SOCIAL IMPACT ASSESSMENT & SKILLS AUDIT – MATIMBA BROWNFIELDS EXTENSION PROJECT

REPORT

APRIL 2006

by

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Executive Summary

With South Africa facing a potential shortage in electricity supply within the next few years Eskom, the primary supplier of electricity, is responding by expanding its generation capacity. Part of this expansion involves the possible construction of a new power station in the Lephalale (formally Ellisras) region of Limpopo Province. At present Eskom runs the Matimba coal-fired, direct dry cooled power station, in close proximity to the Grootegeluk Coal Mine, from which it draws coal. The intentions are to build a second power station and to fuel it in a similar manner.

If these plans materialize Grootegeluk Mine will need to expand, within its current boundaries, by building additional beneficiation plants in order to supply the power station. With this growth potential in mind the mine has undertaken a project referred to as the Matimba B Brownfields Expansion Project. The outcome of this could see the creation of an additional 250 contractor jobs at the mine by 2008 and an extra 50 permanent jobs by 2009. This, however, is in respect of only one of a number of separate projects that the mine is considering and in conjunction with developments at Matimba Power Station could result in there being an additional 6 500 contractors in the region during 2010 and, by 2015, an additional 1 300 permanent jobs on the mine and at the power station alone.

This degree of job creation could be significant and beneficial in, what is the poorest province in South Africa, as this would help to increase, what are comparatively low household income levels in the region. It is, however, unlikely that local residents will enjoy the full potential of this benefit as education and skills levels in the area are also extremely low and many of the jobs that will be created are of a high technical level. This is likely to result in an influx of people to the region that will take place over two stages. The first of these stages relates to the construction of the power station and beneficiation plants at the

mine, which, although they may overlap are unlikely to run concurrently. This means that, over about an eight-year period, there will be a steep increase and sudden decline of contractors in the area with a gradual increase in permanent jobs stabilising after about nine years.

The result of this is that there will be a number of social impacts that will range from the positive to the more negative. These impacts will include an influx of people; pressure on existing infrastructure; economic opportunity with job creation and downstream economic benefit; the need for scarce skills; disruption to daily traffic patterns with an increased threat to public safety (particularly with regard to some stretches of the N33); a greater commitment in respect of corporate social investment; and an impact on owners and residents of surrounding farms and residential areas.

To ensure that developments unfold in an orderly fashion special attention will need to be given to the management of all proposed expansion in the region. Towards this end it would be pertinent to enlist the cooperation of a host of relevant organisations. Amongst others these could include:

Farmers Associations
Labour Unions
Environmental NGOs
Residents Associations
Community Associations
Business Associations
The Department of Minerals and Energy Affairs
The Department of Water Affairs and Forestry
The Department of Agriculture
The Department of Environmental Affairs and Tourism
The South African National Road Agency Limited

It may be appropriate to form a committee to take on the role of monitoring and to provide a channel of communication between the interested and affected parties.

1. Introduction

Socio-economic developments in South Africa have placed an increased demand on the supply of electricity in the country with a requirement of an additional 5 000 MW of electrical power over the next five years. Eskom Holdings Limited (Eskom), as the primary supplier of electricity, currently generating approximately 95% of the country's electricity, has recognized an imminent shortfall in supplies by 2006/7. In response to this looming shortfall Eskom intends to increase its generating capacity and is considering, amongst other options, building an additional coal-fired, direct dry cooled power station in the vicinity of the existing Matimba power station near Lephalale.

At this point Eskom's Matimba power station draws its coal from Kumba Resource's Gootegeluk Open Cast Coal Mine. Grootegeluk Mine situated close to the power station in the Lephalale local municipal area some 20 km to the west of the town of Lephalale (formally Ellisras) in the Waterberg district of the province of Limpopo. Currently Grootegeluk Colliery produces four main products being coking coal, power station coal, metallurgical coal and ash PCI coal processed by means of five beneficiation plants situated on the mine's property. At this point the mine supplies approximately 14 million tons of power station coal to Matimba Power Station on an annual basis. With Eskom's intentions of building an additional power station in the area Grootegeluk management envisage an increased demand for power station coal and are considering meeting this demand by expanding their operation and building additional beneficiation plants at their Grootegeluk Mine. This project is referred to as the Matimba B Brownfieds Project (MBF). The extent of this expansion depends on the form that the new power station will take. If a 3 unit station generating 2400 MW of power is built, the mine's output will be in the vicinity of 7.3 Mtpa. However, if a 6 unit station generating 4800 MW of power is constructed, the output will be in the region of 14.6 Mtpa.

Two alternative sites have been identified for the establishment of the processing plant. Site one is located within the boundaries of the existing mine on the farm Daarby 458 LQ situated some 5km from the township of Marapong and the existing Matimba power station. In this case the processing plant will be surrounded by existing Kumba owned properties and will be adjacent to the current benefactor complex.

Site two is situated just outside of the mine's authorization area on the farm Naauwontkomen 509 LQ also owned by Kumba Coal (Pty) Ltd. This site is situated some 8.5km form the Marapong settlement and Matimba. In this case the processing plant will be adjacent to the preferred site of the proposed new power station referred to as Matimba B. Eskom have undertaken an environmental scoping exercise in the area and have not identified any fatal flaws with this location and this site remains the preferred site.

Apart from the Matimba B Brownfields Expansion Project that forms the focus of this report, Grootegeluk management has identified a number of other projects that may also lead to expansion at the mine. Consequently, in investigating this project and in writing the report, these projects will be taken into account as far as it is possible regarding any identified social impacts that may be noted. This is done as these projects will also result in expansion to current mining operations in a similar manner as the Brownfields Expansion Project will, however, with the greatest difference being in terms of the cumulative scale of these projects particularly in terms of the number of employees and contractors required and the affect that this may have on the infrastructure such as housing, increased traffic, water and electricity supply. These projects include GG6, CHAR, 7-Day Work Week and Infrastructure (dam & pipeline). Attention will now be turned towards the scope of the study.

2. Scope of study

The aim of the study is to determine the existing baseline socio-economic environment and compare it against the projected future requirements of the Matimba B Brownfields Expansion Project while keeping in mind other projects that the mine may be considering. In this manner gaps will be identified and mitigation measures suggested. Issues to be investigated include:

1. Economic impact of the Project on local areas in respect of:
   - Number of jobs directly created
   - Number of jobs indirectly created
   - If possible the multiplier effect on downstream economic activity and jobs
   - Projected number of households/household members benefiting both directly and indirectly from the mine's operation
   - Housing and living conditions
   - Other socio-economic benefits.
2. Employee and contractor profiles.
3. Training strategy and plan in respect of
   a. Estimated costs
   b. Time frame
   c. Redeployment opportunities
   d. Alignment with Mining Qualifications Authority and other relevant Departments
4. Employment equity issues
5. Skills gaps in relation to existing and potential economic opportunities
6. Socio-economic background and key economic activities of the local municipality in which the mine operates. This includes local municipalities (LM), district municipalities (DM) and the Province from which the mine draws its labour and from which it sources supplies or services.

3. Approach to the Study

The researchers undertook a site visit to Grootegeluk Mine on 24 March 2006 as well as on 03 & 04 April 2006. During this time various focus groups were conducted and interviews held with various officials both on the mine and at the offices of the Lephalale Local Municipality. A full list of officials consulted is attached in annexure A. An extensive review of documentation was also undertaken and a list of the main documents consulted is provided under the bibliography.

The impacts are rated in accordance with a scale developed by Uys, Bews and Hatting (2002) and applied during the social impact assessment of the Gautrain Rapid Rail Project. Accordingly, the aim is to ascertain the ***nature***, ***extent***, ***duration***, ***probability***, ***significance*** and ***status*** of the identified impacts that may result from the pre-construction, construction and operational phases of the proposed Brownfields Project. Greater details of the scale applied are provided under 8. Assessment of social impacts.

4. Limitations

The time constraints of this project were such that time was not available to apply an extensive survey method or undertake a large number of one-on-one in-depth interviews. Information was gathered from the available documents, from Grootegeluk management, as well as from Local and District Municipal officials. Consequently, not all of the individual views and concerns of all of the relevant stakeholders could be captured.

5. Socio-Economic Environment[1]

Under this section the socio-economic environment of the region will be described on three levels, at a Provincial, District and Local Municipal level. This discussion is based largely on data provided by Statistics South Africa in respect of the 2001 Census as well as the Integrated Development Plan of the Waterberg District and Lephalale Local Municipalities.

5.1. Provincial Context

The Matimba B Brownfields Expansion Project is situated in the province of Limpopo, which consists of 5 District Municipalities and 23 Local Municipalities. Limpopo is located in the northeast corner of South Africa where it stretches over an area of about 122 839.3 km^2 covering approximately 10,2% of the entire country and accounting for 11.8% of the population of South Africa. The province of Limpopo is considered to be the gateway to the rest of Africa as it accommodates the crossing into Zimbabwe at Beit Bridge and shares boarders with Botswana, Zimbabwe and Mozambique. In the south Limpopo is bordered by the provinces of North-West, Gauteng and Mpumalanga. The province produces about 3,7% of the country's GDP through a mixed industry, which is rich in mineral reserves that includes, amongst other minerals, copper, coal, iron ore and platinum.

The agricultural sector focuses mainly on cattle ranching and controlled hunting in the Waterberg District and includes a wide range of crops such as sunflower, cotton, maize and tomatoes, mainly grown in the Capricorn District. Various subtropical fruits such as bananas, litchis, pineapples, mangoes and paw paws are grown in the Mopani and Vhembe Districts. Extensive forestry plantations

[1] Data obtained from Stats SA Census 2001; Municipal Demarcation Board; Waterberg District Municipality Integrated Development Plan 2005 and Lephalale District Municipality Integrated Development Plan 2006/7

and citrus estates also exist in the province. Notwithstanding this agricultural activity, many rural people in Limpopo still rely on subsistence farming in order to survive.

The tourist potential of Limpopo is greatest in the Waterberg and Mopani districts The Mopani district encompasses a large section of the Kruger National Park, which, together with the Parque Nacional do Limpopo in Mozambique, forms the Transfrontier Park. However, Lephalale, in the Waterberg District, where the mine is situated, also attracts a large number of tourists, mainly in the form of hunters and ecotourists due to the high number of private game farms in the region.

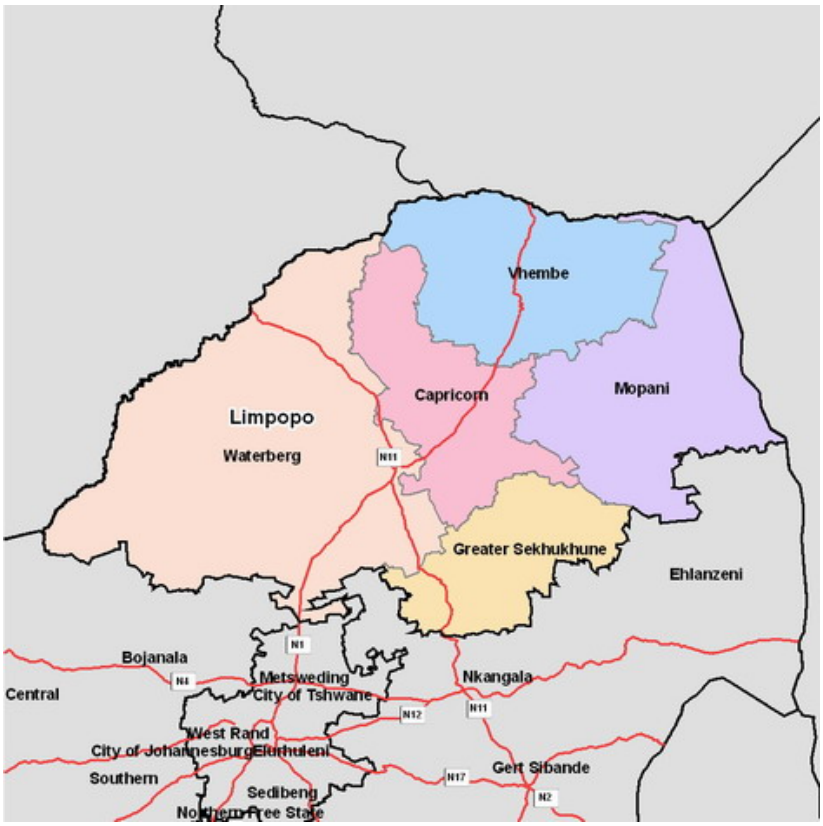
Despite this range of economic activities the province remains an extremely poor area. This is confirmed in the Human Sciences Research Council's (HSRC) "*Fact Sheet no 1: Poverty in South Africa*" (2004). In this document it is indicated that, in 2001, 77% of the population of Limpopo lived below the poverty line compared to 72% in the Eastern Cape, 68% in the Free State, 61% in KwaZulu-Natal and the Northern Cape, 57% in Mpupalanga, 52% in the North-West Province, 42% in Gauteng and 32% in the Western Cape. Consequently, the number of people living below the poverty line in Limpopo is significantly higher than for the whole of South Africa, which has a rate of 57%. Although not entirely the same the United Nations Development Programme (UNDP) also identifies Limpopo as an area with a high level of people living below the poverty line placing the province second lowest with 60.7% as opposed to the Eastern Cape, which they place lowest in the country at 68.3%. Despite these differences both the HSRC and the UNDP clearly identify Limpopo as one of the poorest areas of South Africa.

This state of poverty in the province is also confirmed through other distinguishing features associated with poverty, which are apparent in the province such as a low level of urbanization; a low skills basis; low levels of

education; a high mean household size; a higher proportion of females to males; a high degree of population out-migration; high levels of unemployment and low earning potential. Despite these somewhat negative indicators Limpopo has made some progress in respect of housing and electricity with limited gains in respect of water supply, toilet facilities, refuse removal and the distribution of household goods. For a more detailed discussion in respect of poverty in the province see Bhorat, Poswell and Naidoo, 2004.

A map of the province of Limpopo, depicting the 5 District Municipalities of Waterberg, Capricorn, Vhembe, Mopani and Greater Sekhukhune, is provided in figure 1 below.

Figure 1. Map of Limpopo Province



In respect of the demographics of the Province, Statistics South Africa (2001) indicates that just over 5.2 million people live in the area of which, 97.2% are black, 2.39% are white, 0.19% are coloured and 0.16% Indian/Asian. With regard to languages, Sepedi is spoken by most of the people in the area (52.15%)

and is followed by Xitsonga (22.39%), and Tshivenda (15.92%) with the other language groups combined comprising a total of 9.54%. The distribution of languages within Limpopo is illustrated in table 1.

Table 1. Census 2001 province, language and population group Limpopo

Limpopo	Black African	Coloured	Indian/Asian	White	Totals	%
Afrikaans	6732	5641	129	110029	122531	2.32
English	5759	1760	6745	14674	28938	0.55
IsiNdebele	78522	33	26	36	78617	1.49
IsiXhosa	14103	17	7	99	14226	0.27
IsiZulu	34209	116	3	30	34358	0.65
Sepedi	2748223	1466	91	396	2750176	52.15
Sesotho	69250	71	10	40	69371	1.32
Setswana	82897	170	0	60	83127	1.58
SiSwati	57587	95	3	19	57704	1.09
Tshivenda	839276	259	41	129	839705	15.92
Xitsonga	1179873	501	57	180	1180611	22.39
Other	12187	35	1472	585	14279	0.27
%	97.25	0.19	0.16	2.39	**5273643**	100.00
Totals	5128618	10164	8584	126277		

The province of Limpopo consists of the following 5 district municipalities:

- Waterberg District Municipality (Demarcation Board Code DC36);
- Capricorn District Municipality (Demarcation Board Code DC35);
- Vhembe District Municipality (Demarcation Board Code DC34);
- Mopani District Municipality (Demarcation Board Code DC33) and
- Greater Sekhukhune District Municipality (Demarcation Board Code DC47).

Apart from the District Municipalities listed above, there are also 25 local municipalities in the province of Limpopo with the capital city of the province situated at Polokwane, located within the District Municipality of Capricorn. The Brownfields Project is, however, situated further to the west, within the District

Municipality of Waterberg and, more specifically, within the Local Municipality of Lephalale. Both these areas will be described in greater detail below.

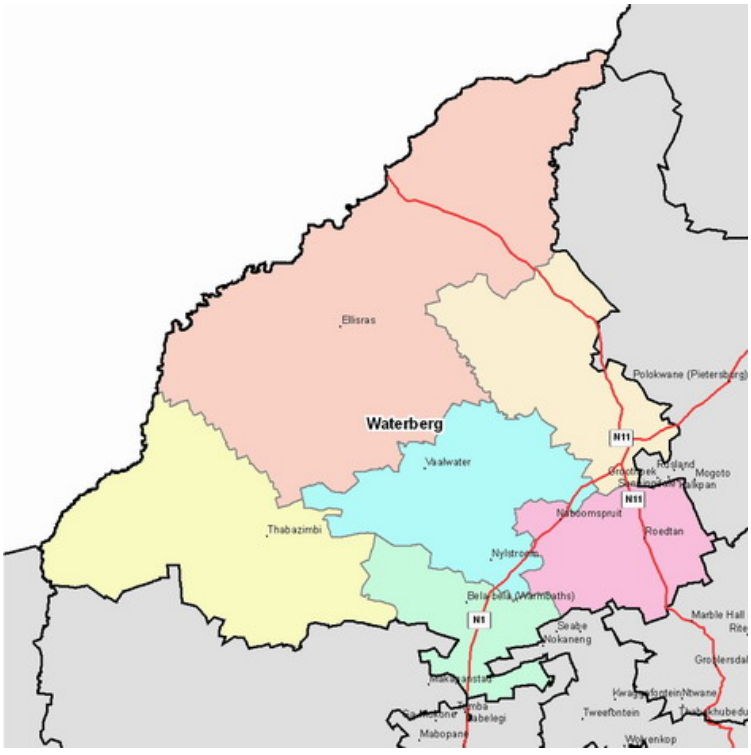
5.2. Regional Context

The Waterberg District Municipality is the largest district in the province of Limpopo covering a geographical area of 49 518.81 km^2. This district contains the following 6 local municipalities:

- Mogalakwena Local Municipality (Demarcation Board Code NP367)
- Bela-Bela Local Municipality (Demarcation Board Code NP366)
- Modimolle Local Municipality (Demarcation Board Code NP365)
- Mookgopong Local Municipality (Demarcation Board Code NP364)
- Lephalale Local Municipality (Demarcation Board Code NP362)
- Thabazimbi Local Municipality (Demarcation Board Code NP361)

The Waterberg District Municipality is illustrated by the map in figure 2.

Figure 2. Map of the Waterberg District Municipality



The Waterberg district covers the south-east portion of the province of Limpopo stretching from Botswana in the north-east to the Capricorn District Municipality in the east. In the southwest it shares borders with the North-West Province while in the south and southeast Gauteng, Mpumalanga and the Greater

Sekhukhune District Municipality border the Waterberg District Municipality.

Although Waterberg is geographically the largest district in Limpopo, with a population of 614 155, it only accounts for 11.7% of the total population of the province making Waterberg the least densely populated district in the province despite a high level of urbanization. In terms of structure, the population of Waterberg also differs when compared to the other districts in Limpopo. In this respect, Waterberg has the most racially diverse population in the province with 9.2% of the population comprising non-Africans while Capricorn, the next most diverse population has only 3.6% of its population being made up of race groups other than African. In respect of the other district municipalities, Mopani comprises 97.6% African, Vhembe 98.5%; Greater Sekhukhune 99.1% and Bohlabela 99.2%.

Compared to the rest of the district municipalities in Limpopo, Waterberg has the highest rate of urbanization, notwithstanding the fact that the largest town, and the administrative capital of Limpopo, Polokwane, is located outside of Waterberg. Waterberg has an urbanization rate of 37.6%, the effects of which are manifest in most other indicators. The most striking of these affects are seen in the unemployment rates. Where Waterberg has an unemployment rate of 30.8% compared to the next lowest, Mopani at 45.5%, Greater Sekhukhune has an extremely high rate of unemployment at 60.9%. Waterberg fares relatively well in respect of household income and, with the highest percentage of the population employed at 38.1%, also has the lowest percentage of household income below R9 600 per annum. What is also evident is that Waterberg has a more positive trend in respect of labour market conditions and income prospects due to the economic activaties found in the Waterberg district in which mining and electricity supply play a major part.

According to the Waterberg District Municipality's Integrated Development Plan mining is the major contributor to the district's gross geographic product (GGP) at

40.8% compared to the next highest contributor, electricity, water and gas at 16.5%. In respect of contribution to employment, community services, is the highest contributor at 23% while agriculture and mining contribute next at the same level, which is 21%. Trade and catering is the next highest contributor to employment in the district at 18%. The highest average growth rate between 1995 and 2000 was achieved by the transport and communications sector. Table 2 below provides a more detailed breakdown of the production structure and sectoral employment contributions in the Waterberg district.

Table 2. Production structure and sectoral employment contribution, Waterberg 2002

Sector	GGP contribution (percentage)	% Average growth rate, 1995-2000	% Contribution to employment
Agriculture and forestry	4.3	3.6	21
Mining	**40.8**	13.9	21
Manufacturing	2.2	11.5	3
Electricity, gas and water	16.5	7.7	3
Construction	0.2	0.2	3
Trade and catering	10.5	14.5	18
Transport and communication	4.7	**25.9**	4
Finance and business service	7.0	7.2	4
Community service	13.8	14.3	**23**
TOTAL	100		100

Source: Waterberg District Municipality's IDP, 2004: 16

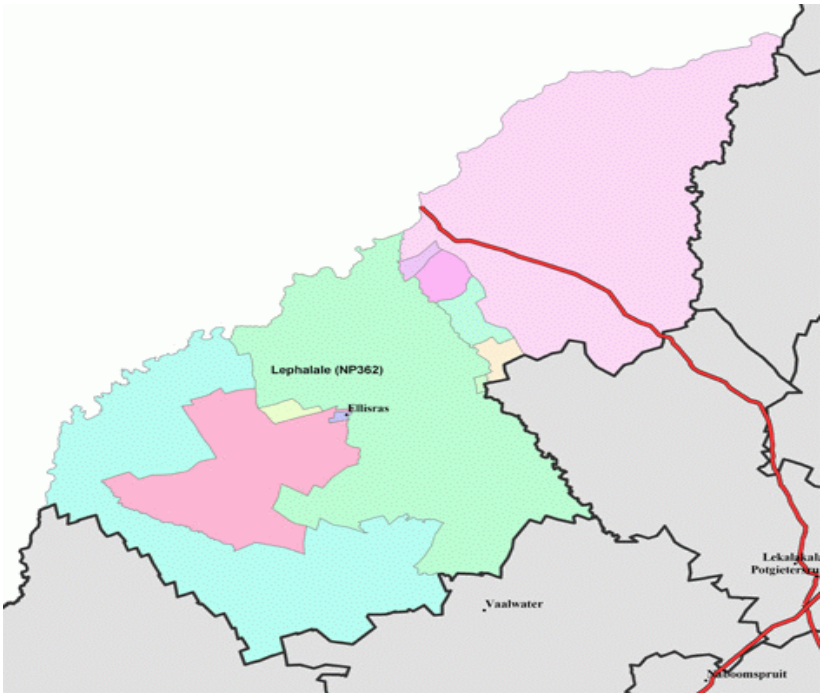
It is pointed out in the Lephalale Revised Integrated Development Plan (2006/7:18) that "*The Waterberg's coalfield has significant reserves (+/- 50% of the Republic of South Africa's total reserve) and represents a major development opportunity*", an important point that will be revisited at a later stage in this report.

Attention will now be turned to towards the Lephalale Local Municipality, the area in which both the Grootegeluk Mine and Matimba Power Station operate.

5.3. Local Context [2]

The Lephalale Local Municipality (NP362), which covers an area of 1 960 514.42 hectares, is situated in the north-western part of the Waterberg district north of the Thabazimbi Local Municipality and stretches as far as the Botswana border in the west. The Lephalale District Municipality, as depicted in figure 3, forms the main focus of this study and consequently will be dealt with in some detail below.

Figure 3. Lephalale Local Municipality



According to the booklet "*Lephalale in Perspective*", the town of Ellisras (later re-named Lephalale) was proclaimed on 7 December 1960 with Extension 1 being proclaimed on 5 May 1965 and Extension 2 on the 3 November 1971. In 2002 the name of the town was changed from Ellisras to Lephalale. The town has a long standing association with mining extending as far back as 1957 when the minerals and metals company, Iscor Limited, obtained property rights to six farms in the area and, in December 1975, began quarrying on the farm Grootegeluk. By 3 March 1981 the Grootegeluk Mine was fully operational and currently operates a fleet of 181-200 and 250-ton dump trucks that move 54 million tons annually.

[2] Data obtained from Stats SA Census 2001; Lephlalale Local Municipality's Integrated Development Plan 2006/7 ; Lephalale Municipality, Lephalale in Perspective.

With the availability of good quality steam coal in the area the electricity supply utility, Eskom, decided to commence with the building of the Matimba air-cooled power station in close vicinity to the mine. Construction on the power station started in April 1981 and resulted in the largest direct dry cooling power station in the world. Matimba currently has an average annual send-out power rate of approximately 24 000 GWh and has operated for 80 days with all six units on load thus establishing a world record. Together Grootegeluk Mine and Matimba Power Station currently provide direct employment for some 3 250 people.

Prior to the official opening of the mine in 1981 the population of the then Ellisras stood at 500 but, with developments on the mine and the building of the power station, the population in the town (including Marapong and Marapong Extension 1) grew to some 18 000 (See Emmett, 2005:19). Although these figures differ slightly from those provided in the report undertaken by Bohlweki Environmental (2006:316), where it is indicated that about 3 000 people live in the town of Lephalale, some 6 000 in Ward 2 Marapong and 10 000 in Ward 3, making a combined population in the immediate area of some 19 000, the basic trend of rapid population growth in the area is established. This rapid growth placed a burden on the town in respect of housing needs and consequently, the mixed business and residential area of Extension 16 was proclaimed to relieve this burden. At this stage, however, the Lephalale Local Municipality does not have any land available for further expansion (interview with Wouter de Lange, Grootegeluk Mine; Johan Erasmus and Dries de Ridder, Lephalele Local Municipality). It is against this background that the population characteristics of the broader Lephalale Local Municipality will now be presented.

5.3.1. Demographics

- *Population*

The total population of the Lephalale Local Municipality, amounts to 96 102 people of which 51.1% are female and 48.9% are male. According to Stats SA (Census 2001 accessed from the Demarcation Board, www.demarcation.org.za), 90.4% of this population is African, 9.3% is white, 0.2% is coloured and only 19 Indian/Asian people live in the area. The major languages spoken in Lephalale are Sepedi at 53.1%; Setswana 29.2%, and Afrikaans 9.1%.

83.3% of the population live in various villages in the rural areas of the district while 16.7% live in an urban environment. Compared to the other local municipalities in the Waterberg district, Lephalale remains the most rural in character as table 3 illustrates. The most densely populated area is the town of Lephalale at approximately 180 people per km^2.

There is a clear indication of in-migration in the town of Lephalale and the township of Marapong as the population in these areas is predominantly made up of males over the age of 35 years, with 60% of the population consisting of males between the ages of 35 and 64 years.

Table 3. Distribution of the populations of the Waterberg municipalities among urban and rural areas

District Municipality	Rural	%	Urban	%	Total
Waterberg (DC36)	38 3304	62.4	23 0854	37.6	614 158
Thabazimbi (NP361)	22 359	35.0	41 556	65.0	63 915
Lephalale (NP362)	80 049	83.3	16 052	16.7	96 101
Mookgophong (NP364)	19 277	62.7	11 482	37.3	30 759
Modimolle (NP365)	31 537	43.3	41 276	56.7	72 813
Bela-Bela (NP366)	20 203	38.8	31 911	61.2	52 114
Mogalakwena (NP367)	209 718	70.3	88 721	29.7	298 439

- *Housing*

About 63.9% of households in Lephalale live in formal dwelling while the rest are divided equally between traditional and informal dwellings. The highest concentration of formal dwellings (95.9%) is found in the town of Lephalale and Ward 3. In Ward 2, the area in which both Grootegeluk Mine and Matimba Power Station are situated, 74.3% of dwellings are houses on stands while in Ward 4, 70% are houses on stands, 13.2% are traditional and 12.5% are informal. In the Integrated Development Plan (IDP) of the Lephalale Local Municipality (2006/7:30) it is pointed out that there is " …a high demand for housing in the Lephalale/Marapong growth point. It is estimated that 936 additional residential units have to be built within the next 5 years… ". In keeping with a trend indicating a high level of in-migration Ward 1 has the highest number of informal dwellings at 29.4% with 44% of respondents indicating that dwelling type is not applicable probably due to the fact that they live in hostel type accommodation.

A certain amount of discrepancy exists regarding the average household size in the Lephalale Local Municipal area. For instance, the IDP of the Lephalale Local Municipality (2006/7:41) places the total population of the area at 96 074 and number of households at 23 401 giving an average household size of 4.1 persons per household. The Demarcation Board (www.demarcation.org.za) indicates that the population of Lephalale Local Municipal is 96 102 (using the gender descriptive statistics from Census 2001) while the number of households is 28 347 (using household gender descriptive statistics). This then places the average household size at 3.4 persons per household. In the same manner it is calculated that there are 3.1, 2.7 and 2.0 persons per household in Wards 2, 4 and 3 respectively.

- *Education*

At 25.8% Lephalale Local Municipality has the second highest rate of population in the Waterberg district with no schooling and the lowest rate, 13%, having a grade 12 level of schooling. The situation is, however, somewhat better in those Wards closer to the town of Lephalale. Although the statistics in Ward 4 tend to approach those of the local municipality with 24.4% having no schooling and 8.9% having a grade 12 level of schooling, in Ward 2, 11.5% have no schooling with 27% having a grade 12 level. Ward 3 fares best of all with 6.7% having no schooling and 30.8% having a grade 12 level of education.

- *Production and employment*

Notwithstanding its rural character, Lephalale performs comparatively well in respect of production and employment and, despite only accounting for 15.6% of the total population of the Waterberg district, Lephalale contributes 25.8% of the Waterberg's gross geographic product (GGP) of which 70% is due to electricity generation and 14% to mining activities. The Thabazimbi Local Municipality is the highest contributor in the district at 38.7% of which 82.5% is derived from mining activities.

Considering this, it is therefore not surprising to find that Lephalale also performs best, when compared to all other municipalities in the Waterberg district, in respect of unemployment. The unemployment level in Lephalale stands at 15.5%, compared to 19.1% in Mookgophong, 21.7% in Thabazimbi, 23.5% in Modimolle, 32.6% in Bela-Bela, and 47% in Mogalakwena. However, as Emmett (2005:22) points out, " …the low unemployment rate in Lephalale needs to be balanced against the relatively high percentage of the municipality's population that was not economically active" which is 42.5%. In real terms then, Thabazimbi, Mookgophong and Modimolle have a higher proportion of their overall population employed than Lephalale. In the Lephalale Local Municipal

area the highest rate of unemployment is found in Ward 1 where it is at 29.1% and the lowest, at 6.6%, is found in Ward 3.

At 18%, Lephalale has the second highest percentage of households having no income, only performing better on this indicator than Mogalakwena where 34.7% of households have no income. Just over 45% of the households in the Lephalale local municipal area have an income of less than R9 600 per annum, however, the situation in the various wards differs starkly with those wards close to the mine, power station and town of Lephalale faring somewhat better. For instance in Ward 2, 7.9% of household have no income and 37.6% have an income of less than R9 600 per annum. In Ward 3, 8.4% of household have no income and 29.6% have an income of less than R9 600 per annum. Although Ward 4 has a low rate of households having no income at 2.3%, the level of household income in Ward 4 is low with 71.5% of households having an income of less than R9 600 per annum.

- *Industry*

On a sectoral basis 33.1% of the economically active population in the Lephalale District Municipality are employed in agricultural related work while 19.9% are employed in private households and 11.3% in community services. The mining and quarrying sector employs 6% and electricity gas and water 2.6%. The situation is somewhat different in Ward 2 with 20.8% being employed in private homes and 16.6% in mining and quarrying. In Ward 3, 22.5% are employed in electricity, gas and water and 17.4% in community services. The mine seems to draw most of its employees from Ward 1 as this Ward has 40.7% of its population employed in mining or quarrying. Both the mine and the power station employ very few people from Ward 4 as this area seems to be largely agricultural, with 47% of people being employed in agriculturally related work.

- *Occupation*

Most senior officials, professionals and technicians reside in Wards 2 and 3 while most of those engaged in elementary occupations reside in Wards 1 and 4, most plant operators are also found in Ward 1.

- *Services*

The most common mode of transport in the Lephalale municipal area is on foot with some 44.8% of the population walking to work or school and 4.5% and 4.4% respectively using a car or bus. Most people, 51.2%, in Ward 4 walk to school or work. In Ward 2, 27.2% travel to work or school on foot, 12.2% make use of a car and 12.3% use a bus. In Ward 3, 26.7% of the residents use a bus to get to work or school and 19.7% walk.

When it comes to access to electricity, 68.2% of households in Lephahale Local Municipality use electricity for lighting and 28.6% use candles while the remainder use other sources such as gas, paraffin and solar energy. The situation in the wards from which the mine draws most of its labour is somewhat better with 93.7% of households in Ward 3 using electricity for lighting, 83.4% in Ward 2 and 74.2% in Ward 1. Only 43.6% of households in Ward 4 have acces to electricity for lighting.

As far as access to water, refuse removal and toilet facilities are concerned the trend is similar to that indicated above. While access to these facilities is limited throughout the local municipal area it is better in the growth areas of Lephalale town and Marapong with access to these facilities being best in Ward 3 where, for example, 97.3% of households have access to a flush toilet system as opposed to 95.1% in Ward 1, 79.9% in Ward 2 and 28% throughout the wider Lephahale local municipal area. Again, in Ward 4, very few households, 19.9% have access to a flush toilet system with most 38.6% having no access to any type of formal toilet system.

To provide an indication of the socio-economic profile in the area a comparison is given, in table 4, of some of the important socio-economic indicators in the Waterberg District and Laphalale Local Municipalities, as well as across Wards 1, 2, 3 and 4 of the Laphalale Local Municipality. What is apparent from this table is that most of the development has occurred in Wards 2 and 3 with Ward 1 lagging behind in some areas. Ward 4 takes on many of the characteristics of a typical rural area.

Table 4. Comparison of various socio-economic indicators[3]

Indicator	Waterberg	Lephalale	Ward 1	Ward 2	Ward 3	Ward 4
Gender ratios						
Males	48.0	48.9	54.4	49.8	54.7	53
Females	52.0	51.1	45.6	50.2	45.3	47
Highest education level 20 years +						
No Schooling	25.8	25.8	10.6	11.5	6.7	24.4
Some Primary	19.2	22	18.8	13.1	14.2	29.5
Completed primary	6.8	7.3	8.9	4.5	5.4	9.5
Secondary	27.5	26.1	39.5	26.1	27.1	23.9
Grade 12	14.5	13	18.5	27.3	30.3	8.9
Higher	6.3	5.8	3.5	17.6	16.4	3.8
Labour market status						
Employed	38.1	48.6	49.2	60.1	70.9	76.2
Unemployed	17.0	8.9	19.9	7.7	5	6
Not econ. Active	44.9	42.4	30.9	32.2	24.1	17.7
Unemployment rate	30.8	15.5	29.1	11.4	6.6	7.3

[3] Not all categories add up to 100% as not all indicators are displayed

Indicator	Waterberg	Lephalale	Ward 1	Ward 2	Ward 3	Ward 4
Annual house-hold income						
None	22.2	18	13.1	7.9	8.4	2.3
R1 – 4800	12.2	21.1	9	14.5	8.5	40.7
R4801 – 9600	23.0	24.5	13	15.2	12.7	28.5
R9601 – 19200	16.2	13.1	15.9	10.1	7.8	14.9
R19201 – 38400	12.5	9.2	26.9	8.5	17.4	6
R38101 – 76800	7.5	7.4	20.8	15.1	24.1	3.4
R76801 and higher	6.4	6.4	3.1	28.3	20.8	4.2
Dwelling type						
Formal	66.5	63.3	24.6	90.1	95.9	73.3
Informal	15	9.1	29.4	3.3	2.6	12.5
Traditional	6.6	9.6	0.5	6.4	1	13.2
Other	0.3	0.4	1.2	0.2	0.6	1.1
Not applicable	11.7	17.5	44.8	0.0	0.0	0.0
Energy source for lighting						
Electricity	64.9	65.4	74.2	83.4	93.7	43.6
Paraffin	2.2	2.2	1.6	0.5	3	3
Candles	32.1	31.3	24	14.4	1.8	50.5
Water supply						
In dwelling	17.7	10.4	23.2	35.2	39	5.4
In yard	35.3	20.5	15.4	10.5	4.1	33.8
Industry						
Agriculture	20.0	33.1	0.8	11.7	0.6	47
Mining/Quarrying	5.9	6	40.7	16.6	6.9	0.1
Electricity/Gas/Water	0.2	2.6	4.5	8.4	22.5	0.1
Sanitation facilities						
Flush toilet sewer	33.5	28	95.1	79.9	97.3	19.9
Mode of Transport						
On foot	7.6	44.8	32	27.2	19.7	51.2
Car as driver	5.1	3	1.1	12.2	12.4	3.2
Car as passenger	19.0	4.5	4.1	9	7.5	9.5
Bus	6.7	4.4	23.6	12.3	26.7	0.8
Occupation						
Senior Officials	3.2	2.0	1.2	4.8	3.7	1.8
Professionals	3.7	2.9	2.2	7.2	5.5	0.6
Tech/Assoc Prof	6.1	4.4	4.5	7.6	10.6	2.1
Clerks	6.7	4.9	7.2	11.0	10.9	1.7
Service workers	7.7	4.8	6.2	4.5	11.4	3.0
Skilled agric work	7.7	12.5	2.1	5.6	0.7	24.0
Other	13.2	10.4	27.1	15.8	20.5	10.8
Elementary occupation	38.4	48.2	35.7	31.1	22.8	46.6
Occupations NEC	5.1	5.0	3.7	8.8	8.6	4.4
Plant Operators	8.2	4.9	10.0	3.5	5.3	5.1

Having addressed the socio-economic environment within which the mine operates we now have the background against which the contributions made by the mine can be considered.

6. Profile of Grooteleluk Mine

In 1973 Iscor, the country's biggest iron producer and consumer of coking coal took a decision to continue with the development of the Grootegeluk colliery on the farm Gootegeluk. This decision, according to "Lephalale in Perspective" (Undated booklet produced by the Lephalale Municipality, page 9) resulted in there being "[a] major influence on the growth of the farm Waterkloof 502LQ" which was to become the town of Ellisras and later the town of Lephalale. The mine has since become the largest open-pit mining operation and producer of coal in South Africa and currently accounts for 90% of the total production of Kumba Coal. At about the time of the official opening of Grootegeluk Mine, in April 1981, Eskom began construction of the Matimba Power Station, which currently draws 81% of the mine's coal production. Consequently both the mine and power station are highly interdependent and together significantly influenced growth and development in the area of Lephalale and beyond.

Due to this high level of interdependence and affect on the region it is not surprising that Eskom's decision to build an additional power station in close proximity to the mine will have a downstream affect on the mine, its employees and the communities amongst which the mine operates. It is the extent of this impact which is the focus of this report.

6.1. Labour force

Grootegeluk Mine employs 1 711 people on a permanent basis and approximately 400 on a contract basis. It is difficult to establish the precise data

in respect of contract workers as this fluctuates on a regular, at times even on a daily basis. Regarding the 1 711 permanent employees, as at end March 2006, 60.5% were African, 38.8% white .5% coloured and .2% were Indian. The force comprised 92.5% male and 7.5% female.

With regard to occupational category, the majority of the work force fell in the skilled to semi-skilled categories with 32% working as plant and machine operators and assemblers, 27% as craft and related trade workers and 10% as clerks. At the two extreme ends of the skill levels 3% were at a senior management and 12.3% at a labourer level. The profile of the permanent work force is illustrated in tale 5.

Table 5. Profile of permanent labour force

Occupational Category	**African**		**Coloured**		**Indian**		**White**		**TOTAL**
	M	**F**	**M**	**F**	**M**	**F**	**M**	**F**	
Legislators, senior officials, managers and owner managers	5	0	0	0	0	0	45	3	53
Professionals	7	1	1	0	0	1	50	8	68
Technicians and associated professionals	26	0	1	0	1	0	133	6	167
Clerks	82	7	1	4	0	0	7	70	171
Service workers, shop and market sales workers	18	0	0	0	0	0	2	3	23
Agricultural and fishery workers									
Craft and related trade workers	214	1	2	0	0	0	249	1	467
Plant and machine operators and assemblers	455	8	0	0	1	0	84	2	550
Labourers and related workers	198	13	0	0	0	0	1	0	211
Apprentices and Section 18(1) learners									
TOTAL	**1 005**	**30**	**5**	**4**	**2**	**1**	**571**	**93**	**1 711**

Concerning qualifications amongst permanent employees 10% have no schooling while 41.4% have a grade 12 level of education and 7.8% have an education level of above NQF 5. Table 6 provides a breakdown of qualifications amongst the permanent employees at Grootegeluk Mine.

Table 6. Qualification Status at Grootegeluk

Band	NQF Level	Old System	African		Coloured		Asian		White		Total	
			M	F	M	F	M	F	M	F	M	F
General Education & Training (GET)	1	No schooling	171								171	0
		Pre ABET	68	0	0	0	0	0	0	0	68	0
		ABET 1	44	1	0	0	0	0	0	0	44	1
		Grade 4/Std 2	18	0	0	0	0	0	0	0	18	0
		Grade 5/Std 3/ABET 2	48	1	0	0	0	0	0	0	48	1
		Grade 6/Std 4	17	0	0	0	0	0	0	0	17	0
		Grade 7/Std 5/ABET 3	63	2	0	0	0	0	0	0	63	2
		Grade 8/Std 6/Form 1	49	2	0	0	0	0	3	0	52	2
Further Education & Training (FET)		Grade 9/Std 7/Form 2/ ABET 4	88	3	0	0	0	0	2	0	90	3
	2	Grade 10/Std 8/Form 3/N1	119	3	0	0	0	0	66	3	185	6
Higher Education & Training (HET)	3	Grade 11/Std 9/Form 4/N2	54	1	0	0	0	0	36	3	90	4
	4	Grade 12/Std 10/Form 5/N3	252	8	3	3	0	0	361	77	616	88
	5	Certificates	12	0	1	0	0	0	48	7	61	7
	6	First degrees/ Diplomas	7	1	1	0	1	0	36	10	45	11
	7	Honors/ Higher Diplomas / 4 year Degrees	0	0	0	0	0	0	7	1	7	1
	8	Doctorates / Masters	1	0	0	0	0	1	7	1	8	2
		Sub-totals	**1011**	**22**	**5**	**3**	**1**	**1**	**566**	**102**	**1583**	**128**
										Total employees	**1711**	

As there is no available data, on the origin of the workforce, it is difficult to establish exactly from which area the workers originate. However, an estimation has been made by Emmett (2005:25) placing the majority of employees as residing within the Lephalale Local Municipal boundaries. Emmett's estimation is provided below in table 7.

Table 7. Estimates of areas of origin and current residence of Grootegeluk's permanent workforce

Areas of origin of African employees	**N**	**%**
Lephalale municipality	960	60
Mogalakwena municipality	320	20
Total Waterberg district	*1 280*	*80*
Capricorn district	240	15
Vhembe district	80	5
Total	**1 600**	**100**
Current areas of permanent residence		
Town of Lephalale	900	41
Outside town but within municipality	780	35
Outside municipality	520	24
Total	**2 200**	**100**

Source: Emmett, 2005:25

The issue of housing for workers is complicated as the mine attempts to move away from single quarter hostel type accommodation and introduce more family orientated units within the old hostel setting. Although there seems to have been some success in upgrading worker accommodation there are still issues that need to be attended to. Emmett (2005:26-26) deals with this matter in some detail and alerts us to the need to undertake a more in-depth investigation in order to understand the extent of the problem better.

6.2. Economic contribution

The economic contribution of the mine will be assessed on the basis of three levels. The first of these levels pertains to the direct creation of jobs and the contribution that this makes towards household income and the reduction of poverty in the area. Secondly, attention will be given to the impact that operations at the mine have on other sectors of the economy and thirdly in

respect of a contribution towards the functioning of municipal and provincial authorities.

6.3. Household income

Using a formula based on a current household size of 4.1 people per household in the Lephalale local municipal area and a workforce of 2 111 (1 711 permanent employees, contract employees estimated at 400) it can be calculated that approximately 8 655 people directly benefit from wages and salaries earned through the mine.

Although this formula provides a basis on which to assess the value of income earned within a community, and can be used on a comparative basis, it does not take all factors into account such as the extended kinship groups that form around sources of income in impoverished areas. If these factors are taken into account then it could be argued that in some cases, and it is difficult to establish in exactly how many, the earnings of one worker could benefit as many as 20 people (Emmett, 2005:26).

A percentage of these earnings will also be spent within the local municipal area and although it is not possible to attach exact values to this at this stage, it can be anticipated that, as Grootegeluk is by far the largest contributor in respect of mining operation in the area, these contributions are highly significant in terms of the local economy. This is based on the fact that the only other mining operations within the Lephalale municipal area are the Oaks Diamond Mine, which is currently downsizing, and the Glenover Phosphate Mine. Apart from this it is pointed out in the IDP of the Lephalale Local Municipality (2006/7:23) that “Local jobs are concentrated in community service, mining and agriculture” with mining contributing 23.6% towards this.

All these factors indicate that wages and salaries earned on the mine, at least in relative terms, play a significant role towards increasing household income in the area and in reducing the levels of poverty.

6.4. Impact on other sectors of the economy

Although it is ultimately electricity generation that dominates the Lephalale economy the mine contributes greatly towards this as, without the Waterberg coalfields and the mining activity of Grootegeluk, it is unlikely that Matimba Power Station would have been built in this area. According to the Lephalale IDP (2006/7:15) together the power station and mine contribute 76.5 % of the gross geographical product (GGP) of Lephalale with electricity generation accounting for 72.5% and mining 4%.

The procurement policy of the mine favours local and Black Economic Empowerment (BEE) companies and the mine actively seeks engagement with such companies through an ongoing marketing campaign. This has resulted in a high level of success with the mine spending 24% of its procurement budget on BEE companies in 2004 thus exceeding its 2004 budget by 6.1%. In 2005 this had risen to 28%.

In 2004 16.5% of the mine's procurement budget was spent in the Lephalale local municipal region of which 1.59% was spent with local BEE companies. In 2005 this had risen to 18.37% and 7.59% respectively. Table 8 provides a breakdown of the mine's BEE spending.

Table 8. Local and BEE procurement, Grootegeluk Mine, 2004/2005

Description	Target 2004	Actual 2004	Actual 2005
Targeted percentage of spending	18%	24.11%	28.06%
Total local procurement as a % of total procurement spending		16.5%	18.36%
Total local BEE spending as a % of total procurement spending		1.59%	7.59%

6.4.1. Impact at national provincial and municipal levels

With over 50% of the country's remaining coal resources being located in the area of the mine and considering the fact that Grootegeluk is operating the world's largest coal processing plant (Undated, Lephalale Local Municipality:17) and currently supplying the largest direct dry cooled power station in the world (Undated, Lephalale Local Municipality:22) the impact of the mine has significant national significance.

On a provincial level the mine provides employment, both direct and indirect, to over 2 000 people in the poorest province in the country. Apart from this it contributes towards the GGP of the province, both in respect of its own mining operation and in terms of supplying fuel for the generation of electricity, a commodity currently in short supply in the country (Business Day, 2006). Although the mine contributes to the province and the district municipality, these contributions are probably best placed in perspective on a local level.

The Lephalale Local Municipality has created a strategic vision as part of its IDP to make "Lephalale the flagship of the Limpopo Province and to provide a sustainable growth environment for the benefit and upliftment of its people." This vision and strategy is based on four pillars of collaboration, one of which is "mining and electricity growth". Towards this end the municipality has formed strong relationships with what it refers to as " …its two major investors… " the

Grootegeluk Coal Mine (Kumba Resources) and Matimba Power Station (Eskom). With these two organisations as major partners the Lephalale Local Municipality has established the Lephalale Development Company (LDC) which was launched by the mayor on 31 May 2005. The role of the LDC is to " … attach large-scale projects to the area and to facilitate development of local businesses, enabling them to participate in the town's expansion" with specific emphasis on black economic empowerment (Undated, Lephalale Local Municipality:54-55).

- *Corporate Social Investment*

Apart from becoming actively involved with the Lephalale Development Company, the mine also engages in various corporate social investment activities under the auspices of the mine's Corporate Citizenship Department. These activities are drawn under six themes each with specific focus areas. These themes are listed below as:

Health care
Education and training
Environmental conservation
Small, micro, medium enterprise (SMME) and other business opportunities
Job creation
Development of infrastructure.

It is difficult to assess the true value of this service but coupled with the corporate social investment initiative of Eskom's Matimba Power Station the loss of this service would have a detrimental affect on the community of Lephalale Local Municipality. For instance the mine's involvement with schools in the area has resulted in an improved performance at these schools (see the brochure Lephalale 2005 4th Prize Awarding Ceremony). There has also been other successful initiative such as the creation of over 30 jobs amongst a group of women in Marapong (see Emmett, 2005:37-38).

It is against this background that developments at the mine, with specific reference to the Matimba B Brownfields Expansion Project, will be addressed. In considering these developments attention will be given to the likely social impact that these developments will have on the surrounding communities.

7. Proposed expansions in the region

If Eskom's intentions of building a second coal-fired direct dry cooled power station in close proximity of the mine, with the idea of sourcing all necessary fuel from the mine materialize, then the mine will face significant expansion. The likelihood of Eskom choosing to build this power station in this vicinity are extremely high as the quality, accessibility and projected lifespan of the required steam-coal in the area are all favorable. This will then result in the mine expanding its operations within the boundaries of its current facilities by building a new beneficiation plant consisting of a DMS beneficiation plant (20Mtpa ROM), a tip and crush plant (6Mtpa ROM) and a stockyard and despatch area. Coal will be mined, from the existing pit, using the conventional truck and shovel method currently in operation.

It is anticipated that the Brownfields project will result in there being an increase in personnel at the mine, both in respect of contractors and mine employees. In respect of contractors, it will increase to 250 in 2008, escalating over a period until 2009/10, when it reaches a peak of 1 000, after which it begins to taper off. As far as employees are concerned, it will increase by 50 in 2009, gradually reaching a peak of 400 employees by 2015/16.

Over a similar period various other projects are also likely to run at the mine all of which will result in an increase in jobs and will require the services of contractors. All this growth cannot be seen in isolation to Eskom's expected expansions which, during their peak and together with the other developments planned at the

mine, will result in there being a total of 6 500 additional workers employed in the area by 2010. By 2011 this number, which includes both the mine and the power station, will begin to subside slightly eventually stabilizing at around 1 300 employees by 2015.

It is most likely that this rapid increase in population, due directly to the expansions envisaged for the region, will have a significant positive and negative social impact in the region. Due to the extent of these developments it is also imperative that they are not considered in isolation as to do so would certainly minimize their cumulative effects. Consequently, the social impact of developments as a result of the Brownfields Project will be assessed while keeping both future expansion, in respect of the mine and the Matimba B Power Station firmly in mind.

8. Assessment of social impacts

The Social Impact Assessment (SIA) aims to ascertain the nature, extent, duration, probability, significance and status of identified impacts that may result from the pre-construction, construction and operation of the proposed Brownfields Project. This assessment will also take into account other projects planned at the mine as well as Eskom's Matimba B Project. The following characteristics of each of the potential significant impacts are identified and tabulated (see Uys, Bews and Hatting, 2002):

The ***nature*****:** Which includes a description of what causes the effect, what will be affected and how it will be affected.

The ***extent***: A prediction of the magnitude of the impact (or change), which may result from the implementation of the project. The size of an impact is described in terms of three possibilities. In the first place the impact could be **local** (**L**), where the impact is restricted to the communities adjacent to the mine or in the

direct vicinity of the mine. Secondly, the impact could affect a bigger area, which would include the **immediate surroundings** (**I**) of the mine, such as the neighbourhood in which the mine operates. Thirdly, the impact could be **regional** (**R**) affecting the local (Lo) or district (D) or the province (Pr) or the nation (Na) level.

The ***duration****:* The lifetime or anticipated length of time during which the impact will be felt. This is indicated in terms of whether the lifetime of the impact will be

- Short term (ST) (<5 years);
- Medium term (MT) (5-20 years);
- Long term (LT) (>20 years): where the impact will cease after the operational life of the activity, either because of natural processes, or through human intervention; or
- Permanent (P): where mitigation either by natural process or through human intervention will not occur in such a way, or in such a time span, that the impact can be considered temporary.

The ***probability****:* The likelihood of the impact actually occurring indicated as

- Improbable (I), where the possibility of the impact occurring is very low;
- Probable (P), where there is a distinct possibility of the impact occurring;
- Highly probable (HP), where it is most likely that the impact will occur;

or

- Definite (D), where the impact will occur regardless of any prevention measures.

The ***status***: An appraisal of the type of effect the activity would have on the affected environment, which is described as either positive (Pos), negative (Neg) or neutral (Neu).

The ***significance*** of the impacts: Whether an impact alters an important aspect of the environment. This is determined and rated as:

- No impact (NI): The social environment and peoples' daily lives are not affected.
- Low (L), where it will have very little influence on the decision. This level of impact is of little significance and likely to have no effect. Social, cultural and economic activities are unlikely to change. There is no apparent benefit.
- Medium (M), where it should have an influence on the decision, unless fairly easily mitigated. At this level the impact is both real and extensive. Although social, cultural, and economic activities are changed, mitigation remains feasible. With some modification to the project, its effects on the community can be limited. The social, cultural and economic activities of the community can continue in a modified form.
- High (H), where it would influence the decision, regardless of any possible mitigation. Benefits are of the highest order within the confines of all anticipated impacts.
- Severe (S), at this level mitigation is extremely difficult or not possible. Social, cultural and economic activities are most likely to change to the extent that the community is seriously disrupted, or that these activities are terminated.

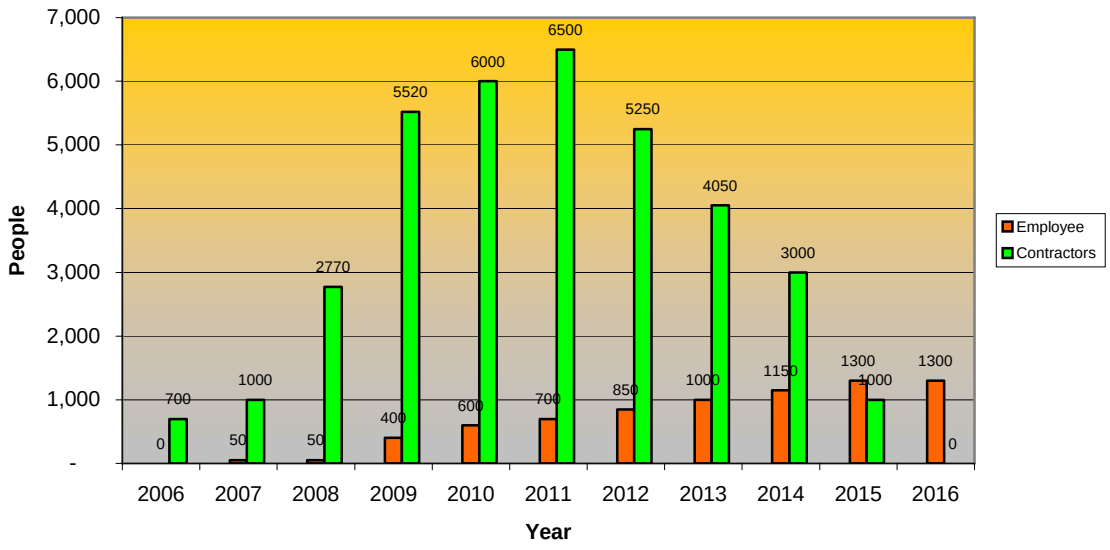
Based on this format the various impacts in respect of the expansions will now be discussed.

8.1. Influx of workers

It is clear that developments in the area will result in an influx of workers, both as contractors and as employees. In this regard it is expected that all-in-all the influx will commence in 2006 peaking during the construction phase to 6 500 in

2010 and stabilising during the operational phase at 1 300 by 2016. Bar Chart 1 illustrates the pattern of influx in respect of both the mine and the power station. What is apparent is that the region can expect a steep gradient in respect of contractors and a much gentler gradient with regard to employees.

Bar Chart 1. Influx of workers Grootegeluk and Matimba B



Consequently, the local municipality can expect an increased demand for temporary accommodation from the year 2006, peaking between the years 2009 and 2012, when it will taper off. The demand for permanent housing is likely to gradually increase from 2009 stabilising by 2016. This will place a major burden on the Lephalale Local Municipality as it is noted in the IDP document (2006/7:26) that "[p]roper spatial planning will be necessary to prevent chaos. The Lephalale municipality is a land poor municipality."

This influx of people to the area is expected to have a positive effect on the economy of the region as, apart from the direct jobs created, it is also likely to result in indirect job creation on both a formal and informal basis. The jobs

created through developments on the mine and at the power station are, however, likely to have a limited impact on unemployment as most of those workers sourced from local communities are likely to be unskilled due to the technical requirements of many of these jobs. Nevertheless, this does provide an opportunity for local people to gain some skills, an opportunity much needed in the area.

On the more negative side concerns have already been raised about an increase in crime, the spread of sexually transmitted diseases and conflict between local and temporary contract workers. Another concern is that a greater number of unskilled job seekers than there are jobs for will flock to the area thus increasing the risk and extent of these social problems.

The extent of this impact is that it is likely to be greatest in the immediate surroundings (I) of the mine but will extend to a regional level (R) particularly with regard to the need for housing, the creation of jobs and the risk of crime. The duration, considering that both the mine and the power station will employ a number of contractors at different times is likely to be short-term (ST), stretching across 5 years during the construction phase, and long-term (LT) during the operational phase. If the various projects, as previously referred to are approved, the probability of an influx of people to the area is definite (D). The effect is likely to have both positive (Pos) and negative (Neg) aspects and the significance is likely to be high (H).

8.2. Infrastructure

The proposed developments will have an effect on infrastructure at both the national and local municipal levels.

8.2.1. National level

Developments in the region will have a significant effect on the road running between Modimolle (Nylstroom) and Vaalwater. From what can be ascertained this road, the N33, was formally a regional road (the R33) but is now a national road and is the responsibility of the South African National Road Agency. The road is narrow and is in poor condition with numerous potholes. As it forms part of the main access road between Lephalale and the province of Gauteng it is the route that will be used by most contractors transporting heavy equipment to both the mine and power station. This increase in heavy traffic is likely to cause the rapid deterioration of the road.

There is also likely to be an increase in normal traffic on the N33 as the population in the Lephalale area grows and people commute between Lephalale and Gauteng on a regular basis. There is no doubt that any increase of traffic, specifically on the stretch of road between Modimolle and Vaalwater, will result in an increase in the accident rate on this road. This will in turn have a serious and negative social impact on people forced to use this road. The extent of this impact is regional with a long-term duration. The probability is definite, the status negative and the significance high.

8.2.2. Local Municipal level

An emphasis will be placed on the need for housing in the region. The mine is aware of the restrictions faced by the Lephalale Local Municipality with regard to the availability of land and is considering various housing options. Notwithstanding this, the local municipality will at times be hard pressed to deliver services such as water, sewage, electricity and refuse removal.

The increased population will also result in an increase in traffic in the town of Lephalale and surrounds. This will place pressure on the local municipality to upgrade roads, implement traffic control systems and put the necessary emergency response facilities in place. The need for hospital and other health services will also increase.

The extent of this impact is regional and could at times reach the provincial level. The duration is long-term but short-term peaks will be experienced. The status is both positive and negative. Positive in as far as this development will act as a catalyst as far as growth in the region is concerned but negative due to the pressure that the peak demand periods will place on authorities within the region. The probability, in the event of the project being approved, is definite and the significance high.

8.3. Economic impact

The economic impact will be assessed on the basis of job creation, skills development, downstream economic activity and social investment.

8.3.1. Job creation

Developments at the mine will eventually result in the creation of 700 permanent jobs, during the operational phase, and will peak at 1 520 jobs for contractors for a 12-month period, during the construction phases, of the various projects planned. Brownfields will generate the majority of these jobs peaking at 1 000 contract jobs during construction in 2009/10 and 400 jobs during the operational phase. Table 9 gives a breakdown of the rollout of these jobs at the mine between 2006 and 2016.

Table 9. Rollout of jobs at the mine

People	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Employee	**0**	**50**	**50**	**350**	**400**	**450**	**550**	**600**	**650**	**700**	**700**
Contractors	***700***	***500***	***770***	***1520***	***1000***	***500***	***250***	***50***	***0***	***0***	***0***

The impact of job creation needs to be seen separately in respect of short-term jobs created during the construction phases of the projects at the mine and the more permanent longer-term jobs created during the operational phases of these projects.

- *Construction phase*

It is estimated that by the year 2008 the Matimba B Brownfields Project (MBF) will result in 250 contractors being employed on site rising to 1000 in 2009. Taking all projects into account it is expected that by 2009 1 520 contractors will be on the mine and, if Eskom's Matimba B project is also taken into account there will be 8 520 contractors in Lephalale in 2009 rising to 9 000 in 2010.

Table 10 illustrates the roll out of contract jobs in respect of the MBF project, the total number of contractors at Grootegeluk during construction and an estimation of contractors needed to build Eskom's Matimba B Power Station.

Table 10. Rollout of contract jobs at Grootegeluk

Company & Project	People	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MBF Project	*Contractors*	*0*	*0*	*250*	*1000*	*1000*	*500*	*250*	*50*	*0*	*0*	*0*
Grootegeluk Other	*Contractors*	***700***	***500***	***520***	***520***	***0***	***0***	***0***	***0***	***0***	***0***	***0***
Total	*Contractors*	***700***	***500***	***770***	***1520***	***1000***	***500***	***250***	***50***	***0***	***0***	***0***

Consequently, the creation of jobs during the construction phase of the MBF Project is likely to extend to a regional level, as it is highly unlikely that contractors will be able to find all necessary skills on a local basis. The duration is short-term and the probability is definite. The status is positive and the significance medium, due to the short-term nature of the construction phase.

- *Operational phase*

Starting with 50 jobs in 2009 the MBF Project will eventual rise to 400 jobs in 2015. Due to all projects on the mine from 2007 50 new jobs will be created which will stabilise at 700 in 2015. Taking into account Eskom's Matimba B Project eventually 1300 new permanent jobs will be created in the area. The rollout of these jobs is illustrated in table 11.

Table 11. Rollout of permanent jobs at Grootegeluk

Company & Project	People	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
MBF Project	Employee	0	0	0	50	100	150	250	300	350	400	400
Grootegeluk Other	Employee	0	50	50	300	300	300	300	300	300	300	300
Total	Employee	0	50	50	350	400	450	550	600	650	700	700

It is clear that the creation of jobs during the operational phase of the MBF Project is also likely to extend to a regional level as again it is highly unlikely that all the necessary skills will be found on a local basis. The duration, in respect of the operational phase, is long-term and the probability definite. The status is positive and the significance high, due to the downstream affect that the creation of 400 jobs in the region will have, particularly if considered together with all other developments in the region.

8.3.2. Downstream economic activity

It is clear that a project the size of MBF will have significant downstream economic effect. In a sense this has already materialised with Eskom's proposal to site a new power station in the area (Bohlweki Environmental, 2006:9). This is due to the fact that Grootegeluk is already mining what is a suitable fuel source in the region.

The original establishment of the mine and, consequently the first power station, resulted in tremendous growth in the region. The downstream impact is quite likely to approach that of the initial developments in the area with a significant increase in household income and infrastructure.

Currently Matimba produces 12% of the country's electricity as one of the lowest cost producers of electricity in the country. In this sense the downstream economic activities will be immense and will extend to a regional basis having an effect on the national economy. The duration of this effect will be long-term and the probability definite. The status is positive and the significance high.

8.4. Skills gap

The issue of skills is crucial to the success of all developments in the region as it is highly likely that all projects during both the construction and operational phases will experience skills shortages. It is clear from data (as discussed under 5.3.1 Demographics above) that on both a provincial and local level education and skills levels are low with an alarming 33.4% of persons over the age of 20 having no schooling in the province of Limpopo. This situation is not much better in either the district or local municipalities both of which have a rate of 25.8% of people over the age of 20 having no schooling. This high rate of people with no schooling, together with the fact that only 13% of people in the local municipal area have a grade 12 level of education, will no doubt have a negative impact on skills levels in the region. This low education level will also negatively affect the short- to medium-term potential of upgrading skills in the area.

Consequently, the necessary artisan skills, such as electricians, boilermakers, fitters, diesel mechanics, millwrights and riggers will all be in short supply. Management and supervisory skills will also be scarce. To bridge these shortfalls there is no doubt that these skills will need to be imported. There is, however, an abundance of semi and unskilled workers in the area.

Currently the budget for training at the mine is R18 million with a further R2 million set aside for limited courses and seminars. The mine has its own training facilities that cater for competency-based training, management training and the GROVOS training facility that, at full capacity, can accommodate 130 learners.

In an attempt to cater for predicted expansion at the mine R700 000 has been budgeted for to increase training personnel. This increase will include one Senior Training Officer; two Instructors and one Admin Assistant. A further R2 million is also budgeted for to expand the competency based training facilities by one additional computer room with 20 computers and two training rooms for literacy training.

Apart from this, there is a relatively well-developed educational infrastructure in the town of Lephalale that could be utilised. It must, however, be noted that these developments could result in a shortage of educators to deliver the training.

The skills shortage is regional and the duration is likely to be medium-term. The probability is high but can be mitigated, and the status is negative. The fact that this impact can be mitigated makes the significance medium.

8.5. Traffic safety and movement patterns

There is no doubt that that traffic volume will increase as a direct result of the project. In addition this traffic will include a number of heavy vehicles. This impact, however, also needs to be seen separately in accordance with the different phases of the project.

8.5.1. Construction phase

During construction there is likely to be an increase of heavy vehicles on the roads in the vicinity of the mine. There is also likely to be an increase in traffic volumes with additional contractors, equipment and materials being moved around the area. This will raise the risk of road accidents, increase pollution, damage existing infrastructure and disrupt traffic flow. The noise and vibration levels are also likely to increase.

The extent of this impact will be on a regional basis as contractors' equipment and materials are moved to the area through the national road system. However, the greatest effect will be experienced in the immediate surrounds of the mine. The duration will be short-term and the probability definite. The status is negative and significance medium.

8.5.2. Operational phase

The impact on traffic safety and movement patterns is likely to be much less dramatic during the operational phase as coal will be transported via conveyor belt and most construction activity will have ceased. There will, however, have been an increase in employees and maintenance activities, which will keep traffic volumes relatively high. In this regard the region's sense of place, as a tranquil biosphere is likely to be negatively effected. Although reduced from the levels experienced during the construction phase noise and vibration levels are unlikely to return the pre-development levels.

During this phase of the project the extent is likely to remain within the immediate surroundings. The duration is likely to be long-term, the probability definite, the status negative and the significance medium.

8.6. Corporate social responsibility

The mine has a positive history of corporate social responsibility and stakeholder engagement in the region. In this regard the mine has formed partnerships with various business and governmental organisations and, through its Corporate Citizenship Department, has undertaken various projects aimed at the upliftment of communities in the area.

It is most likely that with this development these initiatives will be expanded. One of the projects that stands to benefit from future expansion at the mine and Eskom is the Lephalale Development Company (LDC). The LDC is a section 21 company formed through collaboration between a number of organisations, including Grootegeluk Mine, Eskom and the Lephalale Local Municipality. The role of LDC is to facilitate the development of local businesses.

The extent of the impact of expansion in respect of the mine's corporate social investment responsibility is likely to be regional, encompassing both the Lephalale Local and Waterberg District Municipalities. The duration will be long-term and probability definite. The status is positive and significance medium.

8.7. Impact on neighbouring landowners

As the mine intends to utilise existing land it is unlikely that its operation will encroach on neighbouring properties. Notwithstanding this a number of long-standing issues concerning neighbouring properties remain. Some of these issues can be listed as ground water quality and quantity, air quality, noise and vibration and land value. These topics fall within the scope of other specialist areas, however they need to be noted here as a matter to be addressed. As this issue falls outside of the specialist sphere of this report it cannot be rated here. Attention is now turned to synthesising the various impacts addressed above.

8.8. Synthesis of impacts

It is clear from the above discussion that there are both advantages and disadvantages attached to the project. What is also clear is, that on an overall basis, the advantages in respect of job creation and upliftment of the area the advantages outweigh the disadvantages. The characteristics of each of the impacts are illustrated below in table 12.

Table 12. Synthesis of impacts

Nature	Extent	Duration	Probability	Status	Significance	Comments
Influx of workers						
Construction phase	R Lo	ST	D	Pos & Neg	H	
Operational phase	R Lo	LT	D	Pos & Neg	H	
Infrastructure						
National Level	R Na	LT	D	Neg	H	N33 (formally R33) road between Modimolle (Nylstroom) and Vaalwater needs upgrading
Local municipal level	R P	LT	D	Pos & Neg	H	
Economic Impact						
Job creation						
Construction phase	R	ST	D	Pos	M	
Operational phase	R	LT	D	Pos	H	
Downstream economic activity	R	LT	D	Pos	H	
Skills gap	R	MT	H	Neg	M	Mitigation measures are vital to reduce the significance of this impact
Traffic safety and movement patterns						
Construction phase	R	ST	D	Neg	M	
Operational phase	I	LT	D	Neg	M	
Corporate social responsibility	R	LT	D	Pos	M	

Key to codes:

Extent
Local – L; Immediate surrounds – I; Regional – R; (in respect of regional level, Local – Lo District – D; Provincial – P.
Duration
Short-term (<5 years) – ST; Medium-term (5-20 years) – MT; Long-term (>20 years) – LT
Probability
Improbable – I; Probable – P; Highly probable – HP; Definite – D
Status
Positive – Pos; Neutral – Neu; Negative - Neg
Significance
No impact – NI; Low impact – L; Medium impact – M; High impact – H; Severe impact – S

The mitigation of the negative impacts will now be addressed.

8.9. Mitigation measures

Mitigation of measures will be discussed in respect of each of the impacts highlighted above.

8.9.1. Influx of workers

The area will experience a severe increase in population on a temporary and permanent basis. Both the mine and Eskom need to engage with the Lephalale Local Municipality to ensure that the municipality's integrated development plans are adjusted to provide for this influx. Other authorities in the area such as the police services, health services, and education department must also be consulted on the issue. The siting of temporary accommodation is an important consideration and needs to be carefully planned so as to minimise any disruption to existing residents. Careful planning will also need to be undertaken in respect of the burden that will be placed on existing infrastructure. It is highly unlikely that the municipality alone will have the resources to cope with the predicted demands and it will be important that both the mine and Eskom invest in infrastructure in the vicinity of their respective operations. It must be noted that expansion will take place over a period of time and that after reaching a peak it will taper off. This must be catered for in planning to deal with this influx of people.

8.9.2. Infrastructure

The issue of infrastructure and the need to engage with the local municipality was covered above. However, this issue will extend beyond the local level and will touch the national level. In this respect a critical concern is the N33, particularly the stretch between Modimolle and Vaalwater. This road, which is now the responsibility of the National Roads Agency is already in desperate need of upgrading and if ignored, will result in an increase in fatal accidents as a direct result of developments in the region (through an increase in heavy vehicles and an increase in traffic flow). It must be noted that the loss of life has serious social consequences. Consequently, it would be advisable to consult traffic flow specialists in an effort to mitigate these effects.

8.9.3. Skills gap

Although a certain amount of planning concerning the need for training and development has already taken place, with the overall rate of expansion predicted, it is likely that these plans will need to be modified on a regular basis. The costs of training are likely to double due to expansion and, taking inflation into account, will approach the R45 million per annum by 2010.

With a severe skills shortage in the area the competition between employers to attract the best available skills will be intense. Often it is the availability of good training and development opportunities that gives one employer the competitive edge over another in respect of attracting staff. Employees are realising that their employer-employee contracts are likely to be of a much shorter duration than they were in the past. This is as a result of organisational needs to expand and contract in respond to their environments. Consequently, many employees are beginning to value exposure to high quality training that will help them develop life-long careers over a number of different organisations. The mine may do well to identify this trend and thus place a premium on training and development as a means of gaining a strategic advantage. The issue of affirmative action is also important and this must be taken into account with the view of increasing the number of black people at the higher skills and management levels at the mine.

8.9.4. Traffic safety and movement patterns

The greatest impact in respect of traffic safety and movement patterns will occur during construction. It is important that the mine engage with both Waterberg District and Lephalale Local Municipalities in planning for the necessary adjustments to cater for this impact. In this respect traffic control, emergency facilities and infrastructure will need to be upgraded in accordance with projected

expansion in the region. This can only be done through collaboration between the mine, Eskom and the responsible authorities, which needs to be put in place in advance of the expected developments.

8.9.5. Corporate social responsibility

Expansion and the influx of people to the area will place a burden on the mine's Corporate Citizenship Department to increase its activities in accordance with these developments. For instance there is likely to be an increase in the prevalence of HIV/AIDS in the region that will require attention. Apart from this there will also be an increase in the need to facilitate educational programmes, job creation interventions amongst the unskilled, particularly women and the facilitation of business opportunities. Towards this end the mine should monitor developments in the region with a view of expanding the Department to cater for the growth in of the community brought about through expansion.

8.9.6. Impact on neighbouring landowners

The effect on neighbouring landowners will always be an issue that will need to be addressed. In this regard it is important to maintain the communication channels established between the mine and all interested and affected parties and to attend to concerns brought to the attention of the mine by these parties.

9. Conclusion

In concluding this report it is appropriate to reflect briefly on the potential and magnitude of the expansion that is likely to occur in the region and the extent of these developments. As the largest remaining coalfield in the country the Waterberg coalfield, with a predicted lifespan at current rates of extraction of over 200 years, provides a financially viable option for the building of a second power station in the area. Currently Matimba Power Station generates about 12% of

the country's electricity and a second power station would have a significant effect on the countries imminent electricity short fall. Grootegeluk is ideally placed to cost effectively deliver the required coal for this second power station. Apart from this other developments at the mine will increase the volume of coal mined and exported, both locally to support growth within the ferro-alloy industry and internationally.

These developments are likely to result in the creation of about 700 jobs at the mine over the next 10 years. Calculated at a conservative rate of 7 people per job, this would result in economic support for 4 900 people. Estimates in the Gold Mining Industry, however, put the economic support rate at between 7 and 10 people that benefit per job[4]. Consequently, the downstream impact in respect of job creation in the whole area will be far greater considering the additional 600 jobs created at Eskom and other jobs created to support expansion at both the mine and the power station.

This expansion will, however, have its negative consequences that will need to be mitigated. There will be an influx of people to an area known for its tranquility and natural beauty and this will be accompanied by an increase in traffic and activity in the area. The local municipality will be under pressure to provide infrastructure and some roads such as the N33 will need to be upgraded in places.

[4] See The Importance of Gold Mining to SA

To ensure that developments unfold in an orderly fashion it is recommended that the mine, together with Eskom, the Lephalale Local Municipality, Waterberg District Municipality and various other appropriate organisations form a committee to monitor developments in the area. The committee should include representatives from various interested and affected parties, both community based and governmental organisations. This may include, amongst others, such organisations as;

Farmers Associations
Labour Unions
Environmental NGOs
Residents Associations
Community Associations
Business Associations
The Department of Minerals and Energy Affairs
The Department of Water Affairs and Forestry
The Department of Agriculture
The Department of Environmental Affairs and Tourism
The South African National Road Agency Limited

Apart from taking on a monitoring role this committee should provide a communication channel to ensure that the appropriate bodies are informed of pending developments in time for these organisations to appropriately respond. It is crucial for instance that The South African National Road Agency be provided with information on expected traffic increases so that it will be able to respond. It is also vital that community based organisations are provided a channel through which to lodge their concerns and that, where appropriate, action is taken in respect of feasible concerns in order to mitigate against negative impacts.

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Annexure A. List of persons interviewed/consulted

Bhola, Hemina	Head – Functional Training
de Lange, Wouter	ER and Wellness Manager
de Ridder, Dries	Divisional Head – Land Use and Building Control
Erasmus, Johan	Tourism, Marketing Municipal International Relations
Ferreira, Herman	Manager – Organisational Performance
Grobbelaar, Riaan	HR Consultant
Jahn, Corinne	HR Practitioner
Jahn, Wolfie	Chief Engineer, Planning and Development
Meyer, Joe	Mine Manager
Ooberholzer, Jan	Project Leader Matimba Brownfields