



**PROPOSED CONSTRUCTION OF A LANDFILL FOR ESKOM NEAR LEPHALALE IN THE
WATERBERG AREA**

SOCIAL IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

The purpose of this document is to present a social baseline and to assess the most important social impacts that the proposed development will have on the social environment. It also proposes mitigation measures to address the possible impacts.

Eskom is currently constructing a 6 x 800MW coal-fired power station about 15 km from the town of Lephalale. This station is known as the Medupi Power Station and is in close proximity of the existing Matimba Power Station and the proposed Coal 3&4 Power Stations in Waterberg.

In order to comply with a number of legal requirements all waste materials from Medupi's construction must be disposed of in an appropriately licensed waste dump site. There is currently a waste site at the town of Lephalale, but this site is not licensed and can thus not be used for Medupi's waste. As a result Medupi's waste has to be transported to the Johannesburg area to be disposed of at a licensed site. Due to the volume of waste produced, this is not the most cost-effective or sustainable solution.

A number of positive and negative social impacts have been identified throughout the lifecycle of the proposed project. The impacts that have been identified are the following:

- Unsustainable transport of waste
- Expectations
- Nuisance related to dust, noise, traffic and odour
- Job creation
- Creation of infrastructure
- Health Impacts

Although a number of additional impacts have been identified in the scoping phase of the project, many of these impacts were seen not to be relevant to this specific site. By choosing a site within an existing industrial area, many possible social impacts have been avoided. The possibility of scavengers looking for material in the site has been minimised due to the fact that access to the site is already controlled in a strict way. Impacts on sense of place has been minimised by placing the site in an already disturbed area. Since there are very little public interest in the project and it is being overshadowed by some of the other larger developments in the area aspects like Eskom's social license to operate and public perception about Eskom's activities were not relevant to this specific SIA. Stakeholder fatigue due to all the activities in the area has definitely played a role in the low levels of public interest in the project. Many social impacts, like an influx of workers, and impacts associated with construction camps will not occur as a result of this specific project, mainly because those impacts are already taking place due to



other developments in the area, and the existing infrastructure and resources will be utilised for this project.

Having said that, the project is seen to make a positive contribution to the social environment in which it will take place. A careful site selection process has contributed to choosing a site where the least number of negative impacts will be experienced.

Based on the SIA, the following recommendations can be made:

- The proposed landfill should be constructed as soon as possible seeing that the status quo is not sustainable and having a negative impact on a local and provincial level;
- Clear role clarification about responsibilities should be done between Eskom and the Lephalale Municipality;
- No construction traffic should be allowed during peak hours;
- Jobs should be sourced locally as far as possible;
- Jobs should be advertised in accessible ways, like over the local radio station and in local news papers;
- A complaints procedure must be put in place and advertised locally to ensure that all complaints about nuisances like bad odours are handled fast and efficiently;
- The landfill must be managed according to best practice principals; and
- Employees working on the landfill should wear protective gear and go for medical check-ups as specified in the OSH Act and approved by a health practitioner.

This project will improve the current situation, and is seen to be a positive impact on the social environment in which it will take place. No fatal flaws relating to the social environment has been found. It is therefore recommended that this project should proceed.



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GLOSSARY OF TERMS

Sense of place: Defining oneself in terms of a given piece of land. It is the manner in which humans relate or feel about the environments in which they live.

Social impact: Something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense.

Social change process: A discreet, observable and describable process which changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts.

Social Impact Assessment: The processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment.



LIST OF ABBREVIATIONS

CLF	Community Liaison Forum
CPF	Community Policing Forum
CS	Community Survey
DM	District Municipality
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMC	Environmental Management Committee
ESOMAR	European Society for Opinion and Marketing Research
GDP	Gross Domestic Product
IDP	Integrated Development Plan
LDF	Local Development Forum
LM	Local Municipality
SAMRA	Southern African Marketing Research Association
SAPS	South African Police Service
SCF	Sector Crime Forum
SIA	Social Impact Assessment



1 Introduction

The purpose of this report is to provide baseline information regarding the social environment, to identify possible social impacts that may come about as a result of the proposed development as well as to propose mitigation measures. This will assist decision-makers on the project in making sound decisions by providing information on the potential or actual consequences of their actions. It will furthermore help to avoid or minimise potentially adverse impacts and plan for the mitigation of unavoidable negative impacts, thereby significantly increasing the potential for project success. It also provides a framework to manage social change. The process entailed the following:

1. A baseline socio-economic description of the affected environment;
2. Identification of potential social change processes that may occur as a result of the project;
3. Identification of potential social impacts;
4. Identification of mitigation measures.

Disregarding social impacts can alter the cost-benefit equation of development and in some cases even undermine the overall viability of a project. A proper social impact assessment can have many benefits for a proposed development (UNEP, 2002) such as:

- Reduced impacts on communities of individuals,
- Enhanced benefits to those affected,
- Avoiding delays and obstruction – helps to gain development approval (social license),
- Lowered costs,
- Better community and stakeholder relations,
- Improved proposals.

Envirovolution Consulting was appointed to manage the environmental impact assessment process and they appointed Ptersa Environmental Management Consultants to perform the social impact assessment for the project.



2 Background

Social impacts are context specific. Not only should social impacts be interpreted within the context of the proposed project, but also within the context of the wider area in which the proposed development will take place. Sometimes other topics may appear to have little relevance, but within this context may be strong drivers of some of the social impacts.

2.1 Overview of proposed project

Eskom is currently constructing a 6 x 800MW coal-fired power station about 15 km from the town of Lephalale. This station is known as the Medupi Power Station and is in close proximity of the existing Matimba Power Station and the proposed Coal 3&4 Power Stations in Waterberg.

In order to comply with a number of legal requirements all waste materials from Medupi's construction must be disposed of in an appropriately licensed waste dump site. There is currently a waste site at the town of Lephalale, but this site is not licensed and can thus not be used for Medupi's waste. As a result Medupi's waste has to be transported to the Johannesburg area to be disposed of at a licensed site. Due to the volume of waste produced, this is not the most cost-effective or sustainable solution. It was therefore proposed that Eskom construct its own landfill in order to find a solution to the problem.

2.2 Site selection process

The site proposed as the best alternative has been selected through a site selection and scoping exercise which involved all the relevant specialists. The map below indicates the original sites that were considered for the proposed landfill. The pale yellow areas shows the initial sites which were considered. Three farms, namely Kromdraai (Site 1), Grootvallei (Site 2) and Hanglip (Site 3) were initially considered in the site selection process. A number of these sites were green field sites, meaning that no development has occurred on these sites. All of the sites belong to Eskom. From these three sites, none had fatal flaws from a social perspective, although Hanglip (Site 3) was not seen as a good option due to the proximity of planned residential areas. Through the site selection process, with input from all the specialists, Grootvallei (Site 2) was chosen as the best possible site.

Four alternative sites within this site were then identified. Shortly after this a new option became available. It was a portion of land located within the boundaries of the Matimba Power Station. After some investigation it was decided that this option – to be known as Site



5, would be the preferred option. It is situated on an industrial site, in an area which is already disturbed. The area is already fenced and not too close to any communities.

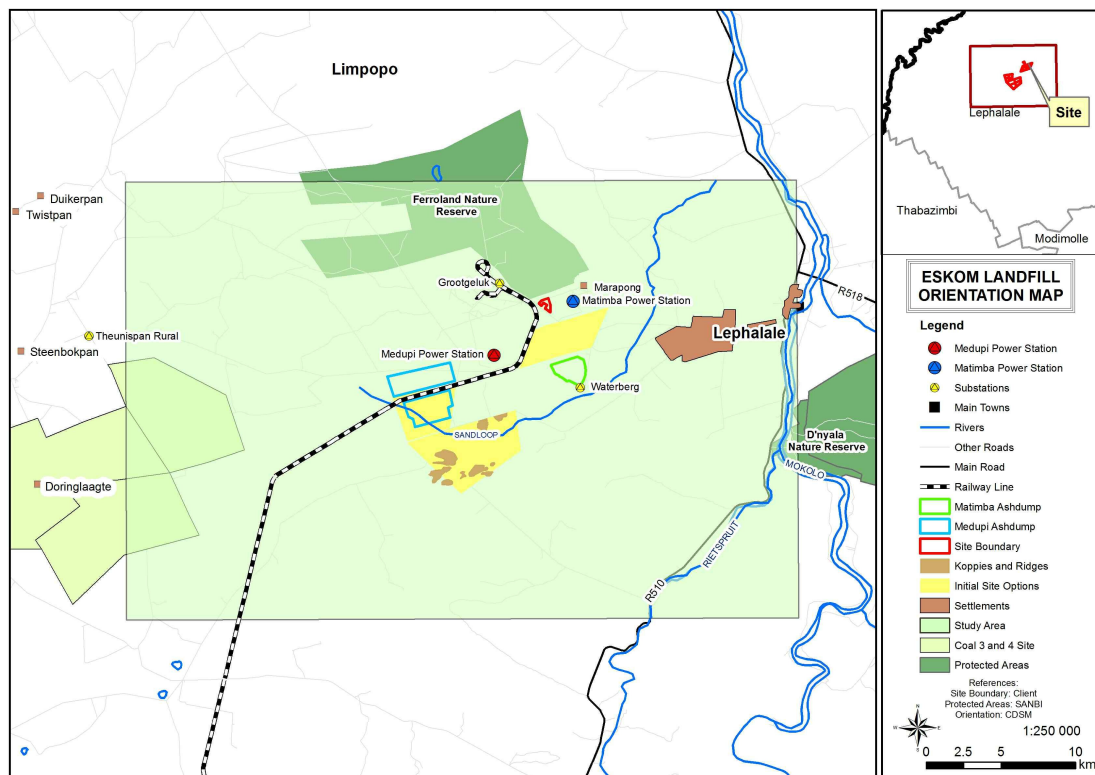


Figure 1: Sites considered in the site selection process

Site 5 was therefore selected as the most appropriate site for the proposed landfill. Since the footprint of the landfill will be relatively small, three options within Site 5 were identified to assess in the Environmental Impact Assessment phase of the project.

The site selection process assisted in eliminating a number of social impacts that were identified earlier in the project. It changed the potential social impacts from high to relatively low.



3 Study approach

3.1 Information base

The information used in this study was based on the following:

1. A literature review; (see list provided in the References);
2. A public consultation process that included personal interviews;
3. Information from public meetings;
4. Professional judgement based on experience gained with similar projects;

3.2 Assumptions and limitations

The following assumptions and limitations were relevant:

1. Not every individual in the community could be interviewed, therefore only key persons in the community were approached for discussion. Additional information was obtained using existing data, public meetings, via telephonic and personal interviews.
2. The social environment constantly changes and adapts to change, and external factors outside the scope of the project can offset social changes, for example changes in local political leadership. It is therefore difficult to predict all impacts to a high level of accuracy, although care has been taken to identify and address the most likely impacts in the most appropriate way for the current local context.
3. Social impacts can be felt on an actual or perceptual level, and therefore it is not always straightforward to measure the impacts.
4. There are different groups with different interests in the community, and what one group may experience as a positive social impact, might be experienced as a negative impact by another group. This duality will be pointed out in the impact assessment phase.

3.3 Methodology

Scientific social research methods were used for this assessment. In order to clarify the process to the reader, this section will start with a brief explanation of the processes that have been used in this study.



3.3.1 Defining of concepts

The theoretical model used for this impact assessment was developed by Sloodweg, Vanclay and Van Schooten and presented in the International Handbook of Social Impact Assessment (Becker & Vanclay, 2003). This model identifies pathways by which social impacts may result from proposed projects. The model differentiates between social change processes and social impacts, where the social change process is the pathway leading to the social impact. A detailed explanation of the model is not relevant to this study, but it is important to understand the key concepts, which will be explained in the following paragraphs.

Social change processes are set in motion by project activities or policies. A social change process is a discreet, observable and describable process that changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.) These processes may, in certain circumstances and depending on the context, lead to the experience of social impacts (Vanclay, 2003). If managed properly, however, these changes may not create impacts. Whether impacts are caused will depend on the characteristics and history of the host community, and the extent of mitigation measures that are put in place (Vanclay, 2002). Social change processes can be measured objectively, independent of the local context. Examples of social change processes are an increase in the population, relocation, or the presence of temporary workers. Social change processes relevant to the project will be discussed before the possible social impacts will be investigated.

For the purpose of this report, the following social change process categories were investigated:

- Demographic processes
- Economic processes
- Geographic processes
- Institutional and legal processes
- Emancipatory and empowerment processes
- Sociocultural processes
- Other processes

The International Association for Impact Assessment (2003) states that **Social Impact Assessment** includes the processes of analysing, monitoring and managing the intended and unintended social consequences, both positive and negative, of planned interventions (policies, programs, plans, projects) and any social change processes invoked by these interventions. Its primary purpose is to bring about a more sustainable and equitable biophysical and human environment. The Inter-organizational Committee on Principles and



Guidelines for Social Impact Assessment (2003) defines Social Impact Assessment in terms of “efforts to assess, appraise or estimate, in advance, the social consequences that are likely to follow from proposed actions”.

A **social impact** is something that is experienced or felt by humans. It can be positive or negative. Social impacts can be experienced in a physical or perceptual sense. Therefore, two types of social impacts can be distinguished:

- **Objective** social impacts – i.e. impacts that can be quantified and verified by independent observers in the local context, such as changes in employment patterns, in standard of living or in health and safety.
- **Subjective** social impacts – i.e. impacts that occur “in the heads” or emotions of people, such as negative public attitudes, psychological stress or reduced quality of life.

It is important to include subjective social impacts, as these can have far-reaching consequences in the form of opposition to, and social mobilisation against the project (Du Preez & Perold, 2005).

For the purpose of this SIA, the following Social Impact Assessment categories were investigated:

- Health and social well-being
- Quality of the living environment
- Economic impacts and material well-being
- Cultural impacts
- Family and community impacts
- Institutional, legal, political and equity impacts
- Gender impacts

Relevant criteria for selecting significant social impacts included the following:

- Probability of the event occurring



- Number of people that will be affected
- Duration of the impact
- Value of the benefits or costs to the impacted group
- Extent to which identified social impacts are reversible or can be mitigated
- Likelihood that an identified impact will lead to secondary or cumulative impacts
- Relevance for present and future policy decisions
- Uncertainty over possible effects
- Presence or absence of controversy over the issue.

For the purpose of this study, the model was adapted to suit the South African context, and where processes and impacts were not relevant to the study, it was omitted. Each category has a number of sub-categories, which also have been investigated. In order to make the report easier to read, similar impacts were grouped together, even if they did fall under different categories. Therefore, a number of impacts from different categories will be discussed under one heading. It is important to mention, however, that all categories were investigated and analysed prior to the writing of this report to ensure that the study is as thorough as possible.

3.3.2 Literature study

A detailed literature search was undertaken to obtain secondary data for the baseline description of the socio-economic environment. The information in this report was acquired via statistical data obtained from Statistics South Africa, SIA literature (see References) as well as information from reputable sources on the World Wide Web. Results from the public participation process compiled by Envirolution Consulting further informed the study.

3.3.3 Research approach

Traditionally there are two approaches to SIA, a technical approach and a participatory approach. A technical approach entails that a scientist remains a neutral observer of social phenomena. The role of the scientist is to identify indicators, obtain objective measures relevant to the situation and provide an expert assessment on how the system will change (Becker, Harris, Nielsen & McLaughlin, 2004). A participatory approach uses the knowledge and experiences of individuals most affected by the proposed changes as the basis for projecting impacts. In this case the role of the scientist is facilitator of knowledge sharing,



interpretation and reporting of impacts (Becker *et al*, 2004). For the purpose of this study, a combination of a technical and participatory approach was followed.

The findings presented in this report are based on primary as well as secondary (desk) research. A qualitative approach was followed for the primary research, while qualitative as well as quantitative data were used for the secondary research.

The layperson sometimes criticises qualitative research as “subjective” or “not really that scientific”. For this reason it is vital to understand the distinction between qualitative and quantitative research as well as their respective areas of application.

Qualitative research as a research strategy is usually characterised by the inference of general laws from particular instances, forms theory from various conceptual elements, and explains meaning (David & Sutton, 2004). It usually emphasise words rather than quantification in the collection and analysis of data. Data collection takes place by using methods such as unstructured or semi-structured interviews, focus groups, observations, etc. Data is not recorded in any standardised coding format, but are usually reported according to themes. Qualitative data express information about feelings, values and attitudes. This approach is used where insight and understanding of a situation is required (Malhotra, 1996). Participants are selected based on their exposure to the experience or situation under review. The aim of qualitative research is to understand, not to quantify and as such is extremely suitable for assessing social impacts. A potential impact need to be understood before it can be assessed appropriately.

Quantitative research as a research strategy usually makes inferences of particular instances by reference to general laws and principles and tends to emphasize what is external to or independent of the mind (objective) and incorporates a natural science model of the research process (David & Sutton, 2004). This usually makes it easier for a person with a natural or physical sciences background to relate to. This approach usually emphasises quantification in the collection and analysis of data. Data collection take place by using methods such as structured questionnaires and data is recorded in a numeric or some other standardised coding format. Data is expressed in numerical format and statistical techniques are usually used to assist with data interpretation. This approach is used when information needs to be generalised to a specific population and participants are usually selected using probability sampling techniques (although non-probability methods can be used depending on the characteristics of the target population).



3.3.4 Primary data collection

Primary data was collected mainly through personal interviews. Respondents for the interviews were selected by means of non-probability sampling techniques, more specifically a combination of judgemental and snowball sampling. The interviews took place in person individually or telephonically. The mode of interviewing used depended on the availability and convenience of the particular respondent. An unstructured interviewing technique was used. This allowed for the respondent to communicate freely all information that he / she deemed relevant to the proposed development that may be missed in a more structured interviewing format. It also allowed for the interviewer to probe and to clarify issues.

The data gathered from the interviews were analysed and interpreted using qualitative techniques such as content analysis and triangulated with other data sources for assessment purposes.

3.3.5 Ethical issues

The fact that human beings are the objects of study in the social sciences brings unique ethical problems to the fore. Every individual have a right to privacy which is the individual's right to decide when, where, to whom, and to what extent his or her attitudes, beliefs and behaviour will be revealed (Strydom, 2002). Every person interviewed for the purposes of this report has been ensured that although the information disclosed will be used, their names will not be disclosed without their permission. Therefore, to protect those consulted and to maintain confidentiality, the people interviewed for this report will not be named in the report. Records of the interviews have been kept. This is in line with international as well as national research practices such as the ESOMAR and SAMRA codes of conduct.



4 Baseline description of the social environment

The baseline description of the social environment will start with a description of the area within a provincial, district and local context. This description will focus on the identity and history of the area.

A description of the affected environment would not be complete without a description of the people in the environment that will be affected by the proposed development. Environment-behaviour relationships are interrelationships (Bell, Fisher, Baum & Greene, 1996). The environment influences and constrains behaviour, but behaviour also leads to changes in the environment. Only by understanding the people in an environment can the impacts on them truly be comprehended. The people in the environment will be described through a stakeholder analysis as well as through a socio-economic review of the population.

4.1 Description of the area

4.1.1 The Limpopo Province

The Limpopo Province is situated at the North Eastern corner of South Africa. Limpopo shares international borders with Botswana, Zimbabwe and Mozambique and locally it borders the North West province, Gauteng and Mpumalanga. The province spans an area of 125 755 square kilometres, taking up 10.3% of South Africa's land area. Six district municipalities fall within the jurisdiction of the Limpopo Province, namely Waterberg, Capricorn, Vhembe, Mopani and Sekhukhune. The capital is Polokwane, lying in the middle of the province.

The province is a typical developing area, exporting primary products and importing manufactured goods and services. It has a high potential for development, with resources such as tourism, rain-fed agriculture, minerals and abundant labour offering investment opportunities.

Rich in natural beauty, culture and wildlife, Limpopo has a thriving tourism industry. In addition to the Kruger National Park, there are 54 provincial reserves and several luxury private game reserves (www.southafrica.info).

Limpopo has rich mineral resources, making mining a critical sector of the economy of the province, contributing 22% to its GDP (www.limpopo.gov.za). The province is rich in terms of fruit and vegetable production. The province produces 75% of the country's mangoes, 65% of



its papaya, 36% of its tea, 25% of its citrus, bananas, and litchis, 60% of its avocados, two thirds of its tomatoes and 285 000 tons of potatoes. Other products include coffee, nuts, guavas, sisal, cotton and tobacco, timber, cotton, sunflower, maize, wheat cultivation as well as grapes. Most of the higher lying areas are devoted to cattle and game ranching, where extensive ranching operations are often supplemented by controlled hunting. About 80% of South Africa's hunting industry is found in Limpopo (www.southafrica.info). In addition to commercial agriculture, subsistence farming is the mainstay of a large section of the rural population.

The Gini co-efficient (a measure of the skewness of distribution of income) for the Limpopo Province is recorded at 0.63 (www.limpopo.gov.za). This is highly skewed, indicating that a small number of people earn good incomes while the rest receive rather poor incomes. This highlights the fact that despite all its assets, Limpopo is still a very poor province with apartheid planning one of the major contributing factors.

4.1.2 The Waterberg District Municipality

The Waterberg District Municipality is the largest district municipality in the Limpopo Province and is situated in the western part of the province. The district is bordered by the North West Province as well as the Gauteng province and shares an international border with Botswana. Within the province, it shares borders with the Capricorn District Municipality as well as the Sekhukhune District Municipality. Six local municipalities form part of the Waterberg district, namely Mogalkwena, Bela-Bela, Modimolle, Mookgophong, Lephalale and Thabazimbi.

The Waterberg district is in the heart of the Bushveld with low mountain ranges and escarpments and is mainly rural with urban areas that can be described as dispersed and fragmented (Waterberg District Municipality 2008 / 2009 IDP Review). The name Waterberg refers to the fact that the mountains in the area serve as water reservoirs for the arid region (www.encounter.co.za). The area has been inhabited over hundreds of thousand years and is also one of the most important San Rock Art areas in South Africa. The area is also known as one of the country's premier wild life areas.

Principle tourist attractions in the area are the Waterberg Biosphere Reserve, Bela-Bela hot springs, the Makapan caves, Nylsvley Wetland Nature Reserve and the Marakele National Park. There are also a number of nature reserves and smaller conservancies in the area (www.waterberg.gov.za). The conservation of wildlife is a driving force in the area with many farms increasingly focusing on game farming and conservation. The area offers great opportunities for birding and touring the region by car or motorcycle has become increasingly popular. Hunting is also a major attraction in the area. Licenses are required and strict rules



and conditions are observed. In all major centres taxidermists are available to preserve and present trophies.

Although best known for its game and nature reserves, the area is also rich in minerals and resources such as iron, coal, tin, platinum, zinc, titanium and vanadium and crops like tobacco, groundnuts, maize, grain sorghum, sunflower seeds, wheat, cotton, citrus fruit and rice are grown here (www.encounter.co.za). The Lephalale area has the third biggest coal reserves in the country which the District views as a distinct competitive advantage which could strategically position the area as a continental powerhouse of coal fuelled electricity production (www.waterberg.gov.za).

The Waterberg DM sees infrastructure as the cornerstone of social upliftment and economic development (www.waterberg.gov.za), and it claims to have allocated sufficient funding to kick start a basis for the development of proper infrastructure in needy areas. Local Government as the custodian of community infrastructure such as roads, waste disposal sites, water & sanitation systems, and public facilities claimed to have ensured that the bulk of investment is geared towards addressing community needs.

4.1.3 Lephalale Local Municipality

The Lephalale Local Municipality was established in December 2000 as a result of the amalgamation of the Ellisras/Marapong Transitional Local Council and the Ellisras/Tswelopele Transitional Local Council. It is situated in the north-western part of the Limpopo province and is the largest municipality in the district in terms of geographical size. The municipality accounts for about 39% of the district (Lephalale IDP) and it makes a contribution of about 26% to the district GGP. The agricultural sector makes up about 30% of the local economy.

The Lephalale area is attractive to the eco-tourist with its great variety of game, birds, trees and grasslands. It offers many opportunities for the outdoor enthusiast as the most activities available in the area centres around game drives, bush walks and hikes, bird-watching, horse-riding safaris, cattle mustering, hunting, fishing, mountain biking and 4x4 trails. The area is described as the heart of the Waterberg Bushveld and one of the last great wilderness areas in South Africa (www.waterberg.gov.za).

Annual events in the area include the Lephalale Bushveld Festival, the Marula Amateur Golf Tournament, Ellisras Firearms Festival, Steenbokpan Quad Rally, Fahad 4x4 Family Sport Day Annually and the Marken Marathon (www.lephalale.gov.za).

According to the Lephalale IDP the projected tourism growth in the area should be considered



when planning any significant development as the importance of the tourism industry to the economy of the area is likely to continue to grow in the future. This is likely to be related to the hunting and ecotourism industries, but could also be linked to any expansion of the industrial operations and the related business tourism. The existing importance of the business tourism sector, and its strong links to the mine and power station are also viewed as important.

Priority issues that have been identified in the Lephalale area (Lephalale Municipality: Spatial Development Framework, 2006) are:

- Clinics
- Roads
- Water reticulation
- Sustainable employment projects
- Acquire municipal land
- Electricity
- Improve payment of services
- Schools/Training
- Improvement of bulk water supply
- Comprehensive Community Services & Facilities

4.1.4 Lephalale

The town Lephalale was known as Ellisras until 2001. Ellisras came into being in 1960 on the farm known as Waterkloof and was named after the original owners of the farm, Patrick Ellis and Piet Erasmus. (www.lephalale.com). The name “Lephalale” was derived from isiZulu with “Lapha” meaning “here” and “lala” meaning “to sleep”. The area was supposed to be called Laphalala, but because of the Sepedi influence, it was then called Lephalale which is also the name of the river that cuts through the centre of the area (www.thebiddinggalery.co.za). According to the Lephalale tourism brochure (www.lephalale.com), the word refers to the Palala River, which means “the barrier”, because of its deep incision into the Palala plateau, which drains from east to northwest in the Limpopo River. The Palala River is located almost in the centre of the municipal area.

The town is situated on the Mokolo River, a tributary of the Limpopo (www.golimpopo.com) and is about 60 km from the Botswana border. The town planning was done in such a way that almost no big trees were cut down and houses and roads were designed to keep much of the Bushveld untouched (www.leopardcreekreserve.co.za).

Lephalale is well-known for its coal-mining industry, which besides tourism, is the mainstay of



the town. The Kumba Grootgeluk open-cast mine, the largest mine of its kind in South Africa and the Matimba Power Station, the largest dry-cooled power station in the world, also put Lephalale on the map. The areas of Onverwacht and Marapong form part of the town of Lephalale. Both these areas were historically used to house employees of the industries in the area, but have since been integrated in Lephalale town. In Marapong single quarter hostels has been transferred to family units in an attempt to address some of the legacies of Apartheid, and to create much needed housing. Most of the RDP housing projects in the town of Lephalale have been constructed in Marapong. **Figure 2** below indicates the proximity of the proposed landfill to Lephalale and Marapong.

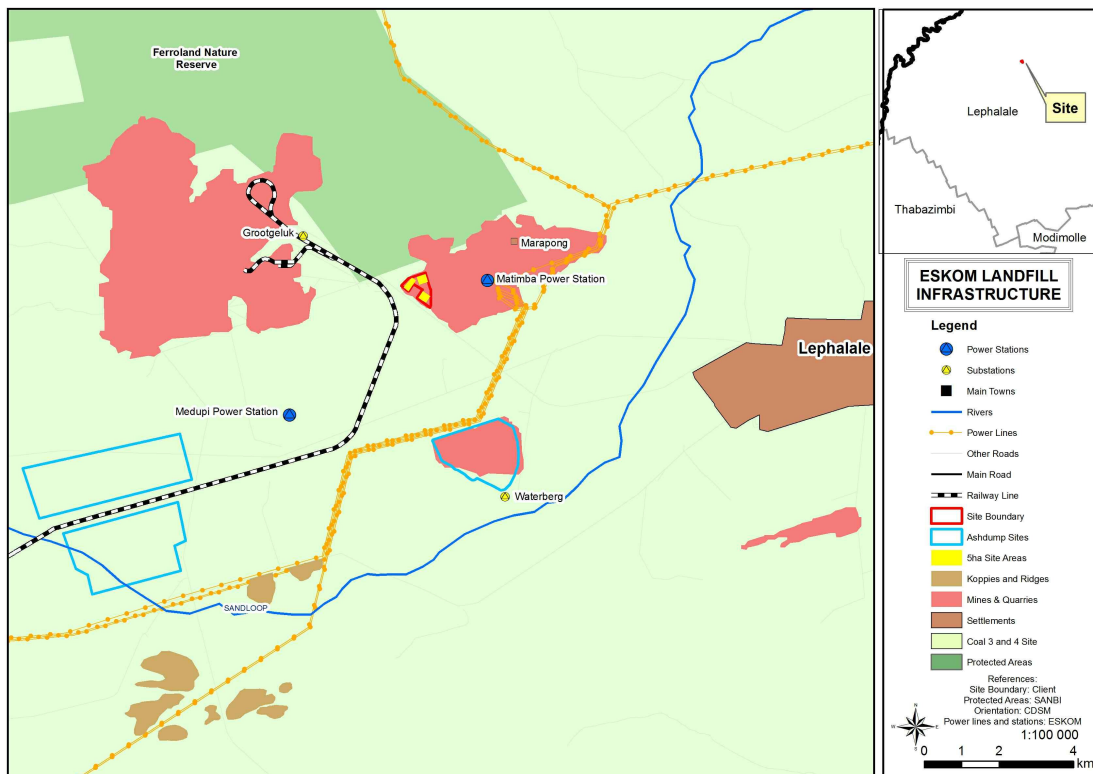


Figure 2: Relation of the proposed sites to Lephalale and Marapong

4.2 Description of the population

The baseline description of the population will take place on three levels, namely provincial, district and local. It is only by understanding the differences and similarities between the different levels that impacts can truly be comprehended. For this study the focus will be on the Lephalale Local Municipality within the context of the Waterberg District Municipality and the Limpopo Province. Recent population statistics for the area is not available on a lower level than that of the local municipal area.

The data used for the socio-economic description was sourced from the Community Survey



(CS) conducted by Statistics South Africa in 2007. The Community Survey is a large-scale household survey conducted by Statistics South Africa to bridge the gap between censuses. It served as a mini census and its purpose (www.statssa.gov.za) is to collect information on the trends and level of demographic and socio-economic data; the extent of poor households; access to facilities and services; levels of employment/unemployment; in order to assist government and private sector in planning, evaluation and monitoring of programmes and policies.

Community Survey 2007 yields more up-to-date information than Census 2001 which used to be the most recent source of demographic and socio-economic data on national, district and municipal level. It also has the advantage that the data is aligned to the new municipal boundaries while the Community Profiles database of Statistics South Africa still show results according to the preceding municipal boundaries.

It should however be noted that Community Survey 2007 is not a replacement of the Census (Statistics South Africa, 2007a) and that there are certain limitations inherent to the study that should be taken into consideration when interpreting the results (Statistics South Africa, 2007b):

- The scope of the study only included households and individuals. Institutions such as military bases, national parks, prisons, hotels, hospitals, military barracks, etc were excluded from the field work. The institutional population is an approximation based on 2001 figures and not new data.
- The measurement of unemployment is higher and less reliable due to the differences in questions asked relative to the normal Labour Force Surveys.
- The income includes unreasonably high income for children probably due to misinterpretation of the question, e.g. listing parent's income for the child.
- The distribution of households by province has very little congruence with the General Household Survey or Census 2001. It is not yet clear whether these changes are real or whether they are due variables that could be ascribed to the study.
- Since the Community Survey is based on random sample and not a Census, any interpretation should be understood to have some random fluctuation in data, particularly concerning the small population for some cells. It should be understood that the figures are within a certain interval of confidence. This applies in particular to cross-tabulations on municipal level where small numbers are likely to give an under or overestimation of the true population (due to group not present in sample or number realised for sample very small). The aggregated total number per municipality however provides more reliable estimates (Statistics South Africa, 2007a).



- Further it should be noted that the estimates were done with the use of the de-facto population (the group of population who were enumerated according to where they stayed on a specific night) and not the de-jure population (the group of population who were enumerated according to where they usually live). These results are presented as the de-jure population.

Based on this the results should be viewed as indicative of the population characteristics in the area and should not be interpreted as absolute. In some instances where Community Survey 2007 data are not available, the Census 2001 data will be used for indicative purposes.

4.2.1 Population

According to the Community Survey 2007 the population of South Africa is approximately 48.5 million and has shown an increase of about 8.2% since 2001. The household density for the country is estimated on approximately 3.87 people per household, indicating an average household size of 3-4 people (leaning towards 4) for most households which are slightly down from the 2001 average household size of 4 people per household.

Although the Limpopo province showed a positive growth rate (based on the results of the Census 2001 and Community Survey 2007 data), it was still below the national average (**Table 1**). The Waterberg district as well as the Lephalale municipal area both showed a decline in population which was more pronounced in the Lephalale area. As the town of Lephalale has expanded a lot over the past couple of years, it is possible that this phenomenon may relate more to the rural areas of the municipality as most of the people in the municipality live there. It must be mentioned that there is a discrepancy between the population Community Survey 2007 shows for Lephalale (80 141) and the population that Lephalale's website indicates (105 000 – www.lephalale.com). It is anticipated that the urban population will increase over the next years and that the town of Lephalale will expand even more due to the construction of additional power stations and the associated industrial activities.



Table 1: Community Survey 2007 Population, growth and household estimates

	Limpopo Province	Waterberg DM	Lephalale LM
Approximate population size	5,238,286	596,092	80,141
Estimated growth in population since 2001	4.86	-2.94	-16.61
Average household size	4.31	3.71	3.38

It must be noted that exact figures are not available, and that even the CS 2007 data is a projection. The Quantec database (www.quantec.co.za), for example, bases its population figures on the Census 2001 data and then applies projection factors based on available economic and demographic data. Their projection for Limpopo is 5,548,548, for the Waterberg District is 686,620 and for the Lephalale Local Municipality is 96,763. Population statistics should thus be interpreted as indicative and used to show patterns and trends.

The population distribution for the area under investigation (**Figure 3**) looks very similar on municipal and district level with the majority belonging to the Black population and a greater proportion Whites than on a provincial level.

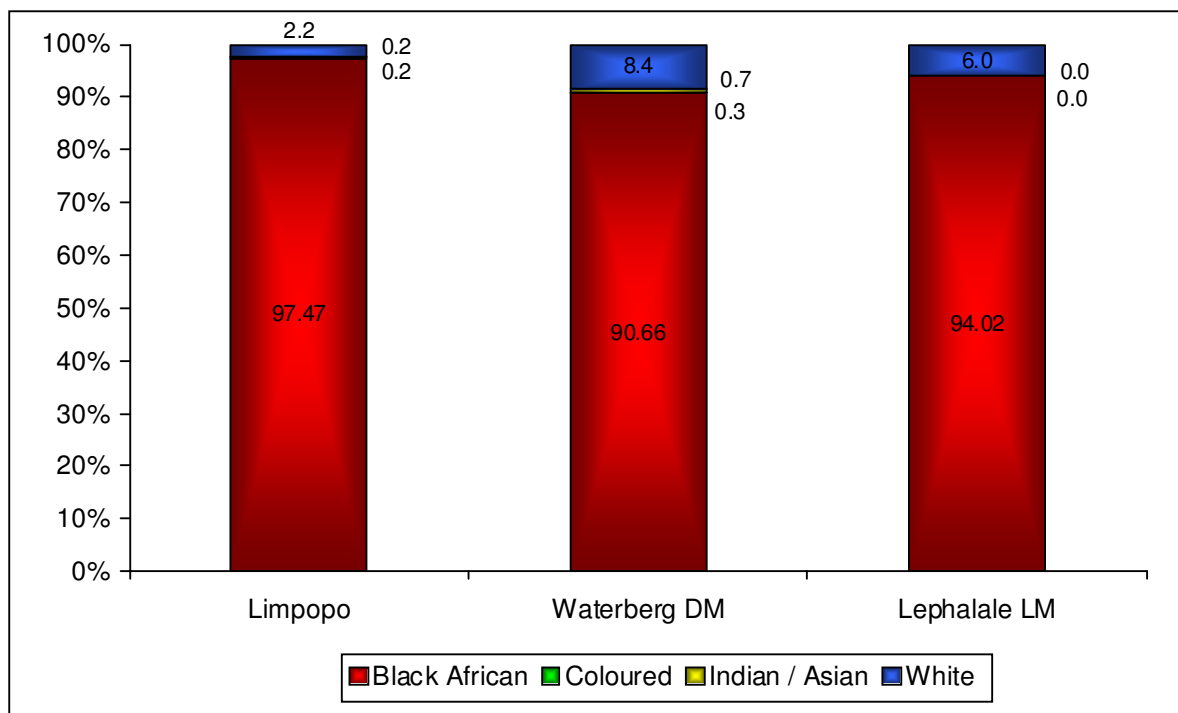


Figure 3: Population distribution (shown in percentage, source: CS 2007)



4.2.2 Age

The average age in Limpopo is 25.55 years (**Table 2**), with the average age for Waterberg and Lephalale slightly higher. Such a young population holds the potential for great future growth in the size of the population, which is likely to result in a greater demand for jobs in the years to come as well as a greater need for infrastructure. The White population is the second largest population group in the area with an average age of about 8-10 years higher than the Black African population in the area. Their average age indicates that they are likely to be more settled in their lifestyles and careers and are also likely to have greater spending power per individual. It must be kept in mind that being in different life-stages, these groups may in many respects have different needs. This population distribution may be attributed to the presence of contractors working in the area.

The average age of the White population in the Lephalale area is much lower than the average age of the Waterberg district, indicating that the average White person in the Lephalale area might be in a different life-stage than in the Waterberg district as a whole. Although both these groups are likely to be settled in their careers, there might be a greater need in the Lephalale area for crèches and primary schools than in the Waterberg district as a whole.

Table 2: Average age (source: CS 2007 data)

	Limpopo Province	Waterberg DM	Lephalale LM
Approximate average age (in years)	25.55	27.28	26.35
Black African	25.29	26.21	25.84
White	36.08	38.02	34.26

The age distribution (**Figure 4**) for the area under investigation looks very similar on the different levels. On all levels, but more so on provincial level, there are proportionately more people that are not of an economically active age (younger than 15 years or older than 65 years) indicating greater strain on the economically active people to take care of them.

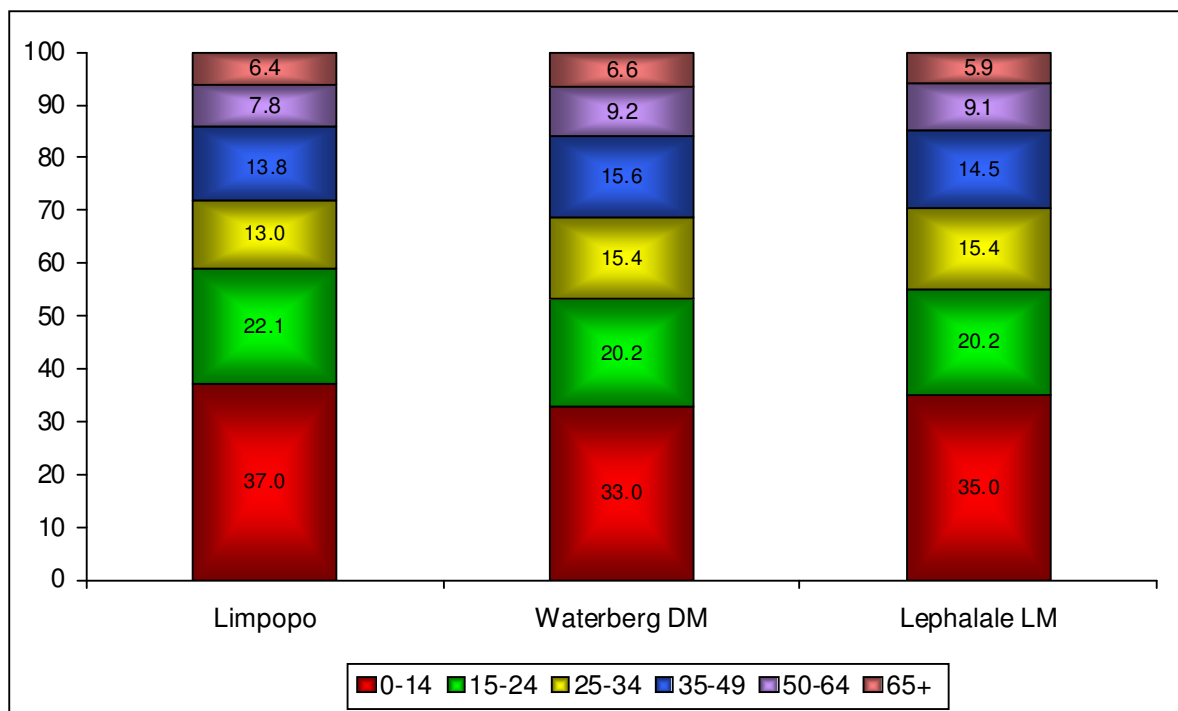


Figure 4: Age distribution (shown in percentage, source: CS 2007)

4.2.3 Gender

The gender distribution is biased towards females (**Figure 5**) on all levels, to a greater extent on a provincial level. A possible explanation for this is that in many of the rural or tribal areas males migrate to large urban or metropolitan areas in an attempt to find a job and generate an income. They then live close to the areas where they work and will send money home to take care of the family that was left behind in the area. The picture is more balanced on a district and local level, probably because great proportions of the land in the Waterberg area is used for farming, industrial or conservation purposes with very little tribal land falling in these areas. The other districts in the province consist of large portions of tribal land.

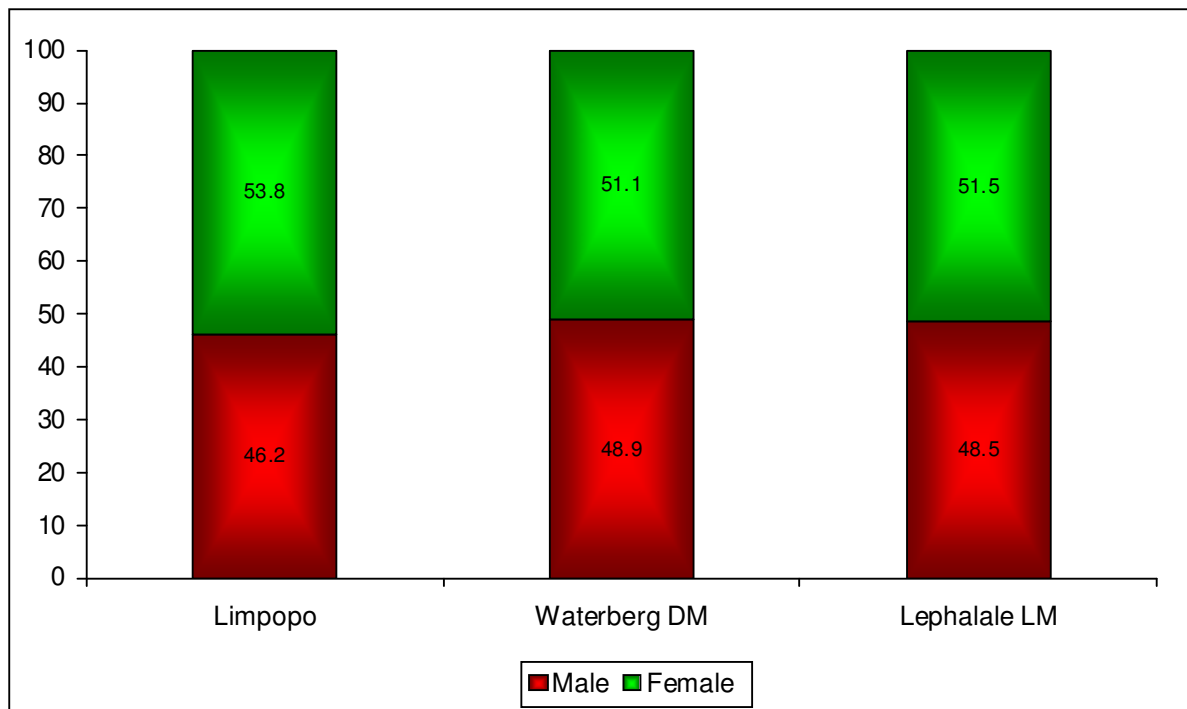


Figure 5: Gender distribution (shown in percentage, source: CS 2007)

4.2.4 Language

The language profile for the area show great differences between the different levels of investigation (**Figure 6**). In 2001, more than half of the people in the Limpopo Province had Sepedi as home language, followed by Xitsonga and Tshivenda. On a district and a local level, more than half of the people also have Sepedi as home language. It is followed by Setswana, Xitsonga, Afrikaans and IsiNdebele on a district level. On a local level, almost a third of the people had Setswana as home language, followed by Afrikaans as the third most common home language. The high frequency of Setswana speakers is expected as the municipality shares a border with Botswana.

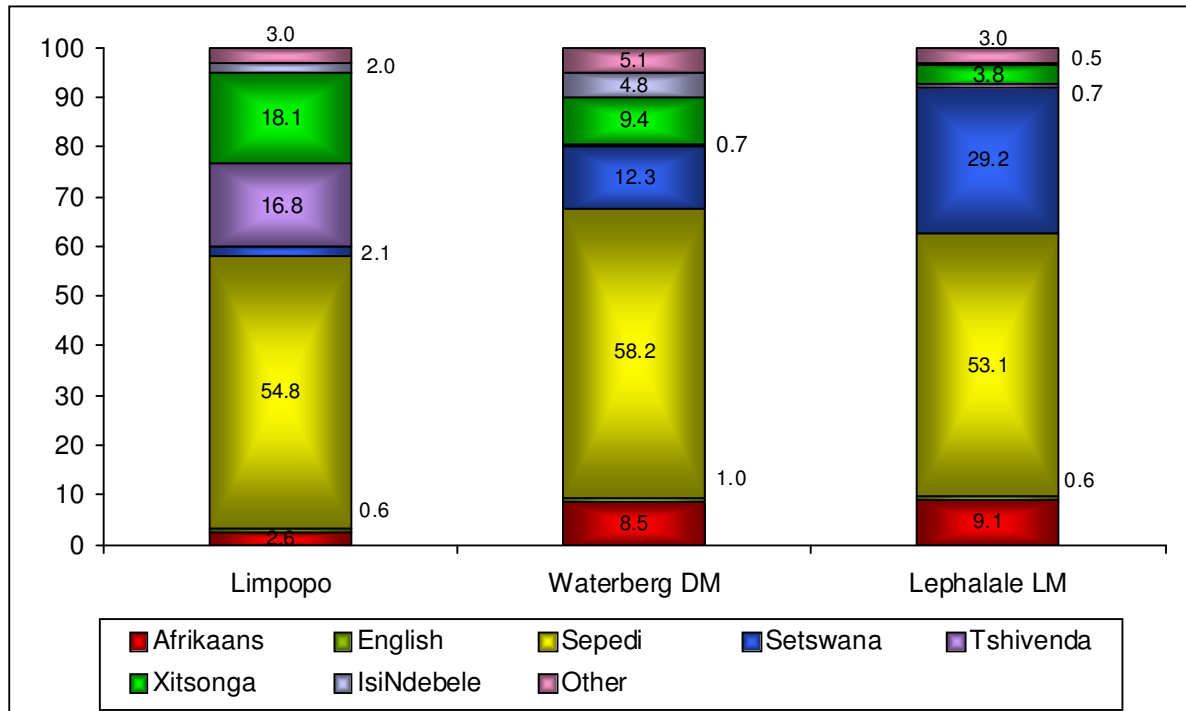


Figure 6: Language distribution (shown in percentage, source: Census 2001)

4.2.5 Education

Education levels among people 20 years or older in the area under investigation is very low (Figure 7), in particular on a local level where about 80% of the population have not completed secondary schooling. This indicates that there may be a great need for adult education as well as skills development in the area. The Lephalale area has the highest proportion of people with tertiary qualifications, which could possibly be ascribed to the industrial activities happening in and around Lephalale such as mining and electricity generation which generally have a greater demand for labour with a tertiary education.

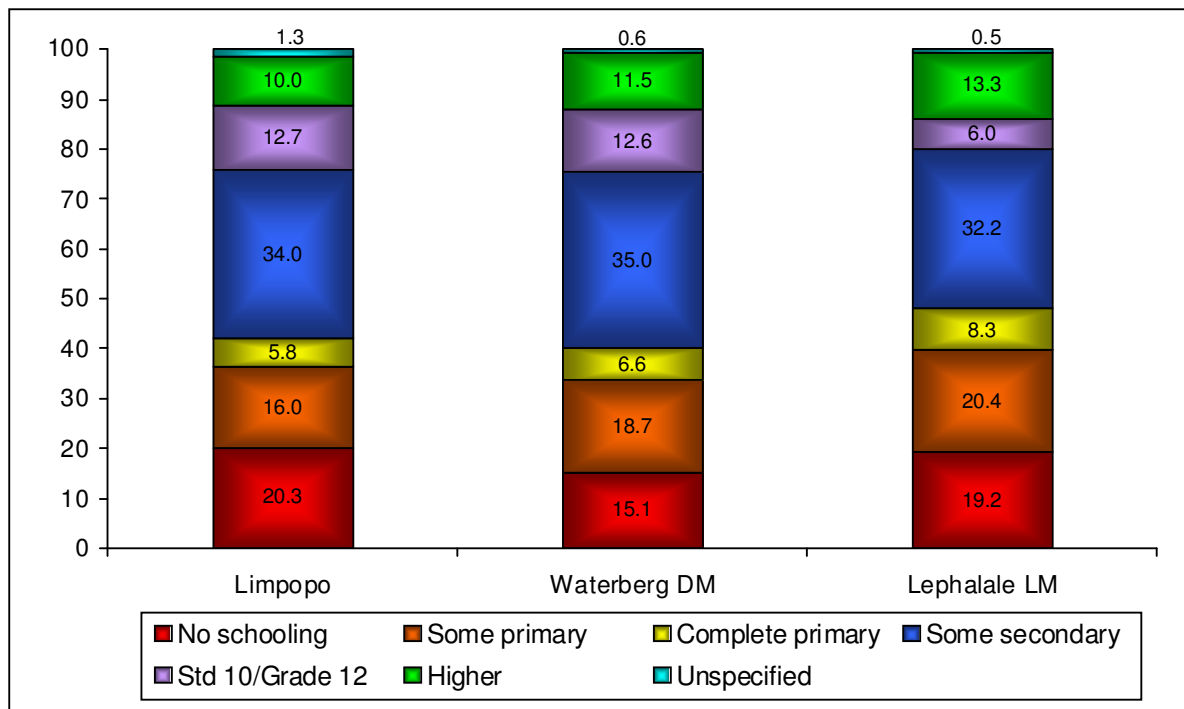


Figure 7: Highest education level – people 20 years or older (shown in percentage, source: CS 2007)

In the Lephalale municipal area there are 10 pre-primary schools, 95 primary schools, 35 secondary schools, an ABET training centre (the Mokolo Academy) and a FET college (www.lephalale.com). The IDP review for the 2007/2008 Financial Year for the Lephalale Municipality indicates however that there are in total 115 educational institutions (excluding pre-primary schools) in the area. Of these schools 37 need sanitation, 19 require electricity and 42 are in need of water provision. Providing water and electricity to a number of schools have been identified as one of the challenges for the municipality.

The area is in need of specific facilities and/or the maintenance of these school and training facilities (Lephalale SDF Report, 2006). One of the major issues is the need for additional class rooms. A need has been identified for the training courses in the area to be expanded to include more technically orientated training that will address specific needs of the industries in the area and through such training expand the available skills base in the area. A need has also been identified for additional pre-primary and primary schools.

4.2.6 Income

The profile for personal monthly income shows great differences depending on the level from which the area is viewed (**Figure 8**). On a provincial level about 60% of the people aged 15-65 years indicated that they had no monthly income. This proportion dropped down to about



half on a district and local level. The Waterberg district has a greater proportion of people in the higher income brackets than the Lephalale area.

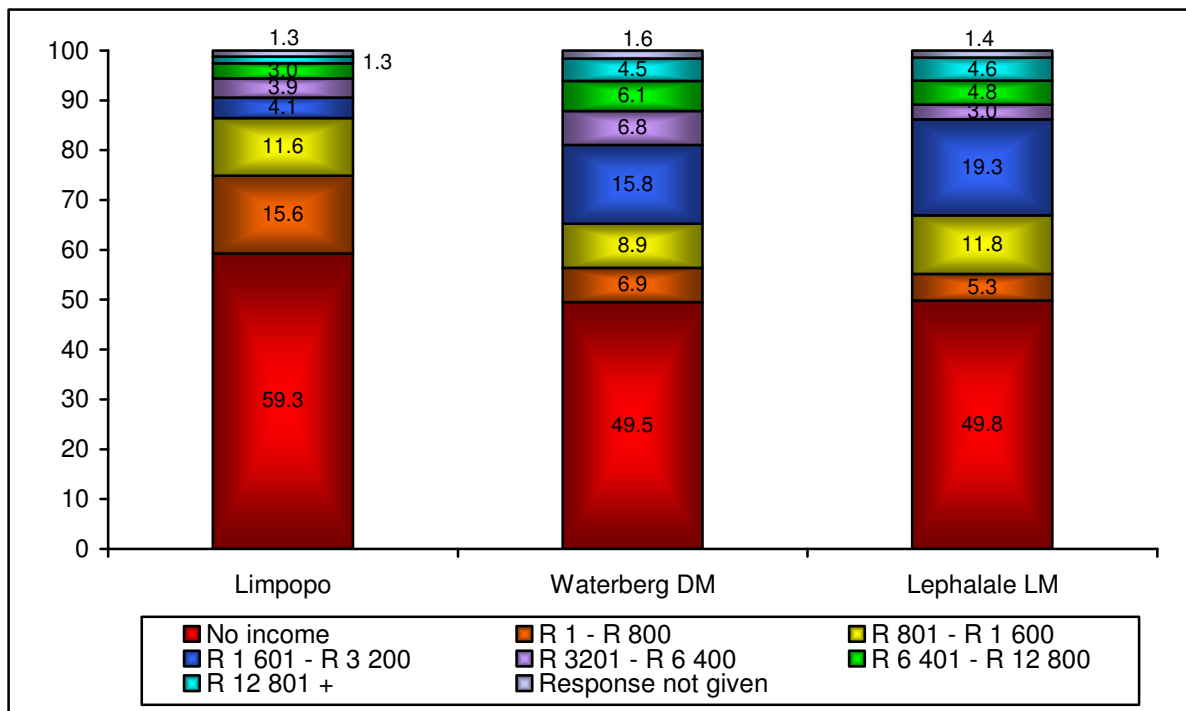


Figure 8: Monthly Personal Income distribution (shown in percentage, source: CS 2007)

4.3 Industry

4.3.1 Employment, occupations and industry

The employment profile (**Figure 9**) shows that the Waterberg district has the highest levels of employment (40%), followed by Lephalale with almost 35% of people of economically active age being employed. Almost half of the people in the Lephalale area have indicated that they are not economically active. People who are not economically active are people like housewives/ homemakers, students and scholars, pensioners and retired people, and any others not seeking work during the reference period. This suggests a heavy burden on the people who are employed, implying they have to take care of the needs of more than one additional adult.

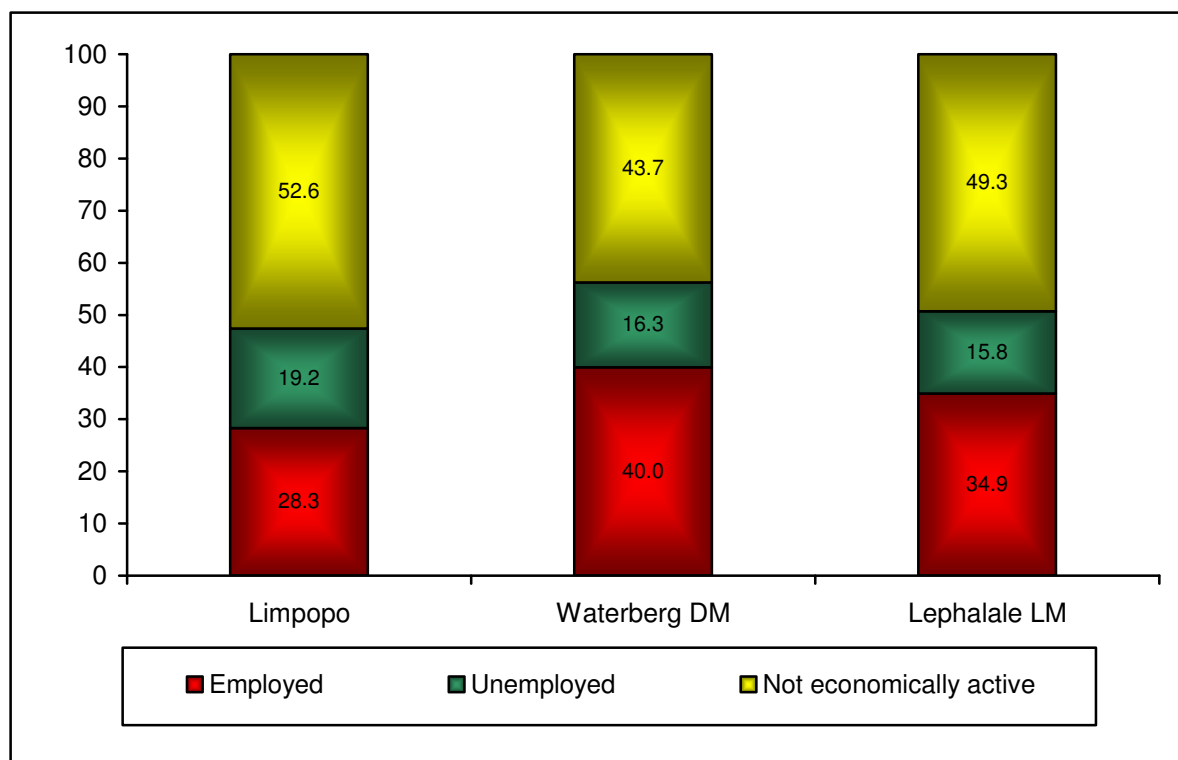


Figure 9: Employment distribution (shown in percentage, source: CS 2007)

The profiles on provincial, district and local level look very different from one another, with greater similarities between the provincial and district profiles. The biggest proportion of the employed people in the area under investigation (**Figure 10**) is working in elementary occupations such as domestic workers, street vendors, shoe cleaners, building caretakers, messengers, porters, garbage collectors, agricultural workers, mining and construction labourers, manufacturing labourers, transport labourers and freight handlers.

On a provincial level this is followed by occupations that were unspecified and not elsewhere classified, professionals and craft & related trades workers. When looking from a district perspective, elementary occupations are followed by craft & related trades workers, professionals and plant and machine operators & assemblers. Locally the second largest occupational group is also craft & related trades workers, followed by skilled agricultural workers, professionals and plant & machine operators.

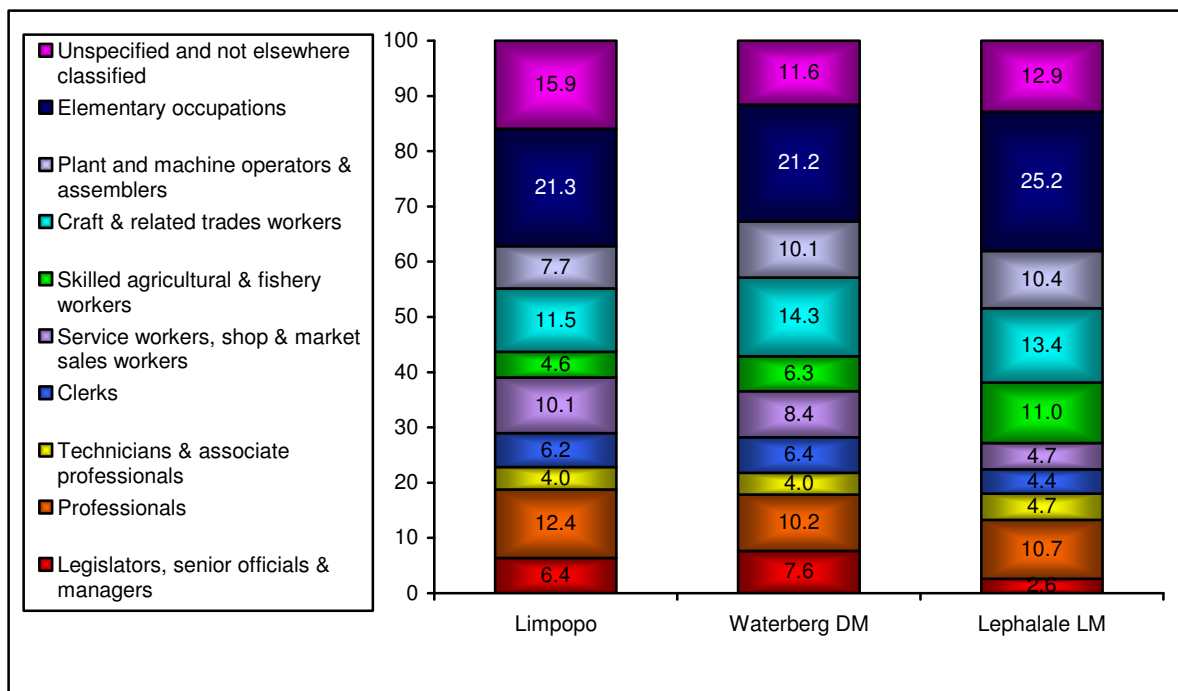


Figure 10: Occupation distribution of the employed (shown in percentage, source: CS 2007)

The industry profiles for the area (**Figure 11**) look very different, depending on the level under review. On all levels a great proportion of industries were unspecified, which may change the profiles to an extent if this proportion could be classified. In the Limpopo province, the industry with the greatest representation is community, social and personal services which include public administration and defence activities, education, health and social work and other service activities among others. This is followed by the wholesale and retail trade industry which also includes hotels and restaurants.

In the Waterberg district, mining and quarrying has the greatest representation, followed by community, social and personal services and wholesale and retail trade. The picture looks very similar in the Lephalale area, except that the group ‘Other and not adequately defined’ industries is the second largest group after mining and quarrying. One possible hypothesis is that this may relate to specific tourism activities such as hunting or private game farms as tourism is not classified as an industry on its own and activities relating to tourism can be found in many of the industries as classified in **Figure 11**. It might have been difficult for the respondent to select only one industry for his/her business activities.

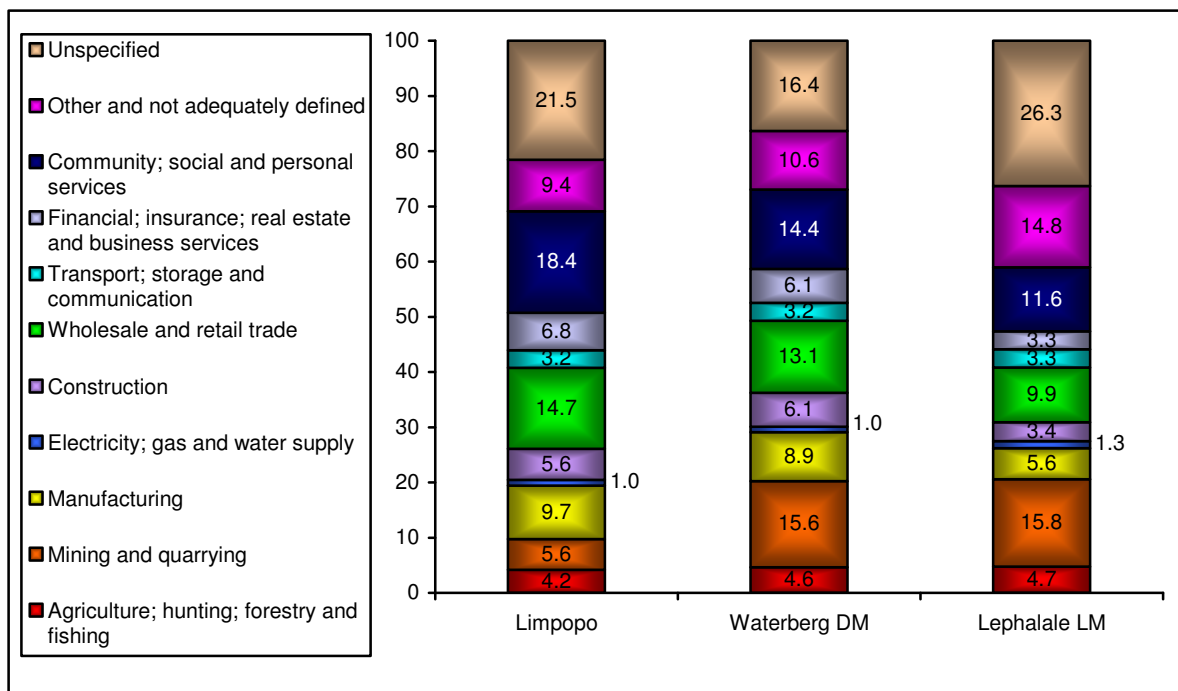


Figure 11: Industry distribution of the employed (shown in percentage, source: CS 2007)

4.4 Infrastructure

4.4.1 Services: Water, Sanitation, Electricity, Refuse Removal and Roads

In the Limpopo province, most households (two fifths) have access to piped water from an access point outside the yard (Figure 12), followed by a quarter who has access to piped water inside the yard and almost a fifth with piped water inside their dwelling. On a district level, proportionately more people (34.6%) have access to piped water inside their dwellings, with piped water from an access point outside the yard, the second most frequent way that households access water from. In the Lephalale area, more than 40% of households have to access water from piped water from an access point outside their yards, with only just below a third having access to piped water inside the dwelling. The Lephalale area also has the greatest proportion of people that get their water from a borehole.

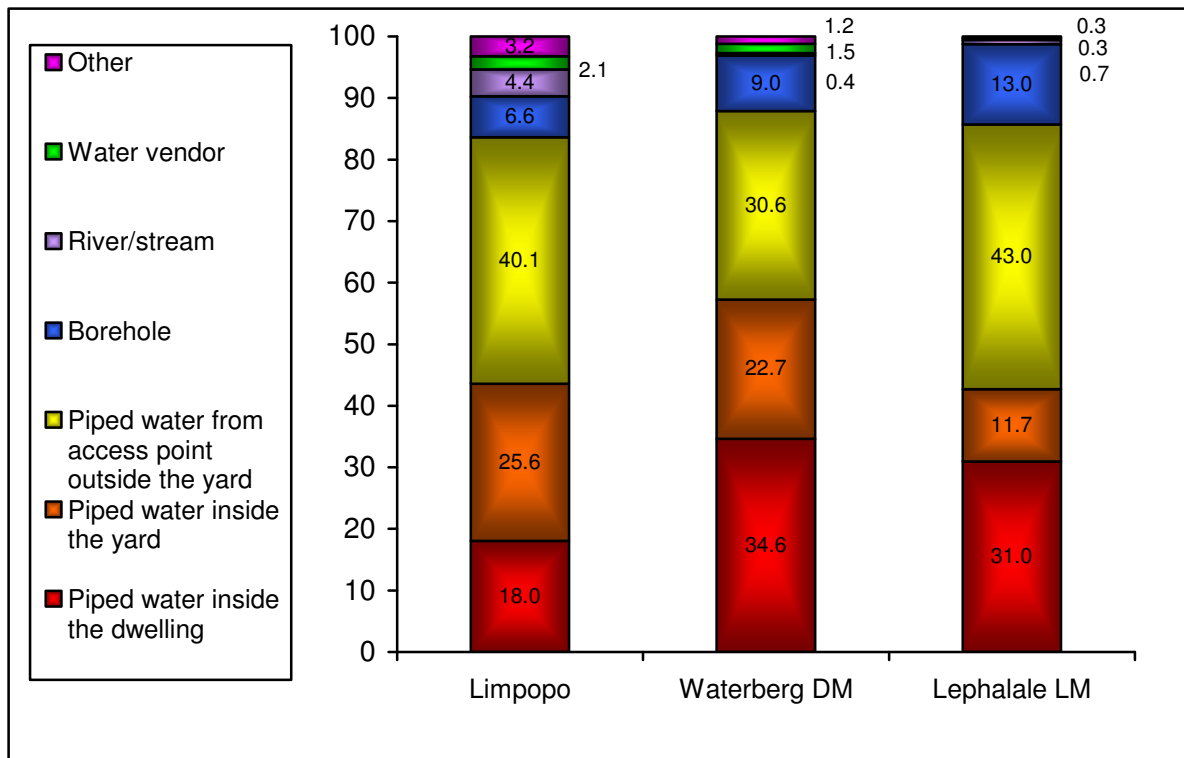


Figure 12: Distribution of water supply (households, shown in percentage, source: CS 2007)

Bulk water supply has been identified as an issue in the Lephalale area (Lephalale SDF Report, 2006). The problem has been identified as lack of infrastructure in the sense that the existing reticulation system/s need to be maintained and extended to such an extent that it is not possible to reach the preferred levels of service delivery due to financial constraints experienced by the local authority.

More than half of the households in the Limpopo province use pit toilets without ventilation for sanitation purposes (**Figure 13**), with less than 20% of the households having access to any kind of flush toilet and more than 10% having no toilet facilities at all. This is most likely due to the rural nature of the province as well as the amount of tribal land in the province. People live far from municipal infrastructure and people are leading a simple lifestyle living in dwellings that meet their basic needs.

In the Waterberg district similar proportions (about two fifths each) has access to a pit toilet without ventilation and a flush toilet that is connected to a sewerage system. The Waterberg district has very few tribal areas in its boundaries and also more big towns, but still has a distinct rural character. In the Lephalale area, almost half of the households make use of a pit toilet without ventilation, while almost a third has access to any type of flush toilet.

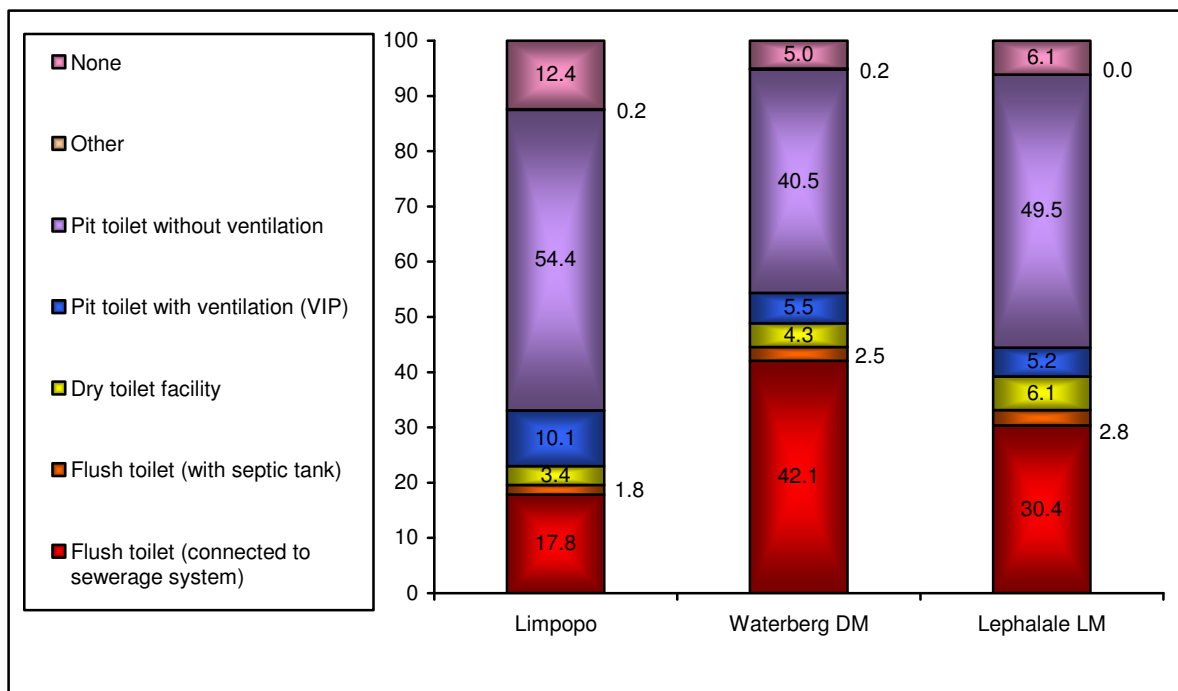


Figure 13: Sanitation distribution (households, shown in percentage, source: CS 2007)

Lack of access to basic sanitation services can create massive environmental and health problems in both rural and urban areas in any area. Most of the non-urban/rural settlements do not comply with minimum RDP levels of water supply and sanitation facilities (Lephalale SDF Report, 2006). Low levels of education regarding sanitation and the use of water for personal hygiene is also contributing to the problem.

The main source of energy for lighting (**Figure 14**) in the area is electricity, with more than 80% using electricity, with candles being the second greatest source of energy. The profiles look very similar and provincial, district as well as local level.

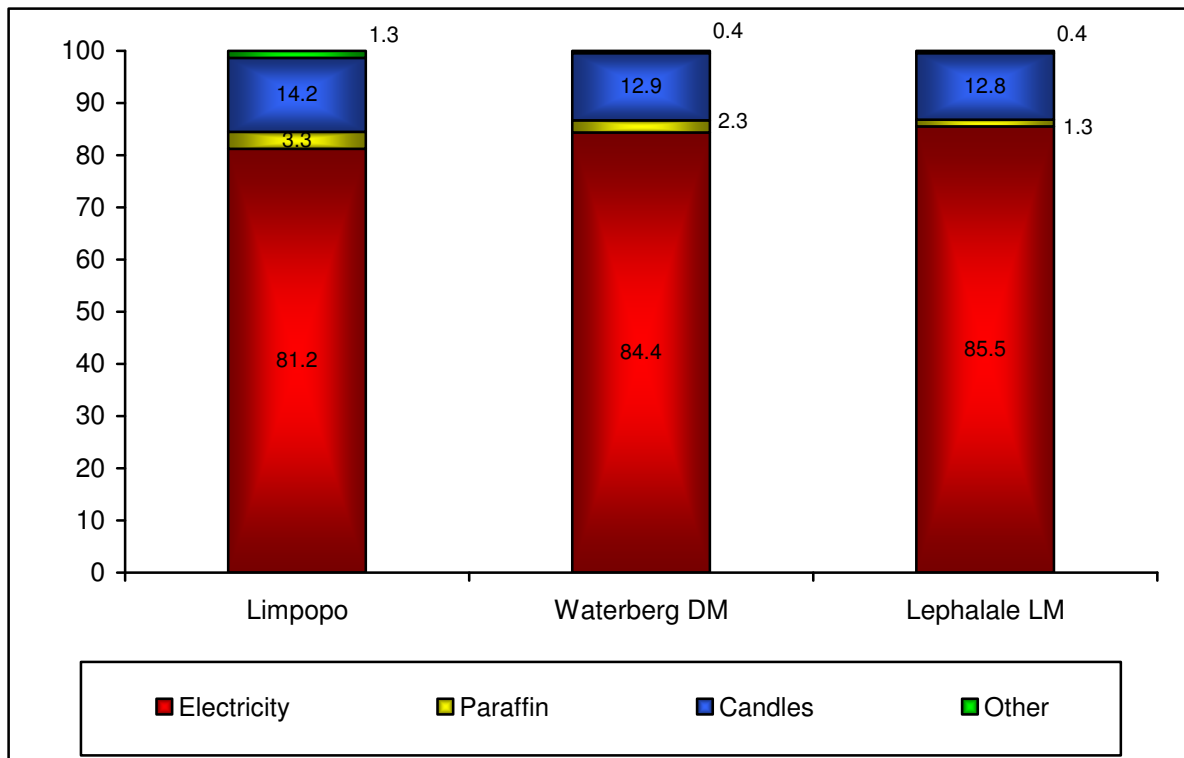


Figure 14: Distribution of energy source for lighting (households, shown in percentage, source: CS 2007)

Most households in the area have their own refuse dumps (**Figure 15**). In Lephalale almost three quarters of the households has their own refuse dumps, compared to just below half in the Waterberg area. This can probably be ascribed to the mainly rural character of the area, with more urban areas in the Waterberg district.

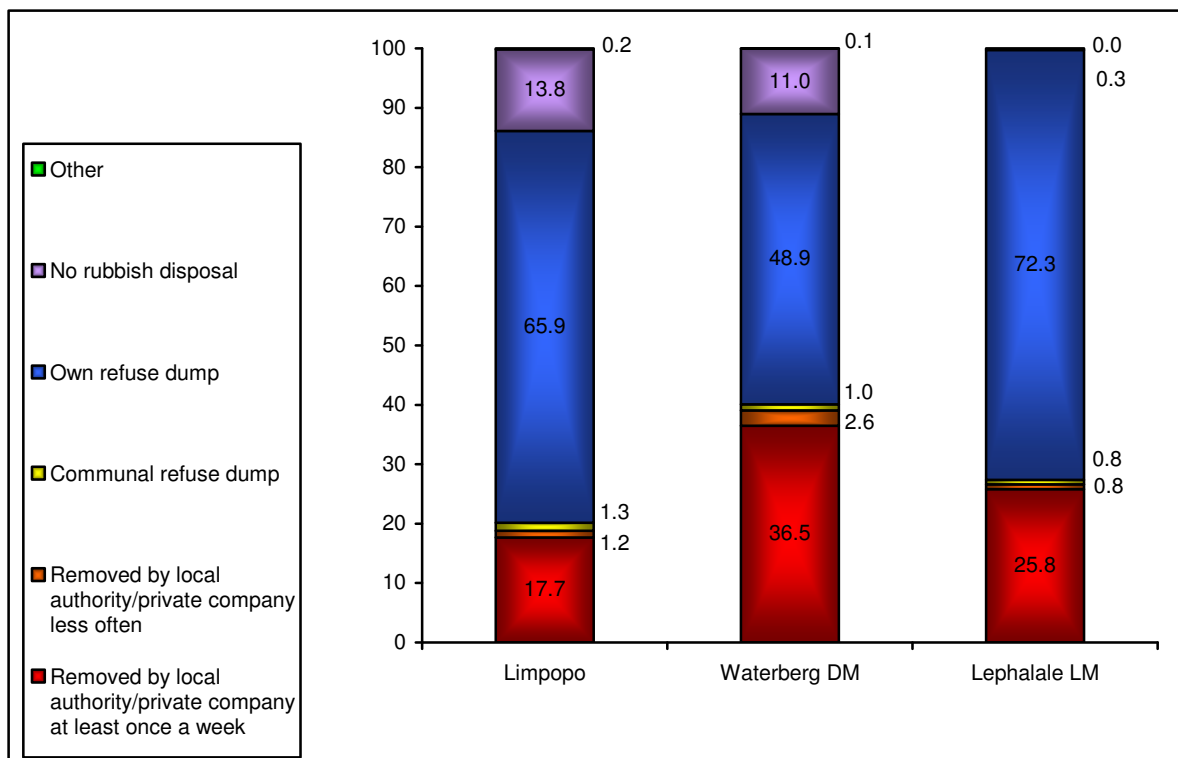


Figure 15: Refuse removal distribution (households, shown in percentage, source: CS 2007)

The households with their own refuse dumps rely mostly on backyard dumping, burial and burning. These practices adversely impact on human health and the environment, specifically:

- Air pollution from smoke;
- Pollution of ground and surface water resources and home grown fruit and vegetables;
- People breathing in smoke from fires at risk of contracting disease (cancer, respiratory related illness);
- Fires can destroy property.

The roads in the area are in a poor state due to limited maintenance of the roads. The poor state of the primary roads is having a detrimental effect on the distribution of goods (Lephalale SDF Report, 2006). Possible causes are lack of funds, human resources and equipment, as well as lack of capacity to maintain existing infrastructure.

4.4.2 Tenure

The tenure status profile for the area under investigation looks very different on provincial, district and local level. Almost three quarters of the households in Limpopo owns their



dwellings and has paid them off in full (**Figure 16**), compared to almost 60% in the Lephalale area. The Lephalale area has the greatest proportion of households renting their dwellings. This can probably be ascribed to the industrial and construction activities going on in an around Lephalale, such as the construction and operation of the Matimba and Medupi power stations, as well as the mining activities in the area.

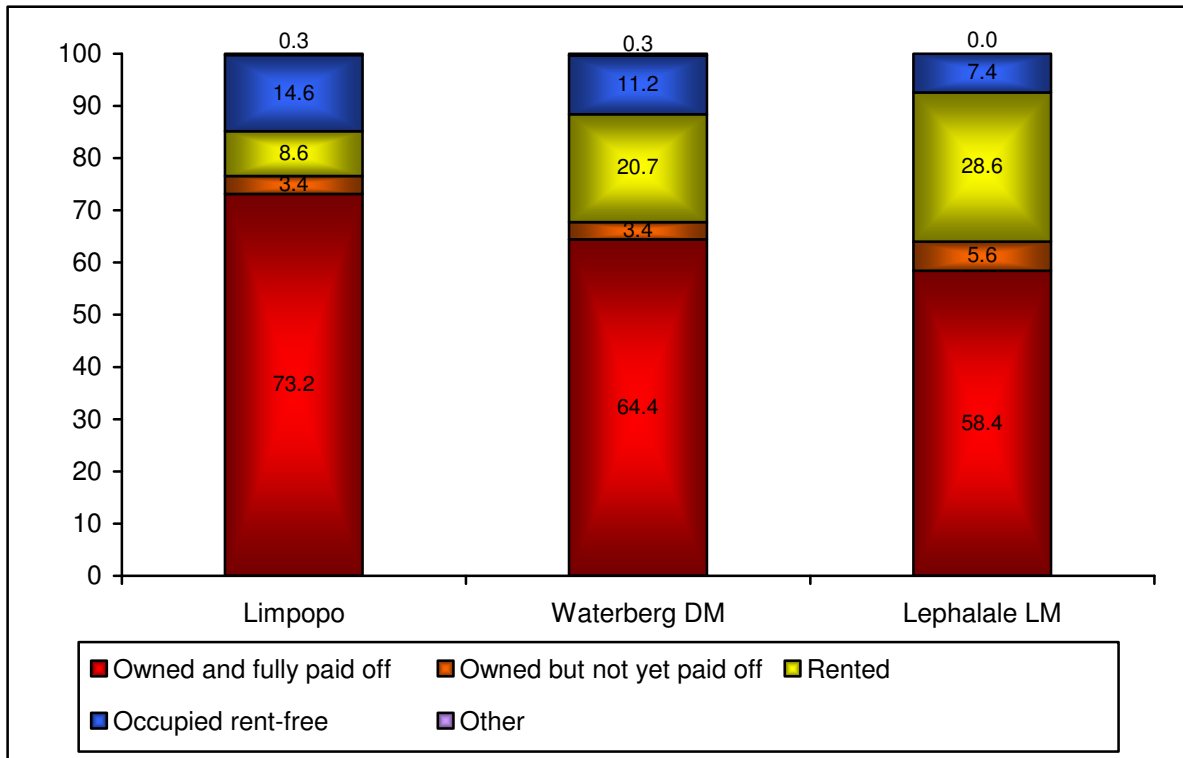


Figure 16: Tenure status distribution (shown in percentage, source: CS 2007)

There is a high demand for housing in the Lephalale/Marapong growth point (Lephalale 2007/2008 IDP Review) and it is estimated that an additional 1356 residential units will have to be built in the next five years to ensure the demand for housing is being met. The phasing out of the single sex hostel system in this growth point will place additional pressure on housing delivery. One drawback is that certain land in Marapong belongs to the Government and must be transferred to the municipality as soon as possible to be developed.

4.4.3 Social amenities

Lephalale has three hospitals (Ellisras Provincial Hospital, Marapong Private Hospital and Witpoort Provincial Hospital), six clinics and three local clinics as well as about five pharmacies and a number of medical doctors, dentists, physiotherapists, social workers and psychologists (www.lephalale.com). The services rendered at the medical facilities are not



adequate to provide a comprehensive service to all the inhabitants of the area (Lephalale SDF Report, 2006).

The Mogol Club Sport Centre offers sport and recreation facilities including 32 sport subsections. Well equipped sports facilities are found in Marapong and several rural villages in the Lephalale area. There is also an airfield near die town of Lephalale.

4.5 Crime

The crime statistics for the SAPS are not grouped according to district municipalities, but according to SAPS regions. For this reason the statistics will be reviewed on provincial level as well as for the Lephalale police station. Please note that on a station level the frequency for a small number of the crimes was low, so movements for these crimes should be interpreted with care and the focus will thus be on more frequent crimes in the area.

The most common crimes in the areas under discussion are very similar with just the order being different. In Limpopo as well as at the Lephalale Police Station the most common crime is "All theft not mentioned elsewhere" (**Table 3**). This category basically refers to all theft excluding theft of motor vehicles and motorcycles, theft out of or from motor vehicles, housebreaking at both residential and non-residential premises and stock-theft. Items most frequently taken in case of other theft are cellular phones, money, jewellery and tools (particularly garden tools). The other most frequent crimes are contact crimes (crimes against the person) as well as contact-related crimes (malicious damage to property).

Table 3: Most frequent crimes in 2007 reporting period (shown in order with most frequent on top, source: www.saps.gov.za)

Limpopo	Lephalale
All theft not mentioned elsewhere	All theft not mentioned elsewhere
Assault with the intent to inflict grievous bodily harm	Common assault
Burglary at residential premises	Assault with the intent to inflict grievous bodily harm
Common assault	Malicious damage to property
Malicious damage to property	Burglary at residential premises

Contact crimes such as assault and robbery frequently impact on the victim in one or a combination of the following ways (SAPS, 2007):



- Death;
- Injuries of various degrees;
- Psychologically trauma; and
- Loss of and/or damage of property which could under certain circumstances have serious repercussions for victims, particularly the poorer ones.

A number of the contact crimes are social or domestic in nature and occur in social environments which are usually outside the reach of conventional policing, for example the privacy of residences. These crimes usually take place between people who know each other such as friends, acquaintances and relatives. Docket analysis from the SAPS (SAPS, 2007) indicated that 89% of assault cases involve people who know each other.

It seems as if there is a close relationship between some contact crimes, particularly all categories of assault and factors and conditions like urbanisation, poverty and unemployment, vigilantism, previous offenders as well as alcohol and drugs. Urbanisation causes urban unemployment, a massive growth of informal settlements (especially in or adjacent to existing poor areas) and the disappearance of the rural subsistence economy and social support network. It also creates rising expectations and new needs (SAPS, 2007).

The crime that showed the greatest increase in Limpopo (**Table 4**) is drug-related crime and at the Lephalale Police station it is driving under the influence of alcohol or drugs, both crimes which are heavily dependent on police action for detection, indicating that the police in the area are making an increased effort to combat crime. In Limpopo the crimes that have increased are all contact crimes and are also quite violent in nature, suggesting an increase in violence in the province. The crimes that showed the greatest increase in the Lephalale area varies in nature.

Table 4: Crimes that have shown the greatest increase since the 2001 reporting period (source: www.saps.gov.za)

Limpopo	Lephalale
Drug-related crime	Driving under the influence of alcohol or drugs
Robbery at residential premises (subcategory of aggravated robbery)	Common robbery
Culpable homicide	Culpable homicide



Indecent Assault (April to December)	Commercial crime
	Malicious damage to property

Attempted murder and theft out of or from motor vehicle were among the crimes that have decreased most since 2001 (**Table 5**) in both the Limpopo Province and at the Lephalale Police Station.

Table 5: Crimes that have shown the greatest decrease since the 2001 reporting period (source: www.saps.gov.za)

Limpopo	Lephalale
Truck hijacking (subcategory of aggravated robbery)	Illegal possession of firearms and ammunition
Crimes in injuria	Attempted murder
Kidnapping	Robbery with aggravating circumstances
Attempted murder	Rape (April to Dec)
Abduction	Theft out of or from motor vehicle
Theft out of or from motor vehicle	Burglary at business premises

4.6 Background to landfill sites

It is important to understand what the term waste means and what happens at a landfill site if one wants to conceptualise social impacts. The following paragraphs aim to explain the process in a non-technical way to introduce the reader to the concept.

The term landfill or landfill site refers to a physical facility that is specifically designed, constructed and operated for the disposal of waste. Even where efficient waste reduction, re-use and recycling programs are in place, a portion of waste will require final disposal.

Waste can be defined as any material considered worthless or unwanted by a generator. DWAF defines waste as “an undesirable or superfluous by-product, emission, or remainder of any process or activity, any matter, gaseous, liquid or solid or any combination thereof...” (DWAF, Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, 2nd Edit. 1998).

Waste is divided into two classes based on the risk it poses:

- General Waste; and



- Hazardous Waste.

DWAF notes that it is accepted that there are no wastes that are truly 'non-hazardous', since nothing is entirely safe or non-hazardous per se. No matter how remote the risk posed to man and the environment by a waste, it nevertheless exists. It is possible, however, to assess the severity of the risk, and to make informed decisions on this basis. The quality and quantity of waste, the manner and conditions of handling and the susceptibility of man or any other organism can be used to determine the degree of hazard posed by a waste. The classification system therefore distinguishes between waste of extreme hazard, which requires the utmost precautions during disposal, and waste of limited risk, which needs less control during disposal.

'General Waste' refers to any waste that does not fall within the definition of Hazardous Waste. It is a generic term applied to waste that does not pose a significant threat to public health or the environment if properly managed. Examples would include domestic, commercial, certain industrial wastes and builder's rubble. General Waste may be disposed of on any landfill that is permitted in terms of the Environment Conservation Act. Domestic waste is classified as 'General Waste' even though it may contain hazardous components. This is because the quantities and qualities of hazardous substances in domestic waste are sufficiently small to be disregarded as a potential risk. In addition, the Minimum Requirements for Waste Disposal by Landfill requires leachate control at certain General Waste disposal sites where the risk of leachate generation exists (DWAF, Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, 2nd Edit, 1998).

Landfill management refers to the processes involved in the planning, design, operation, closure and post closure of landfills. Landfilling includes the monitoring of incoming waste streams, placement and compaction of waste and installation of environmental monitoring and control measures (<http://www.enviroserv.co.za/pages/Content.asp?SectionID=583>).

The principal types of landfills are grouped into two classes: General and Hazardous based primarily on the type of waste they are permitted to receive. General Waste Sites can only receive waste that does not pose any significant threat to public health or the environment if properly managed. Hazardous Waste Sites are landfill facilities that are allowed to accept hazardous waste. Hazardous waste is waste that can have an adverse effect on public health or the environment even in low concentrations. Examples include acids and alkalis, oils, paint and pesticides (<http://www.enviroserv.co.za/pages/Content.asp?SectionID=583>).



The typical landfill process involves:

- Waste dumping at the working face
- Waste spreading, shredding and compaction
- Waste covering to reduce wind scatter and promote natural decomposition processes.

Landfill Airspace describes the permitted height, length and breadth that the landfill may finally occupy and determines the lifespan of a site. Efficient operations such as compaction and coverage will maximise the use of the space and extend the life of the site (<http://www.enviroserv.co.za/pages/Content.asp?SectionID=583>).

Landfill operations continue until all the available permitted airspace has been filled. Once this happens, the site is closed and capped with a layer of impermeable clay and a layer of top soil. Grass and other suitable vegetation types are planted to stabilise the soil and improve the appearance. Environmental monitoring continues for a period of up to 30 years after the closure of the site (<http://www.enviroserv.co.za/pages/Content.asp?SectionID=583>).

According to the national State of the Environment Report, air quality impact assessment conducted for large hazardous and general landfill sites in South Africa have generally indicated that:

- Significant health risks, given good landfill facility management, are restricted to within 500 m of the landfill boundary
- Odour impact distances can vary from 200m to 5km depending on facility management
- Nuisance dust impacts are generally restricted to within the immediate boundary of the facility (<http://soer.deat.gov.za/themes.aspx?m=261>)

It can therefore be concluded that the risks associated with landfills can be managed and monitored, and with proper management significant risks can be mitigated.

4.7 Stakeholder analysis

In order to conduct an objective and representative social impact assessment, it is important to clearly identify the groups of people who may be affected by the proposed development. These groups have been identified using information obtained in the public participation process provided by Envirolution Consulting's environmental and public participation team, a baseline study and field work conducted in the area between November 2008 and March



2009.

There are a number of stakeholder groups which may be affected through the proposed development. The following diagram represents the different groups of stakeholders most likely to be affected. In the paragraphs below a brief description of each of these groups will follow.

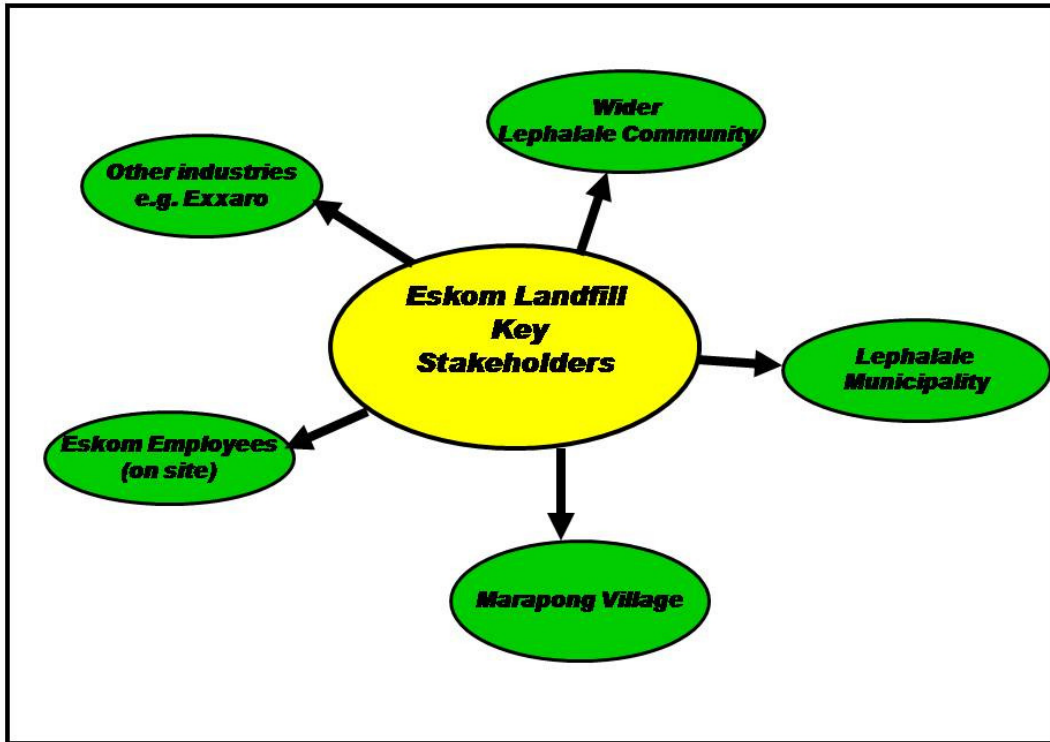


Figure 17: Stakeholders identified for the proposed Eskom Landfill Site

4.7.1 Lephale Local Municipality

The proposed landfill will fall in the Lephale Local Municipality. Waste management and landfill sites are traditionally the responsibility of the municipality. The Municipal Services Act (Act No 32 of 2000) provides the principles and mechanisms to achieve effective governance at the local level, and includes implications for the environmental management function exercised by local government. This environmental management function includes waste management. Local authorities may subcontract certain functions (such as waste management) to private service providers. If a function is subcontracted, however, the local authority retains the responsibility of acting as a *regulator* of that function. In other words, it must have the capacity to ensure that the service provider complies with required norms and standards of service delivery. In the instance of the proposed Eskom landfill, the landfill would only be used by Eskom and its employees. The municipality did not subcontract their functions to Eskom. The municipal waste would still need to be handled by the municipality.



They would also need to ensure that Eskom's landfill comply with the required norms and standards of service delivery.

4.7.2 Wider Lephalale Community

The wider Lephalale Community refers to the residents of Lephalale and Onverwacht. These are the people who will experience some of the social impacts, both positive and negative. They are not directly adjacent to the proposed landfill site, but may still be affected.

4.7.3 Marapong Community

The community of Marapong will be the community closest to the proposed landfill. Due to the fact that there is legislation in place regarding the distances landfill sites may be from communities the community will remain within a safe distance from the proposed landfill site, and it can be estimated that they will be protected from some of the direct health impacts associated with landfills.

4.7.4 Other industries

This group refers to other industries that are currently operating in the area, for example Exxaro. The current landfill site utilised by the community of Lephalale are reportedly situated on Exxaro land. It is assumed that these industries also need to utilise a licensed waste site.

4.7.5 Eskom Employees

This group refers to the group of people employed by Eskom who is working at the Matimba Power Station. The proposed landfill site falls within the grounds of the Matimba Power Station, and there may thus be an impact on these employees from a social perspective.

Stakeholder analysis model:

The stakeholder analysis was done to determine what the levels of interaction with each stakeholder group should be, not only for the purpose of the EIA process, but rather for the purpose of the lifecycle of the development – especially in the first phases of the development. The following figure represents the stakeholder analysis tool which were utilised to do the stakeholder analysis. It must be emphasised that the lines of the grid are not hard and fast boundaries, but are used as guidance only. The vertical line represents the line of influence the stakeholders may have on the project, and the horizontal line represent the magnitude of the potential impacts. If a stakeholder is seen as very influential, but the impact on him would not be great, it is sufficient to provide them with information about the project. If



a stakeholder is influential and the magnitude of the impact is high, the proponent should engage in a dialogue with that stakeholder. If the stakeholder group is not very influential on the proposed project, and the magnitude of the impacts on the group is low, comments can be obtained from this group by giving them basic information. If a group are not very influential, but the impact on them may be high, they should be consulted with. The higher the impact the more intense the level of consultation should be.

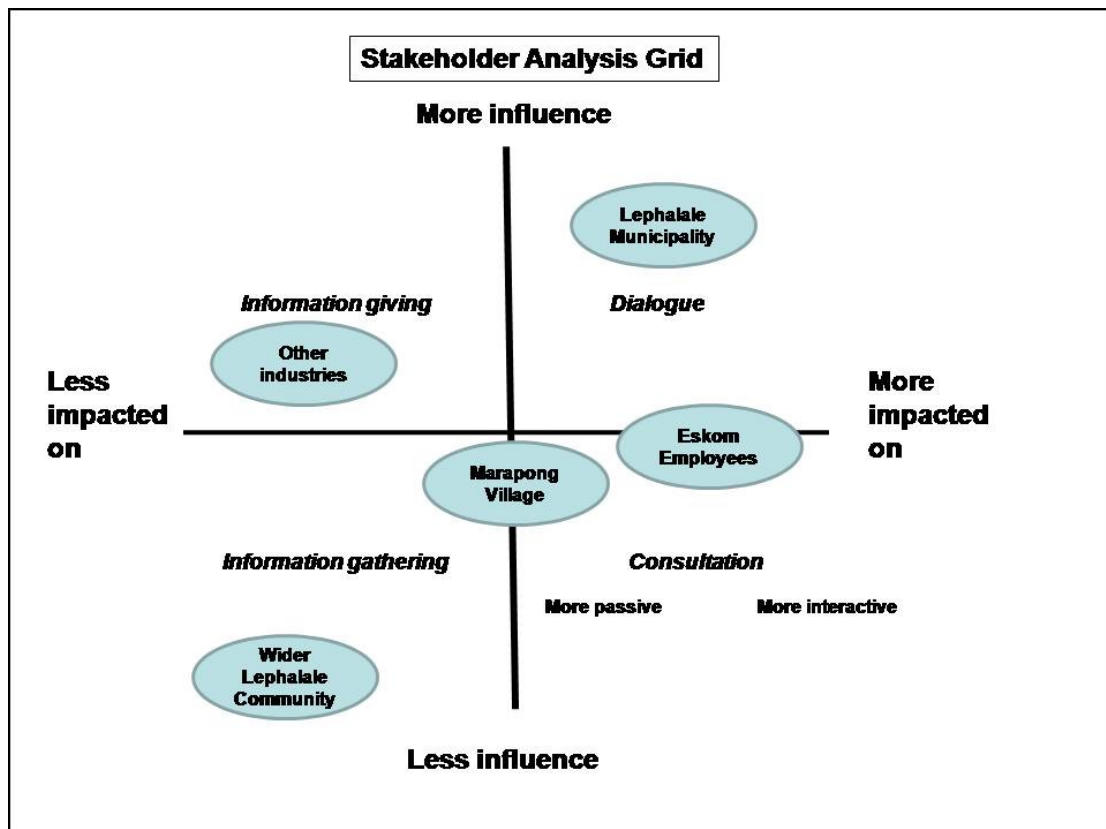


Figure 18: Stakeholder analysis for the proposed Eskom Landfill Site

From the stakeholder analysis it is clear that Eskom should engage in a dialogue with the Lephalale Municipality regarding this project. Eskom has already started this process. The other industries need to be informed about Eskom’s plans, but since the project will not directly affect them in a negative way, they do not need to be consulted specially. It would be sufficient to inform the wider Lephalale community about the proposed project, and to keep them informed about the process, as is done in the EIA process. Depending on the final siting of the proposed landfill, some consultation with the Marapong village may be required. The Eskom employees working on the site of the Matimba Power Station, and those who will be working at the landfill need to be consulted directly. It is intended that the EIA process take care of this, but Eskom must ensure that the employees on the site is aware of the process by advertising it on the internal communication channels as well. Eskom should ensure that their internal communication strategies deal with any health, safety or societal issues this group



may have.

5 Impact assessment

5.1 Social change processes

A social change process is a discreet, observable and describable process which changes the characteristics of a society, taking place regardless of the societal context (that is, independent of specific groups, religions etc.). Social change processes can be measured objectively. The ways in which social change processes are perceived, given meaning or valued, depend on the social context in which various societal groups act. Some groups in society are able to adapt quickly and exploit the opportunities of a new situation. Others (e.g. vulnerable groups) are less able to adapt and will bear most of the negative consequences of change. These social change processes may, in certain circumstances and depending on the context, lead to the experience of social impacts. Social impacts are therefore completely context-dependent (Vanclay, 2003). In the next paragraphs, social change processes which may be set in motion by the proposed project will be discussed. The section after this will assess possible social impacts that may result from the proposed development, and suggest mitigation. It must be stated that given the current industrial activities by Eskom in the Lephalale area, the proposed project is not estimated to have a large individual impact. Most of the impacts that it may cause are already experienced due to the construction of the Medupi Power Station. A project on the scale of the proposed landfill that will be situated on an existing industrial site will therefore have a small impact on society. For the purpose of this project social changes that might occur in the pre-construction, construction and operation phases were investigated. It is anticipated that the following social change processes will take place:

Demographic processes are those that relate to movement and/or composition of the people in the region affected by the project. It is not anticipated that the project will set of any new demographic processes. The area is already subjected to demographic changes as a result of the construction of the Medupi Power Station. It is anticipated that people who are already involved in the construction activities will be utilised to construct the landfill, and to continue working for Eskom. It is unlikely that people will migrate into the area as a result of the proposed landfill. They will migrate into the area as a result of the cumulative opportunities available in the area from Eskom and other industrial role players, but to assess that process is outside the scope of this SIA. Since the proposed project would be in an



already disturbed industrial area, no resettlement of people or neighbours is expected.

The proposed construction of the landfill will lead to some **economic processes**. Economic processes are those that affect the economic activity in a region, including the way in which people make a living, as well as macroeconomic factors that affect the society as a whole. There will be a **change in the number of available jobs**. This process will be experienced positively in the construction and operational phases of the project, and negatively in the decommissioning phase of the project. It is not estimated that a large number of jobs will be created. Secondary economic opportunities created by recycling could be investigated.

Geographic processes are those that affect the land-use patterns of a society. The land use on the site will not change and remain industrial.

Institutional and legal processes refer to those processes that affect the efficiency and effectiveness of various organisations that are responsible for the supply (and security of supply) of the goods and services on which people depend. These organisations include government departments, non-government organisations and the commercial sector. The municipality is supposed to supply the taxpayers (Eskom) with waste disposal services. They are currently not doing so. Eskom will supply the services themselves, and will therefore take away pressure on the municipal services.

When conducting a SIA it is important to consider the context of the community in which the proposed development will occur. Another important consideration is strategic planning in the area and the cumulative effects of other proposed developments on the social environment. Unlike the bio-physical environment, the social environment have the capacity to adapt to change and to reorganise themselves in response to development. Social impacts are therefore dynamic and respond to change, should any change occur in the social environment.

5.2 Social Impacts

The possible impacts have been identified by using the information obtained in the public participation process provided by Envirolution Consulting's environmental and public participation team, issues mentioned in meetings, personal interviews, studying secondary data, consulting SIA literature, demographic data and personal experience in the field of social impact assessment. This process, known as triangulation, occurs when different sets of data are used to come to the same conclusion. During the impact assessment process, all



possible impacts are listed, and then grouped under a main category. The categories used are the impact categories listed in the International Handbook for Social Impact Assessment (2003). These categories were adapted to suit the local conditions where necessary. Only significant impacts were included in the report. If no impacts occurred in a certain category, the category was omitted from the report.

It is important to take note of the following when considering social impacts:

- Social impacts are not site specific, but occur in the communities surrounding the proposed development site.
- Social and biophysical impacts are interlinked. Biophysical impacts often have social consequences. An example is the water quality of a river – which is purely a biophysical impact, but as a result of it social impacts may occur such as the impacts on tourism, recreation and health.
- This section looks at some biophysical impacts from a social perspective – thus it describes the impacts on a community or human level and suggests mitigation measures from a social perspective.
- Some of the impacts identified are existing impacts, which could be magnified by the project.
- Social impacts are not only related to the physical construction of the proposed infrastructure, but also to the social processes surrounding the planning of the infrastructure, e.g. how the project is communicated to the public. Therefore, social impacts can happen before any physical changes have been made to the environment.
- The importance of perceptions of the public should not be under-estimated. Something perceived as a social impact should be dealt with as if it is a social impact, because the affected party experience it as an impact. It is very difficult to change public perception.

The Waterberg region is currently a hub of development. In the context of the development in the area, the proposed landfill site on an industrial property is a relatively small project which is viewed by the public as a part of a bigger project therefore they could not always understand why a separate EIA is necessary for the study. The contribution of the impacts of this project to the cumulative impacts of the other development in the area is relatively small. It would be more constructive to consider many of the impacts on a strategic rather than a local level. The social environment does not operate in a vacuum, and are sensitive to external changes outside the control of the project.

Traditionally a myriad of social impacts are associated with landfill sites. Many of the impacts



are associated with the location of the landfill and the management of the landfill. Through a site selection and scoping exercise the proposed site for the landfill has been narrowed down to three alternative sites within a bigger site, all which is situated on the grounds of the existing Matimba Power station, in close proximity of a site which were previously used for a similar purpose. Through this process, Eskom has managed to avoid a number of social impacts. Public interest in the project is low, and given the fact that no public properties will be affected and the proposed site is in an existing industrial area, possible impacts on the community has been minimised to a large extent. Many of the impacts identified during the scoping phase of the project would therefore no longer be relevant to the project due to the fact that the site that is being assessed in this report has been chosen from the initial five sites. The site selection and scoping process is described earlier in the report (See section 2.1). The low number of social impacts identified in this report can be ascribed to the site selection process that assisted in excluding unsuitable sites from the assessment.

The diagram below represents the possible social impacts that may occur as a result of the proposed project during different stages of the project. The decommissioning phase of the project will not be investigated in this assessment, as it is subjected to other legal processes and assessments.

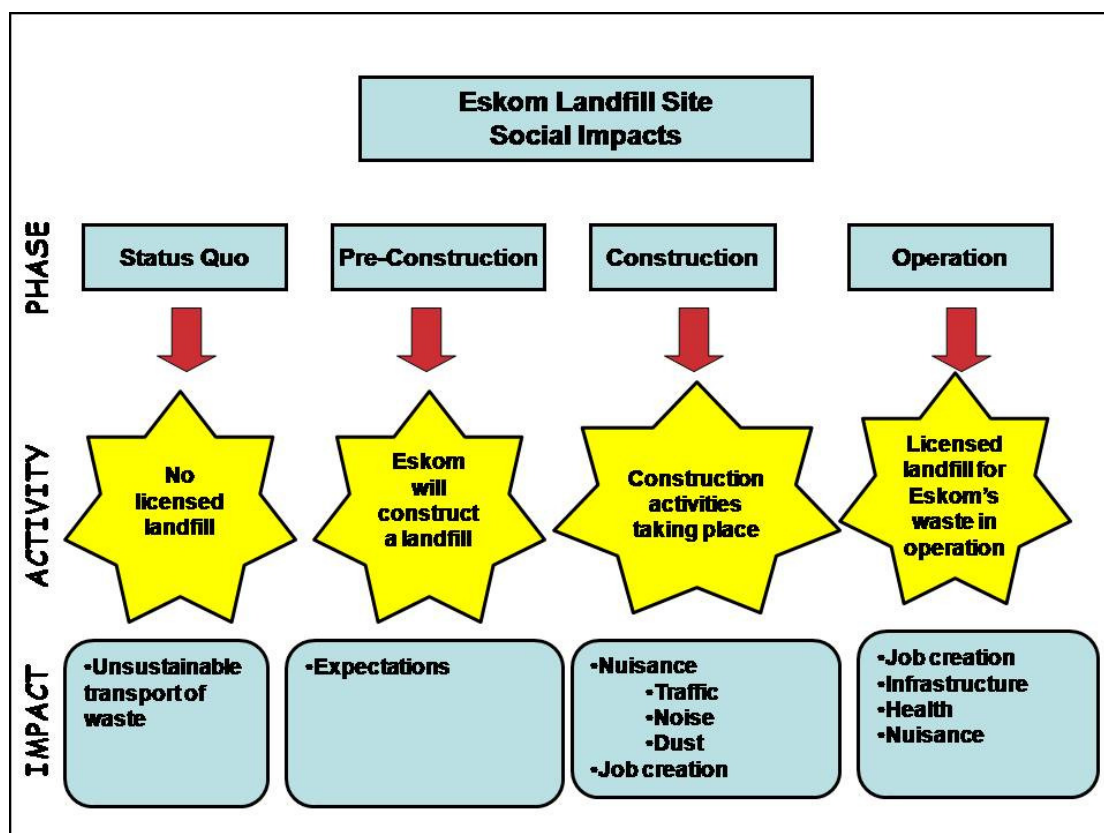


Diagram 1: Social impacts associated with the proposed Eskom Landfill Site



In the following sections the impacts will be presented in the form of impact tables and discussed in more detail. After each impact table there will be a short discussion of the impact and mitigation measures will be suggested. The impacts will be discussed according to the phase of the project in which they are likely to occur.

Status Quo

The section below will discuss the status quo. Status quo, literally "the state in which", is a Latin term meaning the current or existing state of affairs. To maintain the status quo is to keep the things the way they presently are (http://en.wikipedia.org/wiki/Status_quo). The status quo is that Eskom transport all its waste by road to licensed landfills, mostly in Gauteng. The reason for this is that the current landfill in Lephalale is not licensed, and therefore Eskom cannot use it, as their SHE policy commits them to use a licensed landfill. They also need to comply with the legal requirements as set out in the policy.

5.2.1 Unsustainable transport of waste

Table 6: Impacts relating to unsustainable transport of waste

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Status quo	Transportation of waste to Gauteng.	More heavy vehicles on the road cause a deterioration of the road surface.	Regional	Short term	Medium	Highly probable	Medium	Low
Status quo	Transportation of waste to Gauteng.	Unsustainable use of resources waste the taxpayer's money since Eskom is a para-statal organisation.	Regional	Short term	Low	Probable	Low	Neutral

Impacts relating to unsustainable transport of waste

There are two impacts which may occur as a result of the transport of waste to Gauteng. The first impact is related to the additional traffic that is generated by the transport of the waste. The road infrastructure between Gauteng and Lephalale is already under pressure as a result of the traffic generated by the industrial activities in the Lephalale area. The condition of the road is deteriorating rapidly. Additional heavy vehicles travelling on the road will add to this problem. If the transport of waste to Gauteng is no longer necessary, the additional pressure that this practice put on the road infrastructure will be taken away.



The second impact that is already taking place is that the transport of waste is a costly procedure. Given the fact that Eskom is a para-statal organisation, it can be seen indirectly as a price being paid by the taxpayers. The money Eskom is spending on transporting waste could be utilised for other purposes – given the electricity crisis that South Africa is faced with, it would be irresponsible of Eskom to continue with the status quo.

Proposed mitigation:

This impact could be mitigated by the construction of a licensed landfill in close proximity of Lephalale. The status quo of the situation is not sustainable and it is important that a sustainable solution must be found.



Pre-Construction Phase

The section below will discuss the pre-construction phase of the project. This is the phase of the project before the construction activities start. Unlike bio-physical impacts, social impacts can start before any physical change to the environment has been made.

5.2.2 Expectations

Table 7: Impacts relating to expectations

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Pre-construction	Eskom committed to construct a new licensed landfill site	The municipality and other industries expect to utilise the landfill	Local	Short term	Medium	Probable	Medium	Low

Impacts relating to expectations

The landfill in Lephalale is reaching the end of its capacity and it is not licensed. There is an expectation that Eskom should allow the municipality to utilise their new landfill, since many of the drastic changes in the Lephalale area has been caused by the presence of Eskom. Many of the members of civil society are Eskom employees and therefore Eskom should contribute to the physical infrastructure in the area. Eskom made it clear that the proposed landfill would be exclusively for the use of Eskom. Only waste generated by Eskom and by people in residential areas living in Eskom facilities would be disposed of at the proposed landfill. There is a risk that Eskom, and some of the other industries in the area, can be seen as a “surrogate” municipality if they take over the responsibilities of the municipality. Eskom, as a member of the community, pays rates and taxes. This rates and taxes should be used for the improvement of infrastructure. They do have a social responsibility to the society, and Eskom do contribute to infrastructure (i.e. the upgrade of the sewage system) in the area from that point of view.

Proposed mitigation:

It is difficult to manage expectations. It must be communicated clearly from the start that the proposed landfill would be for exclusive use by Eskom. Eskom is not responsible for municipal waste, and there should be clear boundaries and role



clarification.

Construction Phase

The section below will discuss the construction phase of the project. In this phase of the project the construction activities commence.

5.2.3 Nuisance

Table 8: Impacts relating to nuisance

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Construction	Construction of a landfill.	Increase in traffic on road accessing the site.	Local	Short term	Medium	Highly Probable	Medium	Low
Construction	Construction of a landfill.	Increase in dust in the area.	Local	Short term	Medium	Highly Probable	Low	Low
Construction	Construction of a landfill.	Noise resulting from ground removal work and construction activities.	Local	Short term	Medium	Highly Probable	Low	Low

Impacts relating to nuisance

The proposed landfill will be situated on an industrial site where industrial activities causing noise and dust already occur. The noise and dust resulting from the construction activities will be cumulative to the impacts already occurring. From a nuisance perspective it would not be a significant additional impact. Additional traffic on the roads, and especially for the entrance into the site may cause some discomfort to the employees of Eskom, and the residents of Marapong who travel into town or to the Medupi site.

Proposed mitigation:

The impacts of noise and dust on the social environment would not need additional mitigation. According to the State of the Environment Report nuisance dust impacts are usually limited to the boundaries of the site. In an environment where there is an



open cast coal mine and operating power station, the noise created by the construction of the landfill would in all likelihood not be significant. Noise is being assessed in a separate specialist study. Traffic is also assessed in a separate specialist study. From a nuisance perspective it is recommended that construction traffic should not be allowed on the road during peak hours – that is when people arrive for and leave from work. Access control is already taking place at the gate, and construction vehicles should use a separate entrance.

5.2.4 Job creation

Table 9: Impacts relating to job creation

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Construction	Construction of a landfill.	Increase in job opportunities in the area	Local	Short term	High	Highly Probable	Medium (+)	Medium (+)

Impacts relating to job creation

There are a number of construction activities taking place in the Lephalale area. The number of jobs that will be created by this project are small in comparison to the other opportunities currently available in the area. It is also likely that people who are currently working for Eskom on one of the other big projects in the area will be used for this project, since they are already trained and reside locally. There will be some employment opportunities created for local people by the project during the construction phase of the project.

Proposed mitigation:

As far as possible, preference should be given to local labour. Procurement should also be done locally as far as possible. Labour desks should be established in accessible areas, and the availability of jobs should be advertised in a manner accessible to all members of society – it is suggested that radio advertisements and community notice boards are utilised in addition to news papers.



Operation Phase

The section below will discuss the operation phase of the project. This phase entails all the activities on the site for the entire lifespan of the project.

5.2.5 Nuisance

Table 10: Impacts relating to nuisance

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Operation	Operation of a landfill.	Bad odours resulting from the operational activities associated with the landfill	Local	Long term	Medium	Highly Probable	Medium	Low

Impacts relating to nuisance

The most important nuisance factor associated with a landfill site is bad odours. Depending on the management of the landfill, odours could be smelled from anywhere between 200m and 5km (<http://soer.deat.gov.za/themes.aspx?m=261>). There are Eskom employees whom will be working on the landfill site, and in offices in close proximity to the landfill. There is also a community (Marapong) which may be affected by this impact should the landfill not be managed properly.

Proposed mitigation:

Eskom must ensure that the landfill is managed properly and that bad odours are limited. This impact can be managed to a great extent. Eskom should also have a complaints register where complaints about any activities associated with the landfill can be lodged. The complaints register should be accessible to surrounding communities as well as Eskom employees. There should be a specific procedure in place that indicates how and in what timeframe any complaint should be addressed. These procedures must be communicated to all Eskom employees, as well as to the public via publication on local news papers.



5.2.6 Job creation

Table 11: Impacts relating to job creation

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Operation	Operation of a landfill.	Increase in permanent job opportunities in the area	Local	Long term	High	Highly Probable	High (+)	High (+)

Impacts relating to job creation

A number of permanent jobs will be created by this project. This will have a high positive impact on the individuals and their families. Secondary jobs involving recycling practices may also be created, but this option need to be investigated in more detail to ensure it is practical and viable. Ideally recycling should be done at the source of the waste stream.

Proposed mitigation:

As far as possible, preference should be given to local labour. Procurement should also be done locally as far as possible. Labour desks should be established in accessible areas, and the availability of jobs should be advertised in a manner accessible to all members of society – it is suggested that radio advertisements and community notice boards are utilised in addition to news papers. The reasoning behind using radio advertisements is that a large percentage of the local population is illiterate and would be excluded from the process should advertising be done using only written methods. Radio is the medium which would reach the majority of the population in the easiest way. Advertising on local (not necessarily regional) radio stations in the local languages is a cheap and effective way to spread the message. These advertisements need not be detailed – it would be sufficient to say that there is a number of job opportunities for unskilled local labour (i.e. people living in Lephalale and surrounding areas), and interested people can contact the labour desk. Eskom should encourage all the people contributing to the waste stream to recycle at the source of the waste. They should make the sorting of rubbish a pre-requirement for accepting any household waste. Eskom have the opportunity to institutionalise recycling in the organisation, and this should be from the offices to the construction sites, with the Eskom Landfill serving as a practical example for all South Africans.



5.2.7 Infrastructure

Table 12: Impacts relating to infrastructure

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Operation	Operation of a landfill.	Relief pressure from existing landfill sites.	Local	Long term	High	Highly Probable	High (+)	High (+)

Impacts relating to infrastructure

Eskom will take a lot of pressure from the existing landfill infrastructure by building and maintaining its own landfill. Although external parties will not be able to utilise the Eskom Landfill, Eskom is taking responsibility for its own waste.

Proposed mitigation:

This impact will be a positive impact on the area, and therefore no mitigation is needed.

5.2.8 Health

Table 13: Impacts relating to health

	Source of impact	Nature of impact	Scale	Duration	Intensity	Probability	Significance	
							Without mitigation	With mitigation
Operation	Operation of a landfill.	Health impacts on Eskom employees and surrounding communities	Local	Long term	High	Highly Probable	High	Low

Impacts relating to health

There are some health risks associated with landfill sites. These risks vary from the impact of pollution (air and water) on human health, to infectious diseases spread by rodents who came and scavenge on the landfill sites. These risks can be managed and if the site is managed properly the risk decrease significantly. The biggest health risk would be to the employees working on the landfill. According to the State of the Environment Report of South Africa



significant health risks, given good landfill facility management, are restricted to within 500m of the landfill boundary (<http://soer.deat.gov.za/themes.aspx?m=261>).

Proposed mitigation:

The boundaries of the landfill must be at least 500m from the existing offices of the Matimba Power Station, and from the Marapong community. All employees working on the landfill site must be sent for health check-ups before they start their jobs, and need to go for medical tests as specified in the OSH Act and approved by a medical practitioner. They must wear protective gear, including dust masks, boots, overalls and gloves. All requirements of the Occupational Health and Safety Act (Act no 85 of 1993) must be adhered to. The site must be managed in such a way that risks are minimised as far as possible.



6 Recommended site

The figure below indicates the sites that are being assessed for the purpose of this report:

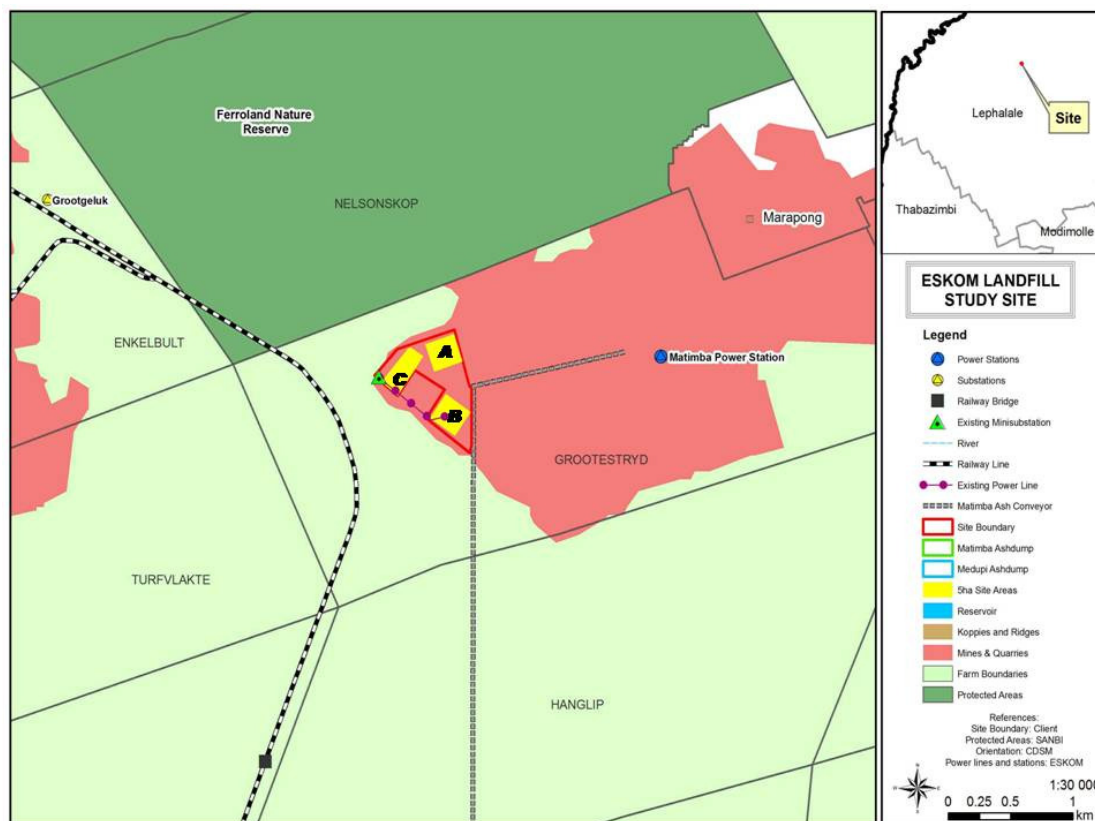


Figure 19: Sites to be assessed

From a social perspective all the sites are equally suitable for the proposed landfill. None of the sites are seen as posing a fatal flaw to the project. The social impacts described in the report will occur irrespective of which site will be utilised. As long as the mitigation measures suggested in the report are adhered to, any of the sites can be used for the proposed development.



7 Conclusions and recommendations

The aim of this SIA was to assess possible social impacts associated with the proposed development. Although a number of impacts have been identified in the scoping phase of the project, many of these impacts were seen not to be relevant to this specific site. By choosing a site within an existing industrial area, many possible social impacts have been avoided. The possibility of scavengers looking for material in the site has been minimised due to the fact that access to the site is already heavily controlled. Impacts on sense of place has been minimised by placing the site in an already disturbed area. Since there are very little public interest in the project and it is being overshadowed by some of the other larger developments in the area aspects like Eskom's social license to operate and public perception about Eskom's activities were not relevant to this specific SIA. Stakeholder fatigue due to all the activities in the area has definitely played a role in the low levels of public interest in the project. Many social impacts, like an influx of workers, and impacts associated with construction camps will not occur as a result of this specific project, mainly because those impacts are already taking place due to other developments in the area, and the existing infrastructure and resources will be utilised for this project.

Having said that, the project is seen to make a positive contribution to the social environment in which it will take place. A careful site selection process has contributed to choosing a site where the least number of negative impacts will be experienced.

Based on the SIA, the following recommendations can be made:

- The proposed landfill should be constructed as soon as possible seeing that the status quo is not sustainable and having a negative impact on a local and provincial level;
- Clear role clarification about responsibilities should be done between Eskom and the Lephalale Municipality;
- No construction traffic should be allowed during peak hours;
- Jobs should be sourced locally as far as possible;
- Jobs should be advertised in accessible ways, like over the local radio station and in local news papers;
- A complaints procedure must be put in place and advertised locally to ensure that all complaints about nuisances like bad odours are handled fast and efficiently;



- The landfill must be managed according to best practice principals; and
- Employees working on the landfill should wear protective gear and go for bi-yearly medical check-ups.

This project will improve the current situation, and is seen to be a positive impact on the social environment in which it will take place. No fatal flaws relating to the social environment has been found. It is therefore recommended that this project should proceed.



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