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SOCIAL IMPACT ASSESSMENT REPORT FOR THE BELFAST PROJECT

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List of Acronyms

ADI	Area of Direct Influence
AIDS	Acquired Immunodeficiency Syndrome
AII	Area of Indirect Influence
ELM	Emakhazeni Local Municipality
EIA	Environmental Impact Assessment
IDP	Integrated Development Plan
HIV	Human Immunodeficiency Virus
MDB	South African Municipal Demarcation Board (Municipal Demarcation Board)
NDM	Nkangala District Municipality
NBA	Dr. Neville Bews & Associates
NBC	North Block Complex
NGO	Non Governmental Organization
PA	Per Annum (Yearly)
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SAPP	Southern African Power Pool
SAHRC	South African Human Rights Commission
SIA	Social Impact Assessment
SMME	Small Medium and Micro Enterprises
Stats SA	Statistics South Africa
STDs	Sexually Transmitted Diseases

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Details and Experience of Independent Consultant

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Neville Bews has consulted extensively the field of Social Impact Assessments. Some of the projects completed by Neville include the Gautrain Rapid Rail Link SIA, Australian ï South African sports development programme impact, Kumba Resources Sishen South Project SIA, The United Nations Office on Drugs and Crime evaluation of a Centre for Violence Against Women, SIAs at Leeuwpan Coal Mine Delmas, Glen Douglas Dolomite Mine Henely-on-Klip, Grootegeluk Open Cast Coal Mine, SANRAL ï Social Impact of tolling the Gauteng Highway System, SANRAL ï Social Impact of the N2 Wild Coast Toll Highway, University of Johannesburg ï Research into research outputs of the University, the social impact assessment for Waterfall Wedge housing and business development in Midrand Gauteng, the social impact assessment for the Environmental Management Plan for Sedibeng District Municipality. Exxaro Ltd. ï Social and Labour Plan for the Belfast Project. Golder Associates Africa (Pty) Ltd ï SIA for the Transnet New Multi-Product Pipeline (Commercial Farmers); Golder Associates Africa (Pty) Ltd ï SIA for the Proposed Vale Moatize Power Plant Project in Mozambique. Kumba Resources Ltd ï SIA for the Proposed Dingleton Resettlement Project at Sishen Iron Ore Mine; EcoPartners ï SIA for the Gold Fields West Wits Project.

Neville regularly lectures as a guest lecturer in the Department of Sociology at both the Universities of Johannesburg and Pretoria. At the University of Johannesburg he collaborated with Prof. Henk Becker of Utrecht University, the Netherlands, in a joint lecture to present the Social Impact Assessment masters course via video link between the Netherlands and South Africa. Neville has also presented papers on Social Impact Assessments at both national and international seminars and has published widely at both a national and international level.

Declaration of Consultant's Independence

Dr. N. F. Bews is an independent consultant to **Exxaro Resources Limited** and has no business, financial, personal or other interest in the activity, application or appeal in respect of which he was appointed other than fair remuneration for work performed in connection with the activity, application or appeal. There are no circumstances whatsoever that compromise the objectivity of this specialist performing such work.

Executive Summary

Exxaro Resources Limited operates a coal mining complex in the province of Mpumalanga South Africa. This complex, referred to as the North Block Complex (NBC), is situated between the towns of Carolina and Belfast, and consists of the Glisa and Strathae Coal Mines as well as the Eerstelingsfontein Project. As part of the North Block Complex, Exxaro is in the process of assessing the feasibility of extending their mining operations to include what has been proposed as the Belfast Project. The site of the proposed Belfast Project is some 10 km southwest of the town of Belfast in Mpumalanga, and is adjacent to the N4 Highway. An application for mining rights on the farms Zoekop, Leeuwbank and Blyvooruitzicht.

The proposed Belfast Project would entail the development of an open-pit mine over two implementation phases and mining will involve a combination of throw blasting, dozing and a conventional truck and shovel operation. At full operation the mine is likely to employ approximately 105 permanent employees as well as an estimated 145 contract employees during the commissioning of the mine.

In order to undertake a social impact assessment of the project a mixed quantitative and qualitative methodological approach was employed based on data sourced from Statistics South Africa, various meetings, interviews and document scans. On this basis, after identifying and defining the areas of influence, a socio-economic profile of the effected area is undertaken to provide a baseline against which the likely social impacts are identified assessed and mitigated.

The project falls within the legislative boundaries of the Emakhazeni Local Municipality which in turn falls under the district of Nkangala in Mpumalanga province South Africa. Due to there being extensive coal reserves in Mpumalanga some of the country's largest power stations, as well as Sasol's Secunda, petroleum from coal, facility are situated in the province. These facilities, along with a steel and vanadium installation in Middleburg and paper mills near Ngodwana, form the basis of the Mpumalanga industry, an industry, which unfortunately generates a high level of air pollution.

Notwithstanding the industrial development that has taken place in Mpumalanga, over the last few years there has been a steady rise in unemployment in the province. On a year-on-year basis, 3,000 jobs were lost in the province between

2008 and 2009 and 39,000 jobs were lost between quarter 1, 2009 and quarter 2 2009. Land use in the area is largely mixed agricultural and the region has a relatively well developed infrastructure, a high prevalence of HIV and AIDS, with a number of heritage sites having been identified on the properties under consideration.

Based on the project description, the social base line study and analysis of data gathered, the following 19 impacts were identified and assessed.

- Increase in SMME opportunities
- Job creation and income potential
- Socio-economic impact
- Access across site
- Creation of expectations
- Disturbance of cultural, spiritual and religious sites
- Health
- Increase in accidents
- Increase in noise and vibration levels
- Increased crime
- Informal development and settlements
- Infrastructure
- Loss of employment after construction
- Resettlement of displaced households
- Risk of STDs, HIV and AIDS
- Social vulnerability
- Visual impact and disturbance of sense of place
- ¶Do nothingô alternative

With regard to these impacts it was found that the most critical are;

- Resettlement of households currently living on the land identified for mining;
- Health issues related to air and particularly water quality and,
- In respect of the ódo nothingôoption, the pending threat that this may pose to the national security of the electricity supply.

It was also established that although the project is likely to have some positive effect in respect of;

- Increased opportunities for SMMEs;

- Job creation and income potential and
- Socio-economic contribution in the area;

these impacts are unlikely to be greatly significant.

On the more negative side it was found that there would also be some impact in respect of the;

- Creation of expectations;
- Disturbance of cultural, spiritual and religiousr sites;
- Increase in accidents;
- Noise and vibration;
- Increased crime;
- Informal development and settlements;
- Increased risk of STDs, HIV and AIDS;
- Increased social vulnerability;
- Visual impact and impact on the sense of place;
- Impact on existing infrastructure;
- Loss of employment after construction.

However, all of these impacts are limited and could be mitigated to acceptable levels.

The ódo nothingôoption on the other hand could eventually result in a shortage of coal needed for the coal driven power stations in the area, which in turn, may place the security of a stable electricity supply at risk, on a national level. Although, if the project does not proceed there would be a loss of job creation and the socio-economic benefit brought about through mining in the area, this could probably be balanced against the economic value that could be derived from agriculture in the area. The positive side of the ódo nothingôoption is that the threat to water security, brought about through the project, would be reduced. However, this would need to be considered against the threat that not proceeding would create in respect of the national electricity supply and the possibility of addressing the water issue through installation of a water purification plant.

1 INTRODUCTION

Exxaro Resources Limited operates a coal mining complex in the province of Mpumalanga South Africa. This complex, situated between the towns of Carolina and Belfast, is referred to as the North Block Complex (NBC) and consists of the Glisa and Strathae Coal Mines as well as the Eerstelingsfontein and Belfast Coal Projects. The NBC uses both underground and open-pit mining methods and employs some 250 people to produces 3Mtpa of thermal coal for both the domestic and export markets. It is estimated that the complex has a reserve base of 8Mt and a resource of 10Mt. As part of the North Block Complex, Exxaro Resources Ltd is in the process of assessing the feasibility of extending their mining operations to include what has been proposed as the Belfast Project which will be described below.

2 PROJECT DESCRIPTION

The site of the proposed Belfast Project is situated some 10 km southwest of the town of Belfast, within the province of Mpumalanga, and is adjacent to the N4 Highway. The mining rights area includes the farms Zoekop, Leeuwbank and Blyvooruitzicht. The site is illustrated by means of the map and Google Earth image presented in Figure 2. 1 and Figure 2. 2 below.

Figure 2. 1: Map of the Belfast Project Area

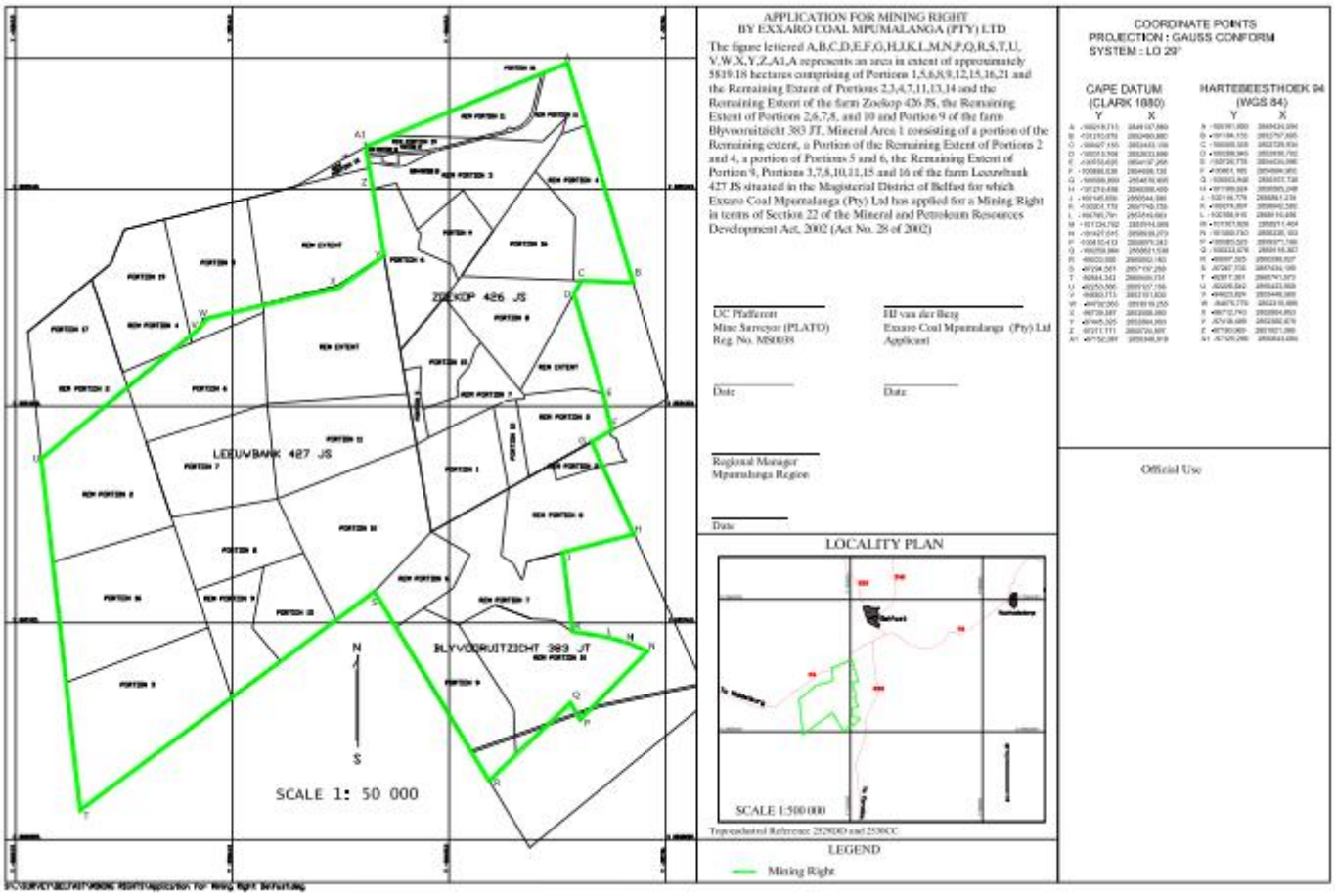


Figure 2. 2: Outline of the Mine Pit on Google Earth Image

The proposed Belfast Project would entail the development of an open-pit mine over two implementation phases as follows:

- **Phase 1**: 2 Mtpa Crushing and Screening ï 3 years
- **Phase 2**: 3 Mtpa Double stage washing plant (low and high gravity) ï 30 years.

The mining operation will involve a combination of throw blasting, dozing and a conventional truck and shovel operation.

At full operation, estimated to occur in 2011, the mine is likely to employ approximately 105 permanent employees. Sixty nine of these employees will be recruited from the Emakhazeni local municipal area, 23 from within the district of Nkangala and the rest, 13 will come from elsewhere in South Africa. It is estimated that a further 145 contract employees will be required during the commissioning of the mine of which 20 will be utilised on various projects throughout the life of the mine. The majority of these permanent jobs, 71, will fall within the category of plant and machine operators and assemblers as will 122 of the 145 contract jobs to be created during commissioning of the mine. Twenty three of the contract workers will

be recruited from Emakhazeni, 90 from within the Nkangala district and 32 from across South Africa. The methodology employed in the study will now be addressed.

3 METHODOLOGY

A mixed quantitative and qualitative methodological approach, based on data sourced from Statistics South Africa, various focus group sessions, interviews and document scans, is used to gather information throughout the study. On this basis, after identifying and defining the areas of influences, a socio-economic profile of the effected area is undertaken to provide a baseline against which the likely social impacts are identified assets and mitigated. The impact assessment technique applied to achieve this is described in some detail below.

3.1 Area of Influence

The project will have an influence at two levels; the first of these levels has a narrow focus and refers to the area of direct influence (ADI). The second, which is broader, refers to the area of indirect influence (AII). Each of these areas is identified in accordance with the geographic and social environment in which the mine will operate and on which it will impact. On this basis each of these areas are described below.

3.1.1 Area of Direct Influence

The Area of Direct Influence (ADI) consists of the footprint area of the proposed mining operation including the buffer zone as well as the local municipal area in which the mine will operate. The footprint and buffer zone of the Belfast Project includes the farms Zoekop 426 JS, Leeuwbank 427 JS and Blyvooruitzicht 383 JT which are situated within a rectangular area between the coordinates y-91863.5 y-101706 and x 2860892 x 2847768. The total area that the mine and buffer zone will occupy amounts to 5 819 ha. As the ADI is assigned on a social basis the Emakhazeni Local Municipality will also form part of the area of direct influence of the mine. The terms ADI and study area will be used interchangeably throughout this report.

3.1.2 Area of Indirect Influence

Although the Area of Indirect Influence (AII) refers to those regions not directly influenced by the project, certain project related impacts will still occur within the AII. With respect to the proposed Belfast Project the AII will encompass the Nkangala District Municipality and, to a diminishing degree, both the province of Mpumalanga and South Africa as a whole.

3.2 Data Collection Methods

A mixed quantitative and qualitative methodology is employed and, in line with this methodology, data was collected by means of Statistics South Africa, interviews, discussions, and document scanning sourced from the following stakeholder groups:

- Local and district municipality who administer the area in which the proposed project falls.
- Affected parties such as farm labourers, farmers and employees of the mine and their families who will have to work at the Belfast Mine.
- Interested parties such as local business, community-based and non-governmental organisations, trade unions and political groups from within the affected communities.

3.3 Study Limitations and Assumptions

Although Stats SA provides certain statistical updates on a regular basis these updates are at the national and provincial levels, with some such as the Community Survey, 2007, extending to the municipal level. At the municipal and ward levels, however, there are gaps in the official data obtainable from Stats SA as data, at these levels, dates back to Census 2001. Although this lack of more recent area specific data has been a limiting factor these limitations have not been insurmountable as a fair, if not relatively accurate estimate, can be obtained by plotting the available data against updated provincial and national trends.

While every attempt was made to provide an opportunity for all affected and interested parties to participate in this study, what is usually the case with research of this nature is that only those people with fairly strong views about the proposed project are prepared to take the time and make the effort to participate. Consequently, the results of the study cannot be generalised to the entire research population and in analysing the results conclusions are drawn in regard to the characteristics and views of those interested and affected parties (I&APs) who participated in the study. A social description of the effected area is provided next.

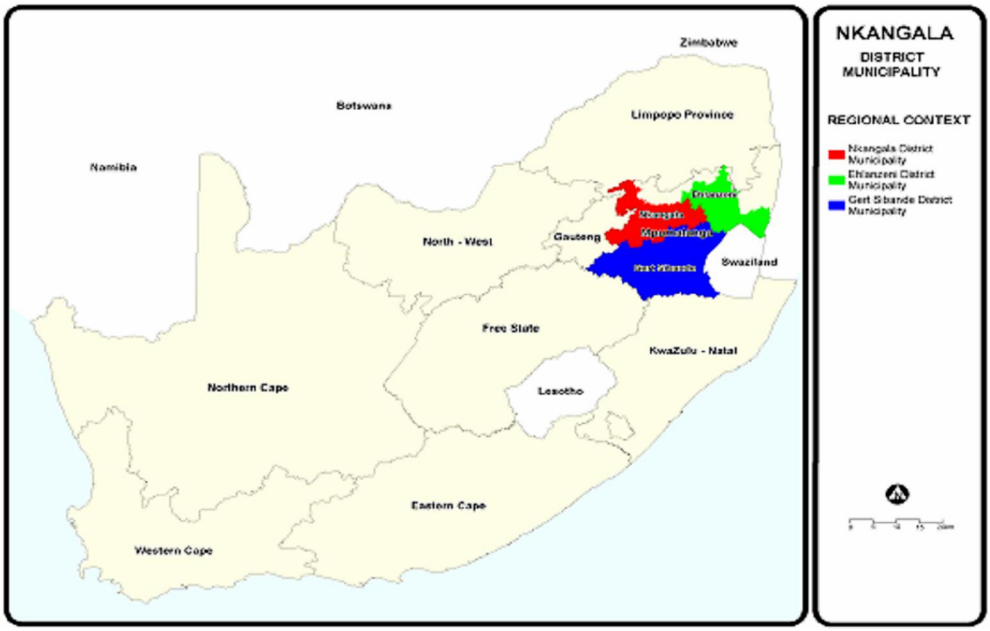
4 SOCIAL DESCRIPTION OF THE AREA

The Belfast Project is situated in the province of Mpumalanga South Africa within the administrative boundaries the Nkangala District Municipality and the Emakhazeni Local Municipality, formally known as Highlands Local Municipality. A brief description of the provincial and municipal settings in which the project is situated is provided below.

4.1 Provincial Description

At the provincial level, Mpumalanga occupies some 6,5% of the land mass of South Africa and, with an estimated population of 3,61 million people using the medium variant, accommodates 7,3% of the total South African population[1]. In Stats SAôs Statistical Release P0302 it is estimated that, between 2006 and 2011, Mpumalanga will experience a negative net migration rate of minus 43,800. On a geographical basis, the province shares borders with Swaziland and Mozambique in the east, Gauteng in the west and the Free State and KwaZulu-Natal in the south and includes the district municipalities of Gert Sibande (DC 30), Nkangala (DC 31) and Ehlanzeni (DC 32). These municipal boundaries, as fixed by the South African Municipal Demarcation Board (MDB), are illustrated within the context of South Africa in Figure 4. 1 below.

Figure 4. 1: Province of Mpumalanga Illustrating District Municipalities



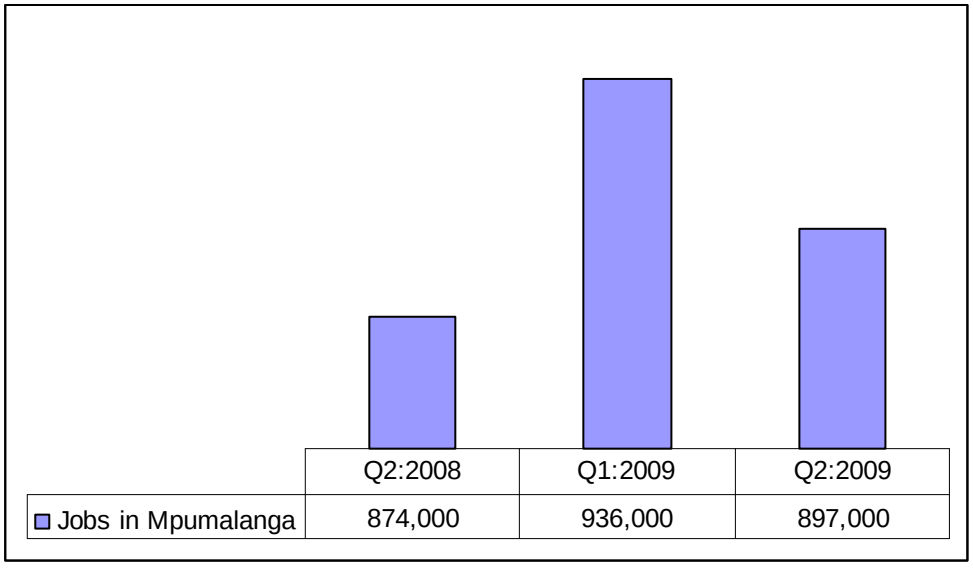
Source: Nkangala District Municipality IDP 2009:1

[1] Statistics South Africa, 2009. Statistical release P0302. Mid-year population estimates, 27 July 2009

Mpumalanga is rich in coal reserves and consequently accommodates some of the countries largest power stations as well as Sasol's Secunda, petroleum from coal, facility. These operations, together with a steel and vanadium installation in Middleburg and paper mills near Ngodwana, form the basis of the province's industry. Unfortunately, however, much of this industry adds to the high levels of air pollution found in the area.

Notwithstanding the industrial development in Mpumalanga there has been a steady rise in unemployment in the province over the last few years. This has probably been aggravated by the current global economic downturn which, on a year-on-year basis between the second quarter of 2008 and the second quarter of 2009, has resulted in a loss of 360,000 jobs in South Africa.[2] On an industry level 95,000 jobs were lost in manufacturing, 80,000 in agriculture and 27,000 in mining all important industries for the Mpumalanga economy. At a provincial level in Mpumalanga, 3,000 jobs were lost on a year-on-year basis between 2008-2009 but 39,000 jobs where lost on a quarter-to-quarter basis between Q1:2009 and Q2:2009. Bar Chart 4. 1 illustrates the changes in the number of jobs in the Mpumalanga economy over the period referred to above.

Bar Chart 4. 1: Jobs Changes in Mpumalanga Economy



Data sources: Quarterly Labour Force Survey, 2nd Quarter:2009

4.2 Municipal Description

The Belfast Project falls within the administrative boundaries of the Nkangala District Municipality (NDM) and the Emakhazeni Local Municipality (ELM). The Nkangala District

[2] Statistics South Africa. Quarterly Labour Force Survey Quarter. 2:2009.

Municipality, according to the MDB, covers an area of 17,000 km^2 and has a population of 1,226,500 people within 305,567 households.[3] The population of Nkangala accounts for 30% of the total population of the province of Mpumalanga and is spread across the 6 local municipalities of Delmas, Dr JS Moroka, Emalahleni, Emakhazeni, Steve Tshwete and Thembisile with most people living in the 165 towns and villages located within the boundaries of the district. Nkangala had a positive growth rate, increasing by 2,4% between 2001 and 2005[4] However, whether this growth rate will be sustainable is debatable as the estimated provincial migration streams for Mpumalanga shows a negative growth rate between 2006-2011. In addition to this the full effect of the global economic downturn will only reflect in data that will become available in late 2009-2010.

At the local level the project falls within the municipal boundries of the Emakhazeni Local Municipality. Emakhazeni covers an area of 52,730 hectares and, according to the Community Survey 2007, has a population of 32,840 people located within 12,127 households which accounts for 4.2% of the entire population of the Nkangala District Municipality. However, the ELM claims that, in 2007, the Department of Social Development estimated the population of the municipality to have grown to 59,268 and that the municipality is working on this figure at a growth rate of 4% pa[5]. Considering the area that the municipality covers and the population, it is apparent that the area is sparsely populated, even at the Department of Social Development population estimate, with 1 person per 0.9 hectares and is dominated by rural and farming areas.

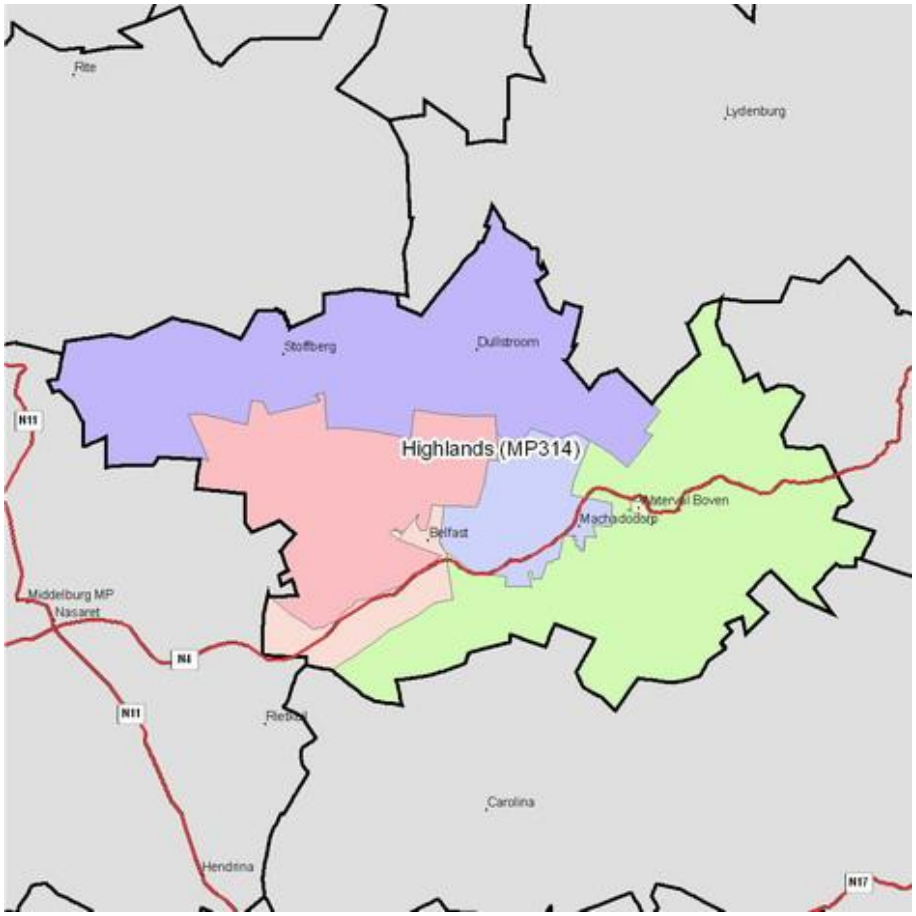
The economy of Emakhazeni is largely reliant on agriculture as the dominant economic contributor in the area. There is also a potential for tourism, particularly tourism attached to the fly fishing industry. On an historical basis farming has resulted in the establishment of a number of small towns such as;

- Belfast and Siyathuthuka;
- Dullstroom and Sakhelwe;
- Machadodorp and Emthonjeni; and
- Waterval-Boven and Emgwenya.

These towns, due largely to the natural attractiveness of the area and activities such as fly fishing within the locality, have also draw a number of tourists to the region. Figure 4. 2 provides an illustration of the vicinity of the Emakhazeni Local Municipality as situated within the district of Nkangala.

[3] Statistics South Africa, Community Survey, 2007.
[4] Nkangala District Municipality, Integrated Development Plan, 2009:32.
[5] Emakhazeni Local Municipality IDP, 2009:19

Figure 4. 2: Emakhazeni (formally Highlands) Local Municipality (MP314)



Source: Demarcation Board http://www.demarcation.org.za

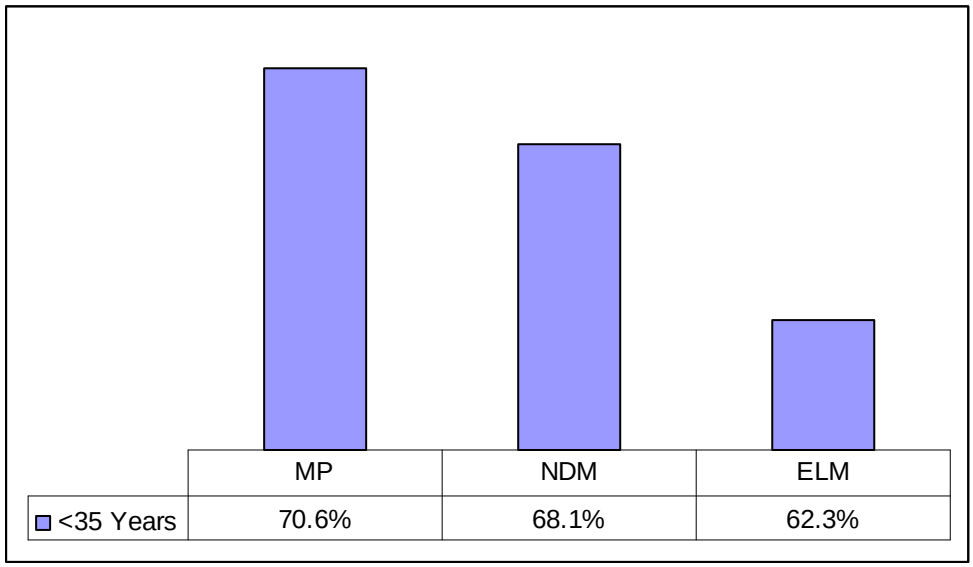
In the following section the demographics across the region will be compared on a provincial district and local basis.

4.3 Demographic Description of the Area of Direct Impact

Although the focus of this description will be the ADI which, is the Emakhazeni Local Municipality, the data provided in each of the tables below will compare this data against that of the province of Mpumalanga and the district of Nkangala. In an effort to introduce consistency into this comparison data provided by Statistics South Africa, through the Community Survey, 2007 (CS, 2007) will be used.

Based on CS, 2007, 62.3% of the population of the ELM are under the age of 35 years while 68.1% and 70.6% of the populations of the NDM and Mpumalanga respectively are under 35 years of age as illustrated in Bar Chart 4. 2 below.

Bar Chart 4. 2: Population <35 Years across Region



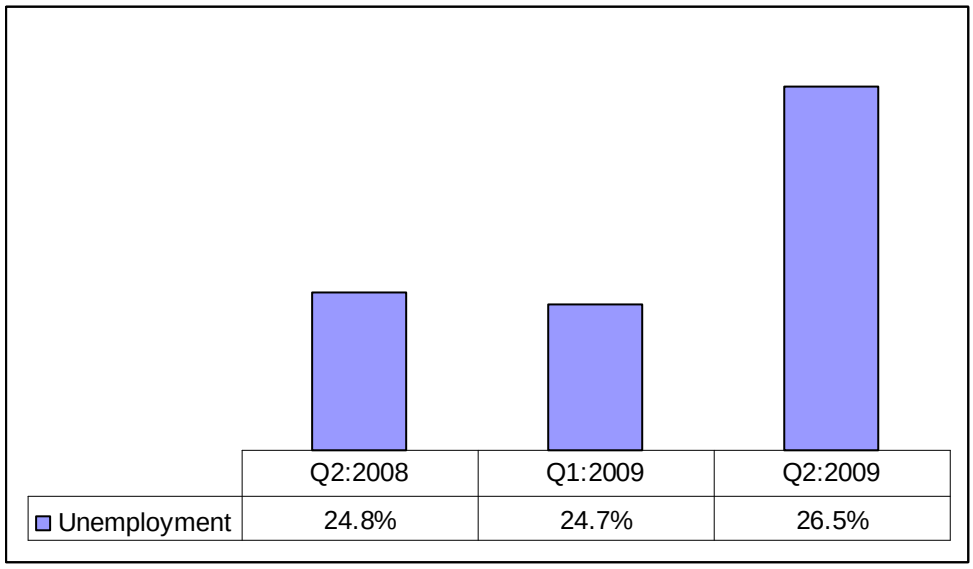
Data sources: Quarterly Labour Force Survey, 2nd Quarter:2009

The gender groups are relatively evenly spread within the local municipal area with a 51% female and 49% male ratio. In Nkangala the gender groups are even closer with 50.1% females and 49.9% males, while the province shows a marginally higher percentage of females at 51.4% compared to 48.6% males. On a racial group basis 87.0% of the population of Emakhazeni regard themselves as black African, followed by whites at 12.3%, Indian/Asians at 0.4% and coloureds at 0.3%. A similar pattern is apparent across both the district and province, however, with the black African population group being in a marginally increased majority at 90.9% and 92% respectively across the district and province. At the time of CS, 2007, levels of unemployment were at 13.9% in Emakhazeni, 19.3% in Nkangala and 19.5% across Mpumalanga. Although unemployment data provided in the Quarterly Labour Force Survey, Quarter 2, 2009 does not reach the municipal levels, data is available at a provincial level. This data indicates that the unemployment rate in Mpumalanga by the second quarter of 2009 had reached 26.5% as Bar Chart 4. 3 illustrates. This is probably indicative of increasing levels of unemployment across both the district and local municipalities.

It must be also be noted that these unemployment figures are based on Statistics South Africaôs official definition of unemployment which excludes those persons who had not taken active steps to seek work within the four week period leading up to the survey. In effect, this definition of unemployment excludes discouraged work-seekers from being counted amongst the unemployed and as such is considered by many to be a rather conservative

estimate of actual levels of unemployment. Statistics South Africa's official definition of unemployment is used throughout this report.

Bar Chart 4. 3: Unemployment in Mpumalanga Q2:2008 to Q2:2009



Data sources: Quarterly Labour Force Survey, 2nd Quarter:2009

A comprehensive comparison of the demographic composition of the population across the provincial, district and local levels, as discussed above, is provided in Table 4. 1 below.

Table 4. 1: Age, Gender, Population Grouped and Employment Status

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Age						
0 - 4	399190	11.0%	129145	10.5%	3092	9.4%
5 - 9	414106	11.4%	131112	10.7%	3503	10.7%
10 - 14	406339	11.2%	121117	9.9%	3153	9.6%
15 - 19	412666	11.3%	128692	10.5%	3137	9.6%
20 - 24	369022	10.1%	124835	10.2%	2971	9.0%
25 - 29	301965	8.3%	106357	8.7%	2502	7.6%
30 - 34	269522	7.4%	94362	7.7%	2114	6.4%
35 - 39	229913	6.3%	80954	6.6%	2760	8.4%
40 - 44	196673	5.4%	72825	5.9%	1993	6.1%
45 - 49	167792	4.6%	62986	5.1%	1558	4.7%
50 - 54	135163	3.7%	51450	4.2%	1743	5.3%
55 - 59	102985	2.8%	38985	3.2%	1600	4.9%
60 - 64	71519	2.0%	26981	2.2%	989	3.0%
65 - 69	64502	1.8%	24214	2.0%	808	2.5%
70 - 74	38778	1.1%	12215	1.0%	557	1.7%
75 - 79	30926	0.8%	8928	0.7%	235	0.7%
80 - 84	14778	0.4%	5527	0.5%	22	0.1%
85 +	17596	0.5%	5813	0.5%	102	0.3%
Total	**3,643,435**	**100%**	**1,226,498**	**100%**	**32,839**	**100%**
Gender						
Male	1769400	48.6%	612081	49.9%	16100	49.0%
Female	1874047	51.4%	614439	50.1%	16739	51.0%
Total	**3,643,447**	**100.0%**	**1,226,520**	**100.0%**	**32,839**	**100%**
Population Group						
Black	3352730	92.0%	1115221	90.9%	28568	87.0%
Coloured	28508	0.8%	11186	0.9%	103	0.3%
Indian or Asian	12871	0.4%	4216	0.3%	118	0.4%
White	249326	6.8%	95897	7.8%	4050	12.3%
Total	**3,643,435**	**100%**	**1,226,520**	**100%**	**32,839**	**100%**
Employment Status						
Employed	886502	39.0%	325885	41.0%	10005	46.5%
Unemployed	442001	19.5%	153305	19.3%	2996	13.9%
Not economically active	882124	38.8%	294751	37.1%	7291	33.9%
Unspecified	31850	1.4%	13783	1.7%	173	0.8%
Institutions	28467	1.3%	6614	0.8%	1051	4.9%
Total	**2,270,944**	**100%**	**794,338**	**100%**	**21,516**	**100%**

Source: Statistics South Africa: Community Survey 2007

Although the CS 2007 does not provide data in respect of language groups, according to the Census 2001 data most people in Emakhazeni, 33.4%, speak SiSwati. This is also the case on a provincial level with 29.4% of the population of Mpumalanga also speaking SiSwati. IsiNdebele is spoken by 31.3% of the population of Nkangala making it the most commonly used language across the district. Table 4.2 illustrates the breakdown of language groups across the municipal and provincial regions according to Census 2001 data.

Table 4. 2: Language Grouping Census 2001

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Language						
Afrikaans	185,944	5.5%	75,289	7.4%	3,982	9.3%
English	50,851	1.5%	17,703	1.7%	803	1.9%
IsiNdebele	346,107	10.3%	319,559	31.3%	9,945	23.1%
IsiXhosa	44,877	1.3%	21,175	2.1%	275	0.6%
IsiZulu	810,168	24.1%	232,392	22.8%	6,906	16.1%
Sepedi	342,057	10.2%	161,361	15.8%	2,987	6.9%
Sesotho	126,345	3.8%	42,411	4.2%	2,426	5.6%
Setswana	63,844	1.9%	56,128	5.5%	378	0.9%
SiSwati	990,759	29.4%	56,510	5.5%	14,363	33.4%
Tshivenda	5,030	0.1%	2,648	0.3%	66	0.2%
Xitsonga	390,022	11.6%	31,611	3.1%	754	1.8%
Other	8,627	0.3%	3,515	0.3%	115	0.3%
Total	**3,364,631**	**100%**	**1,020,302**	**100%**	**43,000**	**100%**

Source: Statistics South Africa: Census 2001

In respect of schooling amongst the sector of the population over 19 years of age, in Mpumalanga, 15.3% of the population have no schooling while 27.4% have a Grade 8/standard 6 or lower level of schooling. In Nkangala the percentages are as follows 13.8% with no schooling and 27.2% with Grade 8/standard 6 or lower level of schooling while in Emakhazeni the respective percentages are 13.2% and 26%. Table 4. 3 below provides a detailed breakdown of educational levels within the region.

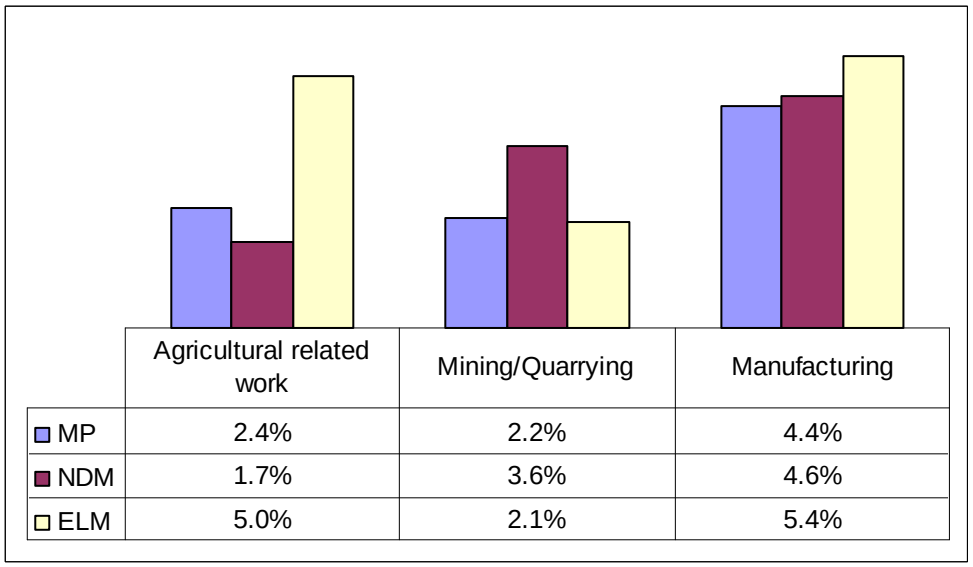
Table 4. 3: Education Levels >19 years of Age

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Education >19						
Grade 0	10374	0.5%	3161	0.4%	18	0.1%
Grade 1/sub A	22465	1.1%	6735	0.9%	32	0.2%
Grade 2/sub B	32707	1.6%	9731	1.4%	457	2.3%
Grade 3/standard 1	54538	2.7%	17866	2.5%	400	2.0%
Grade 4/standard 2	63502	3.2%	19733	2.8%	506	2.5%
Grade 5/standard 3	65274	3.2%	23869	3.3%	912	4.6%
Grade 6/standard 4	77432	3.9%	28474	4.0%	577	2.9%
Grade 7/standard 5	105090	5.2%	39487	5.5%	1146	5.7%
Grade 8/standard 6/form 1	119257	5.9%	46125	6.4%	1137	5.7%
Grade 9/standard 7/form 2	116218	5.8%	44072	6.2%	907	4.5%
Grade 10/standard 8/form 3/NTC I	167677	8.3%	63377	8.8%	1229	6.2%
Grade 11/standard 9/form 4/NTC II	144973	7.2%	55724	7.8%	1065	5.3%
Attained grade 12; out of class but not completed grade 12	121976	6.1%	46436	6.5%	1020	5.1%
Grade 12/Std 10/NTC III (without university exemption)	294145	14.6%	103675	14.5%	3996	20.0%
Grade 12/Std 10 (with university exemption)	57925	2.9%	23274	3.2%	1029	5.2%
Certificate with less than grade 12	47021	2.3%	18244	2.5%	229	1.1%
Diploma with less than grade 12	28936	1.4%	11164	1.6%	357	1.8%
Certificate with grade 12	31923	1.6%	8873	1.2%	279	1.4%
Diploma with grade 12	53710	2.7%	19411	2.7%	452	2.3%
Bachelor's degree	24894	1.2%	7099	1.0%	240	1.2%
BTech	4387	0.2%	1935	0.3%	9	0.0%
Post graduate diploma	7789	0.4%	3314	0.5%	49	0.2%
Honour's degree	7929	0.4%	2440	0.3%	53	0.3%
Higher degree (masters/PhD)	6008	0.3%	1495	0.2%	0	0.0%
No schooling	307740	15.3%	99196	13.8%	2642	13.2%
Out of scope (children under 5 years of age)	0	0.0%	0	0.0%	0	0.0%
Unspecified	11740	0.6%	5369	0.7%	290	1.5%
Institutions	25503	1.3%	6156	0.9%	920	4.6%
Total	**2,011,133**	**100%**	**716,435**	**100%**	**19,951**	**100%**

Source: Statistics South Africa: Community Survey 2007

Apart from ñOccupations unspecified and not elsewhere catered forò, the category with the greatest number of workers across both municipal levels, as well as across the province is elementary occupations. In Emakhazeni the category, elementary occupations, accounts for 8% of the workforce while in Nkangala it accounts for 7.7% and in Mpumalanga 6.9%. With regard to industry 2.1% of the working population of Emakhazeni work in the mining industry compared to 3.6% in Nkangala and 2.2% across Mpumalanga. A comparison of agriculture, mining/quarrying and manufacturing across the region is provided in Bar Chart 4. 4.

Bar Chart 4. 4: Work Force Employed in Selected Industries



	Agricultural related work	Mining/Quarrying	Manufacturing
MP	2.4%	2.2%	4.4%
NDM	1.7%	3.6%	4.6%
ELM	5.0%	2.1%	5.4%

Table 4. 4 below provides a detailed breakdown of occupations and workforce according to industry across the province and both the district and local municipalities.

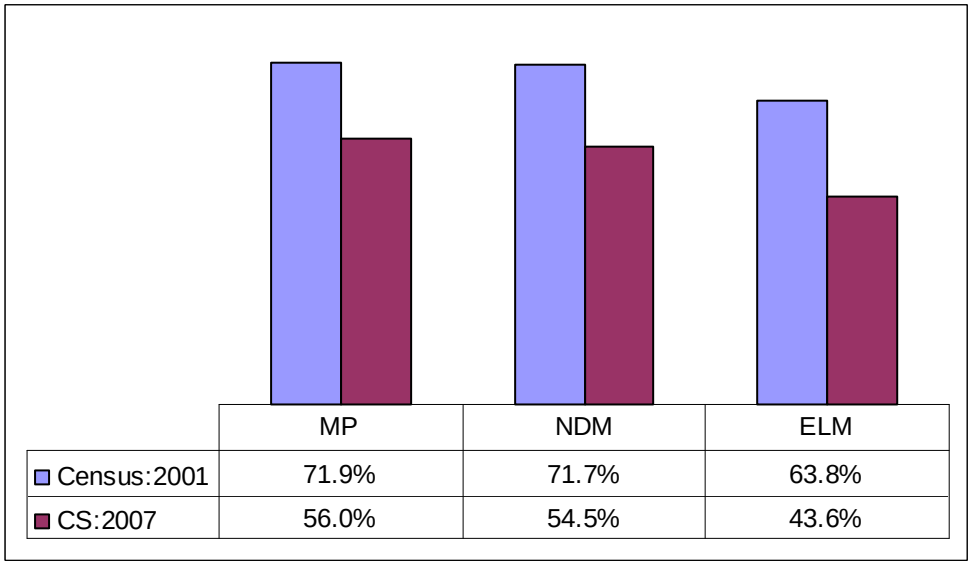
Table 4. 4: Occupation and Industry

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Occupation						
Legislators; senior officials and managers	56190	2.5%	19762	2.5%	694	3.2%
Professionals	72877	3.2%	25375	3.2%	953	4.4%
Technicians and associate professionals	37394	1.6%	12951	1.6%	391	1.8%
Clerks	48450	2.1%	18841	2.4%	389	1.8%
Service workers; shop and market sales workers	67606	3.0%	22658	2.9%	1099	5.1%
Skilled agricultural and fishery workers	36467	1.6%	9632	1.2%	590	2.7%
Craft and related trades workers	118468	5.2%	50361	6.3%	1443	6.7%
Plant and machine operators and assemblers	66555	2.9%	28158	3.5%	1045	4.9%
Elementary occupations	157365	6.9%	61059	7.7%	1724	8.0%
Occupations unspecified and not elsewhere classified	225132	9.9%	77090	9.7%	1678	7.8%
Not applicable	1355976	59.7%	461837	58.1%	10457	48.6%
Institutions	28467	1.3%	6614	0.8%	1054	4.9%
Total	**2,270,947**	**100%**	**794,338**	**100%**	**21,517**	**100%**
Industry						
Agricultural related work	54388	2.4%	13301	1.7%	1068	5.0%
Mining, Quarrying	50923	2.2%	28528	3.6%	452	2.1%
Manufacturing	99861	4.4%	36386	4.6%	1152	5.4%
Electricity/gas/water	11173	0.5%	7003	0.9%	70	0.3%
Construction	49087	2.2%	21877	2.8%	573	2.7%
Wholesale/Retail	97642	4.3%	29185	3.7%	1257	5.8%
Transport, Comm	27969	1.2%	11053	1.4%	675	3.1%
Business Services	71072	3.1%	26381	3.3%	881	4.1%
Community Services	109255	4.8%	36359	4.6%	1598	7.4%
Private Household	103050	4.5%	44403	5.6%	981	4.6%
Undetermined	212082	9.3%	71413	9.0%	1298	6.0%
Extra Territ Orgs	1355976	59.7%	461837	58.1%	10457	48.6%
Rep of foreign Gov	28467	1.3%	6614	0.8%	1048	4.9%
Total	**2,270,945**	**100.0%**	**794,340**	**100.0%**	**21,510**	**100.0%**

Source: Statistics South Africa: Community Survey 2007

Personal income levels show that 56% of the population of Mpumalanga and 54.5% of the population of Nkangala have no income while 43.6% of population of Emakhazeni do not have an income. These income levels sourced through the Community Survey, 2007 are significantly different to those indicated in Census 2001. Bar Chart 4. 5 provides a comparison between the two sets of data to illustrate the significance of this difference.

Bar Chart 4. 5: Population with no Income Census:2001 – CS:2007



A full description of personal income across the province and municipal areas is provided in Table 4. 5 below

Table 4. 5: Personal Income

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Personal Income						
No income	1209526	56.0%	404620	54.5%	8617	43.6%
R1 - R400	101839	4.7%	25262	3.4%	470	2.4%
R 401 - R800	165483	7.7%	50861	6.9%	1602	8.1%
R 801 - R1 600	287208	13.3%	107700	14.5%	4022	20.4%
R1 601 - R3 200	153602	7.1%	64585	8.7%	1858	9.4%
R3201 - R6 400	107761	5.0%	40684	5.5%	1501	7.6%
R 6 401 - R12 800	79207	3.7%	27231	3.7%	1187	6.0%
R12 801 - R25 600	38316	1.8%	13592	1.8%	445	2.3%
R25 601 - R51 200	11838	0.5%	4729	0.6%	41	0.2%
R51 201 - R102 400	3050	0.1%	976	0.1%	0	0.0%
R102 401 - R204 800	1508	0.1%	816	0.1%	0	0.0%
R204 801 or more	987	0.0%	719	0.1%	0	0.0%
Response not given	82155	3.8%	45952	6.2%	720	3.6%
Institutions	28467	1.3%	6614	0.9%	1048	5.3%
Total	**2,160,325**	**100%**	**741,775**	**100%**	**19,743**	**100%**

Source: Statistics South Africa: Community Survey 2007

Electricity is the greatest source of energy for cooking, heating and lighting within both municipal areas and across the province. While wood is the second most common source of fuel for cooking and heating in Mpumalanga, paraffin and coal are the second most common sources of energy for cooking and heating across Nkangala and Emakhazeni. Candles are the second most common source of energy for lighting at both provincial and municipal levels. This is illustrated in Table 4. 6 below.

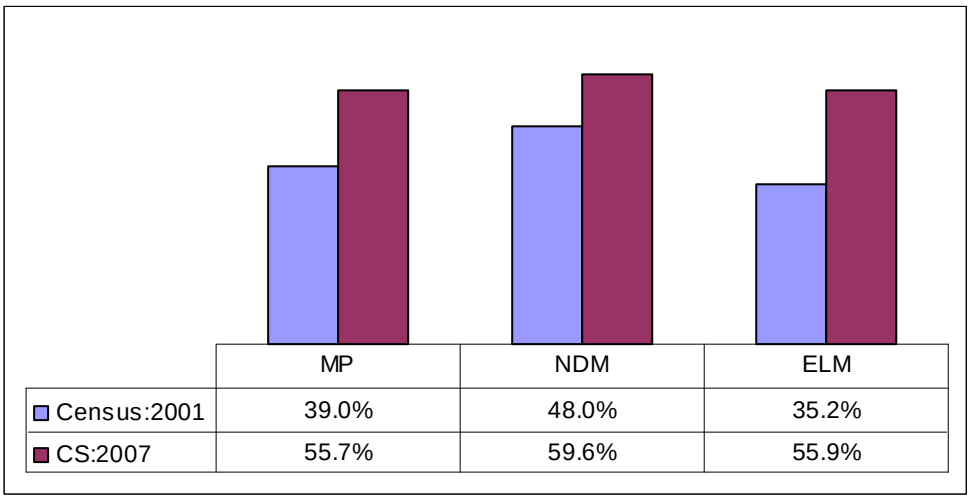
Table 4. 6: Energy Source for Cooking, Heating and Lighting

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Energy Cooking						
Electricity	523808	55.7%	182162	59.6%	6783	55.9%
Gas	10984	1.2%	3127	1.0%	267	2.2%
Paraffin	125502	13.3%	67222	22.0%	445	3.7%
Wood	197924	21.0%	22696	7.4%	1257	10.4%
Coal	78056	8.3%	30249	9.9%	3376	27.8%
Animal dung	2908	0.3%	0	0.0%	0	0.0%
Solar	374	0.0%	0	0.0%	0	0.0%
Other	845	0.1%	110	0.0%	0	0.0%
Total	**940,401**	**100%**	**305,566**	**100%**	**12,128**	**100%**
Energy Heating						
Electricity	423463	45.0%	150711	49.3%	5546	45.7%
Gas	7725	0.8%	2110	0.7%	221	1.8%
Paraffin	55286	5.9%	29160	9.5%	217	1.8%
Wood	249401	26.5%	32243	10.6%	1825	15.0%
Coal	149716	15.9%	76824	25.1%	4169	34.4%
Animal dung	2788	0.3%	54	0.0%	0	0.0%
Solar	1755	0.2%	693	0.2%	0	0.0%
Other	50270	5.3%	13771	4.5%	150	1.2%
Total	**940,404**	**100%**	**305,566**	**100%**	**12,128**	**100%**
Energy Lighting						
Electricity	772635	82.2%	249101	81.5%	10816	89.2%
Gas	1233	0.1%	581	0.2%	46	0.4%
Paraffin	26525	2.8%	9790	3.2%	365	3.0%
Candles	134251	14.3%	44746	14.6%	742	6.1%
Other	1465	0.2%	61	0.0%	6	0.0%
Not Applicable	4292	0.5%	1290	0.4%	152	1.3%
Total	**940,401**	**100%**	**305,569**	**100%**	**12,127**	**100%**

Source: Statistics South Africa: Community Survey 2007

Community Survey, 2007 shows an improvement in service delivery in respect of energy when compared to the Census 2001 data. This improvement is illustrated by comparing the difference between energy used for cooking between Census, 2001 and CS, 2007 in Bar Chart 4. 6 below

Bar Chart 4. 6: Energy Use for Cooking Census:2001 – CS:2007



	MP	NDM	ELM
Census:2001	39.0%	48.0%	35.2%
CS:2007	55.7%	59.6%	55.9%

The majority of households across the region do not have access to telephones with only 9% of households in Mpumalanga, 10.9% in Nkangala and 14.7% in Emakhazeni having access to a telephone. In Mpumalanga only 38.1% of households have access to a flush toilet connected to the sewerage system while in Nkangala and Emakhazeni the percentage is 42.5% and 81.5% respectively. In respect of water delivery 34.9% of households in Mpumalanga have access to piped water inside the dwelling while this applies to 36.6% of households in Nkangala and to 58.9% of households in Emakhazeni. Most households in Emakhazeni, at 71%, have refuse removed at least once a week while this applies to only 39.6% of households in Mpumalanga and to 42.1% in Nkangala. This data is illustrated by means of Table 4. 7 below.

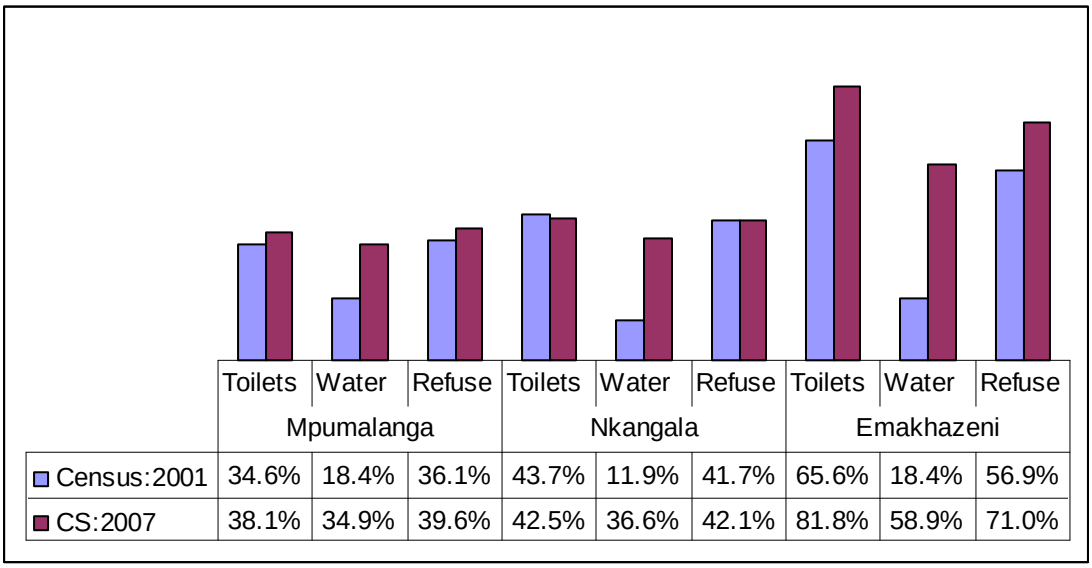
Bar Chart 4. 7 provides an illustration of the difference, in terms of service delivery, between Census, 2001 and CS, 2007 data in respect of toilets, water and refuse removal.

Table 4. 7: Service Delivery – Telephones, Toilets, Water and Refuse

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Telephone						
Yes	84919	9.0%	33214	10.9%	1777	14.7%
No	852691	90.7%	271316	88.8%	10350	85.3%
Unspecified	2792	0.3%	1039	0.3%	0	0.0%
Total	**940,402**	**100%**	**305,569**	**100%**	1777	14.7%
Toilets						
Flush toilet (connected to sewerage system)	357990	38.1%	129755	42.5%	9923	81.8%
Flush toilet (with septic tank)	20257	2.2%	7439	2.4%	663	5.5%
Dry toilet facility	41163	4.4%	17344	5.7%	253	2.1%
Pit toilet with ventilation (VIP)	99553	10.6%	13146	4.3%	61	0.5%
Pit toilet without ventilation	339764	36.1%	123667	40.5%	676	5.6%
Chemical toilet	2566	0.3%	1217	0.4%	35	0.3%
Bucket toilet system	4241	0.5%	2370	0.8%	0	0.0%
None	74870	8.0%	10631	3.5%	516	4.3%
Total	**940,404**	**100%**	**305,569**	**100%**	**12,127**	**100%**
Water						
Piped water inside the dwelling	328335	34.9%	111952	36.6%	7140	58.9%
Piped water inside the yard	314077	33.4%	119977	39.3%	3104	25.6%
Piped water from access point outside the yard	213938	22.7%	48086	15.7%	1058	8.7%
Borehole	30351	3.2%	15106	4.9%	410	3.4%
Spring	6524	0.7%	585	0.2%	74	0.6%
Dam/pool	3643	0.4%	372	0.1%	60	0.5%
River/stream	19328	2.1%	782	0.3%	111	0.9%
Water vendor	9588	1.0%	3945	1.3%	40	0.3%
Rain water tank	5313	0.6%	1534	0.5%	0	0.0%
Other	9305	1.0%	3228	1.1%	131	1.1%
Total	**940,402**	**100%**	**305,567**	**100%**	**12,128**	**100%**
Refuse						
Removed by local authority/private company at least once a week	372575	39.6%	128680	42.1%	8613	71.0%
Removed by local authority/private company less often	17863	1.9%	9174	3.0%	808	6.7%
Communal refuse dump	24887	2.6%	8340	2.7%	135	1.1%
Own refuse dump	466905	49.6%	147083	48.1%	2189	18.0%
No rubbish disposal	56327	6.0%	11959	3.9%	383	3.2%
Other	1848	0.2%	330	0.1%	0	0.0%
Total	**940,405**	**100%**	**305,566**	**100%**	**12,128**	**100%**

Source: Statistics South Africa: Community Survey 2007

Bar Chart 4. 7: Toilets, Water and Refuse Removal Census:2001 – CS:2009



In Mpumalanga 72% of the main dwelling type is a house or brick structure on a separate stand, while in Nkangala and Emakhazeni respectively this type of dwelling accounts for 69% and 77% of all housing structures. At 10% Emakhazeni has a relatively high percentage of hostel type accommodation compared to Mpumalanga at 3% and Nkangala at 2%. There is also a relatively high percentage of informal dwellings in informal settlements in Nkangala at 17% compared to Mpumalanga, at 9% and Emakhazeni at 3%. This data is illustrated in Table 4. 8 below.

Table 4. 8: Main Dwelling Types

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Main dwelling type						
House or brick structure on a separate stand or yard	681414	72.5%	212056	69.4%	9302	76.7%
Traditional dwelling/hut/structure made of traditional materials	66191	7.0%	14000	4.6%	1130	9.3%
Flat in block of flats	13374	1.4%	2350	0.8%	0	0.0%
Town/cluster/semi-detached house (simplex: duplex: triplex)	5097	0.5%	2934	1.0%	0	0.0%
House/flat/room in back yard	13433	1.4%	4440	1.5%	36	0.3%
Informal dwelling/shack in back yard	23556	2.5%	8124	2.7%	134	1.1%
Informal dwelling/shack NOT in back yard e.g. in an informal/squatter settlement	86261	9.2%	50681	16.6%	306	2.5%
Room/flatlet not in back yard but on a shared property	10584	1.1%	2920	1.0%	36	0.3%
Caravan or tent	671	0.1%	461	0.2%	0	0.0%
Private ship/boat	311	0.0%	153	0.1%	0	0.0%
Workers hostel(bed/room)	31351	3.3%	6449	2.1%	1183	9.8%
Other	8160	0.9%	998	0.3%	0	0.0%
Total	**940,403**	**100%**	**305,566**	**100%**	**12,127**	**100%**

Source: Statistics South Africa: Community Survey 2007

Most households in Mpumalanga, 63%, as well as in Nkangala, 59%, and Emakhazeni at 53%, are owned and fully paid up. This is followed by households living in rent-free accommodation at 16% in Mpumalanga, 17% in Nkangala and 18% in Emakhazeni. The tenure situation across the region is illustrated below in Table 4. 9.

Table 4. 9: Tenure Situation

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Tenure						
Owned and fully paid off	589549	62.7%	178796	58.5%	6484	53.5%
Owned but not yet paid off	73909	7.9%	31401	10.3%	1482	12.2%
Rented	124818	13.3%	42158	13.8%	2027	16.7%
Occupied rent-free	149866	15.9%	52388	17.1%	2135	17.6%
Other	2260	0.2%	825	0.3%	0	0.0%
Unspecified	0	0.0%	0	0.0%	0	0.0%
Total	**940,402**	**100%**	**305,568**	**100%**	**12,128**	**100%**

Source: Statistics South Africa: Community Survey 2007

Community Survey, 2007 collected data in respect of household facilities and the results of this, within the study area, indicated that in respect of all other household facilities measured except for internet access and televisions, households in Emakhazeni fare marginally better than those in Mpumalanga and Nkangala. Table 4. 10 illustrates the distribution of computers, internet access, postal facilities, refrigerators, televisions, radios and cell phones amongst households across the region.

Table 4. 10: Distribution of Facilities and Appliances

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Computers						
Yes	100383	10.7%	36245	11.9%	1621	13.4%
No	840020	89.3%	269322	88.1%	10507	86.6%
Total	**940,403**	**100%**	**305,567**	**100%**	**12,128**	**100%**
Internet						
Yes	35147	3.7%	11189	3.7%	283	2.3%
No	902208	95.9%	293170	95.9%	11846	97.7%
Unspecified	3046	0.3%	1209	0.4%	0	0.0%
Total	**940,401**	**100%**	**305,568**	**100%**	**12,129**	**100%**
Postal Facilities						
Yes	275077	29.3%	84459	27.6%	5279	43.5%
No	661407	70.3%	219754	71.9%	6849	56.5%
Unspecified	3918	0.4%	1354	0.4%	0	0.0%
Total	**940,402**	**100%**	**305,567**	**100%**	**12,128**	**100%**
Refrigerator						
Yes	617955	65.7%	209820	68.7%	8679	71.6%
No	322448	34.3%	95747	31.3%	3448	28.4%
Total	**940,403**	**100%**	**305,567**	**100%**	**12,127**	**100%**
Television						
Yes	601924	64.0%	206049	67.4%	7315	60.3%
No	338477	36.0%	99518	32.6%	4812	39.7%
Total	**940,401**	**100%**	**305,567**	**100%**	**12,127**	**100%**
Radio						
Yes	729980	77.6%	250394	81.9%	10341	85.3%
No	210423	22.4%	55175	18.1%	1786	14.7%
Total	**940,403**	**100%**	**305,569**	**100%**	**12,127**	**100%**
Cell Phone						
Yes	728131	77.4%	247943	81.1%	10039	82.8%
No	207254	22.0%	55761	18.2%	2039	16.8%
Unspecified	5017	0.5%	1862	0.6%	49	0.4%
Total	**940,402**	**100%**	**305,566**	**100%**	**12,127**	**100%**

Source: Statistics South Africa: Community Survey 2007

Although the objective of Community Survey, 2007 was to fill the gap created when the government decided to move away from the five to ten-year population censuses, as well as to provide data at lower geographical levels than existing household surveys, there are still gaps that remain in the data available from Stats SA. One of these gaps concerns the mode of transport used by communities in the area. This data is important in assessing the effect that the project may have in respect of access across sites, particularly considering that the region has a high percentage of pedestrian traffic. Consequently, this gap will be filled by using Census 2001 data to provide some idea of the number of pedestrians in the region of the project.

According to Census, 2001 the most common mode of transport across both district and local municipal areas, as well as on a provincial basis, is walking. In Emakhazeni the second most common mode of transport is as a passenger in a car, at 5.8%, whereas in Emakhazeni and Mpumalanga the second most common form of transport is by bus at 6.6% and 4.7% respectively.

Table 4. 11: Mode of Transport – Census, 2001

Description	Mpumalanga		Nkangala		Emakhazeni	
Mode of Transport						
Not applicable	1,615,437	48.0%	489,902	48.0%	18,724	43.5%
On foot	1,205,410	35.8%	328,001	32.1%	16,778	39.0%
Bicycle	16,337	0.5%	6,117	0.6%	494	1.1%
Motorcycle	6,868	0.2%	1,763	0.2%	72	0.2%
Car as a driver	97,253	2.9%	35,333	3.5%	1,275	3.0%
Car passenger	112,849	3.4%	35,285	3.5%	2,477	5.8%
Minibus/taxi	134,699	4.0%	52,999	5.2%	1,778	4.1%
Bus	157,392	4.7%	66,895	6.6%	1,111	2.6%
Train	4,330	0.1%	1,239	0.1%	49	0.1%
Other	14,086	0.4%	2,779	0.3%	245	0.6%
Total	**3,364,661**	**100%**	**1,020,313**	**100%**	**43,003**	**100%**

Source: Statistics South Africa: Census 2001

With regard to number of rooms per household, the majority of household in Emakhazeni, at 26.6%, have 4 rooms while in Nkangala the majority, at 18.8%, and in Mpumalanga the majority at 17.4% also have four rooms per household. The above data is illustrated in Table 4. 11. Attention is now focused on the economy, livelihoods and poverty in the area.

4.4 Economy, Livelihoods and Poverty

According to the Mpumalanga MEC for Finance, quoting Global Insight Regional Explorer, *"…the contribution of the Nkangala District to the economy of Mpumalanga is 37 percent, Gert Sibande 34 percent and Ehlanzeni 29 percent. … Nkangala's mining sector is responsible for 31 percent of the district's total industries, manufacturing 14 percent and finance and community services 27 percent. Nkangala continues to be the highest producer of electricity in Mpumalanga (more than 70 percent).*ò The MEC continues to point out that a ñé *concern is the gap between the districts in terms of annual per capita and house-holds income. Nkangala shows the highest and Ehlanzeni the lowest figures in this regard*ò[6]. This places the population

[6] Speech Presented to the Provincial Legislature by the MEC for Finance, Mr J.L Mahlangu, MPL, on the Occasion of Tabling the Mpumalanga Adjustment Budget: 2008/2009 Tuesday, 18 November 2008.

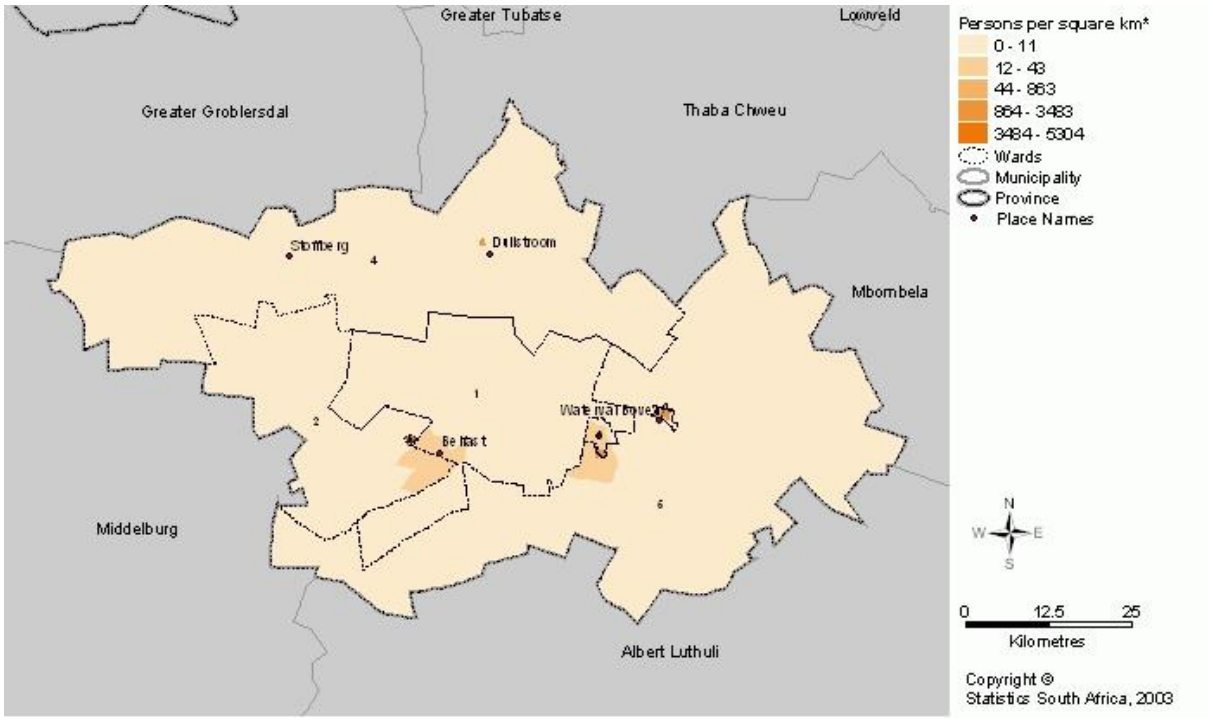
of Nkangala in a relatively better economic position than the other district municipalities in Mpumalanga.

In 2005, however, research undertaken by the PROVIDE project indicates that although unemployment rates in the Govan Mbeki and Nkangala districts are above the national average both districts rank lowest in respect of poverty rate. The PROVIDE research team also found that urban unemployment in the area is rated higher than rural unemployment and that this may suggest long-term unemployment in the region with a high number of discouraged work seekers[7]. The area has a high level of agricultural households and, at an estimated 87%, a relatively high proportion of black Africans within the population most of whom are dependent on agricultural activities through which to earn a living. The PROVIDE research team (2005:7) points out ñ*…that Coloured and African agricultural households are generally worse off than their non-agricultural counterparts in terms of income levels. Agricultural households often reside in rural areas and are far removed from more lucrative employment opportunities in urban areas.*ò

In this regard the dispersion of the population in the Emakhazeni Local Municipality shows the sparsely populated areas with higher population densities evident around the more development nodes of Belfast, Dullstroom and Waterval Boven as depicted in Figure 4. 3.

[7] PROVIDE Project Background Paper A profile of Mpumalanga: Demographics, poverty, inequality and unemployment 2005:1(8). Elsenburg. August 2005

Figure 4. 3: Population Density Emakhazeni



In respect of literacy levels, Emakhazeni is ranked amongst the middle of the local municipalities in the Nkangala district, at 47%[8], and, according to the IDP of the Emakhazeni Local Municipal, the municipality has relatively low income levels, indicative of poverty and reliance on social assistance particularly in the form of housing subsidies[9]. Community Survey, 2007 data indicates that the Emakhazeni population rates closely to Nkangala and Mpumalanga in respect of disability grants but is less dependent on child support grants as is illustrated below in Table 4. 12. This is probably indicative of a more urbanized population with a relatively high number of migrant workers or poor service delivery by Social Development.

[8] Nkangala District Municipality Integrated Development Plan 2008/2009
[9] Emakhazeni Local Municipality Integrated Development Plan 2006-2011 Third Revision (2009)

Table 4. 12: Allocation of Social Grants

Description	Mpumalanga		Nkangala DC31		Emakhazeni MP314	
Social Grants						
Not Applicable	2663387	73.1%	920902	75.1%	24929	75.9%
Old age pension	167634	4.6%	56853	4.6%	1308	4.0%
Disability grant	66136	1.8%	25844	2.1%	1070	3.3%
Child support grant	686180	18.8%	204844	16.7%	3608	11.0%
Care dependency grant	12557	0.3%	4666	0.4%	325	1.0%
Foster care grant	1165	0.0%	343	0.0%	10	0.0%
Grant in aid	5485	0.2%	2117	0.2%	96	0.3%
Social relief	2914	0.1%	1181	0.1%	64	0.2%
Multiple social grants	3525	0.1%	1673	0.1%	43	0.1%
Institutions	34449	0.9%	8077	0.7%	1391	4.2%
Total	**3,643,432**	**100%**	**1,226,500**	**100%**	**32,844**	**100%**

Source: Statistics South Africa: Community Survey 2007

Most of the workforce in Emakhazeni is employed in the primary and secondary sectors with only 4.4% working as professionals and 3.2% as legislators, senior officials and managers as illustrated in Table 4.12 above. Community services, wholesale/retail, manufacturing and agriculture are prominent sources of employment and approximately 54.1% of the population earn under R800 per month placing them below the poverty line. Consequently, the stated aim in the IDP of the Emakhazeni Local Municipality is the eradication of unemployment and poverty in the region.

4.5 Cultural Issues

The scoping report identifies a number of sites of archaeological and cultural importance within the immediate vicinity of the project. Of these the most significant individual heritage resources, as rated by the heritage specialist in respect of age, condition and historical importance, are the farmstead of Jan Burger, a farmstead located next to the N 4 and regarded as a local landmark, as well as various graves and graveyards. It has been estimated in the heritage study that approximately 60 graves exist in the study area with some being over 60 years old.

4.6 Infrastructure of Area

The area is serviced by a road network with both national and regional roads such as the N4 and R33 and a number of farm roads in the vicinity. Other surface infrastructure in the immediate vicinity of the project include farm dams; the railway line between Johannesburg and Maputo; power lines; telephone lines as well as agricultural homesteads and dwellings.

At the municipal level, Emakhazeni Local Municipality is on a comparable basis to both Mpumalanga and the district of Nkangala in respect of service delivery. Although Emakhazeni

fares lower in respect of energy use for cooking and heating than Nkangala it performs better regarding energy use for lighting, flush toilets connected to the sewerage system and water supply. Nevertheless the Emakhazeni Local Municipality has identified service delivery in the form of water supply, electricity, housing, road infrastructure, particularly amongst the rural communities, as a priority that needs attention in the area. It is pointed out in the Emakhazeni IDP, (2009, third revision:39-40) ñé *that the large number of rural community do not have water supply to their homesteads" and "[d]espite the availability of the bulk electrical supply infrastructure in the rural areas, the poor communities do not have access to basic electricity supply even though the electricity is available to the farm owners*ò A full list of priority issues in the municipal area is provided in the IDP under the heading ñPriority Issues, Objectives, Strategies & Projectsòpages 39 to 127.

4.7 Land use Patterns

The immediate project area is currently used for agricultural purposes with maize as the dominate crop at times being rotated with potatoes and sunflower with smaller portions of land used for the production of cherries and poultry farming. Grazing and forestry (*Eucalyptus* and wattle) are also evident in the area.

On a broader basis, although land use is dominated by agriculture there is also a high level of mining activity in the region as well as property development and informal land use. The local municipality is concerned about uncontrolled property development in some areas such as Dullstroom, which it claims does not benefit the black African communities. It is also concerned about the high degree of segregation, particularly on a racial basis, in Belfast and Dullstroom and intends to encourage social integration through the Municipalityôs Spatial Development Framework (SDF). The issue of land restoration is also high on the municipal agenda with over 200 outstanding land claims in the area.

4.8 Prevalence of STDs, HIV and AIDS

According to the Department of Health[10], in 2008, the prevalence of syphilis in Mpumalanga was amongst the lowest in the country, at 0.7%, compared to that of the Northern Cape, 6.8%, and the national level at 1.9%. The prevalence of HIV in Mpumalanga is, however, the second highest in the country at 35.5%. Only KwaZulu-Natal, with an HIV prevalence rate of 39.7%, had a higher rate than Mpumalanga. At the time the national HIV prevalence rate stood at 29.3%.

The Department of Health (2009:9 and 16) also points out that ñ*…Mpumalanga is the only province in the country for which the estimates are increasing from 32.1% in 2006 to 34.6% in 2007 and 35.5% in 2008*òwhile at the district level ñé *only Ehlanzeni district has shown a decrease in HIV prevalence, while Gert Sibande HIV prevalence increased from 38.9 % in 2006 to 40.5% in 2008 and Nkangala from 26.8% in 2006 to 31.8% in 2008*.ò This survey does not extend to the local municipal level.

The social impacts identified in association with the project will be described, discussed and, based on the criteria described above, assessed below.

5 SOCIAL IMPACTS

The social impact assessment will be undertaken on three levels linked to the construction, operational and closure phases of the project. The first two of these levels, the construction and operational phases, will be addressed simultaneously. The third, project closure, is likely to result in a range of somewhat different social impacts than those apparent during the construction and operational phases of the project. Accordingly, project closure is dealt with separately.

5.1 Major Issues Identified During Construction and Operation

Based on the project description and social description of the area that is provided above the following likely impacts have been identified. In total there are 19 impacts, three positive, 15 negative and one having both positive and negative consequences. These impacts are discussed within the categories described above.

- Increase in SMME opportunities
- Job creation and income potential
- Socio-economic impact
- Access across site
- Creation of expectations
- Disturbance of cultural, spiritual and religious sites
- Health
- Increase in accidents
- Increase in noise and vibration levels
- Increased crime

[10] Department of Health, 2009. National HIV and syphilis antenatal seroprevalence survey in South Africa: 2009.

- Informal development and settlements
- Infrastructure
- Loss of employment after construction
- Resettlement of displaced households
- Risk of STDs, HIV and AIDS
- Social vulnerability
- Visual impact and disturbance of sense of place
- ódo nothingôalternative

A final impact, that of the ódo nothingôalternative, which if the project does not proceed will also have its own set of social consequences, is considered as well. Each of the identified impacts will now be discussed in greater detail and assessed below.

5.1.1 Increase in SMME Opportunities

Description of impact: Increased business opportunities for small medium and micro enterprises (SMMEs).

There are certain expectations amongst community members that the project will result in greater business opportunities. These communities require that SMME entrepreneurs are drawn from amongst the local community as the following comments illustrate.

ñ*The need to have Belfast having investment through private sector initiatives is highly welcome to ensure the benefits of small medium and secondary business in the local area is realised* ñ

ñ*The 2nd phase must consider local SMMEs represented by organised business. There must be a detailed data base establishment process to avoid disgruntled SMMEs confirmation of mine recognition of social and labour plan and enterprise development, particularly in the phase 2 of the project – Avoid Gautengers.*ò

Through the mineôs social and labour plan the mine is committed to aligning its projects with the IDP of the Emakhazeni Local Municipality and to addressing areas identified by the municipality for SMME opportunities. Notwithstanding this, however, the contribution of the project towards increasing the opportunities for SMMEs in the region must be seen against the broader context of the region and, although important, is likely to have a limited impact.

Assessment:

Construction phase: Without optimisation measures, it is anticipated that the scale of this impact will be local, the status positive, and it will definitely occur. This impact is relevant, of short-term duration, reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase: Without optimisation measures, it is anticipated that the scale of this impact will be local, the status positive, and it will definitely occur. This impact is relevant, of medium-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Optimisation objective: To enhance the benefit that SMMEs are likely to derive through the project.

Optimisation measures:

- Establish a local SMME recruitment preference policy;
- Work in close cooperation with provincial and district authorities as well as NGOs to ensure that small business operators receive appropriate training such as technical skills and financial and business management training, particularly during the operational phase of the project;
- Implement a monitoring system to ensure that Exxaro and other contractors honour the local SMME recruitment preference policy.

Construction phase with optimisation: It is unlikely that optimisation measures will significantly change the impact, however, if the local community is ignored then this is most likely to have some negative impact for the project.

Operational phase with optimisation: The same applies to the operational phase of the project. Although optimisation is unlikely to result in any significant change in respect of this impact, if no concerted effort is made to utilise local SMMEs the community is likely to react negatively towards that.

5.1.2 Job Creation and Income Potential

Description of impact: The project is likely to result in the creation of a number of direct and indirect jobs during both the construction and operational phases.

It is anticipated that at full operation the mine will employ 105 people of which 69 are likely to come from Emakhazeni, 23 from the rest of Nkangala and 13 from the rest of South Africa. Of these, the majority, 122, are likely to be plant and machine operators and assemblers. It is also estimated that, during construction, the jobs created for contractor workers will peak at 145 over a 24 months period. The anticipated role out of jobs is presented below inTable 5. 1.

Table 5. 1: Rollout of Jobs at the Mine

People	2009	2010	2011	2012	2013	2014
Permanent employees	65	74	80	105	105	105
Contractors			*145*	*145*	*145*	*145*
Total	**65**	**74**	**225**	**250**	**250**	**250**

Notwithstanding the importance of these jobs to those who may fill them and to the families who may benefit from the income generated through these jobs, these jobs are nevertheless unlikely to have a significant impact in respect of job creation in the area, particularly when considered against the background of possible job losses within the agricultural sector.

In a letter dated 11 April 2003 written on behalf of the Escarpment Environmental Protection Group, it is claimed, under point 1.4, that mining activity is likely to ñé *destroy more job opportunities than it creates*ò

It is also important to note the expectations attached to job creation amongst communities across the area of direct impact. This is reflected in the following comments drawn from comment forms received at public meetings held in the region.

ñ*The need for people to have job, food security in a sustainable manner cannot be over emphasised.*ò

ñ*In my opinion I am very glad because the people of Emakhazeni Municipality are going to get work. … For me I think you must first consider local people for employment. As a coal analyst I think I will be the first to look at for analysing your coal.*ò

Assessment:

Construction phase without optimisation: Without optimisation measures, it is anticipated that the scale of this impact will be local, the status positive, and it will definitely occur. This impact is moderately relevant, of short-term duration, reversible and of low significance. The degree of confidence in the assessment is fairly confident.

Operational phase without optimisation: Without optimisation measures, it is anticipated that the scale of this impact will be local, the status positive, and it will definitely occur. This impact is moderately relevant, of medium-term duration, reversible and of low significance. The degree of confidence in the assessment is fairly confident.

Optimisation of benefits: To enhance the benefits of job creation.

Optimisation measures:

- Establish a labour policy to facilitate the employment of locals where feasible;
- In this regard work in cooperation with provincial and district authorities;
- Where feasible, create opportunities for the employment of women and the disabled;
- Where possible use labour-intensive methods of construction;
- Develop a community labour agreement with targets for employment and for career progression;
- Remunerate beyond the minimum wage rate and invest in local staff.

Construction phase with optimisation: The fact that jobs will stretch over a 24 month period is unlikely to result in the impact changing significantly.

Operational phase with optimisation: If optimisation measures are successful it is possible that the relevance may change to that of relevant.

5.1.3 Socio-economic Impact

Description of impact: It is likely that the project will contribute towards the socio-economic development of the region.

A separate assessment was undertaken in respect of the economic impact of the mine. Based on this assessment the mine is expected to make the following contribution to the economy illustrated below Table 5. 2.

Table 5. 2: Economic Impact of Mine

Item	Emakhazeni	Nkangala	Mpumalanga	Nationally
Wages				
Local Economic Development	1,412,687			
Procurement	3,024,470	168,472,178	183,403,113	149,092,167
Regional Council Levies	N/A	N/A	N/A	N/A
Water & electricity	701,706	N/A	N/A	N/A
National government taxes: Pay As You Earn Skills Development Levies Unemployment Insurance Fund Value Added Tax	N/A	N/A	3,514,005 202,066 292,807 23,900,179	N/A
Total	**5,138,863**	**168,472,178**	**211,312,170**	**149,092,167**

Assessment:

Construction phase without optimisation: Without optimisation measures, it is anticipated that the scale of this impact will be regional, the status positive, and it will definitely occur. This impact is moderately relevant, of short-term duration and of low significance. The degree of confidence in the assessment is fairly confident.

Operational phase without optimisation: Without optimisation measures, it is anticipated that the scale of this impact will be national, the status positive, and it will definitely occur. This impact is relevant, of medium-term duration, and of low significance. The degree of confidence in the assessment is fairly confident.

Optimisation objective: To enhance the socio-economic benefit of the project.

Optimisation measures:

- Ensure that the project is run in a responsible manner and that the environment is adequately protected from negative impacts;
- Put adequate monitoring systems in place throughout the duration of the project;
- Ensure that the value of the project is balanced against costs related to both negative environmental and social impacts in the region.

Construction phase with optimisation: It is unlikely that mitigation will alter the construction phase of the project to any significant degree.

Operational phase with optimisation: If optimisation measures are successfully implemented then this may result in the significance of the impact changing from low to medium but only at the local level.

5.1.4 Access across Site

Description of impact: The construction of the mine is likely to result in the restriction of access across the site.

Currently the area consists of a number of farms and in some places there are paths used by farm workers who regularly commute on foot. Consequently, it is important to consider the impact that restricted access will have amongst some communities, particularly amongst those people who rely heavily on walking as their major form of transport. Although the Community Survey, 2007 does not cover mode of transport, Census, 2001 indicated that in Emakhazeni 39% of the population list ónn footô as their most frequent mode of transport. The disruption of pathways used by local communities could cause a high level of inconvenience to these communities and needs to be carefully considered and mitigated. There are, however, two factors that may reduce the severity of this impact. The first is that the mining site will be evacuated prior to construction and the second is that the population density in the area is relatively low. It must also be noted that the severity of the impact is likely to be greatest during construction but will ease over a period into the operational phase.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability almost certain. This impact is relevant, of short-term duration and is reversible and of low significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability almost certain. This impact is moderately relevant, of short-term duration and is reversible but of low significance. The degree of confidence in the assessment is between >70%, very confident.

Mitigation objective: To limit any disruption of access across the mining site.

Mitigation measures:

- Provide alternate access routes around project sites;
- Consult with local authorities and communities to ensure that the disruption of access around installation sites is minimised;
- Ensure that any disruption of to water is adressed;

- Ensure that any disruption of access to grazing is addressed.

Construction phase with mitigation: If mitigation measures are successfully implemented then this may result in the relevance being reduced to moderately relevant.

Operational phase with mitigation: As mitigation would be most relevant during construction it is like that most disruption would have been addressed prior to operation and therefore it is unlikely that mitigation will change any of the impacts during operation.

5.1.5 Creation of Expectations

Description of impact: Expectations attached by the community to the perceived benefits of the project.

Clearly there is an expectation amongst certain communities that the project will result in an increase in jobs and will boost the income potential for small medium and micro enterprises (SMMEs). There is also a perception amongst the community that, as a result of the project, the living conditions in the region will improve and opportunities for skills development will increase. These expectations are illustrated through the following comments drawn from the response forms returned during the public meetings.

ñ*This project is going to improve the standard of our town to be better than it is today*.ò

ñ*I am young and vibrant person with national diploma in cost and management accounting but I need an experience I can be very glad if you can assist me on those regards as community development strategy*.ò

Apart from various comments concerning SMMEs and jobs already dealt with under 5.1.1 and 5.1.2 above the following comments were also drawn from the minutes of the public meeting held on Tuesday 4 August 2009 in the Belfast Funda Community Hall.

Fenter Kumalo representing NAFCOC ñ[s]*tated that he understood that the proposed project will have significant economic impacts on the area and communities around the project area, especially SMMEs*ò and ñ[r]*equested that SMMEs have an opportunity to take advantage of potential economic benefits of the project going forward.*ò

Phillemon Sindane in his private capacity ñ[s]*tated that he was a small business owner of a transport company"* and ñ*…that it was essential that for the project to be sustainable, SMMEs and the local community have to benefit from the project in terms of direct and indirect employment opportunities*.ò

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and it will definitely occur. This impact is relevant, of short-term duration and is reversible but of high significance in that, although it would not have a ómo-goôimplication, it is quite feasible to expect dissatisfied communities to seriously disrupt the project. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and it will definitely occur. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To manage unrealistic perceptions attached to the project by the community.

Mitigation measures:

- Establish a clear and effective channel of communication between the project team and I&APs and insure no unrealistic expectations are communicated.
- Set up a communication forum to manage this channel of communications.
- Appoint specialists and community leaders to the communication forum.
- Make use of the media and, if appropriate, consider the role of community radio stations in this regard.

Construction phase with mitigation: If, during construction, mitigation measures are successfully implemented then this may result in the significance changing from medium to low. It is also likely that the success of mitigation measures during the construction phase will have a direct bearing on the extent of the impact during the operational phase of the project.

Operational phase with mitigation: If mitigation measures are successfully implemented then this may result in the significance changing from medium to low during operation.

5.1.6 Disturbance of Cultural, Spiritual and Religious Sites

Description of impact: The construction of the mine will result in the disturbance of cultural, spiritual, and religious significance.

A number of heritage resources have been identified through the heritage scoping study these resources include farmsteads, graves and graveyards. Twenty five of these sites are regarded as having a high level of sensitivity and should be avoided where possible, while 9 are regarded as having a medium level and 11 as having a low level of sensitivity. Some of the approximately 60 graves identified are over 60 years old. From a social perspective all cultural, spiritual and religious sites need to be addressed in consultation with affected communities and in accordance with resettlement plans. At a public meeting held on Sunday 11 October in Wonderfontein a concern regarding resettlement and the need to relocate was raised by the community.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of permanent duration is irreversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: The impact to these sites will only occur during the construction phase of the project as these sites would need to have been settled prior to the commencement of construction.

Mitigation objective: To appropriately and sensitively deal with any disturbance of cultural, spiritual and religious sites.

Mitigation measures:

- Ensure that any component of cultural, spiritual and religious sites forms part of the Resettlement Action Plan applied to the original inhabitants of this region;
- Ensure that the community is included in decisions regarding cultural, spiritual and religious sites;
- Ensure that all cultural, spiritual and religious aspects are dealt with to the satisfaction of those affected;

- The recommendations of the appropriate specialists, such as heritage, need to be followed.

Construction phase with mitigation: If mitigation measures are successfully implemented then this may result in the significance reverting to medium or even low.

Operational phase with mitigation: Mitigation will need to have taken place prior to operation consequently this impact will not apply during the operational phase of the project.

5.1.7 Health

Description of impact: The health of communities living and working within the vicinity of the project, as well as that of employees is likely to be affected by the project.

Assessment: Although the scientific assessment of health issues is beyond the scope of specialisation of this study these issues are addressed here at the social level. A number of health issues have been raised by communities across the whole region and the State of the Environment Report for Mpumalanga indicates indicated that ñ[a] *wide variety of air pollution exists in Mpumalanga, ranging from veld fires to industrial processes, agriculture, mining activities, power generation, paper and pulp processing, vehicle use and domestic use of fossil fuel*.ò And with respect to water that ñ[w]*ater quality indicators have shown a general decrease in water quality over the past 6 years*.ò[11] Water quality in the area has been the source of concern to a number of residents with many blaming mining activities for the degradation of water in the area. In this regard see submissions made by Dr Koos Pretorius and Mr Kleinbooi Mahlangu at a public hearing held by the South African Human Rights Commission's (SAHRC) on Monday, June 8, 2009[12] as well as the newspaper article ñacid mine water is a ticking bombò[13].

[11] State of the Environment Mpumalanga Air Quality. http://www.mpu.agric.za/SOER/Mpumalanga%20Publikit%20Web%20Version%20SoER%20(2003)/issues/air_quality/index.htm [Accessed on 19 October, 2009]

[12] LRC Advocates for Protection of Environment and Water at SAHRC Hearing 2009 06 11, http://www.lrc.org.za/index.php?option=com_content&view=article&id=992:2009-06-11-lrc-advocates-for-protection-of-environment-and-water-at-sahrc-hearing&catid=84:other-news&Itemid=856 [Accessed on 19 October, 2009]

[13] Salgado I. 2009. Acid mine water is a ticking bomb. Researchers warn polluted water from collieries may render Mpumalanga a wasteland. The Star, Business Report. Wednesday, September 30 2009.

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of long-term duration, is irreversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To manage health risks associated with the project.

Mitigation measures:

- Undertake an independent health assessment associated with the project;
- Follow mitigation measures recommended in the appropriate specialist reports;
- Put in place a monitoring system to monitor health risks throughout the life of the project;
- Ensure that there is broad based representation in respect of the monitoring facility capable of serving both community and company interests.

Construction phase with mitigation: If mitigation measures are successfully implemented then this may result in the significance changing from high to medium.

Operational phase with mitigation: If mitigation measures are successfully implemented then this may result in the reversibility converting to reversible and the significance changing from high to medium.

5.1.8 Increase in Accidents

Description of impact: Increased risk of road and occupational accidents.

An increase in industrial activity and traffic in the area will increase the risk of both road and occupational accidents. An increase in heavy vehicles and machinery during construction and heavy traffic during operation will raise safety hazards for pedestrians, other road traffic and livestock. Local communities may not be accustomed to a high number of heavy vehicles and

heavy machinery and will need to be made aware of the increased dangers that this would pose.

Although mining activities will increase the risk of occupational accidents the mine has stringent health and safety regulation in place and is required to strictly conform to the Occupational Health and Safety Act, thus limiting the risk of occupational accidents.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of medium-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To reduce the risk of accidents.

Mitigation measures:

During construction the sites should be fenced off to prevent access:

- Fencing should be inspected on a regular basis and properly maintained by the contactor until construction is complete;
- The contractor should ensure that warning signs are erected on all boundary fences cautioning against entering the construction area;
- Ensure that all personnel are aware of and comply with all relevant industrial safety and traffic legislation;
- Ensure that all vehicles and machinery are properly maintained at all times;

During the operation phase the following is recommended:

- The mine is to be fenced. Fencing is to be inspected weekly and maintained properly.
- The operator is to ensure that signs warning against entering the area are erected on all boundary fences.
- Public awareness programmes should be developed by the operator. This must be done together with the directly adjacent communities to identify areas of particular risk and generate approaches to reduce risk. This should include awareness

programmes;

- Ensure that all personnel are aware of and comply with all relevant industrial safety and traffic legislation;
- Ensure that all vehicles and machinery are properly maintained at all times.

Construction phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

Operational phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

5.1.9 Increase in Noise and Vibration Levels

Description of impact: Mining activity will result in an increase in noise and vibration within the vicinity of the mine.

Noise and vibration will result from the use of heavy machinery and blasting activities which are likely to increase during the operational phase of the mine. Although noise and vibration are the subjects of a specialist report, which contains the technical details in this regard, on a general basis the social issue of noise and vibrations are important to consider and mitigate.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of medium-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To limit disturbance and psychological effects of noise pollution and damage caused through vibration.

Mitigation measures:

- Construction activities and vehicle movement should be restricted to daylight hours;
- Maintain all vehicles and construction machinery to a standard that ensures the noise levels do not cause unnecessary and avoidable nuisance to the workforce and local communities;
- Where appropriate road materials should be selected so as to minimise operational noise levels;
- Noise attenuation structures should be developed so as to minimise operational noise levels in areas where this is identified as problematic;
- Blasting activities should be undertaken at specific agreed upon times to minimise disturbances;
- The recommendations of the noise and vibrations specialists must be complied with.

Construction phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

Operational phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

5.1.10 Increased Crime

Description of impact: Activity in the vicinity of the mine may result in an influx of people into the area in search of work which could, in turn, result in an increase in crime.

It is possible that, during the construction phase of the project, an opportunistic criminal element may take advantage of increased activities in certain areas around construction sites. It is, however, less likely that the operational phase of the project will result in as great a threat in respect of crime levels as the intention is to draw the bulk of project related labour from surrounding areas. In this regard an argument could be made that this could reduce crime due to job creation.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability almost certain. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To reduce the risk of crime.

Mitigation measures:

- Established liaison structures with local police to monitor changes, particularly during the construction phase;
- Where necessary additional security should be provided;
- Where possible assist the police with infrastructure and resources;
- If applicable, liaise with the Community Policing Forums within the vicinity of the mine.

Construction phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

Operational phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

5.1.11 Informal Development and Settlements

Description of impact: An increase in unplanned development and informal settlements surrounding the project site associated with perceived economic opportunities.

The project could result in an influx of job seekers and those in pursuit of economic gain that may arise from and an increase in economic activity in the area. In particular construction activities and a perception that these activities are associated with job opportunities is likely to attract work seekers who do not have accommodation and who may illegally occupy land and set up informal structures while seeking employment. The nature of this informal development/settlement is such that it can be erected and populated rather rapidly making it difficult for the authorities to control or reverse. If not carefully managed, this type of uncontrolled development is also likely to result in an increase in an array of social pathologies such as crime, prostitution and alcohol and drug abuse.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To control the threat of an increase in unplanned development and the rise of informal settlements.

Mitigation measures:

- Ensure that all discarded construction material that can be used to build informal structures is properly disposed of after construction;
- Ensure that any temporary accommodation used to house construction workers is completely dismantled and properly disposed of after use;
- Cooperate with local authorities to ensure all legislation preventing illegal settlement is enforced at all times;
- Ensure appropriate housing is available for personnel.

Construction phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

Operational phase with mitigation: If mitigation measures are successfully implemented then the significance of the impact should revert to that of low.

5.1.12 Infrastructure

Description of impact: The likelihood of the project placing strain on existing infrastructure such as roads, municipal services, schools, health facilities and housing.

It is unlikely that the project will place a great strain on existing infrastructure in the region as the project is unlikely to attract a significant number of migrants to the area, during either the construction or operational phases of the project. This is due to the fact that most labour will be recruited from local communities within the vicinity of the project. Apart from this the mine

has also made provision to assist the local municipality by playing an active role in the relevant IDP and LED forums.

However, there may be some negative impact on existing infrastructure in the initial stages as construction gets under way although this will be limited to a 24 month period and should start to ease as the operational stage of the project is phased in.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is moderately relevant, of short-term duration, is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is moderately relevant, of short-term duration, is reversible and of low significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To reduce any burden that may be placed by the project on existing infrastructure.

Mitigation measures:

- Work closely with the local municipality to ensure that inadequate infrastructure is timeously upgraded;
- Where feasible upgrade infrastructure in the proximity of adjoining/close to the project area;
- Where feasible consider the possibility of extending technical training to employees of local authorities together with that provided to company employees.

Construction phase with mitigation: It is unlikely that mitigation would result in the significance of this impact changing to low.

Operational phase with mitigation: It is possible that with close cooperation between the mine and local authority the status of this impact could be changed to that of positive.

5.1.13 Loss of Employment after Construction

Description of impact: A number of jobs will be lost once construction of the project has been completed.

The construction phase of the project stretches over a 24 month period after which certain construction related jobs, which require a different range of skills than those of operational phase jobs, will be lost. This is likely to result in an increase in unemployment as construction nears completion. Depending on the state of the economy at the time and, how other construction projects in the area unfold, it is possible that at a point there will be a surplus of construction related skills in the job market which could possibly aggravate the unemployment situation amongst the local population.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be regional, the status negative and it will definitely occur. This impact is relevant, of short-term duration, is irreversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: This impact will not apply to the operational phase of the project.

Mitigation objective: To minimise the extent of jobs lost after construction.

Mitigation measures:

- Introduce training initiatives aimed at up skilling, particularly unskilled and semi-skilled workers, during construction;
- Absorb as many workers into the operational phase of the project as is feasible;
- Introduce community self-help projects as part of the corporate social investment programme.

Construction phase with mitigation: If mitigation measures are successful then it is likely that the significance would revert to low.

Operational phase with mitigation: This impact will not apply to the operational phase of the project.

5.1.14 Resettlement of Displaced Households

Description of impact: The development of the project will require certain households to be resettled.

It is likely that approximately 115 people within about 25 households will need to be relocated due to the project. In this respect a number of concerns regarding resettlement were raised at a public meeting held amongst the Wonderfontein community on 11 October, 2009. The major issue was a fear that resettled communities would be placed on land later required by the mine, or alternatively, on land currently under dispute in terms of the land restitution process presently underway in the area. Either way some community members were concerned that resettlement would start a process of moves unless the resettled communities were given their own land.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and the probability definite. This impact is relevant, of permanent duration, is irreversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: This impact does not apply to the operational phase of the project as resettlement would need to have taken place before the commencement of construction.

Mitigation objective: Provide an acceptable alternate resource for those facing resettlement and to ensure that resettlement takes place in line with world best practice standards.

Mitigation measures:

Resettlement must be conducted in terms of international best practice and accompanied by a comprehensive resettlement action plan. This goes further than merely fulfilling the legislative requirements of compensation. According to the World Bank's Revised Policy on Involuntary Resettlement (OP/BP 4.12) (2006), best practices must ensure that:

- Involuntary resettlement should be avoided, or minimised where unavoidable.
- Where resettlement is unavoidable, resettlement plans and activities should be seen and executed as development programmes.
- Resettled persons should be provided with sufficient investment resources.

- Displaced persons should be meaningfully consulted, and should participate in the planning and implementation of resettlement programmes.
- Displaced persons should be compensated, prior to the move, for their losses at full replacement cost.
- Resettled persons should be assisted with the move and provided with support during the transition period.
- Resettled persons should be assisted with their efforts to improve, or at least restore, their former living standards, income earning capacity and production levels ï whichever is higher.

A resettlement action plan (RAP) or resettlement policy framework (RPF) needs to be worked out through negotiations with the affected parties and other key stakeholders (i.e. Dept of Land Affairs, Dept of Housing, Local Municipalities and Traditional Local authorities).

According to the World Bankôs best practice principles and International Finance Corporation (IFC) performance Standard 5, such a plan or framework should spell out the following;

1) Why people need to be resettled,
2) Where people need to be resettled to,
3) Who specifically would be affected,
4) How they would be compensated,
5) Grievance procedures,
6) Who the responsible agents would be,
7) The timeframe for the resettlement process,
8) The budget/cost estimate and
9) How the resettlement process would be monitored and evaluated (IFC 2002, WB 2001).

The developers will need to commission independent experts to undertake a land audit and to facilitate the development of the RAP/RPF. Alternative housing and/or compensation would also need to be provided to the affected parties prior to the actual relocation activities.

The issue of compensation will also need to be considered based on independent and professionally assessed market related assessments.

Where natural resources are damaged or destroyed adequate compensation will also need to be considered be that in the form of access to alternate resources or through fair compensation.

Construction phase with mitigation: If mitigation measures are successful it is possible that the significance of this impact would change to that of medium.

Operational phase with mitigation: This impact does not apply to the operational phase of the project as resettlement would need to have taken place before the commencement of construction.

5.1.15 Risk of STDs, HIV and AIDS

Description of impact: An increase in the risk of sexually transmitted diseases and HIV and AIDS.

Both the province of Mpumalanga and the district of Nkangala have experienced an increase in HIV prevalence rates between 2006 and 2008[14]. It is also well documented that an increase in the risk of STDs, HIV and AIDS is associated with an influx of workers, particularly migrant workers, and/or any increase in truck traffic into or through an area[15]. These risks are usually particularly high in ógreenfieldôareas and are compounded by high levels of poverty. As far as this project is concerned the region already has a high HIV prevalence rate at 31.8%[16]. Apart from this there is no intention of recruiting any significant number of workers from outside of the region. Consequently, the likelihood of the project having any significant negative impact on the prevalence of STDs, HIV and AIDS in the area is negligible. There was also no mention of any increased risk of STDs, HIV and AIDS during any of the public meetings or the various submissions received in response to the project. Notwithstanding this, however, the issue of STDs, HIV and AIDS must be given serious consideration.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and probability is almost certain. This impact is relevant, of short-term duration and is irreversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

[14] Department of Health, 2009. National HIV and syphilis antenatal seroprevalence survey in South Africa: 2009.
[15] Alam, M.K. Undated. AIDS in India: Sex Workers and Truck Drivers Playing Vital Roles. Global Health Council. http://www.globalhealth.org/reports/text.php3?id=257 [Accessed: 16 November, 2007]
Kulis, M, Chawla M, Kozierkiewicz M & Subata E. Undated. Truck Drivers and Casual Sex: An Inquiry into the Potential Spread of HIV/AIDS in the Baltic Region http://go.worldbank.org/QKLGOMZCD1 [Accessed: 16 November, 2007].
[16] See discussion above under 4.8 Prevalence of STDs, HIV and AIDS.

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative, and probability almost certain. This impact is relevant, of medium-term duration, is irreversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Mitigation objective: To manage risks associated with STDs, HIV and AIDS.

Mitigation measures:

Although no significant risk can be attached directly to the project as the area already has a relatively high prevalence of HIV which needs to be managed. This high level of HIV is most likely due to past activities in the region and it would be prudent for Exxaro to continue to address the issue through its current HIV and AIDS policies. In this sense the following mitigation measure are mentioned.

Mitigation measures:

- In consultation with local and international HIV and AIDS organisations and government structures, design and implement STD, HIV and AIDS awareness and prevention campaign. This campaign should use various common practice methodologies in order to ensure social and cultural sensitivity;
- Where ever possible attempt to minimise population influx by utilising local labour;
- Make STD and HIV and AIDS awareness and prevention programmes a condition of contract for all suppliers and sub-operators;
- Provide an adequate supply of free condoms to all workers. Condoms should be located in the bathrooms and other communal areas within the construction/operational area;
- A voluntary counselling and testing programme should be introduced during the construction phase and should continue during operations;
- Undertake a voluntary STD and HIV and AIDS prevalence survey amongst all workers on a regular basis. This would involve a voluntary test made available to 100% of the workforce[17]. The results of the survey will help to determine the HIV and AIDS and STD strategy. When results are obtained (on assumption that the results are statistically representative), the results should be made available to management and workers at the same time. Results should be presented as statistical returns that ensure confidentiality.

Construction phase with mitigation: It is possible that if mitigation measures are successful the significance of this impact will be reduced to that of low.

Operational phase with mitigation: It is possible that if mitigation measures are successful the significance of this impact will be reduced to that of low.

5.1.16 Social Vulnerability

Description of impact: The economic and psychological stress of resettlement will increase the social vulnerability of some community members.

Concerns have been raised amongst farm workers in the Wonderfontein area that, if the mine purchases properties in the area, they will be forced to move thus beginning a cycle that would leaving them without any land to settle on which would increase their vulnerability. This concern is aggravated by the fact that there are a number of unsettled land claims in the area. Community members fear either being resettled on land owned by the mine that is eventually taken back when mining activities are expanded or on disputed land that is eventually returned to its rightful owners under the land restoration process. If indeed any of these scenarios did unfold this would leave the community disempowered and at risk of;

- Marginalisation.
- Food insecurity.
- Increased morbidity and mortality.
- Loss of access to common property resources.
- Social disarticulation.

These risks are listed amongst the eight risks that, according to Cernea[18], could lead to impoverishment.

It is, however, most unlikely that any of these scenarios will unfold as Exxaro intends to implement a recognised resettlement action plan (RAP) in accordance with the companies policy, which is in line with best practice according to World Bank recommendations.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the

[17] Voluntary samples are not necessarily statistically accurate as they are not strictly random.
[18] Cernea, M.M. (2000). Risks, Safeguards, and Reconstruction: A Model for Population Displacement and Resettlement, in M.M. Cernea & C. McDowell (eds.) Risks and Reconstruction: Experiences of Resettlers and Refugees. The World Bank, Washington DC. p11-55.

scale of this impact will be local, the status negative, and probability is almost certain. This impact is relevant, of short-term duration and is reversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: Resettlement will need to have been completed prior to operation so this impact will not apply to the operational phase of the project.

Mitigation objective: To reduce the degree of social vulnerability created due to resettlement.

Mitigation measures:

- Closely follow the resettlement action plan;
- Identify the vulnerable sectors of the community;
- Liaise with the relevant authorities and form a working group to support vulnerable community members;
- Introduce mechanisms to assist vulnerable members of the community;
- Provide a counselling service.

Construction phase with mitigation: It is likely that, if mitigation measures are successful, then the significance of this impact will be reduced to that of low.

Operational phase with mitigation: Resettlement will need to have been completed prior to operation so this impact will not apply to the operational phase of the project.

5.1.17 Visual Impact and Disturbance of Sense of Place

Description of impact: A ñ*sense of place is a social phenomenon that exists independently of any one individual's perceptions or experiences, yet is dependent on human engagement for its existence. Such a feeling may be derived from the natural environment, but is more often made up of a mix of natural and cultural features in the landscape, and generally includes the people who occupy the place*ò[19].

Not only will the construction of the mine disrupt the natural environment but it will also disrupt the cultural features and social networks in the area. Where people need to be resettled they are no longer able to regain the sense of place that they attached to their previous area of

[19]Wikipidia: http://en.wikipedia.org/wiki/Sense_of_place [Accessed 19 September, 2009].

abode. The visual impact and sense of place currently attached to the region identified for mining is characterised by a rural agricultural area which will be replaced by a more industrialised ambiance associated with mining. Apart from those who will be moved from the area neighbouring residents are also likely to experience a change to the sense of place they currently attach to the area as will tourists passing through the area.

Assessment:

Construction phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative and it will definitely occur. This impact is relevant, of permanent duration and is irreversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase without mitigation: This impact will have occurred during construction and is therefore not applicable to the operational phase of the project.

Mitigation objective: To limit the negative visual effects and the disturbance on the sense of place that the project may have on the environment.

Mitigation measures:

- Consult with affected communities in an effort to identify and address issues relating to the sense of place.
- Follow the mitigation measures suggested in the visual impact report.

Construction phase with mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be local, the status negative and it will definitely occur. This impact is relevant, of permanent duration and is irreversible and of medium significance. The degree of confidence in the assessment is >70%, very confident.

Operational phase with mitigation: This impact will have occurred during construction and is therefore not applicable to the operational phase of the project.

5.1.18 The 'Do-nothing' Alternative

Description of impact: If nothing was done and the *status quo* remained in place there would also be a series of impacts.

If the project did not proceed there would be no need for resettlement and agricultural activities would continue along the same lines as they currently do, with the land being used to either plant crops or for grazing. The risk that mining poses to water security in the area would also be reduced. Although agriculture is likely to continue to be an economically viable option the economic opportunity available through mining the coal reserve would be lost, as would the opportunity for local economic development, job creation and skills development associated with large scale mining operations.

At a national level the countryôs electricity supply is highly dependent on a viable source of coal and, with no alternatives in the foreseeable future, and the depletion of some of the coal reserves in and around Witbank, Eskom requires an alternative coal source closer to Belfast, which the Belfast Project offers. If this resource is not accessed, and considering the rising demands of the Southern African Power Pool (SAPP), the ódo nothingô alternative could result in disruptions to the countryôs electricity supply. If indeed this scenario does materialise the social consequences, on a national level, are likely to be severe. The severity of this was evident during the recent power disruptions that hit the country resulting in traffic congestion, the disruption of medical facilities and placing pressure on industry, amongst other things.

The severity of this, however, needs to be balanced against the threat that the project poses to the security of water resources. Just as disruption to the national energy supply have dire social consequences so do any threats to national water security. In this regard the need to install an effective water treatment facility to ensure water security should be investigated.

Assessment:

Operational phase without mitigation: Without mitigation measures, it is anticipated that the scale of this impact will be national, the status negative, and probability almost certain. This impact is relevant, of long-term duration, is irreversible and of high significance. The degree of confidence in the assessment is >70%, very confident.

This assessment only applies to the operational phase of the project.

Mitigation: The only mitigation option is to proceed with the project, however, with a provisory: that the threats to water security in the area, and on a national basis, are seriously considered and that adequate water treatment options are assessed for the project.

5.2 Issues Identified During Project Closure

Although it is necessary to identify the impacts that are likely to arise due to the closure of the mine it is not always possible, particularly at this early stage of a project, to make any reasonably accurate assessments in this regard. This is largely due to the fact that impact assessments are undertaken against the background of a baseline study and with the life of mine extending over the long-term, between 25 and 30 years, it is most likely that the social environment will have drastically changed by the time the mine closes. Notwithstanding this it is, however, necessary to identify some of the issues that will be associated with the closure of the project. In terms of the Belfast Project these issues are likely to include:

- Job losses
- Closure of small and medium businesses
- Social vulnerability
- Illegal exploitation of infrastructure

Each of these impacts will now briefly be described below in the light of their association with the project.

5.2.1 Job Losses

The closure of the mine will result in the loss of jobs probably over a period as the plant is closed in phases. It is not possible at this stage to indicate the exact number of jobs that will be lost due to closure as this is dependent on a number of variables that will change over time. For the same reason it is not possible to assess, in respect of these jobs, the absorption capacity of the economy at the point of closure.

5.2.2 Closure of Small and Medium Business

It is likely that a number of small and medium sized enterprises will also be both directly and indirectly negatively affected by the closure of the mine. However at this stage, due to the extent of change that is likely to occur between the operational and closure phases of the plant, it is not possible to provide any reasonably accurate assessment of this impact apart from listing it as a future issue.

5.2.3 Social Vulnerability

Dependent on the state and extent of the economy at the point of closure, the loss of jobs and economic opportunities discussed under 5.2.1 and 5.2.2 above are likely to result in the

reduction of household income. It is, however, quite reasonable to assume that at closure, the economy would have developed to an extent that it could largely absorb the socio-economic impact of closure. As the life span of the mine is likely to span at least two generations, considering that generations usually stretch across a 15 year period, it is quite unlikely that, in the event of a weak economy, ex-employees may find it difficult to return to traditional ways of earning a livelihood without having some assistance.

5.2.4 Illegal Exploitation of Infrastructure

The vacation of the mine infrastructure and the site may create an opportunity for the site to be illegally mined by micro-operators and/or illegally occupied. Unplanned and uncontrolled operation and occupation would pose a health and safety risk and may result in a strain being placed on local resources and an increase risk of social pathologies in the area.

5.2.5 Plant Decommissioning Policy

Considering the issues raised above it is important that the mine operator develop a mine decommissioning policy which is regularly reviewed and adapted as the operational phase of the mine unfolds. This policy should be in accordance with the requirements set out under ñ5. Processes pertaining to management of downscaling and retrenchmentò of the minesô Social and Labour Plan which in summary encompass the following.

- Plan well in advance of closure;
- If applicable consider the option of redeployment;
- Employ an inclusive approach to the formulation of a plant decommissioning policy;
- Ensure employees are provided an opportunity to diversify their skills through in-house training schemes well before closure;
- Clearly and timeously communicate the impending closure process;
- Negotiate severance packages with employees that assist in bridging the gap between termination of service and re-employment;
- Provide the option of employment counselling to employees aimed at assisting employees to formulate curriculum vitae and to seek alternative employment.

Attention will now be turned towards a brief discussion culminating in a conclusion.

6 DISCUSSION AND CONCLUSION

This project touches on a number of contentious issues which have resulted in, and no doubt will continue to result in, many discussions regarding the viability of the project becoming somewhat emotional. Keeping this in mind throughout the assessment, every effort was made to consider the project from as neutral a position as possible. To what degree this can be achieved will, however, always be a matter of debate.

The first of these contentious issues concerns the land use in the area and the ongoing conflict between agriculture and mining. In this vein Koos Pretorius of the Mpumalanga Lake District Protection Group points out that ñ[f]*or every rand you make through coal mining you're going to lose three to four rands of income if you consider the impact on the economy of the loss of water and potential jobs from alternative less destructive land use options. The impact won't be immediate; we'll see it in 10 or 15 years when they move out. But mining is not a sustainable option*6ò[20]

Conversely, the issue of coal reserves is also pressing. On the basis of a report cited in Creamer Mediaôs Mining Weekly[21] it is states that ñ*South Africa's coal production is largely concentrated in Mpumalanga province where, in 2006, more than 84% of the country's total coal output was mined from 50 operations*.ò The report continues to state that the coal reserves in the Witbank coal field which, along with the Highveld and Waterberg coal fields, account for 70% of South Africaôs coal reserves are nearing depletion. It continues to indicate that ñ[a]*ccording to the Department of Minerals and Energy, about 77% of the country's primary energy needs and 93% of its electricity production needs are met by coal.*ò With Eskom blaming the January, 2008 national energy crises on low coal stocks, poor coal quality and wet coal and indicating a need to have a coal stockpile of at least 20 day at its power station to avert similar crises in the future, the need to exploit additional coal reserves becomes important. To source coal from the Waterberg coal fields is not an economically viable option leaving the only alternative to source new coal reserves in and around the Belfast area.

The third contentious issue, closely relates to the first two, concerns the security of water, not only in the region, but on a national scale as well. The negative effect that industrial development has had on the quality of water is currently the subject of rigorous debate and is

[20] Africa Wild Life. Vol. 62 No. 3, 2008:13
[21] Creamer Mediaôs Mining Weekly. Local coal market makes global impact. 5th September, 2008.

receiving urgent attention by the World Health Organisation (WHO).[22] A number of articles have placed the blame for water pollution in the area squarely on the shoulders of collieries in Mpumalanga and have warned of a ñ*..looming water crises.*ò[23]

Considering these issues and the worst case scenario in respect of the security of both water and electricity, each has dire social consequences. In January 2008 the negative effects of power disruptions had both severe economic and personal effects, with disruptions to industry, medical facilities and traffic control mechanisms. On the other hand water is a scarce resource on a global level with some areas in the world such as South Africa in threat of a greater crisis than others.

Although each of these issues has social consequences and each is vigorously debated in the social sphere none of them can be evaluated on purely a social basis. The scientific evaluation of water quality goes way beyond the scope of this report as does the economic evaluation of land use and both the economic and scientific evaluation of a secure electricity supply. Although each of these issues need to be assessed and decided on a technical basis the consequences of making the wrong decision, particularly with respect to water and electricity, has very serious social consequences at the national level.

Bearing this in mind it can be said that the social impact assessment of the project does not identify any fatal flaws with the most critical social issue being the resettlement of affected households which will need to be dealt with in terms of an accepted resettlement action plan. The ódo nothingôoption could have serious national social consequences if it places the security of the electricity supply at risk. In a similar vein any threat to water security would also have serious social consequences and a balance would need to be found, which could come in the form of water purification systems.

[22] Amongst many other WHO documents on the subject see ï The International Decade for Action Water for Life - 2005-2015 Coping with Water Scarcity World Water Day 2007. http://www.who.int/water_sanitation_health/wwd7_water_scarcity_final_rev_1.pdf [Accessed 21 September, 2009].

[23] Salgado I. 2009. Acid mine water is a ticking bomb. Researchers warn polluted water from collieries may render Mpumalanga a wasteland. The Star, Business Report. Wednesday, September 30 2009.

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APPENDIX A

IMPACT ASSESSMENT TABLES

Construction Phase without Optimisation/Mitigation Measures								
Impact	**Scale**	**Relevance**	**Duration**	**Reversibility**	**Probability**	**Significance**	**Status**	**Confidence**
Increase in SMME opportunities	Local	Relevant	Short-term	Reversible	Definite	Medium	Positive	Very confident
Job creation and income potential	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Socio-economic impact	Regional	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Access across site	Local	Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Creation of expectations	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Disturbance of cultural, spiritual and religious sites	Local	Relevant	Permanent	Irreversible	Definite	High	Negative	Very confident
Health	Local	Relevant	Short-term	Reversible	Definite	High	Negative	Very confident
Increase in accidents	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Increase in noise levels	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Increased crime	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Informal development and settlements	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Infrastructure	Local	Moderately Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Loss of employment after construction	Regional	Relevant	Short-term	Irreversible	Definite	Medium	Negative	Very confident
Resettlement of displaced households	Local	Relevant	Permanent	Irreversible	Definite	High	Negative	Very confident
Risk of HIV/AIDS and STD	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Social vulnerability	Local	Relevant	Short-term	Reversible	Almost Certain	Medium	Negative	Very confident
Visual impact and disturbance of sense of place	Local	Relevant	Permanent	Irreversible	Definite	High	Negative	Very confident
ôDo nothingôalternative	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Operational Phase without Optimisation/Mitigation Measures								
Impact	**Scale**	**Relevance**	**Duration**	**Reversibility**	**Probability**	**Significance**	**Status**	**Confidence**
Increase in SMME opportunities	Local	Relevant	Short-term	Reversible	Definite	Medium	Positive	Very confident
Job creation and income potential	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Socio-economic impact	Regional	Relevant	Medium-term	Reversible	Definite	Low	Positive	Fairly confident
Access across site	Local	Moderately Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Creation of expectations	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Disturbance of cultural, spiritual and religious sites	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Health	Local	Relevant	Long-term	Irreversible	Definite	High	Negative	Very confident
Increase in accidents	Local	Relevant	Medium-term	Reversible	Definite	Medium	Negative	Very confident
Increase in noise levels	Local	Relevant	Medium-term	Reversible	Definite	Medium	Negative	Very confident
Increased crime	Local	Relevant	Short-term	Reversible	Almost Certain	Medium	Negative	Very confident
Informal development and settlements	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Infrastructure	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Loss of employment after construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resettlement of displaced households	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Risk of HIV/AIDS and STD	Local	Relevant	Medium-term	Reversible	Definite	Medium	Negative	Very confident
Social vulnerability	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Visual impact and disturbance of sense of place	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
¢Do nothingôalternative	National	Relevant	Long-term	Reversible	Definite	High	Negative	Very confident

Construction Phase with Optimisation/Mitigation Measures								
Impact	**Scale**	**Relevance**	**Duration**	**Reversibility**	**Probability**	**Significance**	**Status**	**Confidence**
Increase in SMME opportunities	Local	Relevant	Short-term	Reversible	Definite	Medium	Positive	Very confident
Job creation and income potential	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Socio-economic impact	Regional	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Access across site	Local	Moderately Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Creation of expectations	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Disturbance of cultural, spiritual and religious sites	Local	Relevant	Permanent	Irreversible	Definite	Medium to low	Negative	Very confident
Health	Local	Relevant	Short-term	Reversible	Definite	Medium	Negative	Very confident
Increase in accidents	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Increase in noise levels	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Increased crime	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Informal development and settlements	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Infrastructure	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Loss of employment after construction	Regional	Relevant	Short-term	Irreversible	Definite	Low	Negative	Very confident
Resettlement of displaced households	Local	Relevant	Permanent	Irreversible	Definite	Medium	Negative	Very confident
Risk of HIV/AIDS and STD	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Social vulnerability	Local	Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Visual impact and disturbance of sense of place	Local	Relevant	Permanent	Irreversible	Definite	Medium	Negative	Very confident
¶Do nothingôalternative	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Operational Phase with Optimisation/Mitigation Measures								
Impact	**Scale**	**Relevance**	**Duration**	**Reversibility**	**Probability**	**Significance**	**Status**	**Confidence**
Increase in SMME opportunities	Local	Relevant	Short-term	Reversible	Definite	Medium	Positive	Very confident
Job creation and income potential	Local	Relevant	Short-term	Reversible	Definite	Low	Positive	Fairly confident
Socio-economic impact	Regional	Relevant	Medium-term	Reversible	Definite	Medium at a local level	Positive	Fairly confident
Access across site	Local	Moderately Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Creation of expectations	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Disturbance of cultural, spiritual and religious sites	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Health	Local	Relevant	Long-term	Reversible	Definite	Medium	Negative	Very confident
Increase in accidents	Local	Relevant	Medium-term	Reversible	Definite	Low	Negative	Very confident
Increase in noise levels	Local	Relevant	Medium-term	Reversible	Definite	Low	Negative	Very confident
Increased crime	Local	Relevant	Short-term	Reversible	Almost Certain	Low	Negative	Very confident
Informal development and settlements	Local	Relevant	Short-term	Reversible	Definite	Low	Negative	Very confident
Infrastructure	Local	Moderately Relevant	Short-term	Reversible	Definite	Low	Positive?	Very confident
Loss of employment after construction	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Resettlement of displaced households	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Risk of HIV/AIDS and STD	Local	Relevant	Medium-term	Reversible	Definite	Low	Negative	Very confident
Social vulnerability	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Visual impact and disturbance of sense of place	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
‘Do nothingô alternative	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

APPENDIX B
DOCUMENT LIMITATIONS

DOCUMENT LIMITATIONS

This Document has been provided by Dr. Neville Bews & Associates (DBA) subject to the following limitations:

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Dr. NEVILLE BEWS & ASSOCIATES