



**Royal
HaskoningDHV**
Enhancing Society Together

Appendix M: Social



environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF SPECIALIST AND DECLARATION OF INTEREST

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

PROJECT TITLE

ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY FOR THE MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

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General declaration:

I act as the independent specialist in this application

I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant

I declare that there are no circumstances that may compromise my objectivity in performing such work;

I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, regulations and any guidelines that have relevance to the proposed activity;

I will comply with the Act, regulations and all other applicable legislation;

I have no, and will not engage in, conflicting interests in the undertaking of the activity;

I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;

all the particulars furnished by me in this form are true and correct; and

I realise that a false declaration is an offence in terms of Regulation 71 and is punishable in terms of section 24F of the Act.


Signature of the specialist:

N/A

Name of company (if applicable):

04/04/2014

Date:

SOCIAL IMPACT ASSESSMENT
FOR
THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY
AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE

April 2014



Environmental Assessment

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**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

TABLE OF CONTENT

1. INTRODUCTION	6
1.1 Terms of reference.....	6
1.2 Specialist details.....	7
1.3 Assumptions and limitations.....	7
2. PROJECT DESCRIPTION	8
2.1 Project background	8
2.2 Social attributes considered	10
3. SOCIAL IMPACT ASSESSMENT AS SPECIALIST STUDY	11
3.1 Defining Social Impact Assessment.....	11
3.2 Benefits of assessing social impacts.....	12
3.3 Legal mandate to address social impacts in Environmental Impact Assessment.....	13
3.3.1 <i>Constitution of the Republic of South Africa</i>	13
3.3.2 <i>National Environmental Management Act</i>	13
3.3.3 <i>Environmental Impact Assessment Regulations</i>	14
3.4 Link between Environmental Impact Assessment and Social Impact Assessment.....	15
3.5 Shortcomings in Social Impact Assessment	15
3.5.1 <i>Lack of expertise</i>	16
3.5.2 <i>Lack of peer review mechanisms</i>	16
3.5.3 <i>Lack of availability of information</i>	16
3.5.4 <i>Lack of a sustainable development-approach</i>	17
3.5.5 <i>Lack of a holistic view of developments and their impacts</i>	17
3.6 Steps in conducting a Social Impact Assessment.....	18
3.7 Approach and data collection methods.....	19
3.7.1 <i>Quantitative techniques</i>	20
3.7.2 <i>Qualitative techniques</i>	20
3.7.3 <i>Factors to be considered</i>	21
3.8 Social variables.....	22
3.9 Project stages.....	23
4. SOCIAL BASELINE OF THE STUDY AREA	25
4.1 Provincial level – Limpopo Province	25
4.1.1 <i>Limpopo background information</i>	25

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE

4.1.2	<i>Demographics</i>	27
4.2	District level – Waterberg District.....	27
4.2.1	<i>Demographics</i>	27
4.3	Local (municipal) level – Lephalale Local Municipality	37
4.3.1	<i>Lephalale background information</i>	37
4.3.2	<i>Demographics</i>	40
5.	SOCIAL IMPACT RATING METHODOLOGY	61
5.1	Types of impacts	61
5.1.1	<i>Indirect impacts</i>	61
5.1.2	<i>Cumulative impacts</i>	61
5.1.3	<i>Impact interactions</i>	62
5.2	Interaction between impacts identified in different specialist studies	62
5.3	Impact assessment rating methodology.....	64
6.	SOCIAL IMPACT PREDICTION AND ASSESSMENT	69
6.1	Description of potential social impacts.....	69
6.1.1	<i>Feelings in relation to the project</i>	69
6.1.2	<i>Impact on health due to air quality</i>	70
6.1.3	<i>Impact on health due to water contamination</i>	73
6.1.4	<i>Impact on health due to consumption of contaminated food</i>	73
6.1.5	<i>Impacts due to changes in land-use</i>	73
6.1.6	<i>Reduced visibility due to dust</i>	74
6.1.7	<i>Financial impacts</i>	75
6.1.8	<i>Noise</i>	75
6.1.9	<i>Increase in traffic volumes</i>	76
6.1.10	<i>Employment opportunities created</i>	76
6.1.11	<i>Tourism</i>	76
6.1.12	<i>Supply in electricity</i>	77
6.1.13	<i>Migration</i>	78
6.1.14	<i>Visual impacts/aesthetic quality</i>	78
6.1.15	<i>Impact on business in the area</i>	79
6.1.16	<i>Heritage impacts</i>	80
6.1.17	<i>HIV/AIDS</i>	80

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

6.2	Site alternative 1	81
6.3	Site alternative 2	84
6.4	No-go alternative	87
7.	PROPOSED MITIGATION MEASURES.....	88
8.	CONCLUSION AND RECOMMENDATIONS.....	97
	BIBLIOGRAPHY.....	98

LIST OF FIGURES

Figure 1: Entrances to the farms Ganzepan, Droogeheuvel and Appelvlakte, which form part of site alternative two.....	8
Figure 2: Study site	9
Figure 3: Limpopo, South Africa	26
Figure 4: Distribution of population by age and sex, Limpopo - 1996, 2001 and 2011	27
Figure 5: Distribution of the population by age and sex, Waterberg District - 1996, 2001 and 2011 ...	27
Figure 6: Population growth rates by district municipality - 1996, 2001 and 2011	28
Figure 7: Percentage distribution of population group per district municipality - 1996, 2001 and 2011	28
Figure 8: Population by functional age group and district municipality - 1996, 2001 and 2011	29
Figure 9: Dependency ratio by district municipality - 1996, 2001 and 2011	29
Figure 10: Distribution of population by marital status and district municipality - 1996, 2001 and 2011	30
Figure 11: Distribution of the population aged 20 years and older by highest level of education and district municipality - 1996, 2001 and 2011	30
Figure 12: Distribution of the population aged between 5-24 years by school attendance and district municipality – 1996, 2001 and 2011	31
Figure 13: Unemployment rate (official definition) by district municipality – 1996, 2001 and 2011.....	31
Figure 14: Average household size by district municipality – 1996, 2001 and 2011	32
Figure 15: Percentage distribution of households by type of main dwelling and district municipality – 1996, 2001 and 2011	32
Figure 16: Distribution of households by tenure status and district municipality – 2001 and 2011	33
Figure 17: Distribution of households with a radio, television, computer, refrigerator, cellphone, landline/telephone and access to internet by district municipality – 2001 and 2011	33
Figure 18: Distribution of households using electricity for lighting, heating and cooking by district municipality – 1996, 2001 and 2011	34
Figure 19: Percentage of households having access to piped water by district municipality – 1996, 2001 and 2011	34

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 20: Distribution of households by type of refuse disposal and district municipality – 1996, 2001 and 2011	35
Figure 21: Percentage of households by type of toilet facility by district municipality – 1996, 2001 and 2011	35
Figure 22: Distribution of average household income by district municipality – 2001 and 2011	36
Figure 23: Distribution of female headed households by district municipality – 1996, 2001 and 2011	36
Figure 24: Distribution of child headed households by district municipality – Limpopo, 1996-2011	37
Figure 25: View of Matimba Power Station from Road D6175	38
Figure 26: Indirect impacts	61
Figure 27: Cumulative impacts	62
Figure 28: Impact interactions	62
Figure 29: Hypothetical example of the level of information exchange between specialist studies anticipated for an EIA of a fuel storage facility (DEAT, 2002)	63
Figure 30: Potentially affected communities	69
Figure 31: Homestead on the farm Droogeheuvell, which forms part of site alternative two	71
Figure 32: Part of linear infrastructure route to site alternative two, bordering residential area of Marapong	72
Figure 33: Example of a conveyor belt carrying coal from Grootegeluk Mine to Matimba Power Station	74
Figure 34: Typical landscape of site alternative two, with Grootegeluk Coal Mine in the background	77
Figure 35: Eskom power line traversing site alternative two	78
Figure 36: Matimba Power Station, as seen from site alternative two	79

LIST OF TABLES

Table 1: Attributes considered	10
Table 2: Categories of social impacts	22
Table 3: List of social variables	23
Table 4: Matrix Relating Project Stage to Social Impact Assessment Variables	24
Table 5: Distribution of the population by age and sex, Lephalale Municipality – 1996, 2001 and 2011	40
Table 6: Population growth rates by municipality – 1996-2011 and 2001-2011	41
Table 7: Distribution of the population by population group (Black African), sex and municipality – 1996, 2001 and 2011	42
Table 8: Distribution of the population by population group (Coloured), sex and municipality – 1996, 2001 and 2011	43
Table 9: Distribution of the population by population group (Indian/Asian), sex and municipality – 1996, 2001 and 2011	44

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Table 10: Distribution of the population by population group (White), sex and municipality – 1996, 2001 and 2011	45
Table 11: Distribution of the population by functional age group, sex and municipality – 1996, 2001 and 2011	46
Table 12: Dependency ratio by municipality – 1996, 2001 and 2011	47
Table 13: Distribution of the population by marital status and municipality – 1996, 2001 and 2011	48
Table 14: Distribution of the population aged 20 years and older by highest level of education attained, sex and municipality – 1996, 2001 and 2011	49
Table 15: Distribution of the population aged between 5 and 24 years by school attendance, sex and municipality – 1996, 2001 and 2011	50
Table 16: Distribution of the population aged between 15 and 64 years by employment status – 1996, 2001 and 2011	51
Table 17: Average household size by municipality – 1996, 2001 and 2011	52
Table 18: Distribution of households by type of main dwelling and municipality – 1996, 2001 and 2011	53
Table 19: Distribution of households by tenure status and municipality – 2001 and 2011	54
Table 20: Distribution of households using electricity for lighting, heating and cooking by municipality – 1996, 2001 and 2011	55
Table 21: Distribution of households by access to piped water and municipality – 1996, 2001 and 2011	56
Table 22: Distribution of households by type of refuse removal and municipality – 1996, 2001 and 2011	57
Table 23: Distribution of households by type of toilet facility and municipality – 1996, 2001 and 2011	58
Table 24: Distribution of female headed households by municipality – 1996, 2001 and 2011	59
Table 25: Distribution of child headed households by municipality – 1996, 2001 and 2011	60
Table 26: Generic significance rating criteria	65
Table 27: Rating criteria and scores	67
Table 28: Significance rating of impacts	67
Table 29: Final ratings for spatial representation	68
Table 30: Social Impact Assessment rating table – Site alternative 1	81
Table 31: Social Impact Assessment rating table – Site alternative 2	84
Table 32: Mitigation and management measure	88

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

1. INTRODUCTION

Royal HaskoningDHV (RHDHV) requested that a Social Impact Assessment (SIA) be conducted for the proposed continuous ash disposal facility for the Matimba Power Station in Lephalale, Limpopo Province. The Social Impact Assessment, together with other specialist studies, forms part of the Environmental Impact Assessment process. EIA practitioners draw on inputs from a range of scientific disciplines, with the benefit of translating good theory into good practice (DEAT, 2002a). The applicant is Eskom Holdings SOC (Ltd) and the decision-making authority the National Department of Environmental Affairs.

1.1 Terms of reference

The issues raised in the scoping phase of an EIA, which cannot be effectively addressed with the currently available information, form the basis for the terms of reference of specialist studies (DEAT, 2002a).

The SIA provides a baseline description of the study area, specifically focussing on the communities living and working in close proximity to the proposed development. The potential impacts of the proposed development on the social environment will be identified and assessed in terms of an agreed assessment methodology. Mitigation measures will be proposed to enhance the positive impacts and reduce the significance of the negative impacts.

The process included the following:

- Confirmation of study area, including the proposed site and an identified alternative site;
- Review of available secondary data;
- Social and economic baseline description of the potentially impacted areas;
- Communication with landowners of alternative sites and conduction of a site visit, including alternative sites;
- Assessment of the data collected during the public participation exercises;
- Identification and assessment of potential direct, indirect and cumulative impacts, both positive and negative;
- Review of other specialist studies, as impacts that are not classified as social impacts can result in social impacts;
- Identification of measures to enhance positive social impacts and mitigate negative social impacts; and
- Recommendation on whether the project should proceed from a social point of view.

A comprehensive social sensitivity analysis was done by RHDHV in the scoping phase and this was drawn from in this Social Impact Assessment.

The level of study for the SIA was appropriate to the likely significance and impacts.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

1.2 Specialist details

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1.3 Assumptions and limitations

The following assumptions and limitations are applicable to this study:

- In order to understand the social environment and to predict impacts, complex systems have to be reduced to simple representations of reality (DEAT, 2002a). The experience of impacts is subjective and what one person may see as a negative impact may not be perceived as such by another person.
- The study was based on present information available to the author.
- Maps that formed part of the Scoping Report and Social Opinion compiled by RHDHV were drawn from, especially with regards to the 8km radius around the proposed site and dwellings present within that 8km radius, and supplemented by information gathered from Google Earth, 1:50 000 topographical cadastral maps and the site visit.
- No household/individual surveys were done as part of the data gathering exercise.
- No economic modelling or analysis was done as part of the SIA. Any data relating to the economic profile of the area was obtained from municipal sources, such as municipality/provincial websites, Integrated Development Plans (IDPs), Service Delivery and Budget Implementation Plans (SDBIPs), the Limpopo Employment, Growth and Development Plan (LEGDP) and census data.
- This report only applies to the Matimba ash disposal facility and will not necessarily be accurate for and applicable to similar infrastructure at other sites.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

2. PROJECT DESCRIPTION

2.1 Project background

Matimba Power Station is a 3990MW installed capacity base load coal-fired power station, located approximately 15km west of Lephalale in Limpopo Province. It is the biggest direct dry-cooled power station in the world and it produces approximately 24 000Gwh per annum.

The current ash disposal facility is approximately 3km south of the power station, on the farm Zwartwater 507 LQ, which is about 1200 ha in extent. The study area is an 8km radius from the power station. Of the 920 ha needed for ash disposal over the power station's life span, about 300 ha have already been covered at the existing ash disposal facility.

Matimba Power Station became operational in 1987 and has a remaining life of approximately 44 years. Approximately 750 people are employed at Matimba Power Station (www.eskom.co.za).

The proponent's first site alternative for the establishment of the ash disposal facility is adjacent to the existing ash disposal facility site, also on the farm Zwartwater 507 LQ. This site alternative already has the necessary infrastructure there and if this site is approved the existing facility and infrastructure will merely be extended, thereby saving the costs of installing the necessary infrastructure at a different site where it does not exist at present.

The second site alternative that is also being investigated comprises the following four farms, located north of Matimba Power Station:

- Vooruit 449 LQ (owned by Exxaro Coal);
- Appelvlakte 448 LQ (owned by Exxaro Coal);
- Droogheuwel 447 LQ (privately owned); and
- Ganzepan 446 LQ (privately owned).



Figure 1: Entrances to the farms Ganzepan, Droogheuwel and Appelvlakte, which form part of site alternative two

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

The new linear infrastructure route which include road and conveyor belt that would have to be constructed to carry the ash to the second alternative disposal site would traverse the following farms:

- Grootestryd 465 LQ (owned by Eskom/Lephalale Local Municipality/Exxaro);
- Nelsonskop 464 LQ (owned by Exxaro Coal); and
- Appelvlakte 448 LQ (owned by Exxaro Coal).

Other prominent industrial features in the area are Exxaro's Grootegeluk Coal Mine (approximately 25km outside Lephalale), which supplies Matimba's coal and Eskom's Medupi Power Station, which is currently being constructed.

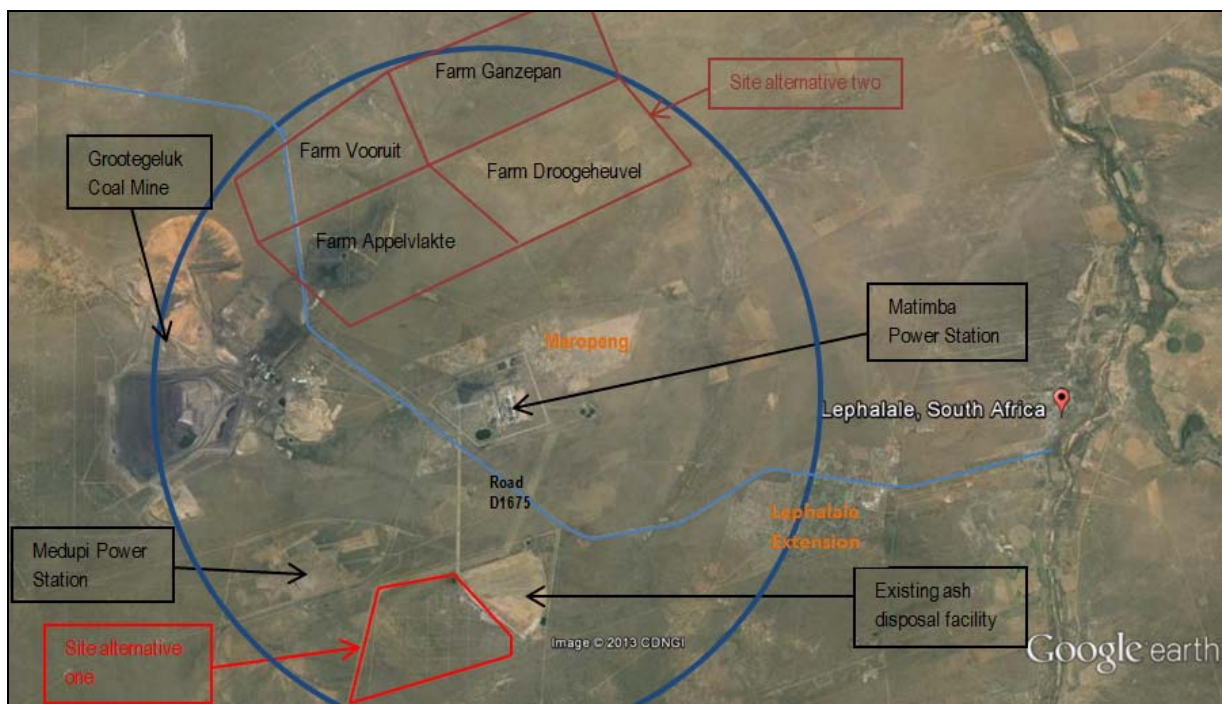


Figure 2: Study site

The ash is generated as a by-product of combustion of coal at the Matimba Power Station. From there the ash is transported via conveyors from the power station to the ash disposal facility. The ash contains 12% moisture and therefore only a small amount of dust is released.

Water (sourced from ash water return dams) is used to suppress airborne ash on the advance slope of the ash dump and the disposal facility is covered on a daily basis with a 50mm thick layer of soil/sandy material. The final rehabilitation cover consists of 300mm thick topsoil material for revegetation.

Approximately 6 million tons of ash is disposed of on an annual basis. It is not foreseen that annual quantities of generated ash will increase.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

2.2 Social attributes considered

Based on the above project information the attributes listed in Table 1 were specifically considered during the study.

Table 1: Attributes considered

<ul style="list-style-type: none"> • Demographics • Range of the development area 	<ul style="list-style-type: none"> • Standard of living • Economic prosperity and resilience 	<ul style="list-style-type: none"> • Income • Employment • Formal and informal business
<ul style="list-style-type: none"> • Physical and social infrastructure • Existing types of housing • Road infrastructure and traffic • Local/regional/ national linkages • Access to services – water, electricity and sanitation • Access to education facilities 	<ul style="list-style-type: none"> • Migration patterns • Influx and outflow of temporary workers • Relocation of individuals or families • Displacement/relocation concerns • Residential stability 	<ul style="list-style-type: none"> • Human rights • Access to health facilities • Health and safety • Perceived health • Personal safety and hazard exposure • Historical experience of change
<ul style="list-style-type: none"> • Capacity of government agency to handle workload generated by project • Integrity of government agencies – absence of corruption and competence of agency • Trust in political and social institutions • Size and structure of local government • Inter-organisational cooperation 	<ul style="list-style-type: none"> • Alterations in family structure • Social networks – interaction with others in community • Community connection – sense of belonging • Social tension and violence • Population size, density and change • Conflict between newcomers and long term residents 	<ul style="list-style-type: none"> • Replacement cost of environmental functions • Loss of natural and cultural heritage • Cultural practices and heritage of the population in the area
<ul style="list-style-type: none"> • Level of education • Opportunities for skills development 	<ul style="list-style-type: none"> • Participation in decision making • Interest group activity • Identification of stakeholders • Interested and affected parties 	<ul style="list-style-type: none"> • Tourism • Presence of seasonal (leisure) residents
<ul style="list-style-type: none"> • Livelihood patterns of nearby communities • Predominant land uses • Changing land use patterns • Land ownership • Property values 	<ul style="list-style-type: none"> • Perceptions of risk, health and safety • Attitudes towards the proposed action • Concerns about social well-being 	<ul style="list-style-type: none"> • Fairness of distribution of impacts across community

3.

4. SOCIAL IMPACT ASSESSMENT AS SPECIALIST STUDY

4.1 Defining Social Impact Assessment

Various definitions of 'Social Impact Assessment' can be found in literature. However, in order to define 'Social Impact Assessment', a clear understanding of the meaning of 'social impacts' is needed.

The Interorganizational Committee on Guidelines and Principles (ICGP) defines 'social impacts' as "... the consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs and generally cope as members of society. The term also includes cultural impacts involving changes to the norms, values, and beliefs that guide and rationalise their cognition of themselves and their society" (ICGP, 1994).

Following this, Vanclay (2002) defines 'Social Impact Assessment' (SIA) as "the process of analysing (predicting, evaluating and reflecting) and managing the intended and unintended consequences on the human environment of planned interventions (policies, programs, plans, projects) and any social change processes invoked by those interventions so as to bring about a more sustainable and equitable biophysical and human environment".

Vanclay (2002) grouped social change processes that can lead to social impacts into seven categories, to assist in identifying potential social impacts that can occur as a result of a certain action:

- Demographic processes (changes in the number and composition of people);
- Economic processes (relating to the way in which people make a living and economic activity in the society);
- Geographical processes (changes in land use patterns);
- Institutional and legal processes (relating to the efficiency and effectiveness of institutional structures including government and nongovernment organisations);
- Emancipatory and empowerment processes (increasing influence in decision making processes);
- Socio-cultural processes (affecting the culture of a society); and
- Other processes.

"SIA, therefore, is an umbrella or overarching framework that encompasses all human impacts including aesthetic (landscape analysis), archaeological and heritage, community, cultural, demographic, development, economic and fiscal, gender, health, indigenous rights, infrastructure, institutional, political (human rights, governance, democratisation etc.), poverty-related, psychological, resource issues (access and ownership of resources), the impacts of tourism and other impacts on societies. SIA is not limited to a narrow or restrictive understanding of the concept 'social'" (Vanclay, 2002).

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

No definition exists for SIA in the context of developing countries specifically. In developing countries, SIA should be seen as “a framework for incorporating participation and social analysis into the design and delivery of development projects” (World Bank, 1995). Taylor et al. (1995) writes that SIA in developing countries should be seen as “a process for research, planning and management of change arising from policies and projects”.

“Thus, SIA needs to be process oriented to ensure that social issues are included in project design, planning, and implementation, as well as ensuring that development is acceptable, equitable, and sustainable” (Branch and Ross in Vanclay, 2002).

Vanclay (2002) emphasises the importance of SIA forming part of development planning in developing countries by stating that the improvement of social well-being, with a focus on poverty reduction and democratisation, should be recognised as an objective of development projects and plans, and as such, should serve as a performance indicator considered in any form of impact assessment. “SIA is more than a technique or step; rather, it is a philosophy about development and democracy. As such, ideally it considers pathologies of development (i.e. harmful impacts), goals of development (such as poverty alleviation), and processes of development (e.g. participation, capacity building)” (Vanclay, 2002).

4.2 Benefits of assessing social impacts

Considering potential social impacts of proposed developments has numerous benefits.

- It enriches the decision-making process by potentially resulting in a different, better informed decision than the one that would otherwise have been made.
- Decision-making criteria are applied consistently.
- A more holistic view of developments and their impacts are obtained.
- Provision of mitigation measures for negative social impacts, which are included as conditions for issuing an authorisation, and thereby ultimately enforced.
- Enhancement of positive social impacts that a development may have.
- Promotion of transparency and accountability in all applications for new developments.
- Social learning by developers, planners, decision-makers and the community, resulting in successful implementation of projects.
- Contributing to sustainability because development is more successful and sustainable if it has the “buy-in” of the communities that are affected by it.

4.3 Legal mandate to address social impacts in Environmental Impact Assessment

4.3.1 Constitution of the Republic of South Africa

Aucamp (2009a) writes that there is a clear mandate in the Constitution of the Republic of South Africa (Act 108 of 1996) to include social issues in the EIA process. The Bill of Rights in the Constitution states:

Everyone has the right –

- (a) to an environment that is not harmful to their health and wellbeing; and
- (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - (i) prevent pollution;
 - (ii) promote conservation; and
 - (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.

4.3.2 National Environmental Management Act

The National Environmental Management Act (Act 107 of 1998) (NEMA) states that, whereas many inhabitants of South Africa live in an environment that is harmful to their health and well-being, the following (relating to the social environment) are acknowledged.

- Everyone has the right to an environment that is not harmful to his or her health or well-being.
- The State must respect, protect, promote and fulfil the *social*, economic and environmental rights of everyone and strive to meet the basic needs of previously disadvantaged communities.
- Inequality in the distribution of wealth and resources, and the resultant poverty, are among the important causes as well as the results of environmentally harmful practices.
- Sustainable development requires the integration of *social*, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations.
- Everyone has the right to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that -
 - prevent pollution and ecological degradation;
 - promote conservation; and
 - secure ecologically sustainable development and use of natural resources while promoting justifiable economic and *social* development.

Aucamp (2009b) lists environmental principles that must be adhered to in all Acts pertaining to the environment. The following NEMA principles listed refer directly to the human/social environment.

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- Development must be socially, environmentally and economically sustainable.
- Environmental justice must be pursued as to not unfairly discriminate against any person, particularly vulnerable and disadvantaged persons.
- Equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued.
- Decisions must take into account the interests, needs and values of all interested and affected parties, including all forms of traditional and ordinary knowledge.
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated, and decisions must be appropriate in the light of such consideration and assessment.

Section 24 of NEMA states that the potential impact on the environment, *socio-economic conditions* and cultural heritage of activities that require authorisation must be considered, investigated and assessed prior to implementation, in order to give effect to the general objectives of integrated environmental management.

4.3.3 Environmental Impact Assessment Regulations

According to Regulation 7 (1) of the Environmental Impact Assessment (EIA) Regulations that were promulgated in terms of Chapter 5 of NEMA in June 2010 the decision-making authority is entitled to all information that has or may have the potential of influencing any decision with regard to an application. It can be argued that, since social impacts have the potential of influencing the authority's decision, as much information on potential social impacts as practicably possible should be supplied to the decision-making authority as part of the application (Bezuidenhout, 2009).

The EIA Regulations also prescribe the content of both Basic Assessment Reports and Environmental Impact Assessment Reports and include the following features applicable to social impacts.

- A description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, *social*, economic and cultural aspects of the environment may be affected by the proposed activity (Content of Basic Assessment Reports: Regulation 22 (2)(d) and Environmental Impact Assessment Reports: Regulation 31 (2)(d)).
- A description of identified alternatives to the proposed activity, including advantages and disadvantages that the proposed activity or alternatives will have on the environment and *the community that may be affected by the activity* (Content of Basic Assessment Reports: Regulation 22 (2)(h) and Environmental Impact Assessment Reports: Regulation 31 (2)(g)).

It is clear from the above that, although there are no explicit requirements for conducting comprehensive SIAs in NEMA or the EIA Regulations, environmental and social interests should be considered equally important (Bezuidenhout, 2009).

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

This, however, is not commonly applied in practice, often due to time and cost constraints associated with conducting specialist social impact studies as part of the EIA application process. Field (2006) poses the question: "If EIA processes do not consider the three E's (environment, economy and equity) in an integrated fashion, where does this take place and who is responsible? The NEMA is unambiguous in requiring that development should be economically, socially and environmentally sustainable and that a consideration of these aspects *must* be integrated".

4.4 Link between Environmental Impact Assessment and Social Impact Assessment

According to the ICGP (1994) there are a number of resemblances between environmental impacts and social impacts. Just as EIAs focus attention on threatened or endangered plant and wildlife species, SIAs must devote particular attention to the impacts on vulnerable segments of the human population, such as the poor, the elderly, the unemployed, minority groups and women. Just like ecosystems that are deemed sensitive, are protected from change that is harmful, the population should be protected from activities that will be harmful to them, based on meanings and social significance assigned to the particular change. It further states that persons not familiar with the social sciences are often tempted to treat social constructions as mere perceptions or emotions, instead of reality. During controversial projects, parties are often tempted to dismiss the concerns of others as being merely imagined or perceived.

There are, however, two important reasons not to omit such concerns from EIAs and SIAs, regardless of whether the views are widely accepted internally or come from critics: "First, positions taken by all sides in a given controversy are likely to be shaped by (differing) perceptions of the policy or project, and the decision to accept one set of perceptions while excluding another, may not be scientifically defensible. Second, if the agency asserts that its critics are 'emotional' or 'misinformed', for example, it is guaranteed to raise the level of hostility between itself and community members and will stand in the way of a successful resolution of the problem" (ICGP, 1994).

Despite the many advances that have been made in the field of SIA and its incorporation into the EIA process, there are not many examples where it has actually made a difference in the decision-making process. "SIA is recognised as important, but has yet to be integrated sufficiently in the EIA process" (Burdge and Vanclay, 1996).

4.5 Shortcomings in Social Impact Assessment

There are general shortcomings in SIA that cannot always be mitigated and that should be acknowledged as potentially having an impact on the quality of the SIA. A number of factors provide challenges in the field of SIA when conducted as part of an EIA process.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

4.5.1 Lack of expertise

Environmental Impact Assessments contain a section that pertains to social impacts. Completion of these sections is often not comprehensive and done by the Environmental Assessment Practitioner (EAP) who seldom has a social sciences background. This, combined with the fact that very little information is required by law and information available at the planning phase of a development project (during which the EIA is conducted) is very limited, poses a serious problem (Bezuidenhout, 2009).

Aucamp (2009a) states: "Given the fact that it is difficult to define social impacts and that no formal training for SIA practitioners exists in South Africa, there are myriad methodological problems. People with different qualifications ranging from environmental to social sciences conduct social impact assessments".

The ideal is that qualified SIA practitioners complete the SIA section of the EIA, but the reality is that many environmental consultancies do not have people with a social sciences background employed and in most cases the Environmental Assessment Practitioner (EAP) ends up completing the section in the EIA that pertains to social impacts.

Du Pisani and Sandham (2006) emphasise the importance of social impacts being assessed by consultants who have been properly trained in social science methods and the lack of importance attached to SIA in general: "Social impacts will have to be taken much more seriously in South Africa, because they are crucial in empowering disadvantaged communities and in strengthening democratic processes".

4.5.2 Lack of peer review mechanisms

According to Vanclay (2002) the inadequacy of many SIA studies derives in part from the lack of appropriate peer review of studies to ensure professional best practice. "As a result, many studies have not been of a satisfactory standard and many have failed to consider the full range of social impacts that might be experienced".

4.5.3 Lack of availability of information

Information relating to the social environment and needed as part of the EIA process is often limited to the amount of employment opportunities that will be created during the construction and operation phases respectively, and what the benefits will be for the community who lives there. These calculations are often done by means of guessing. In addition, no methodology for completing the social impact section is prescribed by South African regulations (Bezuidenhout, 2009).

Information on, for example the number of employment opportunities to be created by the development, is most of the time not readily available during the planning phase of a development.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Since the SIA, as part of the EIA process, is conducted during the planning phase of developments, the lack of available information poses a problem. Carley (1983) writes that good decisions are based on adequate information and adds that some information is better than none.

4.5.4 Lack of a sustainable development-approach

Field (2006) writes: “Awareness of the lack of relevant information for sustainable development thinking should prompt us to re-examine the type of information generated by legal processes aimed at regulating development. For example, if the EIA process only generates data on the environmental impacts of a development, it will be difficult for the regulator to employ sustainable development thinking”.

He further states: “In South Africa, in light of the past and of the current state of socio-economic development, it is ... better to urge a broad-based appropriation and institutionalisation of ‘sustainable development thinking’ than it is to call for the strengthening of ‘environmental protection’ measures: the environment stands a better chance of being valued, respected, conserved, protected, restored and enhanced if the focus is on sustainable development” (Field, 2006).

Gibson (2006) is of the same opinion and writes that concerns with regards to sustainability “have centred on the common and sometimes catastrophic failures of decision-making efforts to take key linked factors into account”.

4.5.5 Lack of a holistic view of developments and their impacts

Developments and their associated impacts are often looked at in isolation instead of holistically. O’Faircheallaigh (1999) writes that another problem associated with SIA is “... the tendency to focus on the impact of individual developments in isolation and over the short to medium term, which means that SIA may ignore the cumulative and longer term impacts that a succession of projects can have”.

Du Pisani and Sandham (2006) evaluated SIA as part of EIAs in the South African context and came to the following conclusions.

- The problems in SIA practice that are experienced in other parts of the world are also evident in South Africa.
- Problems include: institutional, financial and professional constraints, as well as problems associated with approach and methods.
- SIA in South Africa is neglected and does not receive the professional attention it deserves in a country facing enormous social challenges.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Recommendations made by them (Du Pisani and Sandham, 2006) include the following.

- Significant social impacts identified in an EIA should be assessed by an SIA specialist.
- A policy framework for SIAs should be developed by the authorities responsible for EIAs.
- In the guidelines for EIAs attention should also be paid to methodological guidelines for conducting SIAs.

It is therefore clear that much work still needs to be done to ensure that the necessary attention is given to identify and mitigate social impacts during the planning phase of projects (Bezuidenhout, 2009).

4.6 Steps in conducting a Social Impact Assessment

The ICGP (2003) identified ten steps (listed below) that should be followed when conducting a Social Impact Assessment:

- Public involvement: develop an effective public plan to involve all potentially affected parties;
- Identification of alternatives: describe the proposed action or policy change and reasonable alternatives;
- Baseline conditions: describe the relevant human environment / area of influence and baseline conditions;
- Scoping: after obtaining a technical understanding of the proposal, identify the full range of probable social impacts that will be addressed based on discussion or interviews with members of all potentially affected;
- Projections of estimated effects: investigate the probable impacts;
- Prediction of responses to impacts: determine the significance of the identified social impacts;
- Indirect and cumulative impacts: estimate subsequent impacts and cumulative impacts;
- Changes in alternatives: recommend new or changed alternatives and estimate or project their consequences;
- Mitigation: develop a mitigation plan; and
- Monitoring: develop a monitoring programme.

These steps are an extension of the earlier Western and Lynch (2000) 5-step plan for conducting SIAs.

- Step 1: Clarifying the issue – clarifying in general terms what happened or is planned to happen.
- Step 2: Preliminary scoping – answering the following questions: what is the general nature of the issue to be addressed, how much time is available, what resources are available and what data are available?
- Step 3: Structuring the SIA / definitive scoping – define the research methodology to be employed.
- Step 4: Undertaking the SIA – the actual undertaking of the research.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- Step 5: Drawing the SIA together – addressing the overall issues identified in a preliminary fashion in Step 1.

In addition to the proposed steps to be followed when conducting SIAs, a number of factors that should be considered when conducting a SIA are identified by Carley (1983).

- Data requirements – relevant data are more important than comprehensive data.
- Resource capability – the SIA design is related to available resources.
- Quantification and qualification – these are equally important.
- Disaggregation of data – quantified data is disaggregated, but not to the extent that it becomes too complex to use.
- Probability of impact occurrence – high, medium or low.
- Significance of impacts.
- Sensitivity analysis – measuring of sensitivity to variations in the assumptions.
- Robustness measures – indicates how much change in variables must occur before there is a reversal of ranking in the outcomes.
- Hierarchical structure – the structure of presentation of findings.
- Value assumptions.
- Mitigation measures – for negative impacts.
- Communicability – the SIA must be presented in a manner that is clear and understandable.
- Public debate – the SIA must be presented in such a way that it will facilitate public debate.
- Causal understanding.
- Validity – it happens seldom that, after the event, checks are done to compare anticipated impacts with actual impacts.

4.7 Approach and data collection methods

Two research approaches can be distinguished, namely a quantitative approach and a qualitative approach. A combination of these two methods can also be followed. DEAT (2006) uses the example of having to obtain information on the number and availability of community facilities.

The use of statistical data to obtain insight about the number and availability of community facilities will be used (quantitative approach), but it would be explored further by obtaining the views and perceptions of the people on the effectiveness and accessibility of these facilities (qualitative approach). “By using both qualitative and quantitative methodology more comprehensive data will be obtained, and a more holistic product would result, without excluding important areas of assessment” (DEAT, 2006).

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

4.7.1 Quantitative techniques

Quantitative research can be described as an inquiry into a social or human problem, based on a theory composed of variables, *measured with numbers*, and analysed with statistical procedures, in order to determine whether the predictive generalisations of the theory hold true (Sogunro, 2001).

The most common source of quantitative data in SIA is census data, which is used to produce historic and demographic profiles. It can also be used to provide extensive baseline information. Other official statistics, like crime statistics, are also useful and credible (Taylor *et al*, 2004). Other sources include (DEAT, 2006):

- Integrated Development Plans;
- Local Municipalities;
- Maps;
- Information centres;
- The internet;
- Libraries;
- Questionnaires;
- Checklists;
- Surveys;
- Multipliers;
- Input-output analysis; and
- Computer modelling.

4.7.2 Qualitative techniques

Qualitative research can be described as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants and conducted in a natural setting (Sogunro, 2001).

Qualitative techniques are used extensively in SIA, using a number of research methods, including (DEAT, 2006):

- Ethnographic research, which entails in-depth interviews and detailed observation aimed at developing an insider perspective and is not intended to be statistically representative.
- Focus group interviews, which are concentrated in-depth group interviews with selected participants.
- Casual and unplanned contacts can also be valuable sources of information.
- Participatory rural appraisal is aimed at empowerment rather than simply data collection and the information gathered is owned, analysed and used by local people rather than by outsiders. It is a good method to use in developing countries and informal communities, especially where there is a high rate of illiteracy and few sources of secondary data.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- Experts or key informants are persons from both the public and private sectors having knowledge of the community under study. The assessor selects them because they have broad knowledge of the community, its services and its history.
- A community forum is based on one or more public meetings to which people are invited to express their opinions about a proposed project.
- Workshops entail working with groups and learning how the group mind develops during dialogue.

4.7.3 Factors to be considered

A typical SIA investigates one or more of the following issues (The International Bank for Reconstruction and Development / THE World Bank, 1998):

- Demographic factors – number of people, their location, population density, age, and so on.
- Socio-economic determinants – factors affecting incomes and productivity, such as risk aversion of the poorest groups, land tenure, access to productive inputs and markets, family composition, kinship reciprocity, and access to wage opportunities and labour migration.
- Social organization – organization and capacity at the household and community levels affecting participation in local-level institutions as well as access to services and information.
- Socio-political context – implementing agencies' development goals, priorities, commitment to project objectives, control over resources, experience, and relationship with other stakeholder groups.
- Needs and values – stakeholder attitudes and values determining whether development interventions are needed and wanted, appropriate incentives for change, and capacity of stakeholders to manage the process of change.

With this information SIA can help project planners assess the social impacts of investments and, where negative impacts are identified, determine how they can be mitigated.

The following aspects of people's lives should be investigated when data is gathered during the SIA process (DEAT, 2006):

- People's way of life – how they work, play and interact with one another on a daily basis;
- Their culture – their shared beliefs, customs, values and language or dialect;
- Their community – its cohesion, stability, character, services and facilities;
- Their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place and the resources provided for this purpose;
- Their environment – the quality of the air and water that people use; the availability and quality of the food that they eat; the level of hazard or risk, dust and noise which they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources;
- Their health and well-being – where health is understood as a state of complete physical, mental and social well-being, not merely the absence of disease or infirmity;

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- Their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage, which may include a violation of their civil rights; and
- Their fears and aspirations – their perceptions about their safety; fears about the future of the community; and their aspirations for their future and the future of their children.

DEAT (2006) emphasises that SIA is a complex form of impact assessment and that the role of the community in the assessment should never be under-estimated. “All communities should be treated with respect and from the basis that the said community is a unique social structure with characteristics similar, but not identical, to other communities made up from similar social fabric” (DEAT, 2006).

4.8 Social variables

Different types of social variables exist and these variables can almost be used as a ‘check-list’ when identifying potential social impacts of a proposed development.

Vanclay (cited in DEAT, 2006) identified categories of social impacts that can be used as a guideline to ensure that all potential impacts are considered.

Table 2: Categories of social impacts

Health and social well-being	Death; nutrition; actual health and fertility; perceived health; mental health; aspirations for future; autonomy; stigmatization; feelings in relation to the project
Quality of the living environment	Physical quality – exposure to noise, dust, risk, odour etc.; leisure and recreation opportunities; aesthetic quality; availability of housing; quality of housing; physical and social infrastructure; personal safety and hazard exposure; crime and violence
Economic impacts and material well-being	Workload; standard of living; economic prosperity and resilience; income; property values; employment; replacement cost of environmental functions; economic dependency
Cultural impacts	Change in cultural values; violation of culture; experience of being culturally marginalized; commercial exploitation of culture; loss of local language; loss of natural and cultural heritage
Family and community impacts	Alterations in family structure; obligations to family/ancestors; family violence; social networks – interaction with others in community; community connection – sense of belonging; community cohesion; social differentiation and inequity; social tension and violence
Institutional, legal, political and equity impacts	Capacity of government agency to handle workload generated by project; integrity of government agencies – absence of corruption and competence of agency; legal rights; human rights; participation in decision making; access to legal advice; fairness of distribution of impacts across community
Gender relations	Women’s physical integrity – can decide about own body; personal autonomy of women – independence in all aspects; gendered division of labour – income, household, childbearing and rearing of children; access to resources and facilities; political emancipation of women

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

In addition, the Interorganizational Committee on Guidelines and Principles for SIA (2003) provides a list of social variables that must be investigated when conducting socio-economic impacts assessments.

Table 3: List of social variables

Population change	Population size, density and change; influx and outflow of temporary workers; presence of seasonal (leisure) residents; relocation of individuals or families; racial and ethnic composition and distribution
Community/ Institutional arrangements	Voluntary associations; interest group activity; size and structure of local government; industrial/commercial diversification; employment/income characteristics; local/regional/ national linkages; employment equity of disadvantaged groups; historical experience of change
Political and social resources	Distribution of power and authority; inter-organisational cooperation; conflict between newcomers and long term residents; identification of stakeholders; interested and affected parties; leadership capability and characteristics
Individual and family level impacts	Displacement/relocation concerns; trust in political and social institutions; residential stability; family and friendship networks; density of acquaintanceships; perceptions of risk, health and safety; attitudes towards the proposed action; concerns about social well-being
Community resources	Change in community infrastructure; indigenous populations; changing land use patterns; family and friendship networks; effects on known cultural, historical, sacred and archaeological resources

These variables should be used in all four project stages, which will be discussed in detail in the next section.

4.9 Project stages

There are four stages in the project cycle, namely planning, construction/implementation, operation/maintenance and decommissioning. Social impacts will be different for each stage and not all social impacts will occur at each stage (ICGP, 1994).

The ICGP (1994) developed a matrix to demonstrate how social impacts occur in each stage and to assist in identifying all those impacts, using the list of social variables they compiled.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Table 4: Matrix Relating Project Stage to Social Impact Assessment Variables

SIA variables	Planning	Construction/ implementation	Operation/ maintenance	Decommissioning
Population change: population size, density and change; influx and outflow of temporary workers; presence of seasonal (leisure) residents; relocation of individuals or families; racial and ethnic composition and distribution				
Community/ Institutional arrangements: voluntary associations; interest group activity; size and structure of local government; industrial/commercial diversification; employment/income characteristics; local/regional/national linkages; employment equity of disadvantaged groups; historical experience of change				
Political and social resources: distribution of power and authority; inter-organisational cooperation; conflict between newcomers and long term residents; identification of stakeholders; interested and affected parties; leadership capability and characteristics				
Individual and family level impacts: displacement/relocation concerns; trust in political and social institutions; residential stability; family and friendship networks; density of acquaintanceships; perceptions of risk, health and safety; attitudes towards the proposed action; concerns about social well-being				
Community resources: change in community infrastructure; indigenous populations; changing land use patterns; family and friendship networks; effects on known cultural, historical, sacred and archaeological resources				

Source: ICGP, 1994

5. SOCIAL BASELINE OF THE STUDY AREA

As mentioned in the section on quantitative data collection methods, the most common source of quantitative data in SIA is census data, which is used to produce demographic profiles. It is commonly used to provide baseline information. Other sources include Integrated Development Plans (IDPs), Spatial Development Frameworks (SDFs), Service Delivery and Budget Implementation Plans (SDBIPs) and Employment, Growth and Development Plans (EGDPs).

Baseline conditions are the existing conditions and past trends associated with the human environment in which the proposed activity is to take place (DEAT, 2006).

Establishing the baseline conditions is essential for describing the receiving environment, the *status quo* and for identifying and predicting potential impacts. "A prediction of change can only be as effective as the baseline information from which it is derived. It is thus important that the specialist puts the proposed project in perspective by comparing the current state with the potential future state" (DEAT, 2002a).

The baseline conditions pertaining to the proposed continuous ash disposal facility at Matimba Power Station will be discussed in the context of the province (Limpopo), district (Waterberg) and local municipality (Lephalale).

5.1 Provincial level – Limpopo Province

5.1.1 Limpopo background information

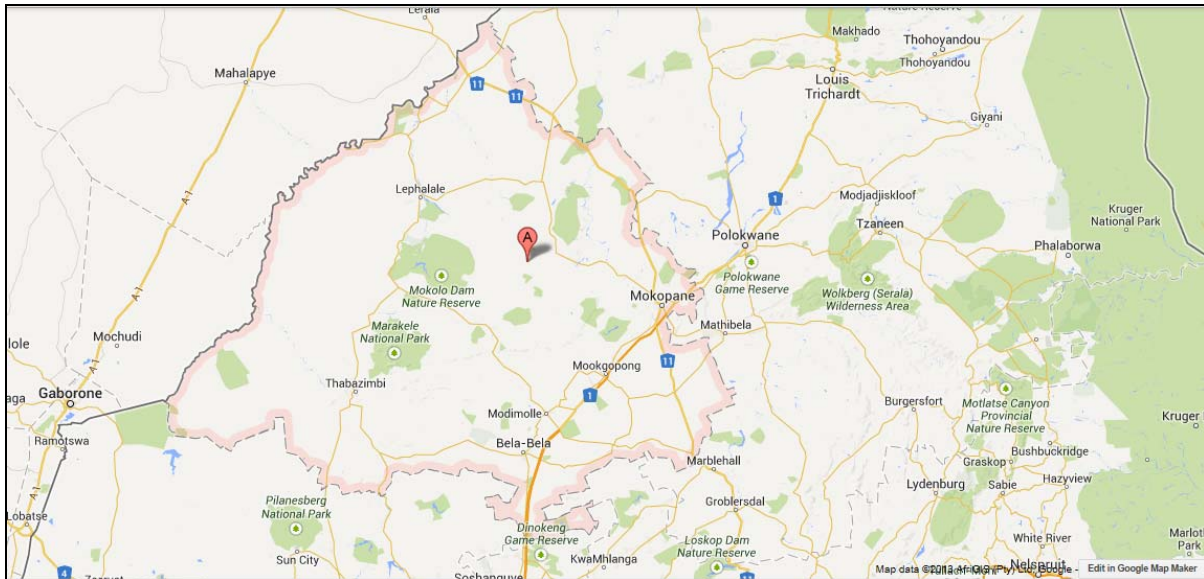
Limpopo Province is South Africa's northernmost province and shares its borders with Mozambique, Zimbabwe and Botswana. It is named after the great Limpopo River that flows along its northern border. The province is rich in wildlife, spectacular scenery and a wealth of historical and cultural treasures, including being home to Modjadji, the fabled Rain Queen, the Stone Age and Iron Age relics of Makapansgat Valley and the treasures of Mapungubwe World Heritage Site.

The northern section (and the bigger part) of the Kruger National Park is located in Limpopo. On the park's western border, privately owned game reserves and lodges can be found. The mountainous area of the Waterberg is also home to numerous game reserves.

Beyond the mountains of the Soutpansberg region, Mopani trees and giant Baobab trees dominate the plains sweeping northward to Zimbabwe. There are 340 indigenous tree species here, an abundance of animal life and the world's highest concentration of leopard.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

The capital of Limpopo is Polokwane, which is located halfway between Pretoria and the Zimbabwean border. Limpopo consists of five District Municipalities (DMs): Waterberg, Capricorn, Vhembe, Mopani and Sekhukhune DMs.



Source: Google Maps

Figure 3: Limpopo, South Africa

Limpopo's climate is characterised by hot summer months (October-March), while winter is characterised by chilly mornings, warm middays, dry afternoons and cool to cold nights. The Lowveld area of Limpopo can get as hot as 45° Celsius during summer.

The population of Limpopo consists of the following ethnic groups distinguished by culture, language and race:

- The Northern Sotho (Sepedi): Approximately 57%;
- The Tsonga (Shangaan): Approximately 23%;
- The Venda: Approximately 12%;
- The Afrikaner: Approximately 2.6%; and
- The English: Approximately 0.5%.

In terms of Agriculture, 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, 66% of its tomatoes and 285 000 tons of potatoes. Other products include coffee, nuts, guavas, sisal, cotton, tobacco and timber, with more than 170 plantations. Limpopo also boasts rich mineral resources, with mining contributing 22% of the GDP. Mineral resources include platinum, chromium, nickel, cobalt, vanadium, tin, limestone and uranium clay. Limpopo has 54 provincial reserves and many private game reserves, making the province a popular tourist destination.

(Source: About Limpopo)

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

5.1.2 Demographics

Figure 4 below indicates that Limpopo’s population is young, with the majority of the population aged below 35 years.

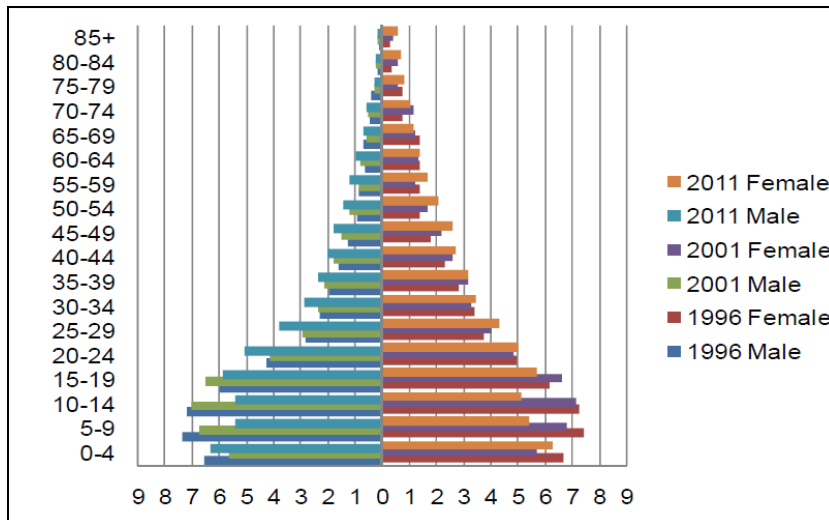


Figure 4: Distribution of population by age and sex, Limpopo - 1996, 2001 and 2011

Source: *Census 2011 Municipal report – Limpopo*

5.2 District level – Waterberg District

5.2.1 Demographics

The distribution of the Waterberg District’s population by age and sex is similar to that of the province as a whole, although the concentration of population below the age of 35 years is not as high as in the case with the Province.

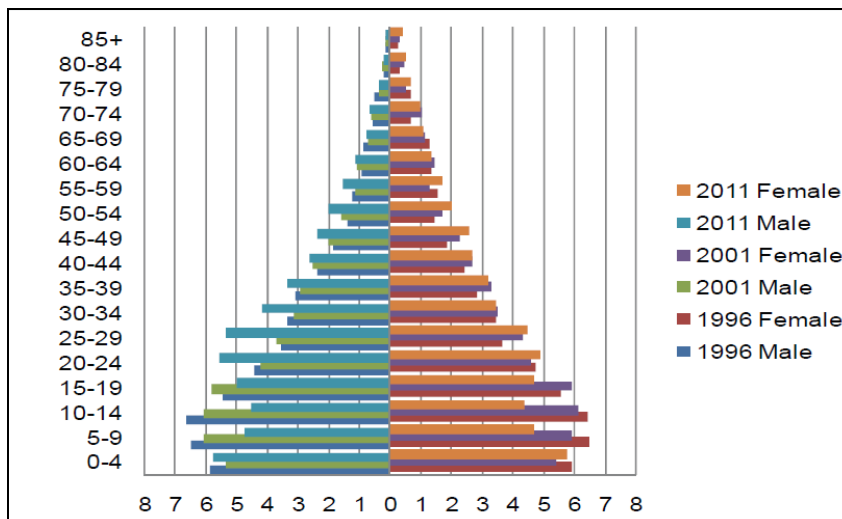


Figure 5: Distribution of the population by age and sex, Waterberg District - 1996, 2001 and 2011

Source: *Census 2011 Municipal report – Limpopo*

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 6 shows that the province has experienced a slow growth in population. For the periods 1996-2001 and 2001-2011, the provincial population is estimated to have grown by 1.8% and 0.8% respectively. Similar growth patterns are also seen in all the districts, except Greater Sekhukhune, which has been constant.

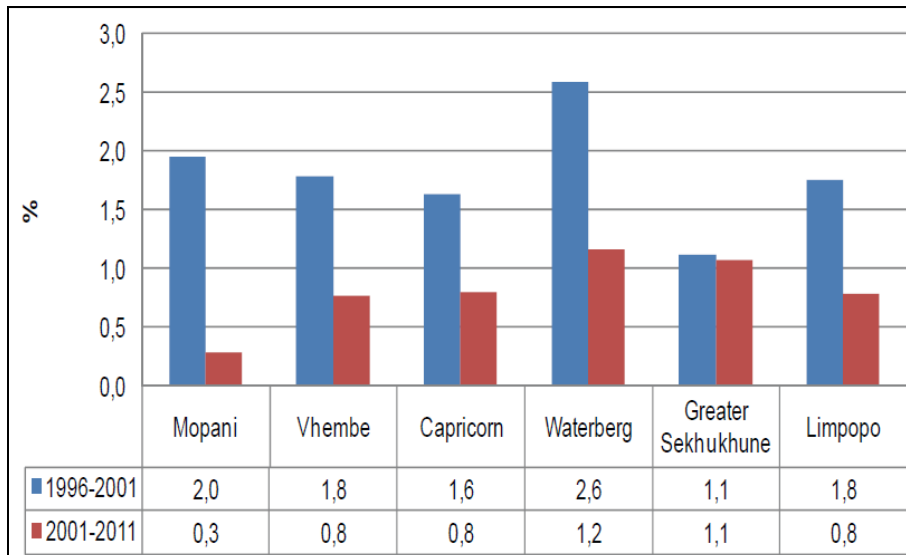


Figure 6: Population growth rates by district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 7 mirrors the population group composition of the country, with the majority of the Waterberg DM population being Black African, with Coloured and Indian/Asian population groups constituting the lowest percentage.

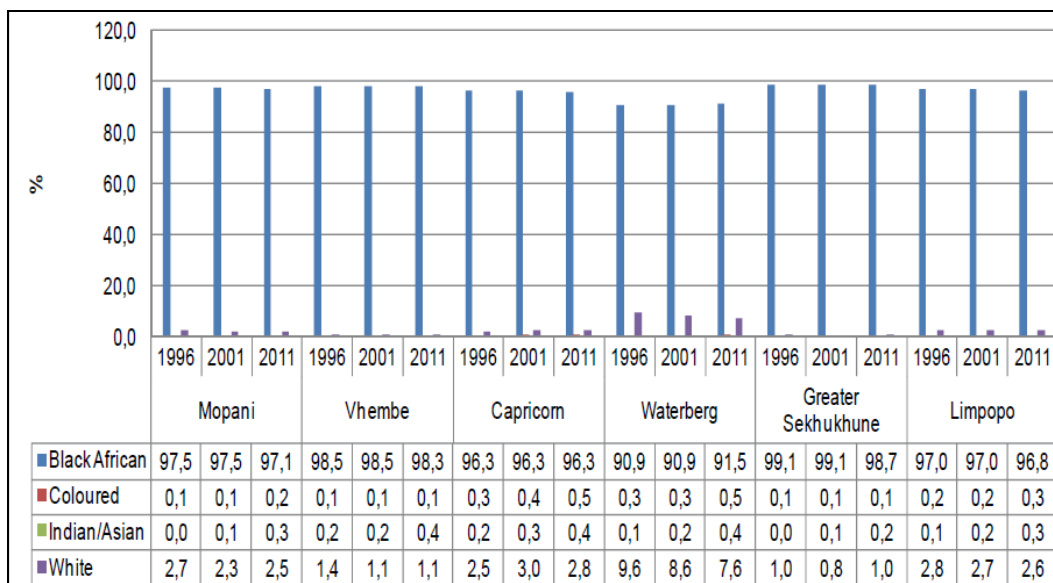


Figure 7: Percentage distribution of population group per district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 8 shows a consistent decline in the proportion of the population aged 0-14 years in the Waterberg District and an increase in the proportion of age group 15-64 years. Members of age group 65+ in the Waterberg District remained almost constant. The Waterberg District has the lowest and highest proportion of population aged 0-14 years and 15-64 years respectively.

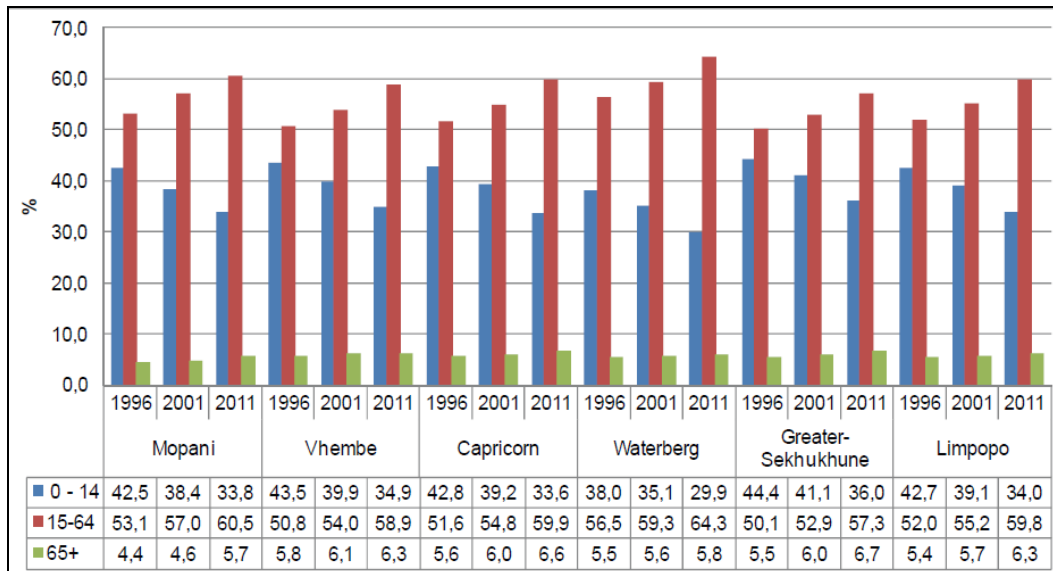


Figure 8: Population by functional age group and district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Dependency ratios provide insights into the burden borne by those who are in working age group (15-64 years) to support those aged 0-14 years and 65+ years. Figure 9 indicates that dependency ratios have been declining over time and the Waterberg District consistently showing a lower than provincial average.

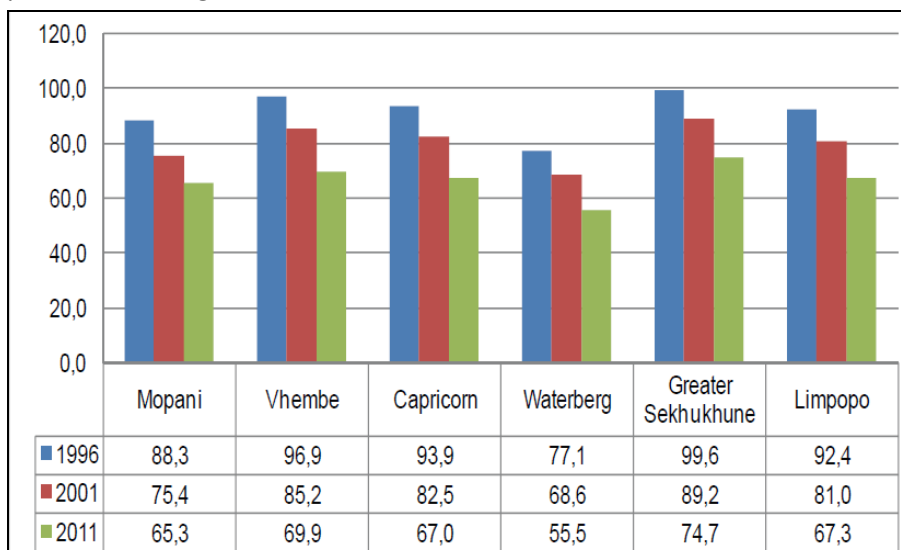


Figure 9: Dependency ratio by district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 10 shows a marginal decline in the proportion of the population never married and a slight increase in the proportion married or living together. The Waterberg DM's numbers are similar to those of the rest of Limpopo Province.

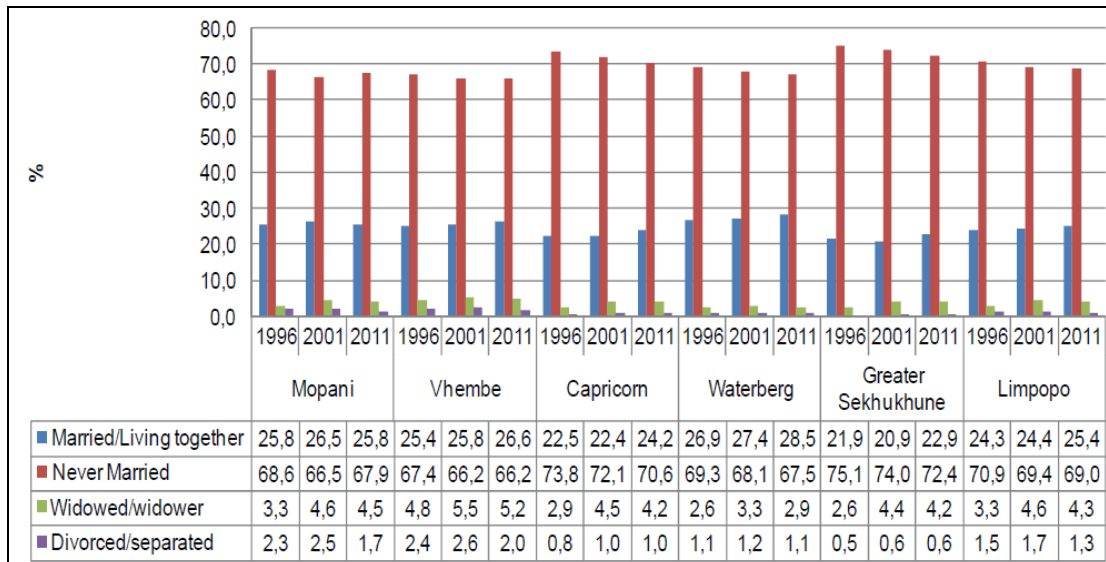


Figure 10: Distribution of population by marital status and district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 11 shows an increase in the proportion of the population with Grade 12/Matric and Higher Education. Also striking is the drastic reduction in the population with no schooling; which halved in all the districts, although still significantly higher than the populations with Grade 12/Matric and Higher Education combined.

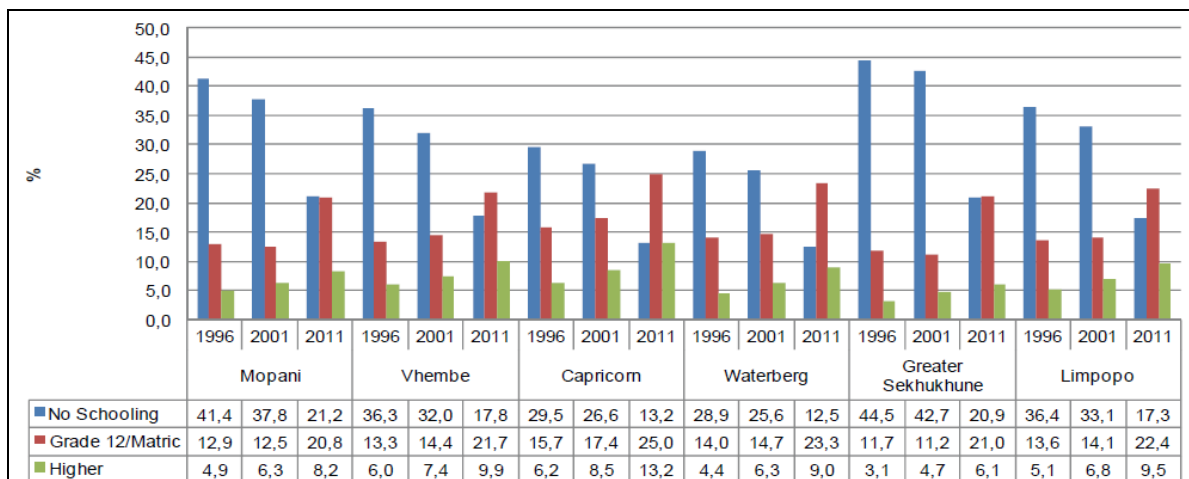


Figure 11: Distribution of the population aged 20 years and older by highest level of education and district municipality - 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 12 shows a general increase in the proportion of the population aged 5-24 attending school across the province. The Waterberg District's percentage of population attending school is, however, consistently lower than those of the other districts.

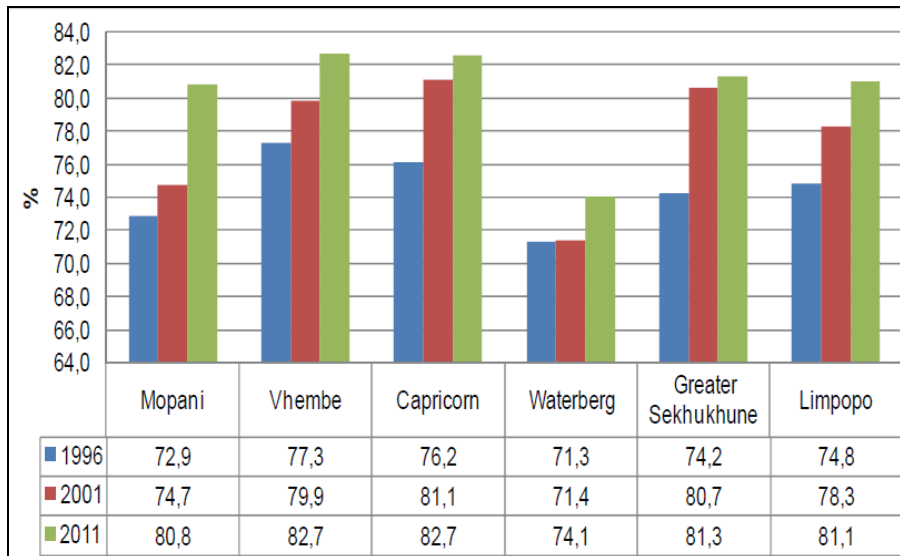


Figure 12: Distribution of the population aged between 5-24 years by school attendance and district municipality – 1996, 2001 and 2011

Source: *Census 2011 Municipal report – Limpopo*

Trends in the unemployment rate, as shown by Figure 13, suggest an increase between 1996 and 2001, and thereafter a decline across districts, except for the Greater Sekhukhune District which had a steady decline since 1996. The Waterberg District's numbers are significantly lower than those of the rest of the province, but still higher than the national unemployment figure of 26.6%.

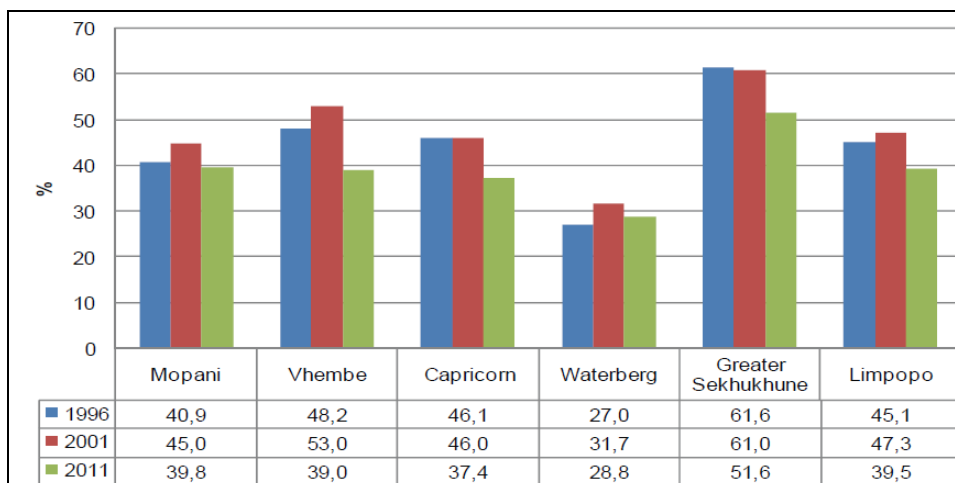


Figure 13: Unemployment rate (official definition) by district municipality – 1996, 2001 and 2011

Source: *Census 2011 Municipal report – Limpopo*

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 14 shows a decline in average household size, with the Waterberg District's figures being consistent with those of the rest of the province.

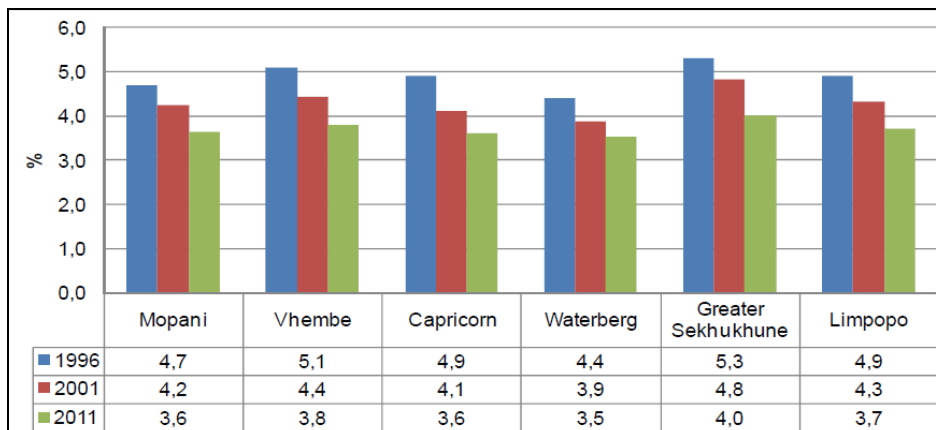


Figure 14: Average household size by district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 15 shows a significant increase in the proportion of households residing in formal dwellings across the province. Concomitantly is the decline in traditional dwellings. The Waterberg District has the highest percentage of informal dwellings across all three periods measured.

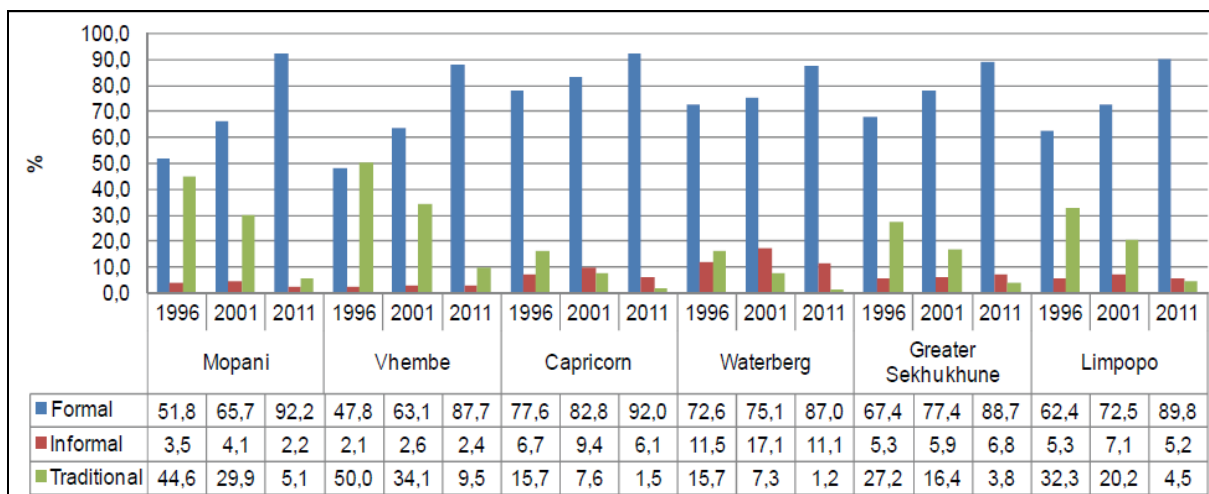


Figure 15: Percentage distribution of households by type of main dwelling and district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 16 shows a decline in the proportion of households that own their dwellings. In the Waterberg District, the percentage of households whose dwellings are rented are the highest in the province.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

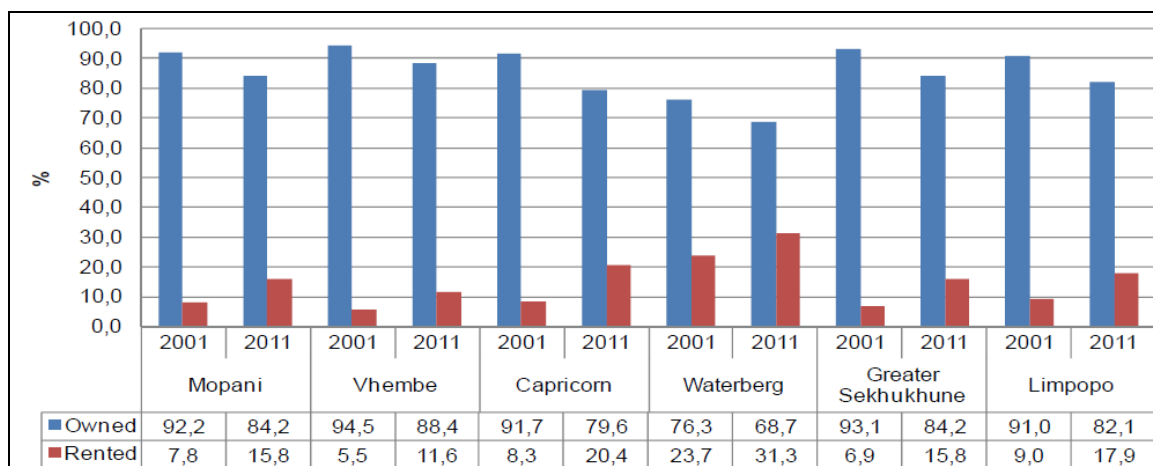


Figure 16: Distribution of households by tenure status and district municipality – 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 17 shows a decline in the proportion of households owning radios and landlines/telephones but an increase in the proportion of households owning televisions, computers, refrigerators and cell phones from 2001 to 2011. The proportion of households with access to internet is highest in Capricorn and Waterberg.

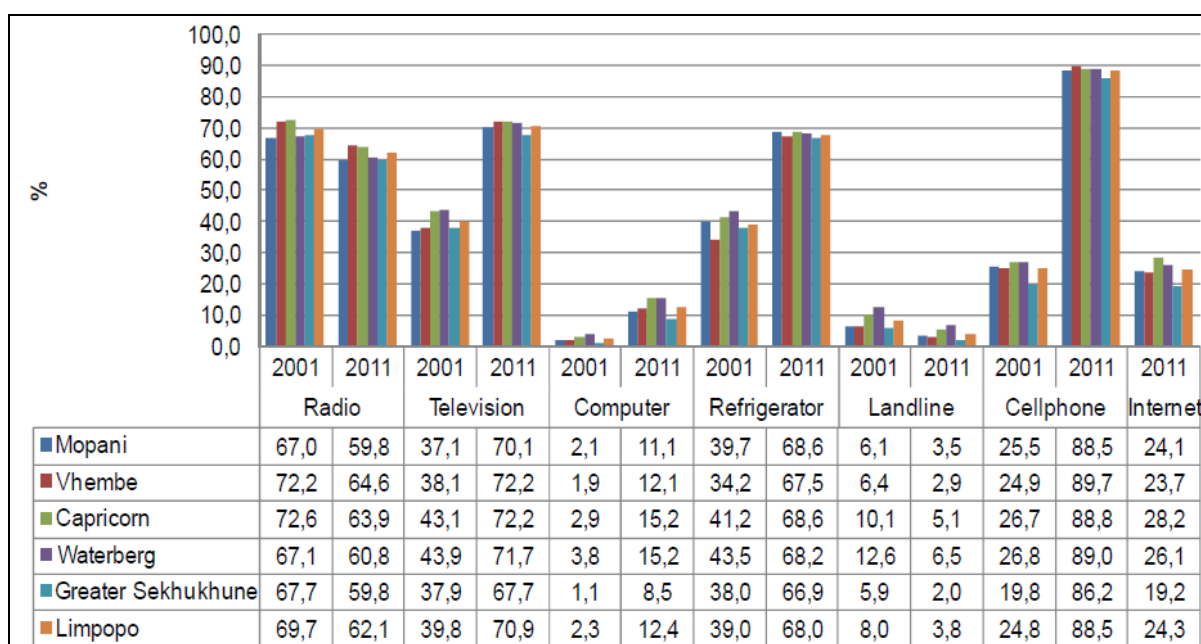


Figure 17: Distribution of households with a radio, television, computer, refrigerator, cellphone, landline/telephone and access to internet by district municipality – 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 18 shows that over the period 1996-2011, the proportion of households using electricity as the main source of energy for lighting, heating and cooking increased significantly across the province, with Waterberg consistent with the rest of the province.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

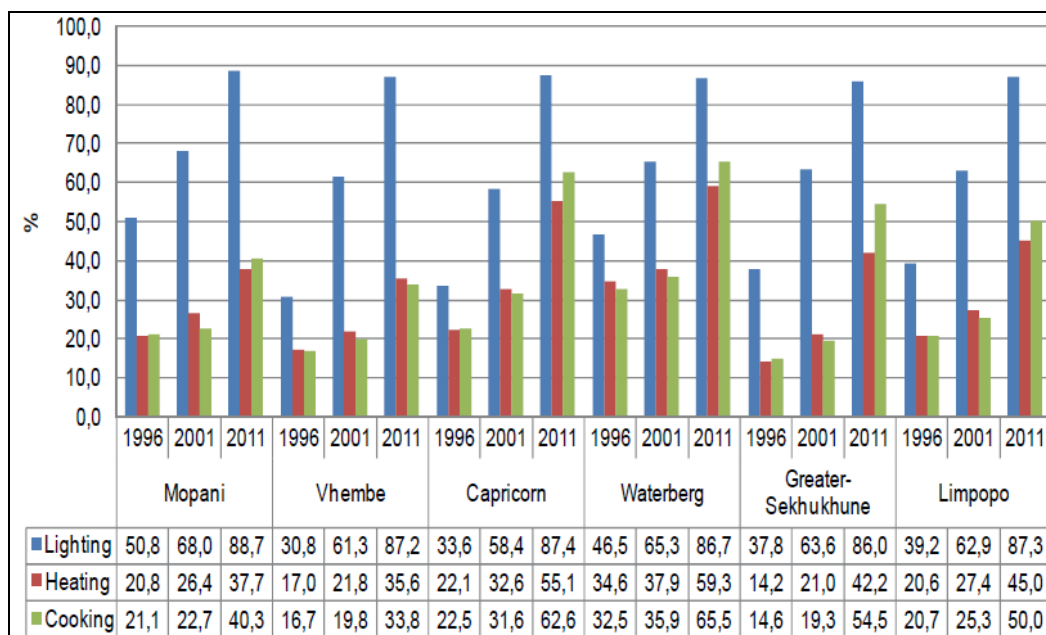


Figure 18: Distribution of households using electricity for lighting, heating and cooking by district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 19 shows that the percentage of households with access to piped water inside the dwelling or yard has increased in all five districts. While the highest increase is seen in Greater Sekhukhune, the highest proportion of households with access to piped water is found in Waterberg. The proportions of households with access to piped water on a communal stand have declined; this is also true of households with no access to piped water, with the exception of Mopani. Waterberg district experienced the biggest decline in the proportion of households with no access to piped water: 21.3% in 1996 to 5.7% in 2011.

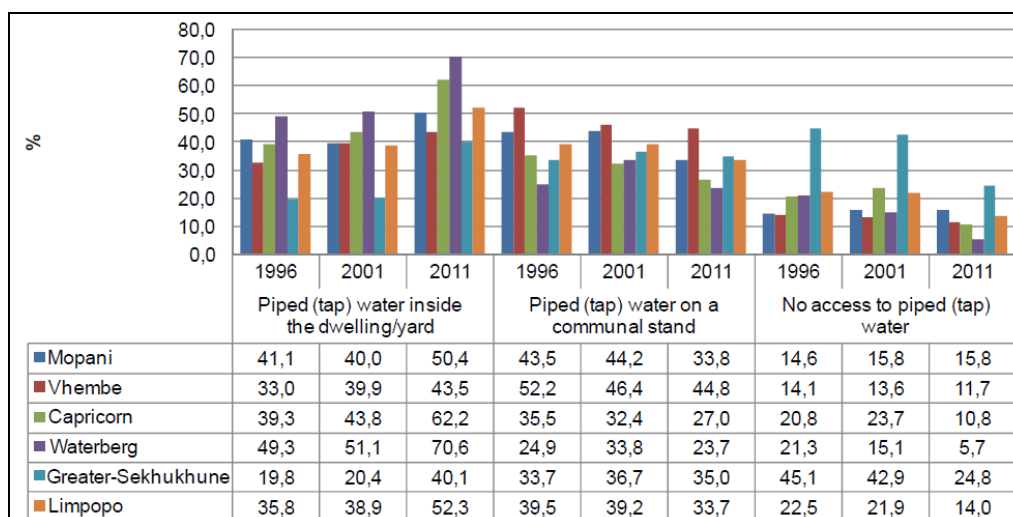


Figure 19: Percentage of households having access to piped water by district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 20 shows that the proportion of households whose refuse is removed by the local authority or private contractors increased in all the districts. The highest proportion of households is seen in the Capricorn and Waterberg Districts. However, the majority of households used communal or own refuse dumps.

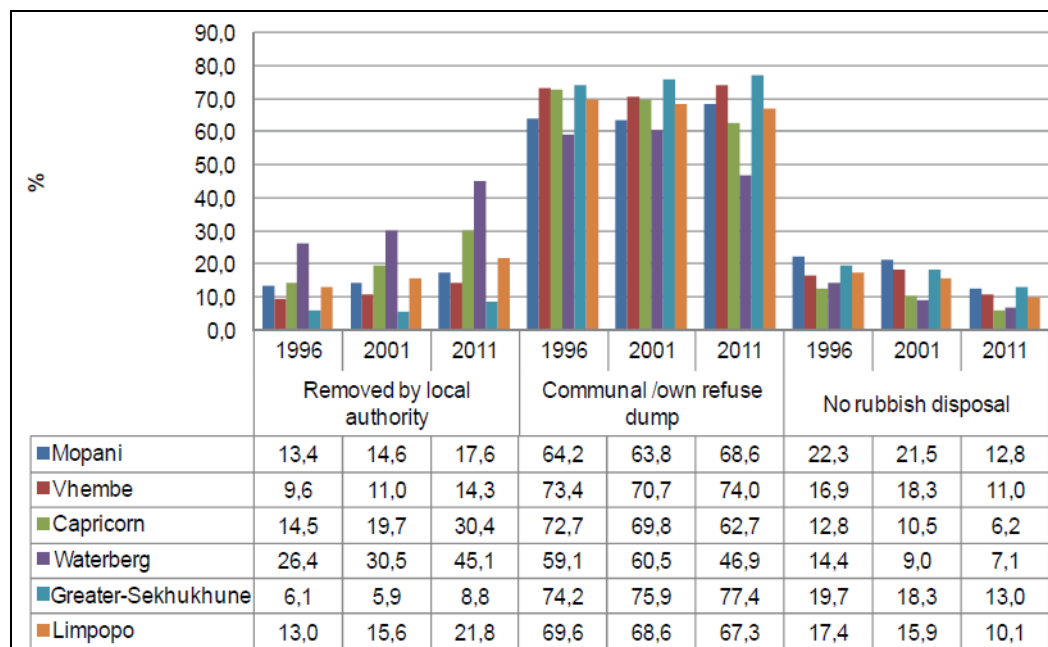


Figure 20: Distribution of households by type of refuse disposal and district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 21 shows that the percentage of households with access to flush or chemical toilets has increased in all the districts and the proportions with no access to toilet facilities decreased across all districts.

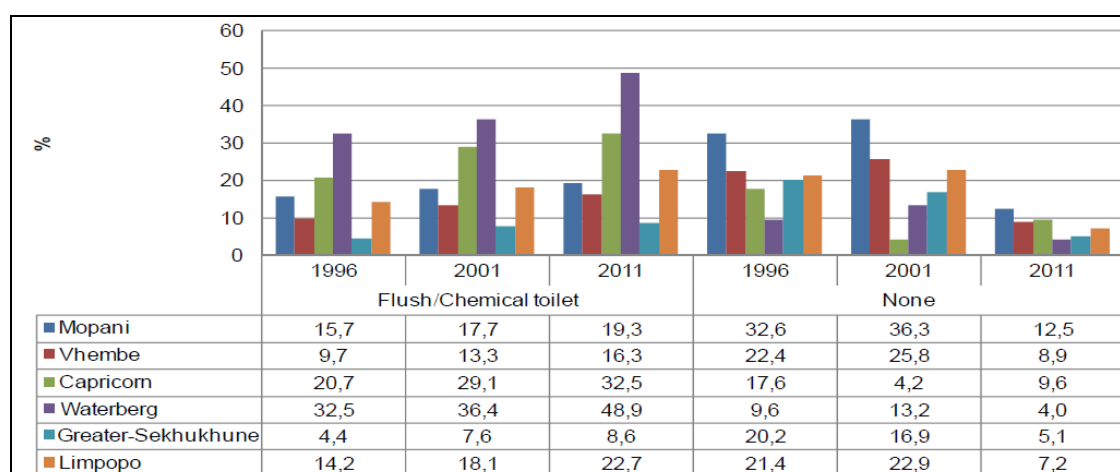


Figure 21: Percentage of households by type of toilet facility by district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 22 shows a more than 100% increase in the average household income across the province.

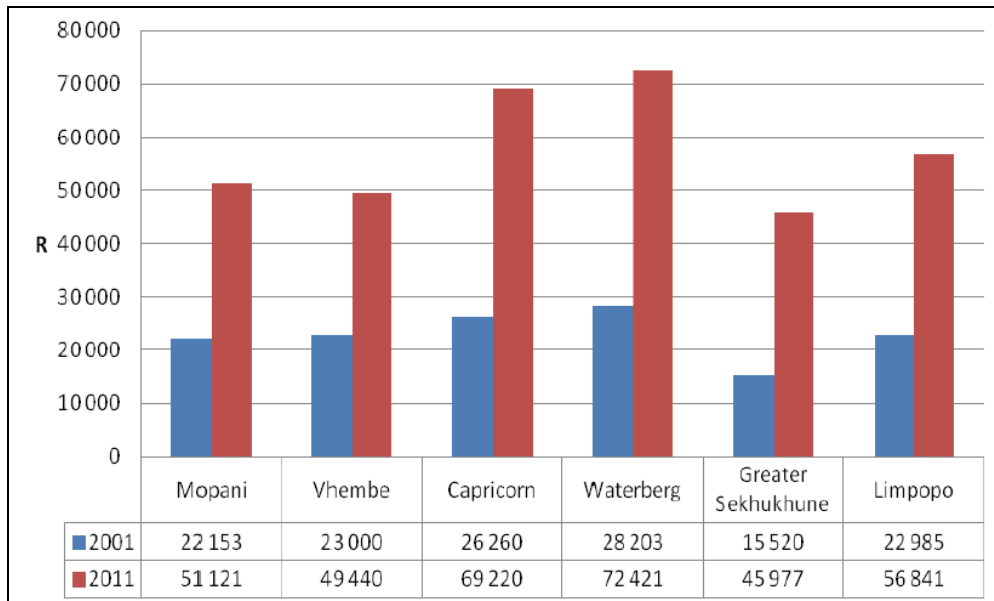


Figure 22: Distribution of average household income by district municipality – 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

Figure 23 suggests that approximately 50% of households in the province are headed by females, with Waterberg having the lowest proportion of female headed households in the province.

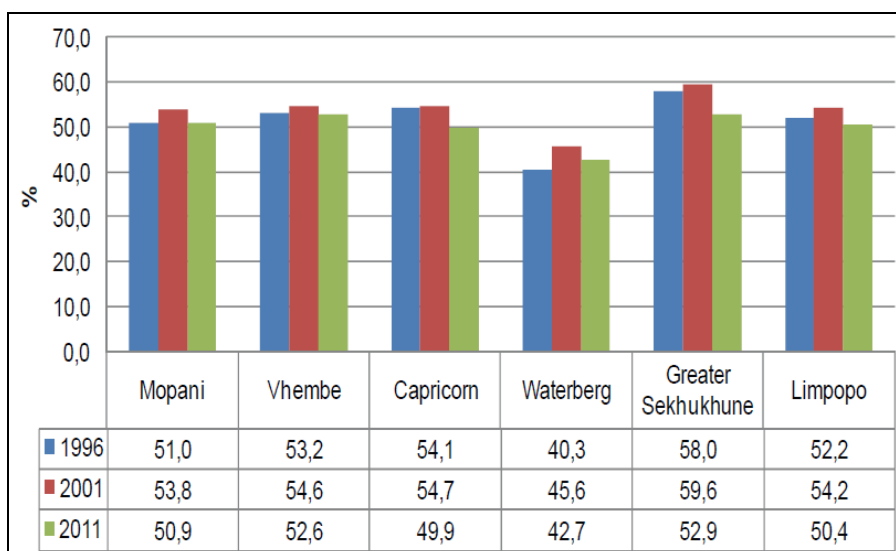


Figure 23: Distribution of female headed households by district municipality – 1996, 2001 and 2011

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Figure 24 shows that the proportion of households headed by children has declined over the three periods and across all the districts in the province. Waterberg District has the lowest proportion of child headed households.

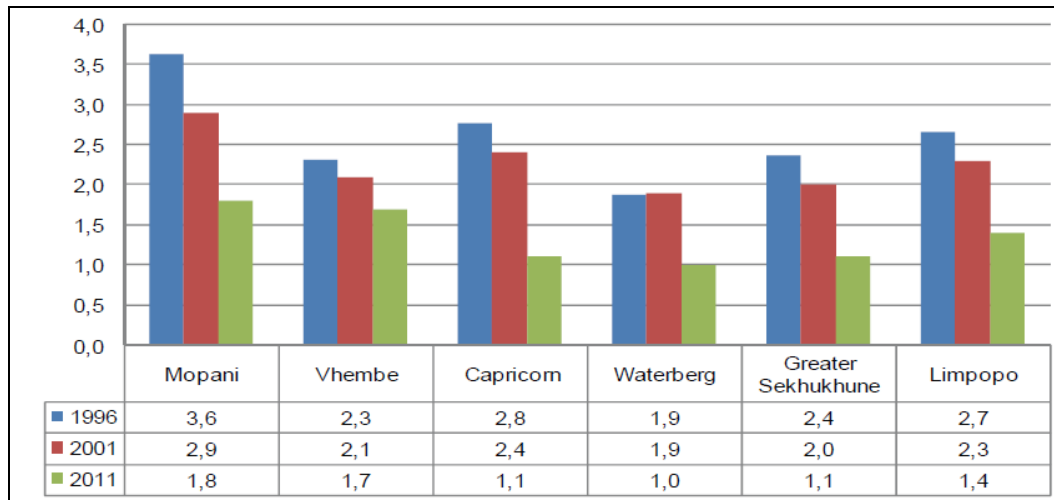


Figure 24: Distribution of child headed households by district municipality – Limpopo, 1996-2011

Source: Census 2011 Municipal report – Limpopo

5.3 Local (municipal) level – Lephalale Local Municipality

5.3.1 Lephalale background information

Lephalale is defined by the Limpopo Growth and Development Strategy as a coal mining and petrochemical cluster. The area is currently experiencing growth driven by mining expansion and the construction of the Medupi Power Station. Construction of the new Medupi Eskom Power Station started June 2007.

The local economy is dominated by the coal mine and the Matimba Power Station. The three clusters that are most relevant to Lephalale are firstly coal and petrochemical, secondly red meat and thirdly tourism.

The construction of a third power station at Lephalale after the commissioning of Medupi is under consideration by Eskom. The construction of this future power station will require the further expansion of the Grootegeluk Coal Mine or alternatively the establishment of a new mine. The obvious growth that will stem from these possible developments will necessitate significant expansion of the existing infrastructure that serves the town.

The Waterberg Coal Field in Lephalale is the biggest coal field in South Africa in terms of in situ reserves. Grootegeluk Mine, together with its beneficiation plants, is the biggest of its kind in the world. The Oaks Diamond Mine, situated near Swartwater, produces approximately 68 000 carats of diamond per annum. A phosphate mine named Glenover Mine is situated near Steenbokpan. Anglo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Coal is investigating the economic potential of Coal Bed Methane (CBM) extraction from the Waterberg Coal Field in Lephalale.

Lephalale is also an important agricultural area, both in terms of animal and crop production. The main products produced are: cattle, game, vegetables, table grapes, citrus, cotton, tobacco, watermelon and paprika.

The Local Economic Development (LED) Strategy of Lephalale Municipality's Vision for 2025 is to:

- Increase power stations from one to five;
- Increase Coal Production from 16 million tons to more than 100 million tons per annum;
- Have a Petro chemical industry established for 160 000 barrels per day;
- Diversify the local economy; and
- Double the population from 120 000 to 240 000.



Figure 25: View of Matimba Power Station from Road D6175

The following LED Interventions are recommended:

- Promote the coal and petrochemical cluster;
- Assist livestock farmers on communal land;
- Increase tourist services and expenditure;

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- Support the informal economy; and
- Improve service delivery by the municipality.

Lephalale Municipality, through its LED Division, is implementing the following projects for local economic development and sustainable development:

- Feeding contract for the Medupi Power Station;
- Hawkers stalls project;
- Tourism Information Centre; and
- Lephalale Agricultural Corridor.

(Source: About Lephalale – Local Economic Development)

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

5.3.2 Demographics

46% (52 881) of residents of Lephalale are female and 54% (62 569) are male, as indicated in Table 5. There has been a significant increase in Lephalale's population from 1996 (77 135) until 2011 (115 450). The largest number of people falls within the age groups 20-24 and 25-29 years. However, this has changed considerably since the periods 1996 and 2001, where the majority of residents fell within the age groups 5-9 and 10-14 years.

Table 5: Distribution of the population by age and sex, Lephalale Municipality – 1996, 2001 and 2011

LIM362: Lephalale	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	4 937	4 897	9 834	4 874	4 814	9 688	6 032	5 840	11 872
5-9	5 334	5 257	10 591	5 228	5 119	10 347	4 737	4 722	9 458
10-14	5 052	5 032	10 084	5 329	5 291	10 620	4 571	4 410	8 981
15-19	4 072	4 248	8 320	4 818	4 972	9 790	5 148	4 901	10 049
20-24	3 361	3 760	7 121	3 836	4 236	8 072	8 560	6 371	14 930
25-29	2 784	3 062	5 846	3 285	3 684	6 969	8 894	5 713	14 607
30-34	2 748	2 987	5 735	2 868	3 108	5 976	6 347	4 128	10 475
35-39	2 298	2 345	4 643	2 700	2 966	5 666	4 524	3 522	8 046
40-44	1 637	1 926	3 563	2 215	2 221	4 436	3 344	2 803	6 146
45-49	1 323	1 467	2 790	1 632	1 951	3 583	2 981	2 683	5 664
50-54	977	995	1 972	1 266	1 424	2 690	2 525	2 028	4 553
55-59	807	960	1 767	852	960	1 812	1 832	1 635	3 467
60-64	593	902	1 495	785	1 003	1 788	1 236	1 236	2 471
65-69	555	763	1 318	492	871	1 363	604	869	1 472
70-74	359	409	768	437	603	1 040	546	744	1 290
75-79	303	407	710	240	331	571	303	585	888
80-84	149	166	315	206	304	510	196	380	576
85+	95	165	260	138	206	344	190	315	504
Total	37 385	39 750	77 135	41 205	44 067	85 272	62 569	52 881	115 450

Source: Census 2011 Municipal report – Limpopo

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Table 6 shows that Lephalale has experienced an increase in population numbers from 1996 (78 715) to 2001 (85 272) and 2011 (115 767) (there is a slight discrepancy in the census data supplied by Stats SA, as can be seen when comparing the figures in Table 5 and Table 6). This is consistent with the growth pattern in the other local municipalities in the Waterberg District (and Limpopo Province as a whole), except for Modimolle Local Municipality, whose population dropped slightly in the period 2001 till 2011.

Table 6: Population growth rates by municipality – 1996-2011 and 2001-2011

Municipality	Total population				
	1996	2001	% Change	2011	% Change
DC33: Mopani	962 456	1 061 107	2,0	1 092 507	0,3
LIM331: Greater Giyani	218 751	240 729	1,9	244 217	0,1
LIM332: Greater Letaba	203 541	218 873	1,5	212 701	-0,3
LIM333: Greater Tzaneen	342 551	375 586	1,8	390 095	0,4
LIM334: Ba-Phalaborwa	109 741	131 536	3,6	150 637	1,4
LIM335: Maruleng	87 871	94 383	1,4	94 857	0,1
DC34: Vhembe	1 095 728	1 197 952	1,8	1 294 722	0,8
LIM342: Mutale	73 313	82 893	2,5	91 870	1,0
LIM343: Thulamela	533 757	581 487	1,7	618 462	0,6
LIM341: Musina	33 061	39 310	3,5	68 359	5,5
LIM344: Makhado	455 597	494 264	1,6	516 031	0,4
DC35: Capricorn	1 072 484	1 164 281	1,6	1 261 463	0,8
LIM351: Blouberg	158 751	171 721	1,6	162 629	-0,5
LIM352: Aganang	146 335	146 872	0,1	131 164	-1,1
LIM353: Molemole	107 635	109 441	0,3	108 321	-0,1
LIM354: Polokwane	424 835	508 277	3,6	628 999	2,1
LIM355: Lepele-Nkumpi	234 926	227 970	-0,6	230 350	0,1
DC36: Waterberg	531 407	604 938	2,6	679 336	1,2
LIM361: Thabazimbi	60 175	65 533	1,7	85 234	2,6
LIM362: Lephalale	78 715	85 272	1,6	115 767	3,1
LIM364: Mookgopong	15 674	34 541	15,8	35 640	0,3
LIM365: Modimolle	46 717	69 027	7,8	68 513	-0,1
LIM366: Bela-Bela	47 592	52 124	1,8	66 500	2,4
LIM367: Mogalakwena	282 534	298 439	1,1	307 682	0,3
DC47: Greater Sekhukhune	914 492	967 185	1,1	1 076 840	1,1
LIM471: Ephraim Mogale	97 988	121 327	4,3	123 648	0,2
LIM472: Elias Motsoaledi	220 394	221 647	0,1	249 363	1,2
LIM473: Makhuduthamaga	269 313	262 005	-0,6	274 358	0,5
LIM474: Fetakgomo	97 213	92 598	-1,0	93 795	0,1
LIM475: Greater Tubatse	229 583	269 608	3,2	335 676	2,2
Limpopo	4 576 566	4 995 462	1,8	5 404 868	0,8

Source: Census 2011 Municipal report – Limpopo

As can be seen from Table 7 – Table 10, *Black African* is by far the majority population group in Lephalale (90.9%), followed by *White* (7.9%), *Coloured* (0.9%) and *Indian/Asian* (0.3%). This has also been similar for the previous two periods, namely 1996 (89.1%, 10.6%, 0.2% and 0.1% respectively) and 2001 (90.6%, 9.2%, 0.2% and 0% respectively).

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 7: Distribution of the population by population group (Black African), sex and municipality – 1996, 2001 and 2011

Municipality	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
DC33: Mopani	424 409	504 654	929 063	470 030	564 662	1 034 691	484 481	575 251	1 059 732
LIM331: Greater Giyani	96 957	120 171	217 128	106 246	133 835	240 081	107 393	135 550	242 942
LIM332: Greater Letaba	89 094	112 732	201 826	96 364	120 038	216 402	93 928	116 287	210 215
LIM333: Greater Tzaneen	150 569	179 101	329 669	166 654	199 892	366 546	174 164	201 740	375 904
LIM334: Ba-Phalaborwa	49 292	48 322	97 614	58 809	61 542	120 352	67 642	72 439	140 081
LIM335: Maruleng	38 497	44 329	82 826	41 957	49 354	91 311	41 353	49 237	90 590
DC34: Vhembe	481 267	589 206	1 070 473	527 114	652 692	1 179 807	579 126	692 582	1 271 709
LIM342: Mutale	32 635	39 826	72 461	37 023	45 389	82 412	41 177	50 045	91 222
LIM343: Thulamela	236 269	292 277	528 547	258 143	321 039	579 182	276 087	337 992	614 079
LIM341: Musina	14 636	13 782	28 418	17 577	19 203	36 780	32 373	31 912	64 285
LIM344: Makhado	197 727	243 320	441 047	214 371	267 062	481 433	229 489	272 634	502 123
DC35: Capricorn	470 470	564 130	1 034 600	510 622	610 984	1 121 606	564 314	647 560	1 211 874
LIM351: Blouberg	70 026	86 524	156 550	76 684	93 248	169 931	73 195	87 880	161 075
LIM352: Aganang	65 639	79 809	145 448	66 021	80 755	146 776	58 812	71 825	130 637
LIM353: Molemole	48 266	57 170	105 436	48 728	58 866	107 594	48 890	57 655	106 545
LIM354: Polokwane	181 836	211 611	393 447	217 320	252 374	469 693	279 161	304 993	584 153
LIM355: Lepele-Nkumpi	104 704	129 015	233 719	101 870	125 741	227 612	104 256	125 207	229 463
DC36: Waterberg	231 873	242 305	474 178	263 050	286 612	549 662	312 149	307 739	619 889
LIM361: Thabazimbi	29 984	17 015	46 999	28 935	24 940	53 875	42 773	29 072	71 845
LIM362: Lephalale	33 542	36 093	69 636	37 174	40 091	77 266	56 704	48 259	104 964
LIM364: Mookgopong	5 084	4 178	9 262	14 623	14 275	28 899	15 748	14 760	30 509
LIM365: Modimolle	18 414	17 020	35 434	29 825	29 372	59 197	30 614	29 760	60 373
LIM366: Bela-Bela	18 566	19 360	37 925	21 847	23 299	45 146	28 799	27 603	56 401
LIM367: Mogalakwena	126 283	148 638	274 922	130 645	154 634	285 279	137 512	158 285	295 796
DC47: Greater Sekhukhune	402 629	495 499	898 129	426 120	532 474	958 594	489 202	572 348	1 061 550
LIM471: Ephraim Mogale	43 779	51 554	95 333	54 466	64 207	118 673	56 730	64 150	120 881
LIM472: Elias Motsoaledi	96 398	116 738	213 136	97 875	121 316	219 191	112 611	131 471	244 083
LIM473: Makhuduthamaga	117 539	149 810	267 349	113 532	148 318	261 850	120 795	152 770	273 565
LIM474: Fetakgomo	42 865	53 666	96 531	40 538	51 371	91 909	41 910	51 302	93 212
LIM475: Greater Tubatse	102 048	123 731	225 779	119 709	147 262	266 971	157 156	172 654	329 810
Limpopo	2 010 648	2 395 794	4 406 442	2 196 936	2 647 424	4 844 360	2 429 273	2 795 481	5 224 754

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 8: Distribution of the population by population group (Coloured), sex and municipality – 1996, 2001 and 2011

Municipality	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
DC33: Mopani	407	395	802	604	646	1 250	882	899	1 781
LIM331: Greater Giyani	28	25	54	54	36	90	75	94	169
LIM332: Greater Letaba	28	28	56	40	45	85	81	87	168
LIM333: Greater Tzaneen	190	206	396	341	349	690	335	339	674
LIM334: Ba-Phalaborwa	117	104	221	150	189	338	229	247	477
LIM335: Maruleng	43	32	75	19	27	46	162	132	293
DC34: Vhembe	649	692	1 341	759	899	1 658	935	898	1 833
LIM342: Mutale	34	31	65	17	14	31	55	32	86
LIM343: Thulamela	110	107	217	135	147	282	190	213	403
LIM341: Musina	68	43	111	50	59	109	118	111	229
LIM344: Makhado	437	512	949	556	679	1 236	573	542	1 114
DC35: Capricorn	1 615	1 810	3 425	2 133	2 389	4 522	3 150	3 121	6 271
LIM351: Blouberg	34	32	66	70	69	139	40	26	65
LIM352: Aganang	12	19	31	23	26	48	33	43	76
LIM353: Molemole	49	50	99	10	26	36	64	75	139
LIM354: Polokwane	1 444	1 624	3 067	1 978	2 221	4 199	2 928	2 892	5 820
LIM355: Lepele-Nkumpi	75	86	161	52	48	100	85	86	171
DC36: Waterberg	774	694	1 467	799	859	1 658	1 913	1 385	3 298
LIM361: Thabazimbi	136	115	251	151	122	274	310	217	527
LIM362: Lephalale	74	60	133	86	98	184	708	315	1 023
LIM364: Mookgopong	26	25	51	42	44	86	67	64	131
LIM365: Modimolle	109	92	202	104	109	213	131	118	249
LIM366: Bela-Bela	324	297	621	294	342	636	489	476	965
LIM367: Mogalakwena	104	105	209	123	143	266	208	195	403
DC47: Greater Sekhukhune	268	329	597	331	396	727	643	589	1 232
LIM471: Ephraim Mogale	29	21	50	67	73	140	56	55	111
LIM472: Elias Motsoaledi	100	109	209	96	109	205	162	177	339
LIM473: Makhuduthamaga	41	57	99	21	34	55	49	58	107
LIM474: Fetakgomo	15	20	35	4	4	9	17	14	31
LIM475: Greater Tubatse	82	122	204	142	175	318	358	284	643
Limpopo	3 713	3 919	7 632	4 626	5 189	9 814	7 523	6 892	14 415

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 9: Distribution of the population by population group (Indian/Asian), sex and municipality – 1996, 2001 and 2011

Municipality	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
DC33: Mopani	203	170	373	380	243	623	1 687	1 043	2 730
LIM331: Greater Giyani	30	28	58	83	27	109	375	239	614
LIM332: Greater Letaba	17	12	29	59	25	84	122	58	181
LIM333: Greater Tzaneen	119	104	224	167	151	317	877	532	1 409
LIM334: Ba-Phalaborwa	27	19	46	59	30	90	180	129	309
LIM335: Maruleng	9	7	16	13	10	22	133	85	217
DC34: Vhembe	1 059	843	1 902	1 671	1 255	2 927	3 136	2 131	5 267
LIM342: Mutale	11	12	24	9	7	16	51	18	69
LIM343: Thulamela	527	299	827	989	583	1 573	1 794	1 256	3 049
LIM341: Musina	33	32	65	3	7	10	231	98	329
LIM344: Makhado	487	500	987	670	658	1 329	1 059	760	1 819
DC35: Capricorn	1 240	1 210	2 450	1 825	1 566	3 391	3 043	2 191	5 234
LIM351: Blouberg	5	5	10	52	8	60	129	22	151
LIM352: Aganang	1	6	7	11	2	13	86	21	107
LIM353: Molemole	18	11	29	69	31	100	97	37	134
LIM354: Polokwane	1 203	1 173	2 375	1 640	1 507	3 147	2 578	2 055	4 633
LIM355: Lepele-Nkumpi	13	16	29	54	18	72	153	56	209
DC36: Waterberg	281	255	536	748	669	1 418	1 833	1 096	2 929
LIM361: Thabazimbi	19	8	26	19	15	34	130	75	205
LIM362: Lephalale	20	24	43	12	8	20	254	90	344
LIM364: Mookgopong	8	5	13	5	1	7	54	16	70
LIM365: Modimolle	85	71	155	69	58	128	192	94	285
LIM366: Bela-Bela	94	107	201	146	139	285	218	161	379
LIM367: Mogalakwena	56	40	96	496	448	943	984	661	1 646
DC47: Greater Sekhukhune	197	181	377	285	223	508	1 123	597	1 721
LIM471: Ephraim Mogale	19	12	31	42	37	79	189	103	292
LIM472: Elias Motsoaledi	72	65	137	72	49	122	358	143	502
LIM473: Makhuduthamaga	48	44	93	38	22	60	222	107	329
LIM474: Fetakgomo	-	4	4	1	-	1	47	14	61
LIM475: Greater Tubatse	57	55	112	131	115	247	307	230	538
Limpopo	2 980	2 659	5 639	4 910	3 957	8 867	10 822	7 059	17 881

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 10: Distribution of the population by population group (White), sex and municipality – 1996, 2001 and 2011

Municipality	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
DC33: Mopani	12 698	12 662	25 361	12 188	12 355	24 543	13 560	13 353	26 912
LIM331: Greater Giyani	337	355	691	223	225	448	169	165	334
LIM332: Greater Letaba	369	394	763	1 121	1 181	2 302	932	867	1 798
LIM333: Greater Tzaneen	4 636	4 789	9 425	3 961	4 071	8 032	5 777	5 784	11 561
LIM334: Ba-Phalaborwa	5 353	5 223	10 575	5 338	5 419	10 757	4 871	4 757	9 628
LIM335: Maruleng	2 005	1 902	3 906	1 544	1 459	3 003	1 811	1 780	3 590
DC34: Vhembe	7 485	7 288	14 773	6 683	6 877	13 561	7 371	7 228	14 599
LIM342: Mutale	104	105	209	227	207	434	207	208	416
LIM343: Thulamela	248	247	495	224	225	450	233	209	442
LIM341: Musina	2 081	1 958	4 039	1 155	1 255	2 411	1 640	1 644	3 284
LIM344: Makhado	5 052	4 978	10 030	5 077	5 190	10 266	5 290	5 167	10 457
DC35: Capricorn	13 005	13 556	26 561	17 325	17 436	34 762	17 955	17 515	35 470
LIM351: Blouberg	730	690	1 420	860	732	1 591	540	466	1 006
LIM352: Aganang	3	1	4	13	22	35	42	43	84
LIM353: Molemole	721	722	1 442	927	784	1 711	630	580	1 210
LIM354: Polokwane	11 444	12 054	23 498	15 429	15 809	31 238	16 582	16 280	32 862
LIM355: Lepele-Nkumpi	107	89	196	96	90	186	161	146	308
DC36: Waterberg	25 363	25 079	50 442	25 448	26 751	52 200	25 934	25 428	51 362
LIM361: Thabazimbi	6 415	5 866	12 281	5 810	5 540	11 350	6 420	5 889	12 309
LIM362: Lephalale	4 255	3 982	8 237	3 933	3 870	7 803	4 902	4 217	9 120
LIM364: Mookgopong	3 023	3 128	6 151	2 657	2 892	5 549	2 311	2 410	4 721
LIM365: Modimolle	5 231	5 442	10 672	4 398	5 092	9 490	3 591	3 788	7 379
LIM366: Bela-Bela	4 127	4 308	8 435	2 894	3 163	6 057	4 127	4 433	8 560
LIM367: Mogalakwena	2 313	2 353	4 666	5 757	6 194	11 951	4 583	4 691	9 274
DC47: Greater Sekhukhune	4 517	4 359	8 876	3 692	3 664	7 356	5 715	5 300	11 015
LIM471: Ephraim Mogale	1 106	1 077	2 183	1 191	1 244	2 435	1 011	1 018	2 029
LIM472: Elias Motsoaledi	2 442	2 417	4 859	1 060	1 070	2 129	2 058	1 983	4 042
LIM473: Makhuduthamaga	72	64	135	22	18	40	67	86	153
LIM474: Fetakgomo	61	54	115	358	320	679	199	184	383
LIM475: Greater Tubatse	836	748	1 584	1 060	1 012	2 072	2 380	2 029	4 409
Limpopo	63 068	62 944	126 012	65 337	67 083	132 420	70 534	68 825	139 359

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

In the province, district and local municipality levels the majority of people fall within the functional age group 15-64 years, which is the economically active group. The smallest number of people by far falls in the age group 65+ years. This means that the birth rate is much higher than the mortality rate in the province.

Table 11: Distribution of the population by functional age group, sex and municipality – 1996, 2001 and 2011

Limpopo	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	957 168	969 297	1 926 465	971 360	980 478	1 951 837	927 172	907 840	1 835 012
15-64	1 026 754	1 320 166	2 346 920	1 211 100	1 548 602	2 759 702	1 488 111	1 743 328	3 231 439
65+	81 633	160 441	242 075	89 350	194 573	283 923	108 853	229 563	338 417
Total	2 065 555	2 449 905	4 515 460	2 271 809	2 723 653	4 995 462	2 524 136	2 880 731	5 404 868

DC36: Waterberg	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	99 316	98 603	197 919	106 290	105 853	212 143	102 265	100 676	202 941
15-64	143 896	150 260	294 155	170 772	188 016	358 787	225 966	210 896	436 861
65+	12 014	16 803	28 816	12 984	21 024	34 008	14 938	24 596	39 534
Total	255 226	265 666	520 890	290 046	314 893	604 938	343 169	336 168	679 336

LIM362: Lephalale	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-14	15 476	15 356	30 832	15 430	15 224	30 655	15 357	14 984	30 341
15-64	20 738	22 818	43 557	24 263	26 528	50 791	45 620	35 071	80 691
65+	1 466	1 918	3 384	1 512	2 314	3 826	1 842	2 894	4 736
Total	37 680	40 093	77 773	41 206	44 067	85 272	62 819	52 949	115 768

Source: Census 2011 Municipal report – Limpopo

Dependency ratios indicate to what extent the working age group (15-64 years) has to support those aged 0-14 years and 65+ years. Lephalale's dependency ratio has decreased notably since 1996 till 2011. This is consistent with the fact that its population aged between 15 and 64 years, has grown significantly during this period, from 43 252 (1996) to 50 782 (2001) and 80 408 (2011), as can be seen in Table 6 and Table 12 (again there is a slight discrepancy in data supplied). The other five local municipalities in the district also had a decrease in dependency ratio, but not nearly as significantly as Lephalale's.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 12: Dependency ratio by municipality – 1996, 2001 and 2011

Municipality	0–14			15–64			65+			Dependency Ratio		
	1996	2001	2011	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	403 608	407 068	369 516	503 870	605 133	660 866	41 443	48 905	62 125	88,3	75,4	65,3
LIM331: Greater Giyani	101 808	101 025	89 769	107 444	129 066	140 226	8 503	10 638	14 222	102,7	86,5	74,2
LIM332: Greater Letaba	91 528	87 998	73 387	100 184	119 048	124 599	10 355	11 827	14 714	101,7	83,9	70,7
LIM333: Greater Tzaneen	135 039	136 122	124 196	187 182	220 930	243 596	15 880	18 534	22 303	80,6	70,0	60,1
LIM334: Ba-Phalaborwa	37 696	44 883	49 576	65 705	83 145	95 224	2 779	3 508	5 837	61,6	58,2	58,2
LIM335: Maruleng	37 537	37 040	32 588	43 354	52 944	57 221	3 926	4 398	5 049	95,6	78,3	65,8
DC34: Vhembe	470 483	478 411	451 593	549 555	646 682	761 968	62 279	72 859	81 161	96,9	85,2	69,9
LIM342: Mutale	33 067	35 631	35 086	33 784	41 893	51 079	4 672	5 368	5 705	111,7	97,9	79,9
LIM343: Thulamela	235 501	237 009	217 876	264 231	310 722	363 533	28 788	33 756	37 053	100,0	87,1	70,1
LIM341: Musina	8 565	11 608	19 258	21 621	26 540	47 316	1 062	1 162	1 785	44,5	48,1	44,5
LIM344: Makhado	193 351	194 163	179 372	229 919	267 528	300 041	27 757	32 573	36 618	96,2	84,8	72,0
DC35: Capricorn	454 536	456 626	423 301	547 797	637 910	755 220	59 584	69 744	82 942	93,9	82,5	67,0
LIM351: Blouberg	74 347	74 924	63 433	73 481	86 273	87 358	8 857	10 525	11 838	113,2	99,0	86,2
LIM352: Aganang	67 294	62 593	49 006	67 550	72 478	69 061	10 016	11 801	13 097	114,4	102,6	89,9
LIM353: Molemole	43 735	42 663	38 535	56 064	59 486	61 598	6 423	7 292	8 188	89,5	84,0	75,9
LIM354: Polokwane	167 662	182 735	189 410	232 054	300 729	407 716	20 782	24 813	31 874	81,2	69,0	54,3
LIM355: Lepelle-Nkumpi	101 498	93 712	82 917	118 648	118 944	129 487	13 505	15 313	17 946	96,9	91,7	77,9
DC36: Waterberg	197 919	212 143	202 941	294 155	358 787	436 861	28 816	34 008	39 534	77,1	68,6	55,5
LIM361: Thabazimbi	14 451	17 062	18 014	42 225	46 835	65 153	1 894	1 637	2 067	38,7	39,9	30,8
LIM362: Lephalale	30 832	30 655	30 341	43 557	50 791	80 691	3 384	3 826	4 736	78,6	67,9	43,5
LIM364: Mookgopong	4 069	9 801	9 153	9 815	22 599	24 095	1 468	2 141	2 391	56,4	52,8	47,9
LIM365: Modimolle	14 205	22 092	21 124	28 522	43 053	43 681	3 061	3 882	3 708	60,5	60,3	56,8
LIM366: Bela-Bela	15 602	16 905	18 665	27 929	32 127	43 878	2 697	3 092	3 956	65,5	62,2	51,6
LIM367: Mogalakwena	118 759	115 628	105 644	142 108	163 382	179 363	16 313	19 429	22 675	95,0	82,7	71,5
DC47: Greater Sekhukhune	399 920	397 588	387 662	451 543	511 189	616 524	49 953	58 407	72 654	99,6	89,2	74,7
LIM471: Ephraim Mogale	40 874	47 735	43 916	50 596	66 379	71 170	5 525	7 212	8 562	91,7	82,8	73,7
LIM472: Elias Motsoaledi	91 340	89 221	90 095	112 511	118 859	141 694	12 787	13 567	17 574	92,5	86,5	76,0
LIM473: Makhuduthamaga	121 282	109 793	104 466	129 065	134 499	147 964	15 342	17 714	21 928	105,9	94,8	85,4
LIM474: Fetakgomo	42 722	37 804	33 211	47 562	48 484	52 972	5 316	6 310	7 612	101,0	91,0	77,1
LIM475: Greater Tubatse	103 702	113 035	115 975	111 809	142 968	202 723	10 983	13 604	16 978	102,6	88,6	65,6
Limpopo	1 926 465	1 951 837	1 835 012	2 346 920	2 759 702	3 231 439	242 075	283 923	338 417	92,4	81,0	67,3

Source: Census 2011 Municipal report – Limpopo

According to the 2011 Census, the majority of residents in Lephalale have never been married (79 492), despite the fact that the population's age groups between 15 and 64 years represent by far the majority of people. It is unclear if traditional weddings were included in this category. If not, it could offer an

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

explanation of why such a high number of people indicated that they are not married. 33 115 residents indicated that they are married, 2 183 are widows/widowers and 978 are separated/divorced.

Table 13: Distribution of the population by marital status and municipality – 1996, 2001 and 2011

Municipality	1996				2001				2011			
	Married	Never married	Widowed	Divorced/separated	Married	Never married	Widower/widow	Separated - Divorced	Married	Never married	Widower/Widow	Separated - Divorced
DC33: Mopani	242 375	645 916	30 878	21 941	280 911	705 523	48 318	26 355	282 357	742 055	49 182	18 913
LIM331: Greater Giyani	54 370	148 102	8 032	4 915	61 443	161 265	12 357	5 663	62 540	163 296	13 524	4 857
LIM332: Greater Letaba	45 856	144 346	7 784	4 521	51 799	149 197	12 293	5 585	47 833	150 894	11 077	2 897
LIM333: Greater Tzaneen	86 254	226 413	10 822	8 793	100 153	248 644	16 485	10 304	104 718	261 666	16 729	6 982
LIM334: Ba-Phalaborwa	35 573	64 340	2 436	2 612	44 078	80 422	3 572	3 464	45 420	97 584	4 456	3 178
LIM335: Maruleng	20 324	62 715	1 804	1 100	23 437	65 995	3 612	1 340	21 846	68 616	3 396	999
DC34: Vhembe	273 009	722 884	51 005	26 095	308 680	792 622	65 333	31 317	343 905	857 527	66 953	26 337
LIM342: Mutale	19 131	48 433	2 972	2 053	21 496	54 511	4 154	2 733	23 309	61 862	4 265	2 434
LIM343: Thulamela	130 074	351 953	26 369	13 421	147 206	385 570	32 977	15 734	161 154	410 091	33 781	13 436
LIM341: Musina	10 685	17 101	688	517	13 944	23 738	887	740	25 208	40 616	1 398	1 136
LIM344: Makhado	113 119	305 397	20 977	10 104	126 035	328 803	27 316	12 109	134 234	344 957	27 509	9 331
DC35: Capricorn	233 512	766 467	29 728	8 614	260 762	838 901	52 402	12 215	305 120	890 963	53 125	12 255
LIM351: Blouberg	31 391	120 379	3 626	866	33 814	129 929	6 741	1 237	33 020	122 691	6 035	883
LIM352: Aganang	29 501	109 807	4 384	796	28 078	109 647	8 127	1 020	26 149	95 716	8 398	900
LIM353: Molemole	25 297	74 617	3 324	1 022	24 399	77 759	5 801	1 483	23 983	77 518	5 761	1 059
LIM354: Polokwane	100 890	291 857	11 400	4 770	129 006	352 660	19 657	6 955	172 031	427 659	21 479	7 830
LIM355: Lepele-Nkumpi	46 434	169 807	6 994	1 160	45 466	168 906	12 077	1 521	49 937	167 379	11 452	1 583
DC36: Waterberg	138 675	356 988	13 403	5 783	165 662	411 718	20 171	7 386	193 767	458 430	19 907	7 232
LIM361: Thabazimbi	26 508	30 268	941	840	28 952	34 795	968	819	37 954	45 180	1 130	970
LIM362: Lephalale	19 295	55 713	1 390	700	21 957	60 524	2 030	761	33 115	79 492	2 183	978
LIM364: Mookgopong	6 749	7 535	582	249	12 465	20 287	1 103	686	12 627	21 659	915	438
LIM365: Modimolle	15 330	27 078	1 304	865	22 357	43 511	1 991	1 168	20 655	45 250	1 612	996
LIM366: Bela-Bela	14 376	27 008	1 202	729	16 019	33 526	1 771	808	20 995	42 644	1 843	1 019
LIM367: Mogalakwena	56 418	209 387	7 984	2 401	63 913	219 075	12 308	3 144	68 419	224 207	12 224	2 832
DC47: Greater Sekhukhune	196 686	675 254	23 173	4 379	202 588	716 123	42 821	5 652	246 449	779 408	45 001	5 982
LIM471: Ephraim Mogale	22 055	71 832	2 316	497	26 530	89 346	4 764	687	28 445	89 735	4 751	717
LIM472: Elias Motsoaledi	49 070	159 917	5 487	1 118	46 853	164 563	8 899	1 332	53 751	183 630	10 384	1 599
LIM473: Makhuduthamaga	57 047	200 020	7 016	921	52 984	195 184	12 908	930	57 993	200 490	14 761	1 114
LIM474: Fetakgomo	20 447	73 829	2 119	214	19 266	68 129	4 906	297	22 243	67 002	4 277	272
LIM475: Greater Tubatse	48 068	169 656	6 235	1 630	56 955	198 901	11 345	2 406	84 017	238 551	10 828	2 280
Limpopo	1 084 257	3 167 508	148 186	66 813	1 218 604	3 464 888	229 046	82 924	1 371 598	3 728 383	234 167	70 720

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

The majority of residents of Lephalale have some secondary education (24 951), followed by Grade 12 (15 903), some primary education (8 650), higher education (7 837), no schooling (6 684) and completed primary school (3 391) as per the Census 2011 results.

Table 14: Distribution of the population aged 20 years and older by highest level of education attained, sex and municipality – 1996, 2001 and 2011

LIM362: Lephalale	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
No schooling	4 574	5 905	10 479	4 641	6 264	10 905	2 957	3 727	6 684
Some primary	3 321	3 539	6 860	4 663	4 998	9 661	4 388	4 262	8 650
Completed primary	1 220	1 447	2 666	1 554	1 673	3 228	1 695	1 696	3 391
Some secondary	4 724	5 339	10 063	5 592	6 519	12 111	13 534	11 417	24 951
Grade 12	2 016	2 461	4 477	3 114	3 045	6 159	8 597	7 306	15 903
Higher	1 220	840	2 059	1 394	1 370	2 764	4 455	3 382	7 837
Total	17 074	19 531	36 605	20 957	23 870	44 827	35 626	31 789	67 416

Source: Census 2011 Municipal report – Limpopo

School attendance trends in the local municipality are consistent with those in the district and the province, with the majority residents by far having indicated that they do attend school. For the last two periods (2001 and 2011) school attendance in Lephalale was slightly higher among males than among females.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 15: Distribution of the population aged between 5 and 24 years by school attendance, sex and municipality – 1996, 2001 and 2011

Limpopo	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Attending	826 647	836 168	1 662 816	979 939	970 052	1 949 991	942 391	894 807	1 837 198
Not attending	261 184	297 905	559 089	241 612	298 558	540 170	204 745	224 349	429 095
Total	1 087 831	1 134 074	2 221 905	1 221 551	1 268 610	2 490 161	1 147 136	1 119 156	2 266 292

DC36:Waterberg	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Attending	82 149	82 494	164 643	97 802	95 909	193 711	95 702	90 662	186 364
Not attending	32 360	33 940	66 300	36 849	40 828	77 677	33 615	31 547	65 162
Total	114 509	116 434	230 943	134 650	136 737	271 388	129 317	122 210	251 527

LIM362: Lephalale	1996			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Attending	11 899	12 099	23 997	14 088	13 823	27 912	15 046	13 999	29 045
Not attending	5 454	5 797	11 251	5 121	5 797	10 918	6 230	5 323	11 553
Total	17 352	17 896	35 248	19 210	19 620	38 830	21 275	19 322	40 598

Source: Census 2011 Municipal report – Limpopo

The unemployment rate in the local municipality has gone down since 1996, from 29% to 23.4% in 2011. This is lower than the current National unemployment rate of 26.6%. The commencement of construction of Medupi Power Station, as well as other areas of growth in the municipality likely explains this drop in the unemployment rate locally. Five of the six local municipalities in the Waterberg District have unemployment rates below the National rate (only Mogalakwena's unemployment rate is higher, at 40.5%) and Musina (at 19%) is the only other local municipality in the entire province that has an unemployment rate below the National rate. The many industries in the area may explain the district performing so well in comparison with the other districts in Limpopo.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 16: Distribution of the population aged between 15 and 64 years by employment status – 1996, 2001 and 2011

Municipality	Employed			Unemployed			Unemployed Rate		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	128 123	159 387	170 348	88 735	130 662	112 563	40,9	45,0	39,8
LIM331: Greater Giyani	19 633	20 990	25 278	20 428	3 188	22 508	51,0	60,3	47,1
LIM332: Greater Letaba	18 029	27 350	26 591	17 725	19 867	18 637	49,6	42,1	41,2
LIM333: Greater Tzaneen	54 016	65 200	72 485	31 833	48 139	42 351	37,1	42,5	36,9
LIM334: Ba-Phalaborwa	25 976	30 983	33 695	10 750	20 802	20 196	29,3	40,2	37,5
LIM335: Maruleng	10 469	14 864	12 299	7 999	9 965	8 872	43,3	40,1	41,9
DC34: Vhembe	126 374	138 021	185 452	117 809	155 818	118 724	48,2	53,0	39,0
LIM342: Mutale	4 963	6 946	9 321	10 561	9 150	8 953	68,0	56,8	49,0
LIM343: Thulamela	53 319	55 458	75 224	60 213	81 945	58 732	53,0	59,6	43,8
LIM341: Musina	12 549	16 173	23 754	1 706	5 378	5 554	12,0	25,0	19,0
LIM344: Makhado	55 543	59 445	77 154	45 329	59 345	45 485	44,9	50,0	37,1
DC35: Capricorn	122 878	154 257	221 464	105 112	131 223	132 331	46,1	46,0	37,4
LIM351: Blouberg	10 898	16 548	15 296	12 804	11 839	10 187	54,0	41,7	40,0
LIM352: Aganang	8 796	8 652	11 314	13 622	12 887	11 532	60,8	59,8	50,5
LIM353: Molemole	13 352	16 189	15 106	9 523	10 361	11 318	41,6	39,0	42,8
LIM354: Polokwane	69 426	93 574	152 687	44 396	66 379	73 881	39,0	41,5	32,6
LIM355: Lepele-Nkumpi	20 407	19 293	27 061	24 768	29 757	25 413	54,8	60,7	48,4
DC36: Waterberg	109 089	134 186	155 652	40 376	62 410	62 949	27,0	31,7	28,8
LIM361: Thabazimbi	28 712	26 903	29 605	2 540	7 143	7 304	8,1	21,0	19,8
LIM362: Lephalale	16 524	22 070	31 537	6 751	5 013	9 655	29,0	18,5	23,4
LIM364: Mookgopong	5 901	13 346	10 169	392	2 742	3 439	6,2	17,0	25,3
LIM365: Modimolle	15 673	20 549	18 344	1 975	6 889	5 234	11,2	25,1	22,2
LIM366: Bela-Bela	12 679	14 318	19 787	3 393	6 953	5 880	21,1	32,7	22,9
LIM367: Mogalakwena	29 600	37 001	46 210	25 325	33 670	31 438	46,1	47,6	40,5
DC47: Greater Sekhukhune	60 860	70 481	124 065	97 622	110 026	132 059	61,6	61,0	51,6
LIM471: Ephraim Mogale	11 207	15 632	17 876	10 005	12 721	12 872	47,2	44,9	41,9
LIM472: Elias Motsoaledi	19 696	20 155	29 669	23 862	24 027	23 764	54,8	54,4	44,5
LIM473: Makhuduthamaga	12 409	10 686	19 254	29 370	32 174	32 662	70,3	75,1	62,9
LIM474: Fetakgomo	3 611	4 861	9 111	9 921	10 449	13 052	73,3	68,3	58,9
LIM475: Greater Tubatse	13 938	19 147	48 154	24 464	30 654	49 709	63,7	61,6	50,8
Limpopo	547 323	656 332	856 982	449 654	590 139	558 625	45,1	47,3	39,5

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

The average household size in the Lephalale Local Municipality is 3.4, down from 3.8 in 2001 and 4.1 in 1996. The number of households in Lephalale are 29 880, the second highest in the district, after Mogalakwena, which have a substantial higher number of households at 79 395 as per the 2011 Census results. This correlates with the high unemployment rate in the Mogalakwena Local Municipality (40.5%), as mentioned before.

Table 17: Average household size by municipality – 1996, 2001 and 2011

Municipality	Total Population			Number of household			Average household size		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	936 035	1 014 646	1 076 891	201219	239 209	296 320	4,7	4,2	3,6
LIM331: Greater Giyani	216 154	238 076	242 571	42408	53 050	63 548	5,1	4,5	3,8
LIM332: Greater Letaba	201 673	210 617	209 493	41902	49 451	58 261	4,8	4,3	3,6
LIM333: Greater Tzaneen	328 469	353 219	386 478	73065	85 993	108 926	4,5	4,1	3,5
LIM334: Ba-Phalaborwa	103 692	125 047	146 515	25527	31 046	41 115	4,0	4,0	3,6
LIM335: Maruleng	86 048	87 687	91 835	18317	19 668	24 470	4,7	4,5	3,8
DC34: Vhembe	1 071 056	1 172 487	1 271 250	211283	264 358	335 276	5,1	4,4	3,8
LIM342: Mutale	73 271	81 829	90 830	13908	18 085	23 751	5,3	4,5	3,8
LIM343: Thulamela	523 956	572 947	610 950	100985	126 023	156 594	5,2	4,5	3,9
LIM341: Musina	26 696	34 145	62 326	8270	11 577	20 042	3,2	2,9	3,1
LIM344: Makhado	447 133	483 566	507 144	88120	108 673	134 889	5,1	4,4	3,8
DC35: Capricorn	1 041 182	1 125 259	1 233 336	210394	273 083	342 838	4,9	4,1	3,6
LIM351: Blouberg	156 631	166 845	161 049	30630	36 930	41 192	5,1	4,5	3,9
LIM352: Aganang	146 114	145 187	129 837	27418	32 042	33 918	5,3	4,5	3,8
LIM353: Molemole	102 883	106 488	106 286	22575	27 888	30 043	4,5	3,8	3,5
LIM354: Polokwane	410 131	483 711	608 844	85373	124 978	178 001	4,8	3,9	3,4
LIM355: Lepele-Nkumpi	225 424	223 028	227 321	44397	51 245	59 682	5,1	4,4	3,8
DC36: Waterberg	502 070	567 345	634 184	114647	145 883	179 866	4,4	3,9	3,5
LIM361: Thabazimbi	47 215	60 319	71 200	14903	20 734	25 080	3,2	2,9	2,8
LIM362: Lephalale	75 124	77 505	101 830	18057	20 277	29 880	4,1	3,8	3,4
LIM364: Mookgopong	15 248	28 012	31 970	5690	7 561	9 918	2,7	3,7	3,2
LIM365: Modimolle	40 949	61 808	63 369	10848	16 964	17 525	3,7	3,6	3,6
LIM366: Bela-Bela	43 339	46 758	62 061	11095	12 335	18 068	3,9	3,8	3,4
LIM367: Mogalakwena	280 196	292 943	303 755	54054	68 011	79 395	5,2	4,3	3,8
DC47: Greater Sekhukhune	907 137	942 993	1 060 311	171827	195 285	263 802	5,3	4,8	4,0
LIM471: Ephraim Mogale	97 597	115 682	122 257	19664	24 189	32 284	5,0	4,8	3,8
LIM472: Elias Motsoaledi	218 622	213 218	242 886	42605	45 478	60 251	5,1	4,7	4,0
LIM473: Makhuduthamaga	266 845	258 246	272 113	49782	52 978	65 217	5,4	4,9	4,2
LIM474: Fetakgomo	96 945	91 589	93 231	17372	18 883	22 851	5,6	4,9	4,1
LIM475: Greater Tubatse	227 127	264 258	329 825	42403	53 756	83 199	5,4	4,9	4,0
Limpopo	4 457 480	4 822 730	5 275 973	909371	1 117 818	1 418 102	4,9	4,3	3,7

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

According to the Census 2011, 83.2% (24 597) of people living in Lephalale reside in formal dwellings, followed by 15.4% (4 554) in informal dwellings and 1.4% (408) in traditional dwellings.

Table 18: Distribution of households by type of main dwelling and municipality – 1996, 2001 and 2011

Municipality	Formal dwellings			Traditional dwellings			Informal dwellings		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	102776	157 251	273 248	88 695	71 514	15 003	7 014	9 913	6 628
LIM331: Greater Giyani	12767	23 636	55 911	27 955	28 197	5 974	1 260	1 144	1 483
LIM332: Greater Letaba	23314	33 634	53 515	17 401	12 420	2 412	837	3 231	1 955
LIM333: Greater Tzaneen	39303	59 190	100 696	29 893	23 177	4 831	2 949	3 472	2 756
LIM334: Ba-Phalaborwa	16083	24 887	39 635	7 281	4 606	1 149	1 667	1 484	213
LIM335: Maruleng	11309	15 904	23 490	6 164	3 113	637	300	582	222
DC34: Vhembe	99843	166 684	293 942	104 722	90 235	31 788	4 485	6 896	8 155
LIM342: Mutale	4795	9 684	20 726	8 955	8 122	2 693	28	223	169
LIM343: Thulamela	41040	72 113	134 270	57 000	51 532	20 390	1 811	2 170	1 606
LIM341: Musina	4644	7 246	14 996	2 212	3 040	1 956	1 207	1 226	2 907
LIM344: Makhado	49364	77 640	123 950	36 555	27 541	6 749	1 438	3 277	3 473
DC35: Capricorn	161187	226 042	315 276	32 626	20 724	4 992	13 921	25 668	21 078
LIM351: Blouberg	16865	26 770	38 243	12 447	7 035	1 044	678	3 001	1 693
LIM352: Aganang	22636	28 910	32 747	3 912	2 235	175	604	869	904
LIM353: Molemole	19560	25 710	28 775	1 799	1 012	382	994	1 120	797
LIM354: Polokwane	64390	99 138	159 082	9 601	6 003	1 896	10 447	19 476	16 044
LIM355: Lepele-Nkumpi	37737	45 513	56 429	4 866	4 439	1 495	1 197	1 202	1 640
DC36: Waterberg	81417	109 616	156 410	17 743	10 715	2 085	13 005	24 970	19 989
LIM361: Thabazimbi	10604	12 286	17 725	1 381	1 576	469	2 672	6 691	6 505
LIM362: Lephalale	11530	15 572	24 597	4 488	2 296	408	1 595	2 321	4 554
LIM364: Mookgopong	4416	5 275	8 856	1 002	390	109	205	1 856	861
LIM365: Modimolle	6659	8 588	15 328	1 664	921	82	2 243	7 366	1 978
LIM366: Bela-Bela	7397	9 785	15 601	950	468	109	2 275	2 036	2 222
LIM367: Mogalakwena	40810	58 111	74 303	8 257	5 064	909	4 015	4 700	3 868
DC47: Greater Sekhukhune	114023	151 094	234 095	46 124	32 121	10 107	9 075	11 520	17 861
LIM471: Ephraim Mogale	13403	19 097	30 102	4 899	3 827	773	1 108	1 196	1 232
LIM472: Elias Motsoaledi	31048	36 137	54 503	8 705	6 902	2 274	1 995	2 356	3 141
LIM473: Makhuduthamaga	33429	41 712	58 744	13 354	8 804	2 819	2 337	2 403	3 398
LIM474: Fetakgomo	11014	15 258	21 535	5 566	2 713	451	521	762	685
LIM475: Greater Tubatse	25131	38 890	69 212	13 600	9 874	3 790	3 115	4 802	9 406
Limpopo	559246	810 686	1 272 971	289 911	225 309	63 974	47 499	78 967	73 712

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

The majority of residents of Lephalale own their homes (50% fully paid off and 10% not paid off). 40% rent accommodation as per the 2011 Census. All these figures have gone up from 2001, with the increase in residents renting the highest.

Table 19: Distribution of households by tenure status and municipality – 2001 and 2011

Municipality	Owned but not yet paid off		Owned and fully paid off		Rented	
	2001	2011	2001	2011	2001	2011
DC33: Mopani	14117	15707	120379	149063	11338	30838
LIM331: Greater Giyani	3328	4534	27455	39558	1359	2705
LIM332: Greater Letaba	1544	2181	32529	24692	1298	5338
LIM333: Greater Tzaneen	4611	5446	38614	57006	3942	13258
LIM334: Ba-Phalaborwa	3398	2864	14747	22444	3590	6748
LIM335: Maruleng	1237	682	7034	5363	1150	2789
DC34: Vhembe	10336	14524	153519	199994	9557	28212
LIM342: Mutale	711	1465	13165	13767	383	924
LIM343: Thulamela	4201	6630	82321	102522	3120	8251
LIM341: Musina	462	679	3656	5592	2276	8670
LIM344: Makhado	4961	5750	54377	78113	3778	10367
DC35: Capricorn	17334	21184	163265	177997	16252	51022
LIM351: Blouberg	1564	1815	21361	22402	1229	3795
LIM352: Aganang	276	648	26710	13874	394	754
LIM353: Molemole	635	1264	18062	18363	1027	2966
LIM354: Polokwane	11504	14667	63766	85812	12162	39735
LIM355: Lepele-Nkumpi	3354	2790	33366	37547	1440	3772
DC36: Waterberg	8517	9921	53168	75807	19141	39111
LIM361: Thabazimbi	919	2158	5663	3963	5770	11527
LIM362: Lephalale	1651	2007	6680	10151	3154	8281
LIM364: Mookgopong	402	406	2209	4026	1792	2816
LIM365: Modimolle	976	833	5645	8795	1622	3511
LIM366: Bela-Bela	750	1099	6239	6792	2750	5032
LIM367: Mogalakwena	3819	3417	26732	42080	4054	7944
DC47: Greater Sekhukhune	9315	9201	111877	144360	8921	28827
LIM471: Ephraim Mogale	995	604	14231	13553	1120	4288
LIM472: Elias Motsoaledi	1440	1658	24627	33324	3153	5828
LIM473: Makhuduthamaga	2191	2257	30979	44302	1441	3035
LIM474: Fetakgomo	1026	913	11757	12073	1066	1979
LIM475: Greater Tubatse	3663	3768	30281	41108	2140	13697
Limpopo	59620	70537	602208	747220	65209	178010

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Tables 20 – 23 indicate the extent to which residents of Lephalale have access to services (electricity, piped water, refuse removal and different types of toilet facilities). The number of households with access to all these services has increased from 1996 till 2011, indicating that progress is being made by the municipality in increasing the supply of services to residents.

Table 20: Distribution of households using electricity for lighting, heating and cooking by municipality – 1996, 2001 and 2011

Municipality	lighting			cooking			Heating		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	100 989	162 612	262 891	42 104	54 238	119 544	40 086	63 167	111 840
LIM331: Greater Giyani	19 256	35 716	56 586	6 267	8 647	14 765	6 101	10 389	18 493
LIM332: Greater Letaba	20 772	32 320	52 878	4 998	7 445	18 166	4 747	9 725	18 327
LIM333: Greater Tzaneen	39 603	59 425	93 916	16 402	19 988	51 513	15 634	23 301	45 716
LIM334: Ba-Phalaborwa	16 027	23 594	37 345	11 680	14 915	27 802	10 977	15 765	22 874
LIM335: Maruleng	5 332	11 556	22 166	2 756	3 243	7 299	2 626	3 987	6 431
DC34: Vhembe	64 324	161 952	292 261	35 193	52 234	113 270	34 677	57 608	119 326
LIM342: Mutale	1 110	7 042	19 782	632	1 471	4 048	605	1 481	4 636
LIM343: Thulamela	33 624	74 736	136 567	16 406	23 290	47 928	16 419	24 291	50 715
LIM341: Musina	4 749	7 205	15 321	3 711	4 715	13 177	3 608	5 391	10 727
LIM344: Makhado	24 841	72 969	120 591	14 444	22 758	48 117	14 044	26 444	53 249
DC35: Capricorn	69 951	159 583	299 677	47 089	86 178	214 501	44 416	88 924	188 805
LIM351: Blouberg	5 720	15 370	36 235	2 627	4 318	13 349	2 159	4 924	12 926
LIM352: Aganang	3 992	12 459	32 096	1 695	4 329	18 231	1 497	3 952	14 426
LIM353: Molemole	8 753	20 859	28 763	5 097	8 836	21 262	4 774	8 731	20 204
LIM354: Polokwane	36 414	79 527	147 710	27 353	51 970	126 149	26 202	52 781	108 301
LIM355: Lepele-Nkumpi	15 073	31 368	54 873	10 317	16 725	35 511	9 785	18 535	32 948
DC36: Waterberg	52 579	95 285	155 989	36 870	52 398	117 823	36 184	55 314	106 632
LIM361: Thabazimbi	7 819	10 039	19 269	6 664	7 985	18 332	6 668	8 010	17 062
LIM362: Lephalale	12 592	14 690	25 398	7 008	7 530	18 046	7 016	8 826	18 059
LIM364: Mookgopong	3 176	4 676	8 465	2 830	3 102	7 540	2 665	3 180	6 119
LIM365: Modimolle	5 628	8 984	14 602	4 777	6 875	13 065	4 653	7 129	11 439
LIM366: Bela-Bela	6 790	8 880	15 352	5 299	5 288	13 662	4 867	5 319	11 898
LIM367: Mogalakwena	16 574	48 017	72 903	10 292	21 617	47 180	10 315	22 851	42 055
DC47: Greater Sekhukhune	63 950	124 173	226 677	25 303	37 778	143 786	23 449	40 966	111 212
LIM471: Ephraim Mogale	10 697	19 938	28 927	4 511	6 381	15 086	4 219	8 455	13 341
LIM472: Elias Motsoaledi	29 505	38 906	54 902	10 495	10 398	37 830	9 624	11 402	30 433
LIM473: Makhuduthamaga	12 368	32 884	58 951	5 058	8 967	32 293	4 615	8 951	23 716
LIM474: Fetakgomo	2 630	7 373	20 914	1 562	3 344	13 202	1 454	3 101	11 033
LIM475: Greater Tubatse	8 750	25 072	62 984	3 677	8 688	45 374	3 537	9 057	32 689
Limpopo	351 793	703 605	1 237 495	186 559	282 825	708 924	178 812	305 978	637 816

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 21: Distribution of households by access to piped water and municipality – 1996, 2001 and 2011

Municipality	Piped (tap) water inside the dwelling/ yard			Piped (tap) water on communal stand			No access to piped (tap) water		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	82 054	95 686	149 356	87 018	105 755	100 028	30 790	37 768	46 935
LIM331: Greater Giyani	20 333	23 155	27 900	19 503	22 836	26 103	2 338	7 060	9 545
LIM332: Greater Letaba	10 871	14 353	26 267	22 667	28 521	26 571	8 155	6 578	5 423
LIM333: Greater Tzaneen	29 814	29 910	49 541	28 837	36 457	33 011	14 031	19 625	26 373
LIM334: Ba-Phalaborwa	14 794	19 716	33 973	8 587	9 865	5 916	1 906	1 464	1 226
LIM335: Maruleng	6 242	8 552	11 675	7 424	8 076	8 426	4 361	3 040	4 368
DC34: Vhembe	69 391	105 532	145 823	109 774	122 778	150 218	30 988	36 048	39 235
LIM342: Mutale	2 601	3 788	6 386	7 248	10 086	14 553	3 941	4 211	2 812
LIM343: Thulamela	33 194	50 848	65 662	54 170	56 620	73 537	13 086	18 555	17 395
LIM341: Musina	6 992	7 485	15 144	230	3 205	3 538	984	888	1 360
LIM344: Makhado	26 603	43 411	58 631	48 126	52 868	58 590	12 978	12 394	17 668
DC35: Capricorn	82 329	119 740	213 348	74 217	88 570	92 495	52 688	64 773	36 995
LIM351: Blouberg	8 055	14 109	18 515	13 670	14 602	15 541	8 725	8 218	7 137
LIM352: Aganang	9 242	11 191	20 075	11 074	15 114	11 935	6 902	5 738	1 908
LIM353: Molemole	5 238	12 695	16 926	14 397	7 971	6 617	2 828	7 223	6 501
LIM354: Polokwane	45 001	64 116	126 866	22 629	37 753	44 188	17 308	23 109	6 947
LIM355: Lepele-Nkumpi	14 794	17 628	30 966	12 447	13 130	14 215	16 925	20 486	14 501
DC36: Waterberg	56 050	74 557	126 988	28 303	49 322	42 571	29 442	22 004	10 308
LIM361: Thabazimbi	9 521	11 782	17 863	1 686	8 705	5 668	3 603	247	1 550
LIM362: Lephalale	7 811	11 431	20 016	4 305	7 848	9 065	5 790	998	799
LIM364: Mookgopong	3 597	5 451	9 066	259	1 793	594	1 774	318	257
LIM365: Modimolle	6 516	10 513	15 059	2 107	5 336	1 824	2 179	1 115	642
LIM366: Bela-Bela	8 061	10 378	15 351	894	1 545	2 131	2 057	411	586
LIM367: Mogalakwena	20 544	25 002	49 633	19 052	24 095	23 289	14 039	18 914	6 473
DC47: Greater Sekhukhune	33 766	39 779	105 872	57 460	71 636	92 400	79 345	83 870	65 530
LIM471: Ephraim Mogale	7 909	9 980	22 759	4 257	6 063	4 343	7 385	8 146	5 181
LIM472: Elias Motsoaledi	10 510	12 562	28 295	13 205	14 176	11 901	18 449	18 741	20 056
LIM473: Makhuduthamaga	8 081	5 701	20 817	14 023	18 510	26 984	27 400	28 767	17 416
LIM474: Fetakgomo	2 193	2 362	8 154	8 336	8 700	12 059	6 722	7 822	2 638
LIM475: Greater Tubatse	5 073	9 176	25 847	17 639	24 188	37 113	19 389	20 393	20 239
Limpopo	323 590	435 294	741 387	356 772	438 061	477 712	223 254	244 463	199 003

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 22: Distribution of households by type of refuse removal and municipality – 1996, 2001 and 2011

Municipality	Removed by local authority/ private company			Communal refuse dump			No rubbish disposal		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	26 465	34 949	52 165	126 658	152 720	203 156	44 054	51 540	37 864
LIM331: Greater Giyani	4 619	5 557	7 755	28 344	34 031	45 734	8 689	13 463	9 441
LIM332: Greater Letaba	2 828	3 457	5 431	26 060	33 519	42 966	12 304	12 476	9 454
LIM333: Greater Tzaneen	8 537	11 654	16 990	50 643	58 223	76 262	12 419	16 116	14 208
LIM334: Ba-Phalaborwa	9 569	13 244	20 323	9 638	11 992	18 533	5 686	5 811	1 933
LIM335: Maruleng	911	1 038	1 666	11 973	14 956	19 660	4 957	3 675	2 828
DC34: Vhembe	19 987	29 136	47 890	152 360	186 820	248 041	35 002	48 402	37 037
LIM342: Mutale	134	544	1 356	7 574	13 965	19 316	5 783	3 575	3 047
LIM343: Thulamela	8 930	12 010	20 183	69 453	84 762	116 335	20 661	29 251	19 268
LIM341: Musina	4 474	5 792	12 744	3 230	3 994	5 033	388	1 792	2 171
LIM344: Makhado	6 449	10 790	13 606	72 102	84 099	107 357	8 170	13 784	12 552
DC35: Capricorn	29 884	53 908	104 233	150 019	190 583	215 058	26 445	28 592	21 339
LIM351: Blouberg	1 878	657	9 058	21 102	30 741	26 631	7 087	5 532	5 060
LIM352: Aganang	69	152	318	22 717	28 411	30 168	4 168	3 479	3 345
LIM353: Molemole	746	1 991	1 827	19 159	24 543	26 239	2 221	1 354	1 867
LIM354: Polokwane	21 413	42 743	80 430	55 362	73 647	90 729	6 897	8 589	5 620
LIM355: Lepele-Nkumpi	5 778	8 366	12 600	31 679	33 241	41 290	6 070	9 638	5 446
DC36: Waterberg	29 676	44 436	81 101	66 371	88 284	84 342	16 172	13 162	12 790
LIM361: Thabazimbi	5 788	7 727	15 609	8 189	10 844	7 756	627	2 164	1 381
LIM362: Lephalale	3 764	4 620	12 578	10 550	13 586	14 022	3 346	2 071	3 140
LIM364: Mookgopong	1 968	3 855	6 456	3 379	3 308	2 932	228	399	424
LIM365: Modimolle	3 629	7 891	12 980	6 147	7 797	3 647	865	1 277	650
LIM366: Bela-Bela	6 244	8 451	11 844	4 324	3 227	4 734	198	657	1 094
LIM367: Mogalakwena	8 283	11 893	21 633	33 782	49 523	51 252	10 907	6 595	6 101
DC47: Greater Sekhukhune	10 290	11 458	23 213	125 328	148 167	204 290	33 185	35 660	34 406
LIM471: Ephraim Mogale	2 184	3 173	3 726	15 490	17 311	23 829	1 663	3 706	4 356
LIM472: Elias Motsoaledi	4 136	3 448	6 527	31 805	34 003	44 517	5 765	8 027	8 504
LIM473: Makhuduthamaga	3 073	463	1 639	39 323	46 992	58 636	6 572	5 523	4 631
LIM474: Fetakgomo	154	428	4 216	12 133	14 621	16 417	4 801	3 835	2 121
LIM475: Greater Tubatse	743	3 946	7 105	26 576	35 241	60 892	14 384	14 569	14 794
Limpopo	116 301	173 886	308 603	620 736	766 575	954 887	154 858	177 356	143 436

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Table 23: Distribution of households by type of toilet facility and municipality – 1996, 2001 and 2011

Municipality	Flush/ chemical toilet			Pit toilet			Bucket latrine			No toilets		
	1996	2001	2011	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	31 403	42 485	57 116	102 208	108 852	194 859	1 009	921	1 099	65 166	86 951	37 067
LIM331: Greater Giyani	4 997	8 711	8 544	13 233	14 951	39 823	172	157	260	23 613	29 232	12 452
LIM332: Greater Letaba	2 546	4 693	6 407	29 463	29 371	44 446	171	196	336	9 520	15 191	6 281
LIM333: Greater Tzaneen	10 674	13 554	21 053	45 944	49 158	73 463	492	419	363	15 621	22 861	12 211
LIM334: Ba-Phalaborwa	10 906	13 092	17 921	5 349	5 732	17 551	109	75	80	8 921	12 148	4 698
LIM335: Maruleng	2 279	2 435	3 191	8 219	9 640	19 575	65	75	61	7 491	7 519	1 426
DC34: Vhembe	20 453	35 275	54 622	141 886	159 449	245 526	730	1 525	1 207	47 055	68 109	30 006
LIM342: Mutale	387	1 241	1 202	7 791	8 950	21 977	60	67	37	5 549	7 827	478
LIM343: Thulamela	7 421	14 193	20 527	62 512	71 753	115 445	323	588	292	30 208	39 488	17 896
LIM341: Musina	5 164	6 228	13 339	1 895	1 973	3 731	41	159	130	1 068	3 218	2 645
LIM344: Makhado	7 481	13 613	19 553	69 688	76 773	104 373	307	710	748	10 230	17 576	8 986
DC35: Capricorn	31 757	56 602	99 813	140 979	166 720	223 169	974	1 740	2 022	35 312	48 021	14 316
LIM351: Blouberg	987	2 547	3 727	16 820	20 012	31 841	141	144	357	12 511	14 228	4 627
LIM352: Aganang	163	811	1 005	21 540	24 520	30 751	56	199	320	5 493	6 512	1 699
LIM353: Molemole	1 771	3 683	4 876	17 619	19 280	23 504	272	131	169	2 806	4 795	1 143
LIM354: Polokwane	23 263	40 890	78 509	52 222	66 224	91 700	352	1 056	1 070	8 825	16 808	5 070
LIM355: Lepele-Nkumpi	5 574	8 671	11 696	32 777	36 684	45 372	154	211	105	5 677	5 678	1 778
DC36: Waterberg	37 013	53 127	87 874	65 289	71 985	80 290	593	1 499	1 822	10 976	19 272	7 136
LIM361: Thabazimbi	7 563	9 796	17 211	5 307	5 630	5 251	67	88	198	1 877	5 220	1 585
LIM362: Lephalale	5 390	6 893	13 820	9 420	10 437	13 983	104	159	186	3 014	2 788	1 589
LIM364: Mookgopong	2 762	4 692	6 701	2 118	1 923	2 232	83	100	196	687	847	526
LIM365: Modimolle	5 429	7 314	12 775	4 169	6 846	3 349	98	530	233	1 102	2 274	527
LIM366: Bela-Bela	7 417	9 089	14 602	2 887	2 126	2 476	50	203	322	652	916	434
LIM367: Mogalakwena	8 453	15 343	22 765	41 389	45 022	52 999	191	418	687	3 645	7 227	2 475
DC47: Greater Sekhukhune	7 552	14 706	22 687	127 762	146 196	220 221	881	1 313	2 609	34 528	33 070	13 510
LIM471: Ephraim Mogale	1 708	3 758	4 067	15 789	17 162	25 328	151	121	611	1 892	3 147	1 677
LIM472: Elias Motsoaledi	2 883	3 786	7 792	36 377	38 802	47 632	274	375	460	2 672	2 516	2 680
LIM473: Makhuduthamaga	1 274	2 176	3 009	38 532	41 918	58 561	188	372	224	9 545	8 512	2 552
LIM474: Fetakgomo	102	724	794	10 505	13 111	20 827	85	106	55	6 594	4 943	941
LIM475: Greater Tubatse	1 585	4 262	7 026	26 559	35 203	67 872	182	339	1 259	13 825	13 952	5 661
Limpopo	128 179	202 195	322 112	578 124	653 202	964 065	4 187	6 998	8 759	193 036	255 422	102 035

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

According to Census 2011, 39.1% of households in Lephalale are headed by females. This is lower than all the other local municipalities in the province, except Bela-Bela (37.5%), Mookgopong (37.2%) and Thabazimbi (24.7%), all of which are in the Waterberg District. This may be attributed to the fact that fewer men in the Waterberg District Municipality leave home and migrate to places where they can find employment, due to the presence of Medupi, Matimba and Grootegeluk Mine, which all offer employment to a large number of people, in the Waterberg District. The percentage of female headed households in Lephalale has also gone down since 2001 and 1996.

Table 24: Distribution of female headed households by municipality – 1996, 2001 and 2011

Municipality	Female headed household			Total number of household			% of female headed households		
	1996	2001	2011	1996	2001	2011	1996	2001	2011
DC33: Mopani	102 668	128 649	150 877	201 219	239 209	296 320	51,0	53,8	50,9
LIM331: Greater Giyani	23 341	31 605	36 391	42 408	53 050	63 548	55,0	59,6	57,3
LIM332: Greater Letaba	24 930	29 217	33 067	41 902	49 451	58 261	59,5	59,1	56,8
LIM333: Greater Tzaneen	36 815	44 821	52 042	73 065	85 993	108 926	50,4	52,1	47,8
LIM334: Ba-Phalaborwa	7 420	11 880	16 239	25 527	31 046	41 115	29,1	38,3	39,5
LIM335: Maruleng	10 162	11 125	13 138	18 317	19 668	24 470	55,5	56,6	53,7
DC34: Vhembe	112 424	144 381	176 390	211 283	264 358	335 276	53,2	54,6	52,6
LIM342: Mutale	7 507	10 171	13 012	13 908	18 085	23 751	54,0	56,2	54,8
LIM343: Thulamela	54 866	69 875	85 121	100 985	126 023	156 594	54,3	55,4	54,4
LIM341: Musina	2 587	4 861	7 935	8 270	11 577	20 042	31,3	42,0	39,6
LIM344: Makhado	47 463	59 473	70 322	88 120	108 673	134 889	53,9	54,7	52,1
DC35: Capricorn	113 848	149 423	171 236	210 394	273 083	342 838	54,1	54,7	49,9
LIM351: Blouberg	17 946	21 321	23 199	30 630	36 930	41 192	58,6	57,7	56,3
LIM352: Aganang	16 698	19 330	19 054	27 418	32 042	33 918	60,9	60,3	56,2
LIM353: Molemole	12 454	15 288	15 908	22 575	27 888	30 043	55,2	54,8	53,0
LIM354: Polokwane	40 634	62 355	79 659	85 373	124 978	178 001	47,6	49,9	44,8
LIM355: Lepele-Nkumpi	26 116	31 129	33 417	44 397	51 245	59 682	58,8	60,7	56,0
DC36: Waterberg	46 224	66 561	76 803	114 647	145 883	179 866	40,3	45,6	42,7
LIM361: Thabazimbi	3 235	6 096	6 188	14 903	20 734	25 080	21,7	29,4	24,7
LIM362: Lephalale	7 467	9 592	11 694	18 057	20 277	29 880	41,4	47,3	39,1
LIM364: Mookgopong	1 340	2 621	3 685	5 690	7 561	9 918	23,6	34,7	37,2
LIM365: Modimolle	2 819	6 052	6 921	10 848	16 964	17 525	26,0	35,7	39,5
LIM366: Bela-Bela	3 201	4 646	6 781	11 095	12 335	18 068	28,9	37,7	37,5
LIM367: Mogalakwena	28 161	37 554	41 533	54 054	68 011	79 395	52,1	55,2	52,3
DC47: Greater Sekhukhune	99 641	116 393	139 593	171 827	195 285	263 802	58,0	59,6	52,9
LIM471: Ephraim Mogale	10 020	13 254	16 550	19 664	24 189	32 284	51,0	54,8	51,3
LIM472: Elias Motsaedi	24 048	26 794	32 061	42 605	45 478	60 251	56,4	58,9	53,2
LIM473: Makhuduthamaga	30 932	34 334	39 217	49 782	52 978	65 217	62,1	64,8	60,1
LIM474: Fetakgomo	10 817	11 565	12 769	17 372	18 883	22 851	62,3	61,2	55,9
LIM475: Greater Tubatse	23 824	30 446	38 996	42 403	53 756	83 199	56,2	56,6	46,9
Limpopo	474 805	605 406	714 900	909 371	1 117 818	1 418 102	52,2	54,2	50,4

Source: Census 2011 Municipal report – Limpopo

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Census 2011 results indicate that 0.9% (254) of households in Lephalale are headed by children.

Table 25: Distribution of child headed households by municipality – 1996, 2001 and 2011

Municipality	1996			2001			2011		
	Households headed by children	Total households	% of child headed households	Households headed by children	Total households	% of child headed households	Households headed by children	Total households	% of child headed households
DC33: Mopani	7 280	201219	3,6	6 836	239 209	2,9	5 468	296 320	1,8
LIM331: Greater Giyani	1 536	42408	3,6	2 075	94 071	2,2	1 793	63 548	2,8
LIM332: Greater Letaba	1 793	41902	4,3	1 925	86 132	2,2	1 510	58 261	2,6
LIM333: Greater Tzaneen	2 488	73065	3,4	1 971	149 038	1,3	1 447	108 926	1,3
LIM334: Ba-Phalaborwa	289	25527	1,1	299	53 568	0,6	328	41 115	0,8
LIM335: Maruleng	1174	18317	6,4	567	34 378	1,6	390	24 470	1,6
DC34: Vhembe	4 868	211283	2,3	5 548	264 358	2,1	5 698	335 276	1,7
LIM342: Mutale	398	13908	2,9	373	32 407	1,2	419	23 751	1,8
LIM343: Thulamela	2 289	100985	2,3	2 846	226 443	1,3	3 084	156 594	2,0
LIM341: Musina	176	8270	2,1	217	17 926	1,2	168	20 042	0,8
LIM344: Makhado	2 006	88120	2,3	2 111	193 901	1,1	2 026	134 889	1,5
DC35: Capricorn	5 813	210394	2,8	6 590	273 083	2,4	3 814	342 838	1,1
LIM351: Blouberg	1 256	30630	4,1	1 134	466 984	0,2	762	41 192	1,8
LIM352: Aganang	909	27418	3,3	1 034	740 067	0,1	504	33 918	1,5
LIM353: Molemole	832	22575	3,7	779	1 207 051	0,1	417	30 043	1,4
LIM354: Polokwane	1 621	85373	1,9	2 217	1 947 118	0,1	1 399	178 001	0,8
LIM355: Lepele-Nkumpi	1 196	44397	2,7	1 426	3 154 169	0,0	732	59 682	1,2
DC36: Waterberg	2 149	114647	1,9	2 829	145 883	1,9	1 739	179 866	1,0
LIM361: Thabazimbi	107	14903	0,7	105	32 897	0,3	115	25 080	0,5
LIM362: Lephalale	308	18057	1,7	476	33 039	1,4	254	29 880	0,9
LIM364: Mookgopong	93	5690	1,6	44	12 348	0,4	40	9 918	0,4
LIM365: Modimolle	81	10848	0,7	233	28 346	0,8	133	17 525	0,8
LIM366: Bela-Bela	73	11095	0,7	78	20 876	0,4	78	18 068	0,4
LIM367: Mogalakwena	1 486	54054	2,7	1 893	118 344	1,6	1 119	79 395	1,4
DC47: Greater Sekhukhune	4 070	171827	2,4	3 814	195 285	2,0	2 949	263 802	1,1
LIM471: Ephraim Mogale	380	19664	1,9	514	42 701	1,2	464	32 284	1,4
LIM472: Elias Motsoaledi	1 197	42605	2,8	1 007	80 719	1,2	800	60 251	1,3
LIM473: Makhuduthamaga	932	49782	1,9	917	95 710	1,0	737	65 217	1,1
LIM474: Fetakgomo	442	17372	2,5	318	34 097	0,9	191	22 851	0,8
LIM475: Greater Tubatse	1 119	42403	2,6	1 058	96 936	1,1	758	83 199	0,9
Limpopo	24180	909371	2,7	25 617	1 117 818	2,3	19 668	1 418 102	1,4

Source: Census 2011 Municipal report – Limpopo

6. SOCIAL IMPACT RATING METHODOLOGY

Impacts are rarely known with certainty during the early stages of a project. However, in the case of the proposed continuous ash disposal facility for the Matimba Power Station, it will be easier to predict impacts, as there is an already existing ash disposal facility for this power station. Therefore, the environmental factors which may have an effect on social impacts remain the same. Impacts have thus already occurred under the same circumstances.

6.1 Types of impacts

In addition to direct impacts that can be experienced as a direct result of a development, impacts can be divided into the following categories: indirect impacts, cumulative impacts and impact interactions (European Commission, 2001). All these categories of impacts need to be considered when conducting a Social Impact Assessment (or any other type of impact assessment for that matter). These categories of impacts will be explained further in the sections that follow.

6.1.1 Indirect impacts

Indirect impacts are impacts which are not a direct result of the project, often produced away from or as a result of a complex pathway. An indirect impact is sometimes also referred to as second or third level impact, or secondary impact (European Commission, 2001). Indirect/secondary impacts are caused by direct/primary impacts and often occur later than and/or further away from the occurrence of direct impacts (DEAT, 2006).

An example of an indirect impact is the construction of a new road, resulting in improved access to facilities, with the indirect impact being an increase in school attendance because learners can get to school more easily.



Figure 26: Indirect impacts

Source: *European Commission, 2001*

6.1.2 Cumulative impacts

Cumulative impacts are impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project (European Commission, 2001). Cumulative impacts result from other impacts of other past, present or future developments. It reflects how the impacts of one project may affect and be affected by other projects and can be

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

seen as the sum of the proposed action plus past and present activity in the same area (DEAT, 2006). For example, the construction of several new facilities for the generation of power across the country, resulting in a significant increase in availability of electricity in Eskom's power grid (as opposed to the construction of one solar plant, for example, which will in isolation not have a significant impact on the grid).

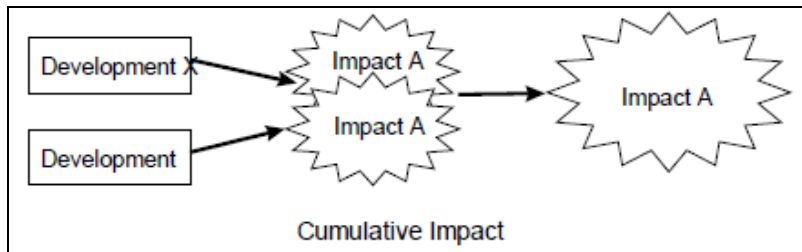


Figure 27: Cumulative impacts

Source: European Commission, 2001

6.1.3 Impact interactions

Impact interactions are the reactions between impacts, whether between the impacts of just one project or between the impacts of other projects in the area (European Commission, 2001).

An impact interaction can for example be the construction of a new clinic in a community on the one hand, resulting to access to quality healthcare, and the installation of a sewage system in the area where there was none, on the other hand, resulting in access to proper sanitation. Both the impacts (access to quality healthcare and access to proper sanitation) will lead to people in the community being healthier and perhaps having a higher life expectancy as a result.

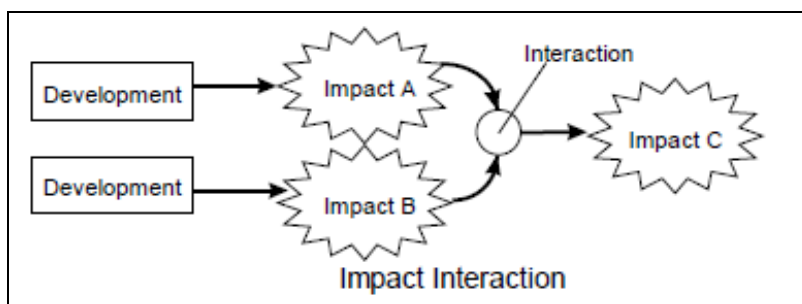


Figure 28: Impact interactions

Source: European Commission, 2001

6.2 Interaction between impacts identified in different specialist studies

It is often the case that one type of impact (for example an environmental impact) can lead to a different type of impact (for example a social impact). An example is air pollution (environmental impact) due to a new factory that can result in impacts on the health of surrounding communities

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

(social impact). Therefore, it is important, when conducting for example a Social impact Assessment, to consider all the impacts identified by the other studies conducted for the same development, such as impacts identified in an EIA Report, Traffic Impact Assessment, Visual Impact Assessment and Biodiversity Assessment. This will ensure that some important potential impacts are not left out and mitigated.

DEAT (2002a) uses the example of the proposed construction of a new fuel storage facility to illustrate the level of information exchange needed between specialist studies conducted as part of the application process (Figure 29).

SPECIALIST STUDY	Specialist study: Health Risk Assessment	Specialist study: Land Use Planning	Specialist study: Groundwater	Specialist study: Terrestrial Ecology	Specialist study: Legislation and Policy	Specialist study: Marine Ecology	Specialist study: Marine Water Quality	Specialist study: Cost Benefit Analysis	Specialist study: Contingency Planning	Specialist study: Risk Assessment	Specialist study: Marine Risk Assessment	Specialist study: Oil Spill Modelling
	Specialist study: Oil Spill Modelling	Strong	None	None	Weak	None	None	None	None	None	None	None
Specialist study: Marine Risk Assessment	Strong	None	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Risk Assessment	Strong	Strong	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Contingency Planning	Strong	None	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Cost Benefit Analysis	Strong	Weak	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Marine Water Quality	Strong	None	None	None	None	Weak	None	None	None	None	None	None
Specialist study: Marine Ecology	None	None	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Legislation and Policy	None	Strong	None	Weak	None	None	None	None	None	None	None	None
Specialist study: Terrestrial Ecology	None	Strong	Weak	None	None	None	None	None	None	None	None	None
Specialist study: Groundwater	Strong	Weak	None	None	None	None	None	None	None	None	None	None
Specialist study: Land Use Planning	Strong	None	None	None	None	None	None	None	None	None	None	None
Specialist study: Health Risk Assessment	None	None	None	None	None	None	None	None	None	None	None	None

INFORMATION EXCHANGE	
	None , e.g. no information exchange anticipated
	Weak , e.g. some information exchange necessary
	Strong , e.g. frequent contact between specialists necessary

Figure 29: Hypothetical example of the level of information exchange between specialist studies anticipated for an EIA of a fuel storage facility (DEAT, 2002)

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Consulting the following specialist studies was of particular importance when this Social Impact Assessment was conducted:

- Traffic Impact Assessment;
- Noise Impact Assessment;
- Air Quality Assessment;
- Hydrological Impact Assessment;
- Soil and Agriculture Assessment;
- Surface Water Assessment;
- Visual Impact Assessment; and
- Heritage Impact Assessment.

6.3 Impact assessment rating methodology

DEAT (2002a) provides the following approach that can be used as a guide to assist specialists during the process of impact identification and evaluation:

- Determine the potential impacts.
- Consider the range of impacts, including indirect, cumulative, secondary, short-, medium- and long-term, permanent or temporary and positive or negative effects.
- Describe and quantify potential impacts for all phases of the proposed project (construction, operation, decommissioning).
- Assess the significance of impacts likely to arise from the project against the reference condition (includes natural variation and not just a snapshot), rather than against the present state revealed by the field surveys.
- Evaluate the impacts according to prescribed impact assessment and evaluation techniques and criteria.
- Provide information on impact reversibility and the potential for mitigating the identified impacts.
- Provide details on how uncertainties and limitations in predicting potential impacts were dealt with.
- Explicitly state all assumptions made for assessing potential impacts.
- State the predicted post-mitigation significance of impacts, i.e. the significance of residual impacts after all proposed mitigation measures have been taken into account.

In order to be able to identify, predict and evaluate impacts and based on that make a decision if a certain activity should proceed, the impact's *significance* needs to be determined. However, determining the significance of an impact is done by means of interpretation and is ultimately a judgement call, because significance is relative. When predicting and assessing significance, value judgements must be included and it must be set in a context (DEAT, 2002b).

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

To assist in ensuring that impacts are rated and significance determined in as uniform a way as possible, DEAT (2002a) published a set of generic criteria which were drawn from published literature and South African practice, that can be used to determine significance in a systematic manner. The rating criteria are described in Table 26.

Table 26: Generic significance rating criteria

Significance criteria	Rating	Description
<p><u>Extent or spatial scale of the impact:</u> Whether impacts are limited in extent or affect a wide area or group of people. For example, impacts can either be site-specific, local, regional, national or international.</p>	High	Widespread; far beyond site boundary; Regional/ National/International scale
	Medium	Beyond site boundary; local area
	Low	Within site boundary
<p><u>Intensity or severity of the impact:</u> Whether the intensity of the impact is high, medium, low or has no impact, <i>in terms of its potential for causing either negative or positive effects.</i></p>	High	Disturbance of pristine areas that have important conservation value; destruction of rare or endangered species
	Medium	Disturbance of areas that have potential conservation value or are of use as resources; complete change in species occurrence or variety
	Low	Disturbance of degraded areas, which have little conservation value; minor change in species occurrence or variety
	No impact	
<p><u>Duration of the impact:</u> What the lifespan of the impact will be.</p>	High (long term)	Permanent; beyond decommissioning; more than 15 years
	Medium (medium term)	Reversible over time; lifespan of the project; 5-15 years
	Low (short term)	Quickly reversible; less than the project lifespan; 0-5 years
<p><u>Mitigatory potential:</u> Whether negative impacts can be mitigated or positive impact advanced. For each impact, practical mitigation measures that can affect the significance rating should be recommended. Management actions that could enhance the condition of the environment (i.e. potential positive impacts of the proposed project) should be identified. If no mitigation is considered</p>	High	High potential to mitigate negative impacts to the level of insignificant effects
	Medium	Potential to mitigate negative impacts; however, the implementation of mitigation measures may still not prevent some
	Low	

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

feasible, this must be stated and the reasons provided. <i>The rating both with and without mitigation or enhancement actions should be recorded.</i>		negative effects Little or no mechanism to mitigate negative impacts
Acceptability: Criteria and standards that relate to the receiving environment (e.g. air quality, water quality or noise). An impact identified as being non-significant by a specialist may be unacceptable to a particular section of the community. On the other hand, a significant impact may be acceptable if, for example, adequate compensation is given. The level of acceptability often depends on the stakeholders, particularly those directly affected by the proposed project.	High (Unacceptable) Medium (Manageable) Low (Acceptable)	Abandon project in part or in its entirety; redesign project to remove or avoid impact With regulatory controls; with project proponent's commitments No risk
Degree of certainty: Describe the degree of certainty of the impact actually occurring.	Definite Probable Possible Unsure	More than 90% sure of a particular fact; substantial supportive data exists to verify the assessment; impact will occur regardless of prevention measures Over 70% sure of a particular fact or of the likelihood of that impact occurring Only over 40% sure of a particular fact or of the likelihood of an impact occurring Less than 40% sure of a particular fact or of the likelihood of an impact occurring
Status of the impact: Whether the impact is positive, negative or neutral.	Positive Negative Neutral	Impact is a benefit Impact is a cost ---
Legal requirements: Identify and list the specific legal and permit requirements that could potentially be relevant to the proposed project.	---	---

Sources: DEAT (2002a) and DEAT (2002b)

The impact rating criteria used for this Social Impact Assessment was adapted from the above model and is the same rating matrix used in the Environmental Impact Assessment.

The rating criteria and scores depicted in Table 27 were used.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Table 27: Rating criteria and scores

CRITERIA	DESCRIPTION AND RATING			
	4	3	2	1
Extent	<u>National</u> Whole of South Africa	<u>Regional</u> Provincial and parts of neighbouring provinces	<u>Local</u> Within a radius of 2 km of the construction site	<u>Site</u> Within the construction site
Duration	<u>Permanent</u> Mitigation either be man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	<u>Long-term</u> The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter	<u>Medium-term</u> The impact will last for the period of the construction phase, where after it will be entirely negated	<u>Short-term</u> The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase
Intensity	<u>Very high</u> Natural, cultural and social functions and processes are altered to the extent that they permanently cease/continuously improve	<u>High</u> Natural, cultural and social functions and processes are altered to the extent that they temporarily cease/improve	<u>Moderate</u> Affected social environment is altered, but natural, cultural and social processes continue albeit in a modified way	<u>Low</u> Impact affect the social environment in such a way that natural, cultural and social processes are not affected
Probability of occurrence	<u>Definite</u> Impact will certainly occur	<u>Highly probable</u> Most likely that the impact will occur	<u>Possible</u> The impact may occur	<u>Improbable</u> Likelihood of the impact materialising is very low

The total number of points scored for each impact indicates the level of significance of the impact, as indicated in Table 28.

Table 28: Significance rating of impacts

Low impact (4-6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7-9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10-12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader social.
Very high impact (13-16 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operation. Any activity which results in a “very high impact” is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

To be able to reflect all the studies done as part of the EIA as a spatial representation, the final ratings will be processed as indicated in Table 29.

Table 29: Final ratings for spatial representation

1	Low- / Very high+	Impact insignificant – preferred area for development
3	Medium- / High+	Impact of medium significance – mitigation likely to reduce impact
5	High- / Medium+	Impact severe – unlikely to be adequately mitigated
7	Very high- / Low+	Impact extremely severe – area not developable due to inherent fatal flaws

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE

7. SOCIAL IMPACT PREDICTION AND ASSESSMENT

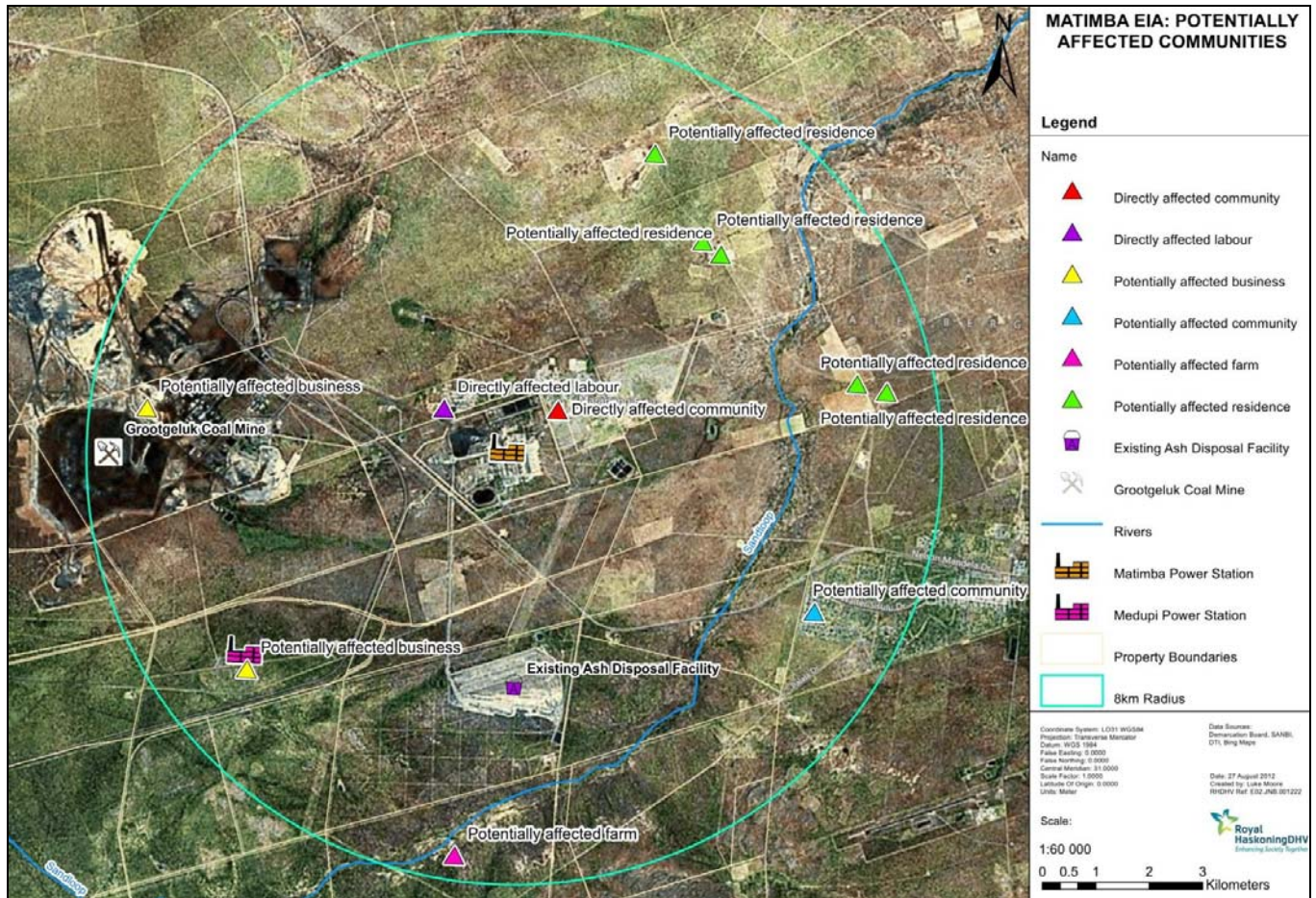


Figure 30: Potentially affected communities

Source: RHDHV Social Opinion for Matimba continuous ashing

7.1 Description of potential social impacts

7.1.1 *Feelings in relation to the project*

The following issues were raised during the public participation process that formed part of the scoping phase of the EIA and during informal discussions with parties:

- Many process related questions were raised.
- Many expressed concerns that there will be negative consequences for the surrounding area, such as:
 - Damage to natural ecosystems and biodiversity;
 - Groundwater quality;
 - Air quality;
 - Wildlife and water bird life in the Sandloop River and downstream dams;
 - Game farming and Exxaro’s Manketti Game Reserve; and

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

- A decrease in property values.
- Concern was expressed that, should site alternative two be approved, the following aspects will be negatively impacted on:
 - The populated area of Marapong (which is located to the north of and adjacent to Matimba Power Station); and
 - Serious problems with dust will be experienced, as site alternative two is directly in the prevailing wind direction of Exxaro's existing operations.
- The question was raised by several participants in the public participation process why backfilling of mining pits at Grootegeluk Coal Mine was not considered as a method for the disposal of ash.
- In addition to the assessment of archaeological and palaeontological resources, any other heritage resources that may be impacted on, such as built structures over 60 years old, sites of cultural significance associated with oral histories, burial grounds and graves, graves of victims of conflict and cultural landscapes or viewsapes must also be assessed.
- Interest in the design and construction of the ash disposal facility was expressed and the question was posed whether the existing disposal site was lined underneath.
- A question was raised on how many years were remaining until the entire farm Zwartwater 507 LQ was covered by ash, and if it would be necessary to acquire yet another site in time for ash disposal.
- Lastly, it was requested that another public meeting be held to explain to stakeholders what the impacts of the extension of the ash disposal facility on the environment would be and to inform them which site was recommended.

General consensus was that the existing site be expanded instead of using a new site for continuous ash disposal and no opposition *per se* to the proposed project was expressed.

7.1.2 Impact on health due to air quality

Prolonged exposure to airborne ash (coal fly ash) could have health impacts on neighbouring communities, including those living on farms and in Marapong and Lephalale, and workers at Matimba Power Station and other places of employment in the area.

The combustion of coal leads to the formation of fine particles, which can remain in the air for weeks. According to the specialist Air Quality Report for this project, particulate matter can be linked to a range of serious respiratory and cardiovascular health problems, including premature mortality,

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

aggravation of respiratory and cardiovascular disease, aggravated asthma, acute respiratory symptoms, chronic bronchitis, decreased lung function and increased risk of myocardial infarction (USEPA, 1996 in Air Quality Report).



Figure 31: Homestead on the farm Droogeheuvel, which forms part of site alternative two

Houses of residents of Lephalale and Marapong fall within the 8km radius. The residential area Marapong is located directly north of the power station itself. The prevailing winds blow from a north-easterly direction and therefore none of the residential areas are directly in the path of prevailing winds. Site alternative one is located on land that is zoned “Industrial” and in the vicinity of other potentially disturbing features, such as the Grootegeluk Coal Mine and the two power stations (Matimba and Medupi). The conveyor belt carrying the ash to the existing disposal site would continue as is, should the existing site be expanded, as proposed. However, should site alternative two be approved a new linear infrastructure route would have to be constructed to carry the ash to the new site. This linear infrastructure route would run right next to the residential area of Marapong, or even through it should the residential area expand, as has been the case in recent years when the area has experienced rapid growth. This could pose a health risk to the residents of Marapong, especially due to their close proximity to the proposed linear infrastructure route.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE



Figure 32: Part of linear infrastructure route to site alternative two, bordering residential area of Marapong

There are also some homesteads, including labourer accommodation, on the four farms that constitute site alternative two.

Should appropriate measures be taken, the impact of ash should not be significant, for the following reasons:

- According to the Air Quality Report, Lephalale is not an area with high wind speeds.
- The ash that is transported from Matimba Power Station to the disposal facility contains 12% moisture, according to the Preliminary Technical Report compiled by Jeffares & Green (Pty) Ltd, and therefore minimum ash is released into the air while being transported by the conveyors. However, this ash dries out by the time it is disposed of on the ash pile.
- Daily covering of the piles, with 50mm of local soil or sand, takes place.
- Two days after the ash is disposed of on the pile, the ash solidifies as a result of dust suppression using water.
- The piles are rehabilitated as soon as they have reached maximum capacity. Rehabilitation entails covering the piles with approximately 300mm thick topsoil and re-vegetation. Therefore, there will be no accumulation of exposed ash that can result in increased fly ash being released.

The health of employees on site and members of surrounding communities can also be affected by dust generated during construction activities of infrastructure such as conveyors and access roads. This will, however, be temporary and limited to the construction phase.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

7.1.3 Impact on health due to water contamination

Both surface water and groundwater can potentially be polluted by the disposed ash.

The Sandloop River is located within the 8km radius of the Matimba Power Station at roughly 200m from the existing ash disposal facility site boundary and also near the furthest eastern point of the linear infrastructure route to site alternative two. The water in the Sandloop River can be contaminated either through storm water run-off or seepage; this could affect water users downstream of the facility. However, the extent of surface water use by communities in the area is expected to be minimal, as the communities surrounding the facility (Marapong and Lephalale) are fully serviced by the municipality. Measures to prevent contamination of surface water should still be implemented.

Seepage is mainly caused by the irrigation of the ash to suppress dust creation. The amount of waste water that can infiltrate groundwater will largely depend on the geology of the area and also on the presence or absence of liners before wet depositing of ash takes place. Monitoring of groundwater does take place, by sampling and analysing of existing boreholes in the area. According to the Geohydrological study monitoring reports have shown that several parameters exceeded the limit in some of the boreholes, including Electrical Conductivity, sodium, chloride, sulphate, manganese and iron, and that the non-compliance of the water quality within the boreholes may be as a result of the seepage from the ash disposal facility. However, boreholes located further away from the ash disposal facility indicated a better water quality and therefore, it is reasoned that it is likely that the potential contaminant plume associated with the ash disposal facility is very localised.

7.1.4 Impact on health due to consumption of contaminated food

There can be negative impacts on the health of animals due to air and/or water pollution as a result of the ash disposal facility. This includes not only domestic animals, but also livestock and game, as there are several game farms located in the area. Pollutants can also enter the food chain via roots and fodder plants that are consumed by humans and livestock alike. This can lead to the food chain being contaminated, as human health can be affected through the consumption of contaminated meat or fresh produce.

7.1.5 Impacts due to changes in land-use

Current land uses of surrounding areas that could be impacted on are the residential areas of Marapong and Lephalale, game farms, livestock farming and crop production.

Should site alternative two be approved game farming will be affected, as the four farms that constitute site alternative two are game farms. Two of the three farms which the linear

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

infrastructure route would traverse to site alternative two, are owned by Exxaro Coal. These farms (Nelsonskop 464 LQ and Appelvlakte 448 LQ) currently carry game, although it is understood that hunting no longer take place on these sections and it is not utilised for any tourism related activities. The third farm, Grootestryd 465 LQ, has three owners for the various portions namely Eskom, Exxaro and the Lephalale Local Municipality. The Matimba Power Station as well as the residential area of Marapong are located on Farm Grootestryd 465 LQ.



Figure 33: Example of a conveyor belt carrying coal from Grootegeluk Mine to Matimba Power Station

Expansion potential of the residential area of Marapong might become limited due to its proximity to the proposed linear infrastructure route, should site alternative two be approved. This impact will occur over the long term but will ultimately not be permanent, as the used ash disposal sites are rehabilitated and will therefore no longer pose a threat to communities residing in the vicinity in the future.

Some livestock farming and limited crop production are also present in the area. Whether rehabilitated land will be suitable for grazing and whether the presence of the ash disposal facility may lead to the permanent sterilisation of soil need to be investigated. According to the Agriculture Potential study the proposed activity will not impact on cultivated areas. In addition, the agricultural potential of the area has been found to be low. Should agricultural activities, including game farming, be affected, it could lead to a loss of income to farmers and landowners.

7.1.6 Reduced visibility due to dust

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Should site alternative two be approved a new linear infrastructure route would have to be constructed to carry the ash to the new site. This linear infrastructure route would run right next to the residential area of Marapong. Marapong's close proximity to the linear infrastructure route, as well as the fact that Marapong is located downwind from site alternative two, could pose a health risk to the residents of Marapong due to dust.

Dust generation will mainly be the result of construction activities related to conveyor lines, access roads, other associated infrastructure (such as site office, workshop, contractors yard, water supply lines, ash water return dams and storm water control dams and channels) and the disposal facility itself, but can also be as a result of wind storms.

Reduced visibility due to dust could result in vehicle and pedestrian accidents and traffic delays and disruption. However, this is not likely as Lephalale is not an area with high wind speeds, as reported in the Air Quality Report. Dust as a result of construction activities will also be of a temporary nature and limited to the construction phase.

The conveyor belt carrying the ash to the disposal site would continue as is, should the existing site be expanded.

7.1.7 Financial impacts

Apart from financial losses that surrounding landowners or users can incur due to a change in land-use, dust and fly ash can also have financial implications due to the following:

- The need to install additional and/or artificial lighting due to reduced visibility;
- Commercial losses due to aesthetics;
- Increased maintenance and repairing costs for buildings;
- Impacts on sensitive industries in the area, such as bakeries;
- Decrease in property values; and
- Reduced growth of crops, due to altered soil composition.

7.1.8 Noise

The main sources of noise in the area are traffic, Matimba Power Station and its infrastructure, Medupi Power Station (which is still under construction) and Grootegeluk Coal Mine. Noise related to activities at the ash disposal facility include the conveyor belt transporting the ash from the power station to the disposal facility and operations at the facility, such as the dumping and spreading of the ash, as well as rehabilitation activities.

Noise during construction could be high, but would be temporary. Sites within 1.4km from the site would particularly be affected.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

During operation of the ash disposal facility, sites that fall within 1km of the site would be exposed to noise levels that are higher than the ideal levels, 50dBA during daytime and 40dBA during night-time. According to the Noise Impact Assessment Report, noise levels within 500m of the ashing operations are predicted to be 53.9dBA and within 1km, 46.9dBA.

7.1.9 Increase in traffic volumes

An increase in traffic can lead to an increase in road accidents and congestion. The Traffic Impact Assessment found that Matimba Power Station and the existing ash disposal facility don't generate notable operational traffic. The majority of users of the main road are employees of the power station and Grootegeluk Mine.

During construction additional traffic will be generated from activities such as the delivery of conveyor belts (should site alternative two be approved and a new conveyor belt therefore be constructed); this impact will be short-term. Traffic during operation will be minimal, as ash is transport by conveyor belt and not by road. The traffic study found that site alternative one will have a very small, if any, impact on the existing road network.

7.1.10 Employment opportunities created

Matimba Power Station employs approximately 750 people (www.eskom.co.za). By extending the ash disposal facility on site alternative one it is not anticipated that a meaningful amount of employment opportunities will be created, as such a facility is already in operation and gets rehabilitated as soon as its maximum capacity has been reached. Ashing is also not labour intensive. It is true, though, that should ashing not be able to continue, the operations at the power plant will be affected which may result in significant job losses. It is important not to create expectations that there will be opportunities for employment as a result of this project.

7.1.11 Tourism

There are a number of game farms and lodges in the area where hunting takes place and which contributes to tourism in the area. To what extent is unknown, but it is not expected to be considerable.

The farms that constitute site alternative two are game farms and it has been confirmed that tourists go to these farms to hunt game as opposed to the linear infrastructure route where hunting does not take place. This will cease if site alternative two is approved, but there are several other game farms in the area that will still be able to accommodate hunters.

Therefore it is not anticipated that the activity will have a significant impact on tourism in the general area.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE



Figure 34: Typical landscape of site alternative two, with Grootegeluk Coal Mine in the background

7.1.12 Supply in electricity

Matimba Power Station supplies electricity to the country's grid. Should the plant not be able to dispose of ash, the power plant will have to cease operations which will have a negative impact on the country's electricity supply, which is already under pressure. This will in turn have negative impacts on businesses, living conditions and economic growth.



Figure 35: Eskom power line traversing site alternative two

7.1.13 Migration

As the creation of employment opportunities will not be significant, there won't be any migration of work force if site alternative one is approved for the extension of the current ash disposal facility. Should site alternative two be approved a minimal number of temporary employment opportunities would be created for the construction of the disposal facility and the linear infrastructure route.

7.1.14 Visual impacts/aesthetic quality

It will be impossible to avoid any visual impact by extending the ash disposal facility at site alternative one or constructing a new facility at site alternative two. However, the significance of potential visual impacts will depend on whether the extended ash disposal facility will be visible from areas where it has not been visible before, especially where tourism activities such as hunting take place. Site alternative two consists of game farms and should the proposed ash disposal facility be located on this site, it will heavily impact on the visual characteristics of the site, which currently is natural and unspoilt bushveld.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

There is a strong existing industrial element in the area in which site alternative one is located, consisting of Matimba Power Station, Medupi Power Station, Grootegeluk Coal Mine and Matimba's existing ash disposal facility. According to the Visual Impact Assessment the preferred site would be site alternative one. This site will constitute an extension of the current disposal facility site and would therefore consolidate an existing impact on the landscape. It would also not expand the industrial footprint of the area with a new visually prominent feature, as pointed out in the Visual Impact Assessment.



Figure 36: Matimba Power Station, as seen from site alternative two

7.1.15 Impact on business in the area

There are both formal and informal businesses present in the study area, especially in Lephalale and Marapong. Fly ash could impact on these businesses, especially sensitive ones such as bakeries, as mentioned in the Air Quality Assessment. Existing businesses could be affected by the need to increase maintenance and repairs due to fly ash and dust, as well as experiencing losses due to decreased aesthetic value, depending on the nature of the business. However, as pointed out before, ash disposal sites that are used to capacity are rehabilitated immediately and if dust suppression measures are implemented successfully it should not have a significant impact on existing businesses in the area.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Should site alternative two be approved, the new linear infrastructure route would be located right next to Marapong. Due to Marapong's close proximity to the proposed linear infrastructure route for site alternative two, businesses in Marapong would be more at risk than with the existing conveyor belt to the preferred alternative site.

7.1.16 Heritage impacts

Site alternative one contains no features or objects of cultural significance and extending the ash disposal facility on that site would therefore have no heritage impact. Site alternative two also did not contain any significant heritage features.

7.1.17 HIV/AIDS

"Mainstreaming of HIV/AIDS, STIs and TB through the Environmental Impact Assessment (EIA) process" has been identified as an action to be implemented by all 10 Environmental Competent Authorities (National Department and the nine Provincial Departments), in terms of the National Strategic Plan 2012-2016. The inclusion of HIV/AIDS, STIs and TB in EIA commenced in 2012.

Inclusion of HIV/AIDS issues in the EIA process will be compulsory only for large infrastructure development projects, specifically the *State of the Nation Address 2012 Prioritised Development Projects* and other projects that form part of the *Projects of the Presidential Infrastructure Coordinating Commission (PICC)*, and therefore it does not apply to ash disposal facilities at power stations. It will not really be practical to apply this to the application for the continuous ash disposal facility at Matimba Power Station, as very few, if any at all, employment opportunities will be created as a result of the project and therefore, no workforce will be affected. There are also no specific aspects related to this project that will result in a risk of increased spread of the diseases, such as a long-term change in the labour force in the area or migration of workers.

However, it is recommended that issues of HIV/AIDS still be included in as many projects that do not fall in that category where practical and possible at all. Therefore, Eskom is urged to explore the possibility of introducing programmes to address these issues in its broader development activities, such as the construction of power stations and transmission and distribution lines.

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

7.2 Site alternative 1

Table 30: Social Impact Assessment rating table – Site alternative 1

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
PLANNING PHASE														
S-1	Feelings in the relation to the project	3	2	2	4	11	High-	3	1	2	3	9	Medium-	3
CONSTRUCTION PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	2	2	4	11	High-	2	1	2	3	8	Medium-	3
S-2	Impact on health due to air quality	2	2	2	2	8	Medium-	2	2	1	1	6	Low-	1
S-5	Impacts due to changes in land-use	3	2	3	1	9	Medium-	2	2	2	1	7	Medium-	3
S-6	Reduced visibility due to dust	2	2	3	3	10	High-	1	2	1	2	6	Low-	1
S-7	Financial impacts	3	2	2	2	9	Medium-	2	2	1	1	6	Low-	1
S-8	Noise	2	2	3	2	9	Medium-	2	2	2	2	8	Medium-	3
S-9	Increase in traffic volumes	2	2	2	2	8	Medium-	2	2	1	2	7	Medium-	3
S-10	Employment opportunities created	3	2	3	1	9	Medium+	3	2	3	1	9	Medium+	3

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-13	Migration	3	2	2	1	8	Medium-	3	2	2	1	8	Medium-	3
S-14	Visual impacts/aesthetic quality	2	2	2	2	8	Medium-	2	2	1	2	7	Medium-	3
S-15	Impact on business in the area	2	2	2	2	8	Medium-	2	2	1	1	6	Low-	1
S-16	Heritage impacts	2	4	3	2	11	High-	1	4	1	1	7	Medium-	3
OPERATION PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	3	2	2	10	High-	2	2	1	1	6	Low-	1
S-2	Impact on health due to air quality	3	4	4	3	14	Very high-	3	1	1	1	6	Low-	1
S-3	Impact on health due to water contamination	3	4	4	3	14	Very high-	3	1	1	1	6	Low-	1
S-4	Impact on health due to consumption of contaminated food	3	4	4	3	14	Very high-	3	1	1	1	6	Low-	1
S-5	Impacts due to changes in land-use	2	3	2	2	9	Medium-	1	2	2	2	7	Medium-	3
S-6	Reduced visibility due to dust	2	2	2	2	8	Medium-	1	2	1	1	5	Low-	1
S-7	Financial impacts	3	2	2	2	9	Medium-	2	1	1	1	5	Low-	1
S-8	Noise	2	2	1	2	7	Medium-	2	2	1	1	6	Low-	1

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-9	Increase in traffic volumes	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-10	Employment opportunities created	3	2	1	1	7	Medium+	3	2	1	1	7	Medium+	5
S-11	Tourism	3	1	1	1	6	Low-	3	1	1	1	6	Low-	1
S-12	Supply in electricity	4	3	4	4	15	Very high+	4	3	4	4	15	Very high+	1
S-13	Migration	3	2	1	1	7	Medium-	3	2	1	1	7	Medium-	3
S-14	Visual impacts/aesthetic quality	3	3	3	3	12	High-	2	2	2	2	8	Medium-	3
S-15	Impact on business in the area	3	2	2	2	9	Medium-	2	1	1	1	5	Low-	1
S-16	Heritage impacts	1	3	4	2	10	High-	1	3	1	1	6	Low-	1
DECOMMISSIONING PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	1	3	2	9	Medium-	2	1	1	1	5	Low-	1
S-2	Impact on health due to air quality	2	2	2	2	8	Medium-	1	1	1	1	4	Low-	1
S-6	Reduced visibility due to dust	2	2	2	2	8	Medium-	1	2	1	1	5	Low-	1
S-8	Noise	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-9	Increase in traffic volumes	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-10	Employment opportunities created	3	2	1	1	7	Medium+	3	2	1	1	7	Medium+	5

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

7.3 Site alternative 2

Table 31: Social Impact Assessment rating table – Site alternative 2 Including Proposed linear infrastructure route

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
PLANNING PHASE														
S-1	Feelings in the relation to the project	3	2	3	4	12	High-	3	1	3	4	11	High-	5
CONSTRUCTION PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	3	4	4	14	High-	2	3	3	3	11	High-	5
S-2	Impact on health due to air quality	2	2	2	2	8	Medium-	2	2	2	2	8	Medium-	3
S-5	Impacts due to changes in land-use	3	2	4	4	13	Very high-	3	2	4	4	13	Very high-	7
S-6	Reduced visibility due to dust	2	2	3	3	10	High-	1	2	1	2	6	Low-	1
S-7	Financial impacts	3	2	2	2	9	Medium-	2	2	1	1	6	Low-	1
S-8	Noise	2	2	3	2	9	Medium-	2	2	2	2	8	Medium-	3
S-9	Increase in traffic volumes	2	2	2	2	8	Medium-	2	2	1	2	7	Medium-	3
S-10	Employment opportunities created	3	2	3	1	9	Medium+	3	2	3	1	9	Medium+	3

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-13	Migration	3	2	2	1	8	Medium-	3	2	2	1	8	Medium-	3
S-14	Visual impacts/aesthetic quality	2	3	2	2	9	Medium-	2	3	2	2	9	Medium-	3
S-15	Impact on business in the area	2	3	2	2	9	Medium-	2	3	1	1	7	Medium-	3
S-16	Heritage impacts	2	4	1	1	8	Medium-	1	4	1	1	7	Medium-	3
OPERATION PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	3	4	4	14	Very high-	2	3	3	3	11	High-	5
S-2	Impact on health due to air quality	3	4	4	3	14	Very high-	1	4	3	3	11	High-	5
S-3	Impact on health due to water contamination	3	4	4	3	14	Very high-	3	1	1	1	6	Low-	1
S-4	Impact on health due to consumption of contaminated food	3	4	4	3	14	Very high-	3	1	1	1	6	Low-	1
S-5	Impacts due to changes in land-use	3	3	4	4	14	Very high-	3	3	4	3	13	Very high-	7
S-6	Reduced visibility due to dust	2	2	2	2	8	Medium-	1	2	1	1	5	Low-	1
S-7	Financial impacts	3	2	2	2	9	Medium-	2	1	1	1	5	Low-	1
S-8	Noise	2	2	1	2	7	Medium-	2	2	1	1	6	Low-	1

THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE, LIMPOPO PROVINCE

Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-9	Increase in traffic volumes	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-10	Employment opportunities created	3	2	1	1	7	Medium+	3	2	1	1	7	Medium+	5
S-11	Tourism	3	3	3	4	13	Very high-	3	3	3	4	13	Very high-	7
S-12	Supply in electricity	4	3	4	4	15	Very high+	4	3	4	4	15	Very high+	1
S-13	Migration	3	2	1	1	7	Medium-	3	2	1	1	7	Medium-	3
S-14	Visual impacts/aesthetic quality	3	3	3	4	13	Very high-	3	3	3	4	13	Very high-	7
S-15	Impact on business in the area	3	2	2	2	9	Medium-	2	1	1	1	5	Low-	1
S-16	Heritage impacts	1	4	4	1	10	High-	1	4	1	1	7	Medium-	3
DECOMMISSIONING PHASE														
Ref no.	Impact description	Pre mitigation						Post mitigation						Final rating for spatial representation
		Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	Extent	Duration	Intensity	Probability of occurrence	Impact rating	Classification of impact	
S-1	Feelings in relation to the project	3	3	4	4	14	Very high-	2	3	3	3	11	High-	5
S-2	Impact on health due to air quality	2	2	2	2	8	Medium-	1	1	1	1	4	Low-	1
S-6	Reduced visibility due to dust	2	2	2	2	8	Medium-	1	2	1	1	5	Low-	1
S-8	Noise	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-9	Increase in traffic volumes	2	2	1	1	6	Low-	2	2	1	1	6	Low-	1
S-10	Employment opportunities created	3	2	1	1	7	Medium+	3	2	1	1	7	Medium+	5

7.4 No-go alternative

If the ash disposal facility project does not proceed so that continuous ashing can take place, none of the negative impacts would occur. However, it would also mean that the power station would not be able to operate any further, which would have several significant negative consequences, such as the loss of approximately 750 jobs and the inability to continue to contribute to the national power grid. This in itself would have negative knock-on effects that could extend country-wide.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

8. PROPOSED MITIGATION MEASURES

The following mitigation and management measures are proposed for inclusion in the Environmental Impact Assessment Report (EIR) and Environmental Management Programme (EMPr).

Table 32: Mitigation and management measure

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
PLANNING PHASE				
S-1	Feelings in relation to the project	High-	<ul style="list-style-type: none"> • Stakeholders and affected parties should be kept informed of any developments during all four the project phases. • The applicant should be accessible to the public when concerns, complaints or questions arise. 	Medium-
CONSTRUCTION PHASE				
S-1	Feelings in relation to the project	High-	<ul style="list-style-type: none"> • Stakeholders and affected parties should be kept informed of any developments during all four the project phases. • The applicant should be accessible to the public when concerns, complaints or questions arise. 	High-
S-2	Impact on health due to air quality	Medium-	<ul style="list-style-type: none"> • The authorities should be informed if the incidence of respiratory disease in the area increases. It is advised that clinics and hospitals in the area adopt a formal monitoring programme to enable the identification of increases in respiratory diseases. • Through the legislated annual occupational health examinations, any increase in respiratory diseases should be investigated to determine the source and immediate measures should be put in place to correct it. • Should any out-of-the-ordinary risks to health and safety arise it should be widely communicated to the surrounding community, including employees, business owners, and all other stakeholders. 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Air, surface water and ground water monitoring should take place on a regular basis, as agreed to by the various specialists, so that any potential threat to health can be detected and rectified immediately. All employees who are exposed to ash at the power station and the ash disposal facility should be supplied with protective gear and the use of such protective gear should be compulsory. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	
S-5	Impacts due to changes in land-use	Medium-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-6	Reduced visibility due to dust	High-	<ul style="list-style-type: none"> Road users must be warned if dust storms could develop. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-7	Financial impacts	Medium-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			ashing.	
S-8	Noise	Medium-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-9	Increase in traffic volumes	Medium-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-10	Employment opportunities created	Medium+	<ul style="list-style-type: none"> Should any employment opportunities be created, it is recommended that local labour be used. 	Medium+
S-13	Migration	Medium-	<ul style="list-style-type: none"> No mitigation suggested. 	Medium-
S-14	Visual impacts/aesthetic quality	Medium-	<ul style="list-style-type: none"> Road users must be warned if dust storms could develop. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-15	Impact on business in the area	Medium-	<ul style="list-style-type: none"> The applicant should be accessible to the public when concerns, complaints or questions arise. Road users must be warned if dust storms could develop. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-16	Heritage impacts	High-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous 	Medium-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			ashing.	
OPERATION PHASE				
S-1	Feelings in relation to the project	High-	<ul style="list-style-type: none"> Stakeholders and affected parties should be kept informed of any developments during all four the project phases. The applicant should be accessible to the public when concerns, complaints or questions arise. 	Low-
S-2	Impact on health due to air quality	Very high-	<ul style="list-style-type: none"> The authorities should be informed if the incidence of respiratory disease in the area increases. It is advised that clinics and hospitals in the area adopt a formal monitoring programme to enable the identification of increases in respiratory diseases. Through the legislated annual occupational health examinations, any increase in respiratory diseases should be investigated to determine the source and immediate measures should be put in place to correct it. Should any out-of-the-ordinary risks to health and safety arise it should be widely communicated to the surrounding community, including employees, business owners, and all other stakeholders. Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Air, surface water and ground water monitoring should take place on a regular basis, as agreed to by the various specialists, so that any potential threat to health can be detected and rectified immediately. All employees who are exposed to ash at the power station and the ash disposal facility should be supplied with protective gear and the use of such protective gear should be compulsory. Road users must be warned if dust storms 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			<p>could develop.</p> <ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	
S-3	Impact on health due to water contamination	Very high-	<ul style="list-style-type: none"> Should any out-of-the-ordinary risks to health and safety arise it should be widely communicated to the surrounding community, including employees, business owners, and all other stakeholders. Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Air, surface water and ground water monitoring should take place on a regular basis, as agreed to by the various specialists, so that any potential threat to health can be detected and rectified immediately. All employees who are exposed to ash at the power station and the ash disposal facility should be supplied with protective gear and the use of such protective gear should be compulsory. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-4	Impact on health due to consumption of contaminated food	Very high-	<ul style="list-style-type: none"> Should any out-of-the-ordinary risks to health and safety arise it should be widely communicated to the surrounding community, including employees, business owners, and all other stakeholders. Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			<ul style="list-style-type: none"> Air, surface water and ground water monitoring should take place on a regular basis, as agreed to by the various specialists, so that any potential threat to health can be detected and rectified immediately. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	
S-5	Impacts due to changes in land-use	Medium-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-6	Reduced visibility due to dust	Medium-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Road users must be warned if dust storms could develop. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-7	Financial impacts	Medium-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-8	Noise	Medium-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			that could result from any other impacts as a result of the proposed continuous ashing.	
S-9	Increase in traffic volumes	Low-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-10	Employment opportunities created	Medium+	<ul style="list-style-type: none"> Should any employment opportunities be created, it is recommended that local labour be used. 	Medium+
S-11	Tourism	Low-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Road users must be warned if dust storms could develop. 	Low-
S-12	Supply in electricity	Very high+	<ul style="list-style-type: none"> No mitigation suggested. 	Very high+
S-13	Migration	Medium-	<ul style="list-style-type: none"> No mitigation suggested. 	Medium-
S-14	Visual impacts/aesthetic quality	High-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Medium-
S-15	Impact on business in the area	Medium-	<ul style="list-style-type: none"> The applicant should be accessible to the public when concerns, complaints or questions arise. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-16	Heritage impacts	High-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			as a result of the proposed continuous ashing.	
DECOMMISSIONING PHASE				
S-1	Feelings in relation to the project	Medium-	<ul style="list-style-type: none"> Stakeholders and affected parties should be kept informed of any developments during all four the project phases. The applicant should be accessible to the public when concerns, complaints or questions arise. 	Low-
S-2	Impact on health due to air quality	Medium-	<ul style="list-style-type: none"> The authorities should be informed if the incidence of respiratory disease in the area increases. It is advised that clinics and hospitals in the area adopt a formal monitoring programme to enable the identification of increases in respiratory diseases. Through the legislated annual occupational health examinations, any increase in respiratory diseases should be investigated to determine the source and immediate measures should be put in place to correct it. Should any out-of-the-ordinary risks to health and safety arise it should be widely communicated to the surrounding community, including employees, business owners, and all other stakeholders. Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Air, surface water and ground water monitoring should take place on a regular basis, as agreed to by the various specialists, so that any potential threat to health can be detected and rectified immediately. All employees who are exposed to ash at the power station and the ash disposal facility should be supplied with protective gear and the use of such protective gear should be compulsory. 	Low-

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

Ref No.	Impact Description	Significance (Pre Mitigation)	Mitigation and Management Measures	Significance (Post Mitigation)
			<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	
S-6	Reduced visibility due to dust	Medium-	<ul style="list-style-type: none"> Measures to prevent air, surface water and ground water pollution should be implemented, adhered to and monitored. Road users must be warned if dust storms could develop. All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-8	Noise	Low-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-9	Increase in traffic volumes	Low-	<ul style="list-style-type: none"> All mitigation measures contained in the specialist studies should be included in the EMPr, in order to minimise social impacts that could result from any other impacts as a result of the proposed continuous ashing. 	Low-
S-10	Employment opportunities created	Medium+	<ul style="list-style-type: none"> Should any employment opportunities be created, it is recommended that local labour be used. 	Medium+

9. CONCLUSION AND RECOMMENDATIONS

The main social impacts related to an ash disposal facility like the one proposed for the Matimba Power Station are the potential negative impacts on the health of both humans and animals, due to poor air quality as a result of fly ash, and water contamination. These impacts can be mitigated and continuous monitoring should take place. Few or none employment opportunities will be created as a result of the continuous ashing taking place, but the power station employs approximately 750 people and should ashing not be able to continue the power station will have to close and those jobs will be lost.

Site alternative one is the preferred site alternative from a social point of view, as it will be an extension of the existing site. It will therefore not have any or significant impacts on the aesthetics of the area and there will be no changes in land use, which could otherwise result in several negative social impacts. The existing conveyor belt would also be used and there will be no need to consider a new or additional linear infrastructure route to transport ash to the disposal site.

If the disposal facility is to be constructed on site alternative two, it would have a direct impact on the residents of Marapong, which is located on part of the linear infrastructure route. It would also result in a change in land-use, as the site itself currently consists of game farms. There could be an impact on tourism to the area and a loss of livelihood and income.

As most social impacts will result from environmental impacts (air pollution, water contamination, etc.) it is recommended that the mitigation measures listed in the comprehensive selection of specialist studies be adhered to. It is also recommended that those conditions be included in the EIR and EMP, as well as the conditions of the authorisation, should the project be approved.

**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

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**THE PROPOSED CONTINUOUS ASH DISPOSAL FACILITY AT MATIMBA POWER STATION IN LEPHALALE,
LIMPOPO PROVINCE**

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