0%
Unspecified	79.6%

The unemployment rate within the district is estimated at 36.4%. Furthermore, the district has a large component of people under the age of 14 years (42.1%), which would make any job opportunities vital to the future development of the district.

The WDM is one of the biggest contributors towards provincial agricultural activities. Field crop commodities include tobacco, cotton, sunflower, sorghum,

and maize. Proportionally the WDM also has the largest grazing field, making it one of the biggest contributors towards red meat production.

The WDM is well known for its scenic environment. A trend that is on the increase in the area is the conversion of agricultural land into game farms resulting in a rapid expansion of game farming and tourism in the area. The WDM is malaria free and has a rather mild climate that adds to the district's appeal as a tourist destination. The WDM area is also in fairly close proximity to the Gauteng Province (approximately 3 hours drive), which makes it not only an appealing destination, but also a prime location to develop game farms.

### 3. CHANGE PROCESSES AND POTENTIAL IMPACTS

This section intends to address the following objectives:

- Assess the affected local area (settlements and institutions) in terms of the various change processes;
- Broadly identify how these processes might be changed by the proposed project and identify any major concerns;
- Conduct a baseline comparison among the pipeline alternatives in order to determine which of them is likely to have the fewest and least significant negative impacts on the social environment;
- Rate these potential impacts in order to obtain an overall view of their relative severity and significance; and
- Identify measures that could be implemented to prevent or ameliorate any negative impacts.

For the purposes of this basic assessment, the impact variables were categorised in terms of change processes. A **change process** can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention. A **potential impact** follows as a result of the change process. 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 following subsections discuss the various change processes and the potential impacts that could be experienced by the receiving environment as a result of the proposed project. The categories of processes are as follows:

- **Demographic Processes:** the number and composition of the local population;
- **Economic Processes:** the way in which people make a living and the economic activities within a specific (affected) area;
- **Empowerment and Institutional Processes:** people's ability to become actively involved and influence the decision making process, and also the efficiency and operation of local authorities and other significant organisations);
- **Socio-Cultural Processes:** the way in which humans interact and relate to each other within the context of their environment, and how this interaction is guided by value systems;
- **Geographic Processes:** the land use pattern within the (affected) area; and
- **Biophysical Processes:** the way in which the physical environment influences a person's experience of their social environment.

Unless otherwise stated, the baseline social profile of the potentially affected areas and settlements was compiled based on data obtained from the *Social Impact Assessment as part of the Environmental Scoping and EIA Reports for the proposed establishment of a New Coal-Fired Power Station in the Lephalale Area, Limpopo Province*, as well as the Municipal Demarcation Board. Note that, as this data is based on the results of Census 2001, it should only be viewed as indicative of the broad trends within the area and not as a rigid representation of the area.

### **3.1 Demographic Processes**

Demographic processes relate to the number of people and composition of a community and include an overview of the population size and the educational profile of the affected communities.

#### **3.1.1 Population**

The Lephalale Local Municipality (NP362) covers an area of approximately 19 605km<sup>2</sup> and is located within the Limpopo Province. Lephalale is bordered by Thabazimbi, Modimolle, Musina and Blouberg, and Botswana to the west.

The total population of Lephalale is estimated at approximately 96 047 people living in 23 401 separate households at an average of 4.1 persons per household. The population in this area represents approximately 15.6% of the total population within the Waterberg District Municipality.

The proposed project involves two Wards with the LLM, as follows:

- Ward 1, which includes the Grootgeluk Mine and the residential area of Marapong. The Ward covers an area of approximately 77km<sup>2</sup> and has a total population of approximately 5 666 people with an estimated population density of 73.6 people per km<sup>2</sup>.
- Ward 3, which includes the town of Lephalale. The Ward covers an area of approximately 16km<sup>2</sup> and has a total population of 1 838 people at a population density of approximately 114.9 persons per km<sup>2</sup>.

Table 3 below provides an overview of the population demographics of the study area in relation to South Africa as a whole, the province and the district. From this table it is evident that there are more males than females in the study area. However, within the broader regional context there appears to be more females than males and therefore cognisance should be taken of the possibility that a large proportion of potential work seekers might be female.

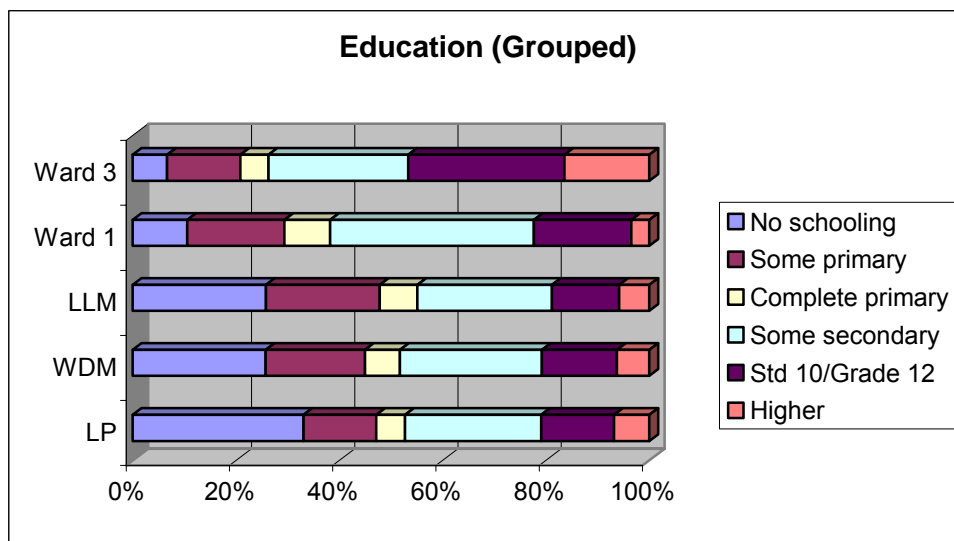
**Table 3: Summary of Population Characteristics**

	South Africa	Limpopo Province	WDM	LLM	Ward 1	Ward 3
Area size (km <sup>2</sup> )	1 219 912	122 839 (10% of SA)	49 519 (40.3% of LP)	19 601 (39.6% of WDM)	77 (0.4% of LLM)	16 (0.1% of LLM)
Total population	47 390 900	4 994 326 (11% of SA)	614 102 (1.2% of LP)	96 092 (15.6% of WDM)	5 666 (5.9% of LLM)	1 838 (1.9% of LLM)
Population density (people per km <sup>2</sup> )	38.9	40.7	12.4	4.9	73.6	114.9
Total households	11 205 705	1 193 351	168 218	28 357	2 204	911
Avg. persons per household	4.0	4.2	3.7	3.4	2.6	2.0
Population Group	Black African (79.5%)	Black African (97.0%)	Black African (90.8%)	Black African (90.5%)	Black African (99.6%)	Black African (55.8%)
Gender	Female (50.8%)	Female (54.3%)	Female (51.9%)	Female (51.0%)	Male (54.4%)	Male (54.7%)
Age Group	≤ 19 (42.6%)	≤ 19 (52.2%)	20-64 (47.8%)	20-64 (49.8%)	20-64 (58.8%)	20-64 (73.4%)

### 3.1.2 Education

An overview of the educational profile for the study area in relation to the district and province is as per Figure 3.

**Figure 3: Educational Profile of the Affected Areas**





The educational profile reflects the fact that more people within the study area have had some form of schooling than compared to the local and district municipalities and the province as a whole. The majority of the adult population within Ward 1 (Marapong) have completed some form of secondary education, whereas the majority of the adult population in Ward 3 (which includes the town of Lephalale) have completed secondary schooling and some form of tertiary education. It can therefore be concluded that the study area is characterised by a semi-skilled to skilled male population.

### **3.2 Demographic Change Processes**

When considering the size of the proposed project in relation to other construction projects currently taking place within the area (notably the construction process currently taking place at the Medupi Power Station), it is not foreseen that the current project in itself would have a significant bearing in changing the number and composition of the population in the local area.

#### ***3.2.1 Potential Impacts***

Table 4 below provides an overview of the expected change process to occur as well as the expected impacts that might occur as a result of the change process taking place.

In the case of a category 1 impact, the expected impacts associated with a specific change process has been assessed. In the event of a potential impact being identified as a category 2 impact, an assessment was conducted between the alternatives to determine which alternative would create change processes with the least significant impacts. In both instances, the potential impact(s) have been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.

**Table 4:** Overview of Expected Demographic Change Processes and Potential Impacts

DEMOGRAPHIC CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Relocation of households and/or population segments	No relocation of households and/or population segments is foreseen.	-	-	-
Influx of construction workers	Influx of construction workers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, since a reservoir has only changed location, it is believed that construction workers would be sourced from the power station construction teams to construct the reservoir and therefore an additional influx of construction workers is not expected.	Category 1, see table 4a	Pre-construction and construction	Negative to neutral
Influx of job seekers	Influx of job seekers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. Again, it is not expected that a large number of job seekers would focus their attention at the construction site of the proposed Medupi water reservoir, but rather at other construction sites in the area. Not only are these construction sites bigger and therefore the chances of securing employment are better, but construction processes at these sites are also over a longer period thereby creating the opportunity of longer term employment.	Category 1, see table 4b	Pre-construction and construction	Negative to neutral

**Table 4a: Influx of Construction Workers (category 1 impact)**

<b>Nature of Impact:</b>								
Influx of construction workers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, since a reservoir has only changed location, it is believed that construction workers would be sourced from the power station construction teams to construct the reservoir and therefore an additional influx of construction workers is not expected.								
<b>Economy:</b> An influx of construction workers who make use of local services, might impact on the local economy as a result of expenditure.								
<b>Health:</b> Construction workers might come into contact with local residents, which in turn might give rise to sexual relationships being formed. Uninformed sexual contact between construction workers and community members could impact on the health of both parties as a result of sexually transmitted infections, including HIV.								
<b>Safety and security:</b> Unrestrained access by construction workers in an area might lead to local residents feeling unsafe, as they cannot always make a distinction between construction worker and job seeker. People often believe that the crime rate increases the moment that construction workers arrive on site.								
<b>Social well-being:</b> People have grown accustomed to a certain standard of life and have formed certain social networks within their area of residence. The introduction of new people to such networks might impact on group dynamics and the way in which people relate to each other and their social environment.								
	Economy		Health		Safety and security		Social well-being	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Local (1)	Local (1)	National (4)	Regional (3)	Local (1)	Local (1)	Local (1)	Local (1)
<b>Duration</b>	Very short (1)	Short (2)	Permanent (5)	Long term (4)	Short (2)	Very short (1)	Short (2)	Very short (1)
<b>Magnitude</b>	Minor (2)	Low (4)	Very high (10)	Moderate (6)	Moderate (6)	Low (4)	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)
<b>Significance</b>	Low (12)	Low (21)	Medium (57)	Medium (39)	Low (27)	Low (12)	Low (27)	Low (12)
<b>Status (positive or negative)</b>	Neutral	Positive	Negative	Negative	Negative	Negative	Negative	Neutral
<b>Reversibility</b>	Reversible		Irreversible		Reversible		Reversible	

<b><i>Irreplaceable loss of resources?</i></b>	No	No	No	No
<b><i>Can impacts be mitigated?</i></b>	Yes	Yes	Yes	Yes
<p><b><i>Mitigation:</i></b></p> <p><b>Economy:</b></p> <ul style="list-style-type: none"> <li>• Encourage construction workers to make use of local services.</li> <li>• Inform local businesses of the presence of construction workers so that they are prepared for the additional demand on their services.</li> </ul> <p><b>Health:</b></p> <ul style="list-style-type: none"> <li>• Conduct an HIV/STI awareness campaign through the use of talks, posters, etc. both within the local area as well as amongst construction workers.</li> <li>• Make condoms available at a central and discreet point for use by both construction workers as well as community members.</li> </ul> <p><b>Safety and Security:</b></p> <ul style="list-style-type: none"> <li>• Construction workers should be clearly identifiable through the use of overalls with the construction company logo, and/or ID tags.</li> <li>• Inform neighbouring property owners when construction workers will be on site, during what times of the day and for how long they would be on site.</li> </ul> <p><b>Social well-being:</b></p> <ul style="list-style-type: none"> <li>• Communicate local communities' expectations (cultural, social) to construction workers.</li> </ul>				
<p><b><i>Cumulative impacts:</i></b></p> <p>The presence of construction workers on other developments in the area leads to an increase in numbers and therefore proportionally an increase in the likelihood of the impacts described above materialising.</p>				
<p><b><i>Residual Impacts:</i></b></p> <p>HIV infection is permanent. Infected individuals are mobile and can therefore infect other persons in other parts of the country.</p>				

**Table 4b:** *Influx of job seekers (category 1)*

***Nature of Impact:***

The impacts expected with the influx of job seekers are the same for the influx of job seekers. Again, it is not expected that a large number of job seekers would focus their attention at the construction site of the proposed Medupi water reservoir, but rather at other construction sites in the area. Not only are these construction sites bigger and therefore the chances of securing employment are better, but construction processes at these sites are also over a longer period thereby creating the opportunity of longer term employment.

***Mitigation:***

- Job seekers should be directed to the labour desk at the Medupi power station construction site.

### 3.3 Economic Processes

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

#### 3.3.1 Employment and Economic Sectors

The dominant economic sector in Lephalale is electricity generation, which contributes approximately 70% of the areas' Gross Geographical Product (GGP). Other pre-dominant sectors include the services sector (14% of GGP), mining (4% of GGP), and agriculture (3% of GGP). However, the local economic market is still dominated by mining (18%) and community services (34%).

Table 5 below provides an overview of the employment and economic sectors of the study area in relation to South Africa as a whole, the province and the district. From this table it is clear that the study area is not only characterised by a semi-skilled to skilled male population, but also a high employment rate. However, very few of the economically active population are employed within the construction industry. In Ward 1, only 4.5% are active within this industry, whilst in Ward 3, only 6.0% are employed in this industry. Even though these statistics relate to individuals who are already *employed* within this industry, it gives an indication of the possible shortage of construction skills in the local area. This would imply that, should local residents be used on the construction team, it might be necessary for either Eskom or its appointed contractors to first provide training on construction processes and techniques before the commencement of the construction phase.

**Table 5:** Overview of Employment and Economic Sectors

	South Africa	Limpopo Province	WDM	LLM	Ward 1	Ward 3
Employed*	33.7%	23.6%	38.1%	48.6%	49.2%	70.9%
Unemployed*	24.0%	21.2%	17.0%	8.9%	19.9%	5.0%
Not economically active	42.3%	55.1%	44.9%	42.5%	30.9%	24.1%
Employment rate**	58.4%	52.7%	69.2%	84.5%	71.1%	93.4%
Industry	Community services (29.1%)	Community services (4.1%)	Undetermined (79.6%)	Undetermined (74.1%)	Mining, quarrying (40.7%)	Electricity, gas, water (22.5%)

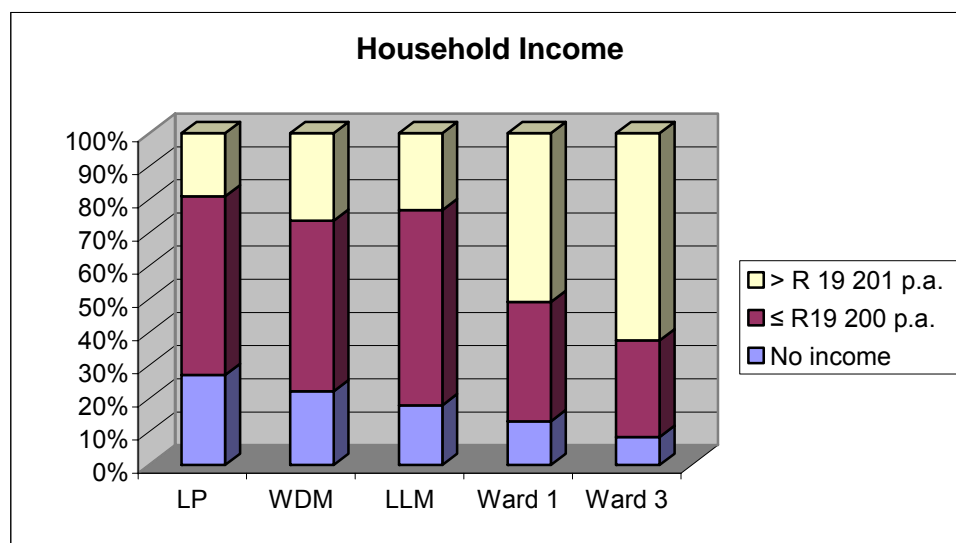
\* This is the percentage employed/unemployed of the entire working age population and should not be read as the unemployment rate, i.e. the not economically active population is included in this segment.

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

### 3.3.2 Household Income

The graph below provides an overview of the household income levels of the affected areas in relation to the broader context of the study area.

**Figure 4:** Overview of the Annual Household Income in the Affected Areas



Although the majority of households within the LLM live below the acceptable minimum standard of at least R20 000 per annum per household, in comparison most households within the affected local area appear to live on par or above the minimum required standard. Notably Ward 3 appears to be fairly affluent where at least two thirds of all households are living above the acceptable minimum standard. This economic profile can be linked to both the educational profile of these Wards as well as the high employment rate within these Wards. It can therefore be expected that the dependency ratio on the municipality from the study area would be very low.

### 3.4 Economic Change Processes

Economic change processes relate to the changes brought about to the employment and general economic profile of an area as a result of the introduction of any development. For example, job opportunities might be created as a result of the construction and maintenance of the proposed Medupi water reservoir and associated pipelines. Employment creates a source of income, which in turn enables the employed individual to access services and a support mechanism for his/her family.

### **3.4.1 Potential Impacts**

Table 6 below provides an overview of the expected change process to occur as well as the expected impacts that might occur as a result of the change process taking place.

In the case of a category 1 impact, the expected impacts associated with a specific change process has been assessed. In the event of a potential impact being identified as a category 2 impact, an assessment was conducted between the alternatives to determine which alternative would create change processes with the least significant impacts. In both instances, the potential impact(s) have been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.



**Table 6:** Overview of Expected Economic Change Processes and Potential Impacts

ECONOMIC CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Direct formal employment opportunities to local individuals	Direct formal job opportunities for local individuals and/or contractors that create income (economic impact) and enhance social well-being.	Category 1, refer to table 6a.	Pre-construction, construction and operation	Positive
Indirect formal and/or informal employment opportunities to local individuals	Indirect formal and/or informal job opportunities for local individuals and/or contractors that creates income (economic impact).	Category 1, refer to table 6b.	Pre-construction and construction	Positive

**Table 6a:** Direct formal employment opportunities to local individuals (category 1)

<b>Nature of Impact:</b> Direct formal job opportunities for local individuals and/or contractors that create income (economic impact) and enhance social well-being.				
<b>Economy:</b> Labourers who secure employment on the project, also secures an income. Money therefore becomes available to the individual and his/her family that would enable families to take care of themselves as they are now, e.g. able to buy food and pay for services.				
<b>Social well-being:</b> Families who become financially independent have a better sense of social well being as they are able to take care of themselves and are therefore less dependant on outside structures to take care of their needs.				
	Economy		Social well-being	
	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Local (1)	Local (1)	Local (1)	Local (1)
<b>Duration</b>	Very short (1)	Short term (2)	Very short (1)	Short term (2)
<b>Magnitude</b>	Low (4)	Moderate (6)	Low (4)	High (8)

<b>Probability</b>	Probable (3)	Probable (3)	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (18)</b>	<b>Low (27)</b>	<b>Low (18)</b>	<b>Medium (33)</b>
<b>Status (positive or negative)</b>	Positive	Positive	Positive	Positive
<b>Reversibility</b>	Reversible		Reversible	
<b>Irreplaceable loss of resources?</b>	No		No	
<b>Can impacts be mitigated?</b>	Yes		Yes	
<p><b>Mitigation:</b></p> <p><b>Economy:</b></p> <ul style="list-style-type: none"> <li>• Payment should comply with applicable Labour Law legislation.</li> </ul> <p><b>Social well-being:</b></p> <ul style="list-style-type: none"> <li>• Unskilled job opportunities should be afforded to local residents. Local trade unions could assist with the recruitment process to counteract the potential for social mobilisation.</li> <li>• Mechanisms should be developed to provide alternative solutions for creating job security upon completion of the project. This could include formal and/or informal training on how to look for alternative employment, information on career progression, etc. to ensure that people are equipped to seek other jobs with the skills that they have gained.</li> </ul>				
<p><b>Cumulative impacts:</b></p> <p>None.</p>				
<p><b>Residual Impacts:</b></p> <p>The dependency ratio on outside agencies decreases as more families become financially independent.</p>				

**Table 6b:** Indirect formal and/or informal employment opportunities to local individuals (category 1)

**Nature of Impact:**

Indirect formal and/or informal job opportunities for local individuals and/or contractors that creates income (economic impact). The impacts as a result of indirect formal and/or informal employment opportunities is expected to be of a similar nature to that of direct formal employment opportunities as outlined above.

**Mitigation:**

- Comply with Eskom's procurement policy any other applicable policies.

### 3.5 Empowerment and Institutional Processes

Empowerment and Institutional processes relate to the role, efficiency and operation of government sectors and other organisations within the area in terms of service delivery. It also investigates the ability of people to engage in decision-making processes to such an extent that they have an impact on the way in which decisions are made that would concern them.

#### 3.5.1 Municipal Services

Table 7 below provides an overview of the municipal services of the affected area in relation to the province and the district as a whole. No data could be obtained for the overall municipal service delivery in South Africa. From this table it is evident that the most of households within the study area appears to have efficient municipal services infrastructure and delivery, which, in most cases is on par or above RDP standards. RDP standards in terms of sanitation are defined as either a flush toilet, or a chemical tank or a pit latrine with ventilation. A piped water source either within a dwelling or within a 200m distance from such a dwelling is defined as the minimum RDP standard.

**Table 7: Overview of Municipal Service Delivery to the Affected Areas**

	South Africa	Limpopo Province	WDM	LLM	Ward 1	Ward 3
Energy cooking		Wood (57.1%)	Electricity (37.3%)	Wood (55.9%)	Electricity (69.2%)	Electricity (91.3%)
Energy heating		Wood (57.8%)	Wood (44.7%)	Wood (52.2%)	Electricity (69.4%)	Electricity (92.2%)
Energy lighting		Electricity (63.2%)	Electricity (65.0%)	Electricity (65.3%)	Electricity (74.2%)	Electricity (93.5%)
Refuse		Own refuse dump (66.7%)	Own refuse dump (58.8%)	Own refuse dump (65.8%)	Removed once a week (83.5%)	Removed once a week (89.9%)
Sanitation		Below RDP standard (72.1%)	Below RDP standard (56.0%)	Below RDP standard (61.6%)	Above RDP standard (96.5%)	Above RDP standard (98.6%)
Water		Above RDP standard (56.8%)	Above RDP standard (60.6%)	Above RDP standard (62.6%)	Above RDP standard (98.3%)	Above RDP standard (92.7%)

### **3.6 Empowerment and Institutional Change Process**

The Basic Assessment process is an opportunity for stakeholders to give input into the process and project. However, stakeholders would have to offer up their time to become actively involved in the process and they should clearly understand their rights in terms of the process to enable them to use these rights.

#### ***3.6.1 Potential Impacts***

Table 8 below provides an overview of the expected change process to occur as well as the expected impacts that might occur as a result of the change process taking place.

In the case of a category 1 impact, the expected impacts associated with a specific change process has been assessed. In the event of a potential impact being identified as a category 2 impact, an assessment was conducted between the alternatives to determine which alternative would create change processes with the least significant impacts. In both instances, the potential impact(s) have been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.

**Table 8:** Overview of Expected Empowerment and Institutional Change Processes and Potential Impacts

EMPOWERMENT AND INSTITUTIONAL CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Attitude formation against the proposed project	Attitude formation against the project could have economic impacts and could impact on social well-being. Due to all the developments in the area, it would appear as if stakeholders in the area have been "over participated" to such an extent that very little reaction has been received on the proposed Medupi water reservoir, which is most likely experienced as 'just another small project' in a line of projects. The risk for attitude formation against the project in the form of social mobilisation therefore seems unlikely in this instance.	Category 1, refer to table 8a.	Pre-construction and construction	Neutral to Negative
Disaster Management Plan	Disaster Management Plan to enhance safety on site, as well as the safety of the surrounding areas.	Category 1, refer to table 8b.	Construction and Operation	Positive

**Table 8a:** Attitude formation against the project (category 1)

**Nature of Impact:**

Attitude formation against the project could have economic impacts and could impact on social well-being. Due to all the developments in the area, it would appear as if stakeholders in the area have been "over participated" to such an extent that very little reaction has been received on the proposed Medupi water reservoir, which is most likely experienced as 'just another small project' in a line of projects. The risk for attitude formation against the project in the form of social mobilisation therefore seems unlikely in this instance.

**Economy:** In the event of attitude formation or social mobilisation against the project, the project is delayed and more money has to be invested in a mediation process.

**Social well-being:** Social mobilisation decreases a trust relationship between the project proponent and the project opponent. Both parties now have to focus their attention on a mediation process instead of a trusting working relationship.

	Economy		Social well-being	
	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Regional (2)	Local (1)	Local (1)	Local (1)
<b>Duration</b>	Short term (2)	Very short term (1)	Short term (2)	Very short term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)	High (8)	Moderate (6)
<b>Probability</b>	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (12)</b>	<b>Medium (33)</b>	<b>Low (16)</b>
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative
<b>Reversibility</b>	Reversible		Reversible	
<b>Irreplaceable loss of resources?</b>	No		No	
<b>Can impacts be mitigated?</b>	Yes		Yes	
<b>Mitigation:</b>				
<b>Social well-being:</b>				
<ul style="list-style-type: none"> <li>• Employment opportunities should first be offered to the local community if the skills are available within the community.</li> <li>• The undertakings in the EMP should also be implemented effectively and with due diligence.</li> </ul>				
<b>Cumulative impacts:</b>				
None.				

**Residual Impacts:**

None.

**Table 8b: Disaster Management Plan (category 1)****Nature of Impact:**

Disaster Management Plan to enhance safety on site, as well as the safety of the surrounding areas.

	Safety (on site)		Safety (surrounding areas)	
	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Local (1)	Regional (2)	Local (1)	Regional (2)
<b>Duration</b>	Very short term (1)	Very short term (1)	Very short term (1)	Short term (2)
<b>Magnitude</b>	Low (4)	Moderate (6)	Low (4)	Moderate (6)
<b>Probability</b>	Probable (3)	Probable (3)	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (18)</b>	<b>Low (27)</b>	<b>Low (18)</b>	<b>Medium (30)</b>
<b>Status (positive or negative)</b>	Positive	Positive	Positive	Positive
<b>Reversibility</b>	Reversible		Reversible	
<b>Irreplaceable loss of resources?</b>	No		No	
<b>Can impacts be mitigated?</b>	Yes		Yes	



***Mitigation:***

- Develop and implement a disaster management plan for implementation during the construction phase.
- Identify suitable individuals that can be trained and used as first aid officers on site (levels 1 to 3). Training of these individuals should ideally take place during this phase of the project to ensure that qualified first aid officers are on site once construction commences.
- Consult with private ambulance services and/or hospitals so that they are aware of the project and would be able to provide emergency and/or medical services if needed.

***Cumulative impacts:***

A reduction in the dependency ratio on local emergency services.

***Residual Impacts:***

None.

### **3.7 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.

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 attempts to integrate the character of a setting with the personal emotions, memories and cultural activities associated with such a setting.

### **3.8 Socio-Cultural Change Processes**

Socio-cultural change processes that are associated with the construction and operation of the proposed project include changes such as health and safety aspects and sense of place. The concept of 'health' is not only limited to physical health (i.e. the absence of ailments or illness), but also includes mental and social health.

#### ***3.8.1 Potential Impacts***

Table 9 below provides an overview of the expected change process as well as the expected impacts that might occur as a result of the change process taking place.

In the case of a category 1 impact, the expected impacts associated with a specific change process has been assessed. In the event of a potential impact being identified as a category 2 impact, an assessment was conducted between the alternatives to determine which alternative would create change processes with the least significant impacts. In both instances, the potential impact(s) have been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.

**Table 9:** Overview of Expected Socio-Cultural Change Processes and Potential Impacts

SOCIO-CULTURAL CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Integration of construction workers into local areas	Socially acceptable integration, including the risk of spreading STIs and HIV/AIDS with an impact on health. Where integration is complicated as a result of different ethnical and/or cultural backgrounds, conflict may arise, impacting on social well-being.	Category 1, refer to table 9a.	Pre-construction and construction	Negative to neutral
Noise pollution	Psycho-social impact of construction and operational activities and resultant noise pollution on surrounding landowners' quality of life. However, there are currently no densely populated areas around the reservoir site or along the pipeline routes. A single dwelling was identified along the Stockpoort Road to the northwest of the current conveyor belt (alternative 3).	Category 1, refer to table 9b.	Construction and operation	Negative to neutral
Sense of place	The location of the proposed reservoir and associated infrastructure (e.g. pipelines) might impact on sense of place of inhabitants. However, it is unlikely that the proposed project would have an adverse negative effect on sense of place as most of the surrounding farms is owned by either Eskom or Exxaro with very few inhabitants, mostly scattered households.	Category 2 – refer to table 9c.	Operation	Negative to neutral

**Table 9a:** Integration of construction workers into local areas (category 1)

**Nature of Impact:**

Socially acceptable integration, including the risk of spreading STIs and HIV/AIDS with an impact on health. Where integration is complicated as a result of different ethnical and/or cultural backgrounds, conflict may arise, impacting on social well-being. However, it is believed that current construction workers on the Medupi power station would be sourced for construction on the reservoir, and therefore very few "additional" construction workers would be expected in the area.

	Health		Social well-being	
	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	National (4)	Regional (2)	Regional (2)	Local (1)
<b>Duration</b>	Permanent (5)	Long term (4)	Medium term (3)	Very short term (1)
<b>Magnitude</b>	Very high (10)	Moderate (6)	Moderate (6)	Low (4)
<b>Probability</b>	Highly probable (4)	Probable (3)	Probable (3)	Improbable (2)
<b>Significance</b>	<b>High (76)</b>	<b>Medium (36)</b>	<b>Medium (33)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Negative	Negative	Negative to neutral
<b>Reversibility</b>	Reversible		Reversible	
<b>Irreplaceable loss of resources?</b>	No		No	
<b>Can impacts be mitigated?</b>	Yes		Yes	
<p><b>Mitigation:</b></p> <p><b>Health:</b></p> <ul style="list-style-type: none"> <li>• An aggressive STI and HIV/AIDS awareness campaign should be launched, which is not only directed at construction workers but also at the area as a whole.</li> <li>• Condoms should be distributed by placing them at centrally located points and by ensuring that construction workers and residents are aware of the availability and location of condoms. The distribution of condoms should be approached with the necessary cultural sensitivity.</li> <li>• Access at the construction site should be controlled to prevent sex workers from either visiting and/or loitering at the depots.</li> </ul> <p><b>Social well-being:</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• The community should be informed in advance of the influx of construction workers and the time they will spend in the community as well as the activities they will be</li> </ul>				

involved in. This will enable the community to prepare for a possible (temporary) change in functioning.

- A code of conduct should be established for construction workers in their dealings with the local community.

**Cumulative impacts:**

Construction workers present at other construction sites increase the number of 'foreigners' in the local areas, thereby increasing the risk of health impacts and conflict.

**Residual Impacts:**

HIV infection is permanent and can spread to other parts of the country. The high HIV infection rate in the country also has an indirect impact on the economy as people become ill and are unable to work.

**Table 9b: Noise pollution (category 1)**

**Nature of Impact:**

Psycho-social impact of construction and operational activities and resultant noise pollution on surrounding landowners' quality of life. However, there are currently no densely populated areas around the reservoir site or along the pipeline routes. A single dwelling was identified along the Stockpoort Road to the northwest of the current conveyor belt (alternative 3).

**Mitigation:**

- Construction activities should be restricted to daytime hours between 06:00 and 18:00.
- Adjacent property owners should be consulted and notified of any construction activities that could lead to excessive noise levels.
- Adjacent property owners should also be consulted if any night time construction activities were to take place.

**Table 9c: Sense of Place (category 2)**

**Nature of Impact:**

The location of the proposed Medupi water reservoir and associated underground pipelines might impact on sense of place of inhabitants. However, it is unlikely that the proposed project would have an adverse negative effect on sense of place as most of the surrounding farms is owned by either Eskom or Exxaro with very few inhabitants, mostly scattered households. Furthermore, the pipeline would be buried underground and therefore the potential impact on sense of place is mostly restricted to the construction period.

	Alternative 1		Alternative 2		Alternative 3	
	Without mitigation	With mitigation	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)	Local (1)
<b>Duration</b>	Long term (4)	Short (2)	Long term (4)	Short (2)	Long term (4)	Short (2)
<b>Magnitude</b>	Low (4)	Minor (2)	Low (4)	Low (4)	Moderate (6)	Low (4)
<b>Probability</b>	Improbable (2)	Improbable (2)	Improbable (2)	Improbable (2)	Probable (3)	Probable (3)
<b>Significance</b>	<b>Low (18)</b>	<b>Low (10)</b>	<b>Low (18)</b>	<b>Low (10)</b>	<b>Medium (33)</b>	<b>Low (21)</b>
<b>Status (positive or negative)</b>	Neutral to negative	Neutral	Negative	Neutral	Neutral to negative	Neutral
<b>Reversibility</b>	Non-reversible	Non-reversible	Non-reversible	Non-reversible	Non-reversible	Non-reversible
<b>Irreplaceable loss of resources?</b>	No	No	No	No	No	No
<b>Can impacts be mitigated?</b>	Yes		Yes		Yes	
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>Sufficient and transparent information should be supplied to neighbouring properties to enhance their sense of safety and thereby reducing the negative impact on sense of place.</li> </ul>						
<p><b>Cumulative impacts:</b></p> <p>The farm Hanglip already has a number of servitudes registered against the title deed as a result of the presence of a number of transmission power lines and the conveyor belt. However, Eskom's intention is to include the pipeline servitude within the 92 m wide conveyor servitude, which would minimise the cumulative impact.</p>						
<p><b>Residual Impacts:</b></p> <p>None.</p>						

### 3.9 Geographical Processes

Geographical processes relate to land use patterns and infrastructure in the area. This section therefore describes the land use in the study area from a social perspective.

Land use is defined as "the way land is developed and used in terms of the types of activities allowed (agriculture, residences, industries, etc.) and the size of buildings and structures permitted. Certain types of pollution problems are often associated with particular land uses, such as sedimentation from construction activities."

Another definition of land use is as follows: "Patterns of land use arise naturally in a culture through customs and practices, but land use may also be formally regulated by zoning, other laws or private agreements such as restrictive covenants."

As previously mentioned, the local economic market is still dominated by mining (18%) and community services (34%). One of the mines in the area include the **Grootgeluk Mine**, an open cast mine producing over 17 million tons of thermal and coking coal for both the national and international markets. Mining methods used at Grootgeluk Mine is mostly conventional truck and shovel. The Grootgeluk Mine also has six beneficiation plants. On both the northern and southern limits, this coalfield is fault-bounded.

The Matimba Power Station is also located in Lephalale and is the largest direct dry cooling power station in the world. The station uses coal from the nearby Grootgeluk Mine and has sufficient coal reserves to guarantee a lifespan of 35 years at 3 800 tons of coal per hour. The annual send-out power amounts to approximately 24 000GWh. The new Medupi Power Station is also currently under construction in the same area. The area is also characterised by infrastructure associated with mining developments and power stations, e.g. conveyor belts, transmission power lines, roads, railway lines, etc.

The Lephalale Local Municipality have earmarked a heavy industrial area between the Matimba Power station and the Grootgeluk mine, seeing as the large amounts of coal deposits in the area form the basis for future industrial development. The geophysical potential of this coal field represents combustion, carbonisation, gasification, coal bed methane and Ferro-alloy production. The presence of this newly established heavy industrial area is meant to lure prospective investors into the area.

In terms of the agricultural sector, the sector is dominated by field cropping and animal production. However, during recent years game farming has become a

major economic activity in the area. The upsurge in eco-tourism and commercial hunting lead to a decrease in traditional agricultural activities. In turn, this lead to an increase in land value, this makes the acquisition of land for conventional agriculture non-viable.

The following key growth areas have been identified in the agricultural sector:

- The beneficiation of agricultural products, e.g. the tanning of hides and processing of conventional livestock farming products;
- The production of animal feed and/or charcoal from the products of bush encroachment and invader species;
- Horticulture; and
- Farm tourism.

The Lephalale Local Municipality's Integrated Sustainable Rural Development Strategy (ISRDS) has a spatial focus mainly centred on poverty-stricken areas. A total of 63% of the population in Lephalale live in scattered settlements or farmland, with the remaining 37% living in settlements with high population concentrations and growth potential. Currently Lephalale town is the only primary node identified. There are two secondary nodes around Ga-Seleka and Setateng.

The current land use on the proposed site for the Medupi water reservoir is illustrated in figure 5. At the time of the study, the project proponent (Eskom) was finalising the purchase of the farm Kuipersbult from the private landowner, which means that the reservoir would be located on Eskom-owned land.



***Figure 5:** Current land use on the proposed reservoir site.*

All three of the pipeline alternative alignments mostly follow existing infrastructure. **Alternative 1** follows farm boundaries and the existing railway line. **Alternative 2** follows the alignment of the Stockpoort Road and existing power lines. **Alternative 3** follows the alignment of the conveyor belt (which is



operated by Eskom) and existing power lines. Due to the stringent security measures in place around the conveyor belt (see figure 6), this alternative is not preferred due to the fact that it appears that access to a servitude within a servitude could be limited. It is preferred that maintenance workers have free access to a pipeline, especially if such a pipeline would require emergency maintenance procedures to be carried out.



**Figure 6:** Security measures at the conveyor belt (Alternative 3).

### **3.10 Geographical Change Processes**

Geographical change processes refer to land use change as a result of the actual or perceived changes in land use, whether it be on a temporary or permanent basis. It is believed that it is unlikely that the construction and maintenance of the proposed Medupi water reservoir and associated underground pipelines would lead to a change in the land use within the local area.

#### ***3.10.1 Potential Impacts***

Table 10 below provides an overview of the expected change process as well as the expected impacts that might occur as a result of the change process taking place.

In the case of a category 1 impact, the expected impacts associated with a specific change process has been assessed. In the event of a potential impact being identified as a category 2 impact, an assessment was conducted between the alternatives to determine which alternative would create change processes with the least significant impacts. In both instances, the potential impact(s) have been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.

**Table 10:** Overview of Expected Geographical Change Processes and Potential Impacts

GEOGRAPHICAL CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Spatial development (future land use)	The presence of the Medupi water reservoir and pipelines might prohibit future developments encroaching upon the reservoir footprint or pipeline servitudes, which means that land is lost for development. However, no future development plans for the area were evident. The proposed pipeline also does not pass through any built-up areas, apart from Eskom infrastructure in the area.	Category 1, refer to table 10a.	Operation	Negative

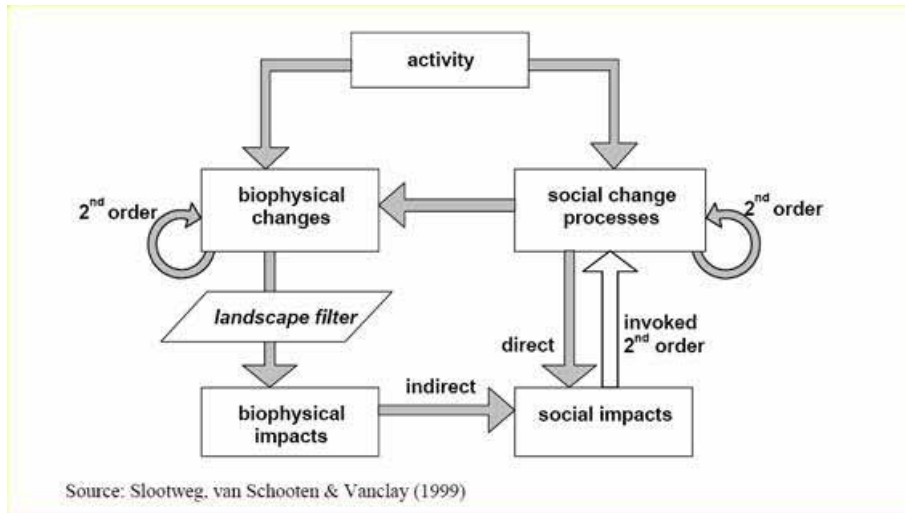
**Table 10a:** Spatial development (future land use) (category 1)

<p><b>Nature of Impact:</b></p> <p>The presence of the Medupi water reservoir and pipelines might prohibit future developments encroaching upon the reservoir footprint or pipeline servitudes, which means that land is lost for development. However, no future development plans for the area were evident. The proposed pipeline also does not pass through any built-up areas, apart from Eskom infrastructure in the area. Eskom also now owns most of the land in the area and it is therefore unlikely that residential developments will take place on these farms.</p>
<p><b>Mitigation:</b></p> <ul style="list-style-type: none"> <li>• None.</li> </ul>

### 3.11 Biophysical Processes

The biophysical environment can lead to indirect social impacts, as illustrated in Figure 7.

**Figure 7:** Biophysical change processes and indirect social impacts



### 3.12 Biophysical Change Processes

Social change processes can lead to biophysical change processes, e.g. economic developments to increase tourism numbers can change land use and water quality, which can have indirect human impacts because of the reduction in agricultural production, and subsequent lower income levels (Slootweg et al. 2001).

#### 3.12.1 Potential Impacts

Table 11 below provides an overview of the expected change process as well as the expected impacts that might occur as a result of the change process taking place. These potential impacts will be assessed in detail during the Impact Assessment phase.

In the event of a potential impact being identified as a category 2 impact (see section 1.3); a basic assessment was conducted to determine which alternative would create change processes with the least significant impacts. In such an instance, the potential impact has been assessed both *prior* to and after the implementation of mitigation measures. Where applicable, mitigation measures have been identified, as well as any cumulative and/or residual impacts.

**Table 11: Overview of Expected Biophysical Change Processes and Potential Impacts**

BIOPHYSICAL CHANGE PROCESSES				
Expected Change Process	Potential Impact	Type of Impact	Project Phase	Status
Pollution and fire risk	The impact of pollution and fire risk on construction workers and the surrounding community's health and safety.	Category 1, refer to table 11a.	Pre-construction and construction	Negative
Sanitation	Lack of sanitation impacts on the environment, which could affect health of people.	Category 1, refer to table 11b.	Pre-construction and construction	Negative

*Table 11a: Pollution and Fire Risk (category 1)*

<b>Nature of Impact:</b>				
The impact of pollution and fire risk on construction workers and the surrounding community's health and safety.				
	Health		Safety	
	Without mitigation	With mitigation	Without mitigation	With mitigation
<b>Extent</b>	Regional (2)	Local (1)	Regional (2)	Local (1)
<b>Duration</b>	Short term (2)	Very short term (1)	Short term (2)	Very short term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (12)</b>	<b>Medium (30)</b>	<b>Low (12)</b>
<b>Status (positive or</b>	Negative	Negative to neutral	Negative	Negative to neutral

<i>negative)</i>				
<b>Reversibility</b>	Reversible		Reversible	
<b>Irreplaceable loss of resources?</b>	No		No	
<b>Can impacts be mitigated?</b>	Yes		Yes	
<b>Mitigation:</b>				
<ul style="list-style-type: none"> <li>• Refuse on site should be discarded in sealed bins and/or covered skips. Refuse should be removed from the site on regular intervals (at least once a week) and disposed of at an approved waste disposal site.</li> <li>• Construction workers should only be allowed to make fire in designated areas. Construction workers who do not keep within designated areas should be fined.</li> </ul>				
<b>Cumulative impacts:</b>				
None.				
<b>Residual Impacts:</b>				
Refuse that is not removed remains on site and continues to impact on health.				

**Table 11b: Sanitation (category 1)**

<b>Nature of Impact:</b>		
Lack of sanitation impacts on the environment, which could affect health of people.		
	<b>Health</b>	
	<b>Without mitigation</b>	<b>With mitigation</b>
<b>Extent</b>	Regional (2)	Local (1)

<b>Duration</b>	Short term (2)	Very short term (1)
<b>Magnitude</b>	Moderate (6)	Low (4)
<b>Probability</b>	Probable (3)	Improbable (2)
<b>Significance</b>	<b>Medium (30)</b>	<b>Low (12)</b>
<b>Status (positive or negative)</b>	Negative	Negative to neutral
<b>Reversibility</b>	Reversible	Reversible
<b>Irreplaceable loss of resources?</b>	No	No
<b>Can impacts be mitigated?</b>	Yes	Yes
<b>Mitigation:</b>		
<ul style="list-style-type: none"> <li>• Adequate water facilities should be provided.</li> <li>• Sufficient portable chemical toilets on site and at the depots.</li> </ul>		
<b>Cumulative impacts:</b>		
None.		
<b>Residual Impacts:</b>		
Sewerage that is not disposed of could pollute the groundwater, thereby potentially affecting the health of residents.		

## 4. CONCLUSIONS AND RECOMMENDATIONS

### 4.1 Summary

As a summary, the potential impacts are grouped per change process in Table 12.

*Table 12: Summary of Impacts per Change Process*

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
<b>DEMOGRAPHIC</b>			
Relocation of household	No relocation of households and/or population segments is foreseen.	n/a	n/a
Influx of construction workers	Influx of construction workers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, since a reservoir has only changed location, it is believed that construction workers would be sourced from the power station construction teams to construct the reservoir and therefore an additional influx of construction workers is not expected.	Low to medium negative	Low negative to neutral
Influx of job seekers	Influx of job seekers that will lead to a change in the number and composition of the local community, and impact on economy, health, safety and social well-being. However, in view of the number of developments currently taking place in the area, it is expected that labourers would focus their attention on securing employment at one of these construction sites. It is therefore expected that labourers would remain in the area as opposed to moving out of the area in large	Low to medium negative	Low negative to neutral

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
	numbers.		
<b>ECONOMIC</b>			
Direct formal employment opportunities to local individuals	<p>Direct formal job opportunities for local individuals and/or contractors that create income (economic impact) and enhance social well-being.</p> <p><b>Economy:</b> Labourers who secure employment on the project, also secure an income. Money therefore becomes available to the individual and his/her family that would enable families to take care of themselves as they are now, e.g. able to buy food and pay for services.</p> <p><b>Social well-being:</b> Families who become financially independent have a better sense of social well-being as they are able to take care of themselves and are therefore less dependant on outside structures to take care of their needs.</p>	Low positive (economy and social well-being)	Low positive (economy) Medium positive (social well-being)
Indirect formal and/or informal employment opportunities to local individuals	Indirect formal and/or informal job opportunities for local individuals and/or contractors that creates income (economic impact). The impacts as a result of indirect formal and/or informal employment opportunities is expected to be of a similar nature to that of direct formal employment opportunities as outlined above.	Low positive (economy and social well-being)	Low positive (economy) Medium positive (social well-being)
<b>INSTITUTIONAL &amp; EMPOWERMENT</b>			
Attitude formation against the project	Attitude formation against the project could have economic impacts and could impact on social well-being. Due to all the developments in the area, it would appear as if stakeholders in the area have been "over participated" to such an extent that very little reaction	Medium negative	Low negative



CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
	has been received on the proposed Medupi water reservoir, which is most likely experienced as 'just another small project' in a line of projects. The risk for attitude formation against the project in the form of social mobilisation therefore seems unlikely in this instance.		
Disaster Management Plan	Disaster Management Plan to enhance safety on site, as well as the safety of the surrounding areas.	Low positive	<b>Medium positive</b>
<b>SOCIO-CULTURAL</b>			
Integration of construction workers into local areas	Socially acceptable integration, including the risk of spreading STIs and HIV/AIDS with an impact on health. Where integration is complicated as a result of different ethnical and/or cultural backgrounds, conflict may arise, impacting on social well-being.	High negative (health) Medium negative (social well-being)	Medium negative (health) Low negative to neutral (social well-being)
Noise pollution	Psycho-social impact of construction and operational activities and resultant noise pollution on surrounding landowners' quality of life. However, there are currently no densely populated areas around the reservoir site or along the pipeline routes.	n/a	n/a
Sense of place	The location of the proposed Reservoir and associated infrastructure (e.g. pipelines) might impact on sense of place of inhabitants.	Low neutral to negative (alternative 1) Medium negative (alternatives 2-3)	Low neutral (alternatives 1-3)
<b>GEOGRAPHIC</b>			
Spatial development	The presence of the Medupi water reservoir and	n/a	n/a

CHANGE PROCESS	EXPECTED IMPACT	SIGNIFICANCE (pre-mitigation)	SIGNIFICANCE (post-mitigation)
	pipelines might prohibit future developments encroaching upon the reservoir footprint or pipeline servitudes, which means that land is lost for development. However, no future development plans for the area were evident. The proposed pipeline also does not pass through any built-up areas, apart from Eskom infrastructure in the area.		
<b>BIOPHYSICAL</b>			
Pollution and fire risk	The impact of pollution and fire risk on construction workers and the surrounding community's health and safety.	Medium negative	Low negative to neutral
Sanitation	Lack of sanitation impacts on the environment, which could affect health of people.	Medium negative	Low negative to neutral

A comparison was conducted among the alternative pipeline alignments by assessing all of the category 2 impacts identified with a certain change process. A summary of the outcome of this brief assessment is as per the table below, where:

<b>1</b>	Sensitive area, not recommended from a social perspective.
<b>3</b>	Acceptable area neither ideal nor flawed from a social perspective.
<b>5</b>	Ideal area, from a social perspective.

*Please note that a 'red area' does not constitute a fatal flaw, but does however imply that careful consideration should be given to the development and implementation of mitigation measures in the event that such an alignment is selected.*

Also note that category 1 impacts have not been included in this table, as it is believed that these impacts would occur regardless of which site is selected.

**Table 13:** Summary of Assessments (category 2 impacts)

Process	Change Process	Alternative 1	Alternative 2	Alternative 3
Demographic	No category 2 impacts foreseen.	n/a	n/a	n/a
Economic	No category 2 impacts foreseen.	n/a	n/a	n/a
Institutional & Empowerment	No category 2 impacts foreseen.	n/a	n/a	n/a
Socio-Cultural	Sense of place	5	3	3
Geographical	No category 2 impacts foreseen.	n/a	n/a	n/a
Biophysical	No category 2 impacts foreseen	n/a	n/a	n/a
<b>TOTAL</b>		<b>5</b>	<b>3</b>	<b>3</b>

Based on the results of the basic assessment as summarised in the table above, **alternative 1** is recognised as the preferred alignment (marginally) from a social perspective, followed by either **alternative 2** or **alternative 3**. This conclusion is based on the fact that **alternative 1** is mostly located in close proximity to existing infrastructure of a similar linear nature, while at the same time it is

located on an Eskom property thereby reducing the number of potential social impacts on the surrounding environment. However, since the completion of this study, Eskom has advised that **Alternative 1** is not regarded as technically feasible and therefore this alternative has been discarded (refer to figure 8 below).

**Figure 8:** Technically feasible pipeline alternatives



Due to the fact that no issues emerged on any of the initial three alternatives that could be considered as a fatal flaw from a social perspective, **alternatives 2 and 3** are equally viable. Regardless of which of these two alternatives (i.e. alternative 2 or 3) is chosen, careful consideration should be given to the enhancement and/or mitigation measures, both during the construction as well as the operation phases of the project.

During the basic assessment, no issues emerged that can be considered as fatal flaws from a social perspective. However, careful consideration should be given to the enhancement and/or mitigation measures, both during the construction as well as the operation phases of the project.

The reservoir site posed not fatal flaws from a social perspective, as the site on which the reservoir would be located is owned by Eskom and of a similar nature to the surrounding infrastructure.

## 5. MITIGATION MEASURES

### 5.1 Demographic Change Process

#### *5.1.1 Influx of construction workers*

The construction workers from the Medupi power station would be used for the reservoir construction. The following points are therefore reiterated:

##### **Economy:**

- Encourage construction workers to make use of local services.
- Inform local businesses of the presence of construction workers so that they are prepared for the additional demand on their services.

##### **Health:**

- Conduct an HIV/STI awareness campaign through the use of talks, posters, etc. both within the local area as well as amongst construction workers.
- Make condoms available at a central and discreet point for use by both construction workers as well as community members.

##### **Safety and Security:**

- Construction workers should be clearly identifiable through the use of overalls with the construction company logo, and/or ID tags.
- Inform neighbouring property owners when construction workers will be on site, during what times of the day and for how long they would be on site.

##### **Social well-being:**

- Communicate local communities' expectations (cultural, social) to construction workers.

#### *5.1.2 Influx of Job Seekers*

- Job seekers should be directed to the labour desk at the Medupi power station construction site.

### 5.2 Economic Change Process

#### *5.2.1 Direct formal employment opportunities to local individuals*

##### **Economy:**

- Payment should comply with applicable Labour Law legislation in terms of minimum wages.
- Where local labourers are employed on a more permanent basis, cognisance should be taken of the requirements of the Labour Law.

##### **Social well-being:**

- Unskilled job opportunities should be afforded to local residents. Local trade unions could assist with the recruitment process to counteract the potential for social mobilisation.

- Mechanisms should be developed to provide alternative solutions for creating job security upon completion of the project. This could include formal and/or informal training on how to look for alternative employment, information on career progression, etc. to ensure that people are equipped to seek other jobs with the skills that they have gained.

### ***5.2.2 Indirect formal and/or informal employment opportunities to local individuals***

- Develop a procurement policy that is easy to understand and ensure that local subcontractors also comply with the procurement policy and any other applicable policies.
- Ensure that local subcontractors receive the necessary support in terms of resources.
- Agree on specific performance criteria prior to appointment.
- Identify the segment that might benefit from informal indirect opportunities, and assist them with skills development and subsidise initiatives that are sustainable.

## **5.3 Institutional and Empowerment Change Processes**

### ***5.3.1 Attitude formation against the project***

- Employment opportunities should first be offered to the local community if the skills are available within the community.
- The undertakings in the EMP should also be implemented effectively and with due diligence.

### ***5.3.2 Disaster Management Plan***

- Develop and implement a disaster management plan for implementation during the construction phase.
- Identify suitable individuals that can be trained and used as first aid officers on site (levels 1 to 3). Training of these individuals should ideally take place during this phase of the project to ensure that qualified first aid officers are on site once construction commences.
- Consult with private ambulance services and/or hospitals so that they are aware of the project and would be able to provide emergency and/or medical services if needed.

## **5.4 Socio-Cultural Change Processes**

### ***5.4.1 Integration of construction workers into local areas***

#### **Health:**

- An aggressive STI and HIV/AIDS awareness campaign should be launched, which is not only directed at construction workers but also at the area as a whole.
- Condoms should be distributed by placing them at centrally located points and by ensuring that construction workers and residents are aware of the availability and location of condoms. The distribution of condoms should be approached with the necessary cultural sensitivity.
- Access at the construction site should be controlled to prevent sex workers from either visiting and/or loitering at the depots.

#### **Social well-being:**

- 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.
- The community should be informed in advance of the influx of construction workers and the time they will spend in the community as well as the activities they will be involved in. This will enable the community to prepare for a possible (temporary) change in functioning.
- A code of conduct should be established for construction workers in their dealings with the local community.

### ***5.4.2 Noise pollution***

- Construction activities should be restricted to daytime hours between 06:00 and 18:00.
- Adjacent property owners should be consulted and notified of any construction activities that could lead to excessive noise levels.
- Adjacent property owners should also be consulted if any night time construction activities were to take place.

### ***5.4.3 Sense of place***

- Sufficient and transparent information should be supplied to neighbouring properties to enhance their sense of safety and thereby reducing the negative impact on sense of place.

## **5.5 Biophysical Change Processes**

### ***5.5.1 Pollution and fire risk***

- Refuse on site should be discarded in sealed bins and/or covered skips. Refuse should be removed from the site on regular intervals (at least once a week) and disposed of at an approved waste disposal site.
- Construction workers should only be allowed to make fire in designated areas. Construction workers who do not keep within designated areas should be fined.

### ***5.5.2 Sanitation***

- Adequate water facilities should be provided.
- Sufficient portable chemical toilets on site and at the depots.
- Adequate sanitation services (e.g. showers) at the Medupi construction village.



## **6. SOURCES CONSULTED**

### **6.1 Municipal Documentation**

- Waterberg District Municipality Draft IDP 2002.
- Lephalale Local Municipality Draft IDP 2006/07.

### **6.2 Project Documentation**

- Bohlweki Environmental (undated). Social Impact Assessment as part of the EIA Report for the proposed Medupi Coal Fire Power Station. Unpublished project report submitted to Eskom Holdings.
- Project generated maps indicating the various pipeline alternatives.

### **6.3 Other Documentation**

- Sloomweg 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.
- Vanclay, F. 2002. *Environmental Impact Assessment Review* 22:183–211

### **6.4 Websites**

- <http://www.demarcation.org.za> - accessed January 2008.
- <http://www.idp.org.za> - accessed January 2008.