TABLE 25: DYNAMIC IMPACT TABLE

Road Name	Speed limit (km/h)	Length of Road (km)	Approximate Period of View (sec)	View Distance
Alternative 1 N4	120	33.7	1011	3-6 km
Alternative 2 N4	120	8.1	243	10-14 km
Alternative 3 N4	120	5.5	165	15-16 km
Alternative 1 N12	120	4.4	132	19-27 km
Alternative 2 N12	120	26.6	798	11-18 km
Alternative 3 N12	120	24.4	732	10-13 km
Alternative 2 N3	120	1.9	57	0.5-3 km
Alternative 4 N3	120	18.1	543	0-1 km
Alternative 4 N1	120	10.6	318	15-18 km
Alternative 2 N17	120	2	60	50-52 km
Alternative 3 N17	120	3.9	117	40-50 km

Conclusion

Table 26 lists the observation points together with the category of viewer, context of view, relative numbers of viewers and approximate distance of observation point to the proposed site. The location of these observation points are shown in Figure 58, Figure 59, Figure 60 and Figure 61.

TABLE 26: VISUAL IMPACT MATRIX

Potential Observation Point	Category of Potential Receptor	Context of View	Approximate View Distance	Period of View	Visibility Rating
Surrounding Farmland	Static	Level	0 – 11 km	Long Term	Medium
Johannesburg/Pretoria	Static	Level Above	> 10 km	Long Term	Medium
Gravel Roads	Dynamic	Above & below	1 – 11 km	Medium	Low
Tar Roads	Dynamic	Level - Above	5 – 11 km	Short	Low

It should however be noted that there are a number of existing power lines in the study area as shown in the Figures above. Viewers in the viewshed have become accustomed to these power lines in the landscape and an additional 100 km of power line will not increase the impact significantly, however if Alternative 2 is selected the visual impact will be greater because there is no existing power line located on this route.

7.2   Cultural Environment

7.2.1   Archaeological and Cultural Historical Features

Focused archaeological research has been conducted in the Gauteng and Mpumalanga Provinces of South Africa for more than four decades. This research consists of surveys and of excavations of Stone Age and Iron Age sites as well as the recording of rock art and historical sites. The Gauteng and Mpumalanga Provinces have a rich heritage comprised of remains dating from the pre-historical and from the historical (or colonial) periods of South Africa. Pre-historical and historical remains in the Gauteng and Mpumalanga Provinces therefore form a record of the heritage of most groups living in South Africa today.

Various types and ranges of heritage resources that qualify as part of South Africa's 'national estate' as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) occur in the Gauteng and Mpumalanga Provinces.

Within a cultural landscape

The project area is located in the midst of a cultural landscape that is marked by heritage remains dating from the pre-historical into the historical (colonial) period. Stone Age sites, Iron Age sites and colonial remains therefore do occur in the project area. However, the historical character of the project area is gradually been erased by various kinds of development.

The archaeological and historical significance of the project area must be described and explained in more detail before the results of the Phase I HIA study are discussed.

FIGURE 62:- THE PROJECT AREA NEAR BRONKHORSTSPRUIT IN THE EAST IS CHARACTERISED BY OUTSTRETCHED GRASS VELDT, AGRICULTURAL FIELDS AND QUARTZITE RIDGES. NOTE EXISTING NORTHERN CORRIDOR RUNNING ACROSS CREST OF RIDGE.

FIGURE 63:- THE CENTRAL OPTION FOR THE PROPOSED NEW 400 KV BRAVO/LULAMISA POWER LINE RUNS ACROSS THE BRONKHORSTSPRUIT DAM NEAR BRONKHORSTSPRUIT.

Contextualising the project area

The following brief overview of pre-historical, historical, cultural and economic evidence will help to contextualise the project area.

Stone Age sites

Stone Age sites are marked by stone artefacts that are found scattered on the surface of the earth or as parts of deposits in caves and rock shelters. The Stone Age is divided into the Early Stone Age (covers the period from 2.5 million years ago to 250 000 years ago), the Middle Stone Age (refers to the period from 250 000 years ago to 22 000 years ago) and the Late Stone Age (the period from 22 000 years ago to 200 years ago).

The Later Stone Age is also associated with rock paintings and engravings which were done by the San, Khoi Khoi and in more recent times by Iron Age farmers.

The Mooiplaas rock engraving site is located on the farm Mooiplaas 367 JR to the north of the project area. This engraving site comprises nearly sixty footprints, 15 to 35 cm long and up to 5cm deep engraved on the surface of four rock plates. The engravings also include more than 15 cupules.

Iron Age remains

The Iron Age is associated with the first agro-pastoralists who lived in semi-permanent villages and who practised metal working during the last two millennia. The Iron Age is usually divided into the Early Iron Age (covers the 1st millennium AD) and the Later Iron Age (covers the first 880 years of the 2nd millennium AD).

Early Iron Age farming communities practised a mixed economy consisting of plant cultivation and stock herding in the interior of South Africa during the first half of the first millennium A. D. These Bantu-Negroid people, who probably interbred with the local San and Khoi-Khoi, were ironworkers of some repute and established the first permanent villages south of the Limpopo River. Some of their settlements occur to the north of the Magaliesberg and project area.

During the Late Iron Age farming was practised in the northern, central and eastern parts of the country. Stone walled settlements built from the 17th century onwards are particularly numerous to the west of the study area, where they are associated with the Tswana. Several of these stone walled sites also occur between the Bronberge and the Magaliesberg where they reveal Ndebele spheres of influence. This group originated from KwaZulu-Natal during the 17th century. The group initially settled at Elangeni, somewhere near Randburg. The Manala section of the Ndebele subsequently occupied a wide area to the east of Pretoria between the Bronberge in the south and the Magaliesberg to the north. This sphere of influence stretched from Wapadrand in the west to Tierpoort and Bapsfontein in the east and from Mamelodi in the west to Pienaarspoort in the east. This sphere of influence was known as KwaQobongo and can be divided into three areas which were consecutively occupied by the group, namely namely Ezotshaneni (ca. 1677 to 1717), Embilaneni (c. 1717 to 1747) and KoNonduna (c.1747 to 1825).

Concentrations of stone walled sites probably associated with the Ndebele were recorded on Tweefontein 372 JR (Wapadrand), Klipkop 396 JR, Hatherly 331 JR, Zwartkopjes 364 JR, Tierpoort 371 JR, Zwavelpoort 373 JR and Rietfontein 395 JR.

The historical period

The first colonists settled in places in the Magaliesberg such as Tierpoort, Garsfontein and Swawelpoort near the Bronberge. In the second half of the 19th century, Pretoria was established, on 16 November 1855, to meet the need for a central meeting place for the disunited Voortrekker republics. At first Pretoria developed slowly, and for many years maintained a rural atmosphere. The first mail coach service was established in 1864, telegraph communications followed in 1877 and on New Year's day 1893, the railway line from Elandsfontein (Germiston) reached Pretoria. The Delagoa Bay railway line was opened on 1 January 1895 and the railway line to Pietersburg on 1 May 1899.

Other towns close to the project area include Bronkhorstspruit, Centurion and Randburg.

Bronkhorstspruit which was laid out by Cornelius Erasmus on a part of his farm Hondsrivier in 1904. The town was named Erasmus for a number of years. From July 1935, the town's name, which is derived from a water-cress called 'bronkhors' by early settlers, was changed to Bronkhorstspruit. The 20th century saw the introduction of large-scale irrigation and dry land farming in the eastern parts of the study area. Today, milling is Bronkhorstspruit's main industry.

Bronkhorstspruit is rich in heritage resources. The town and its outskirts were occupied from the earliest times by Stone Age peoples while Iron Age farmers, who preferred the rocky ridges and outcrops exposed in the rolling landscape, occupied the area from the 17th century onwards. The first Colonists who moved north of the Vaal River during the second half of the 20th century also established farm homesteads, outbuildings and infrastructure across the landscape. The first railroad line between Pretoria and Delagoa Bay passed through Donkerpoort, to the north of the project area.

The Anglo Transvaal Wars

The Transvaal Anglo Boer War followed in 1880 to 1881. The Second Anglo Boer War raged from 1899 to 1902. Battlefields, graveyards and fortifications from this time still exist from Irene (Centurion) through to Pretoria, Bronkhorstspruit, Cullinan and to Balmoral and Witbank in the east.

The annexation of the Transvaal Republic with the hoisting of the Union Jack on 12 April 1877 in Pretoria was confronted, four years later, by the re-proclamation of the independence of the South African Republic on 16 December 1880. War erupted. Two companies of the 94 Regiment of Foot was ordered from Lydenburg to Pretoria as reinforcements. A Boer commando under Commandant F. Joubert confronted the British column of Lieutenant-Colonel P.R. Anstruther at Bronkhorstspruit. The column, which was comprised of 250 men and 36 wagons, stretched for almost a kilometre. The British suffered heavy casualties (75 killed and 80 wounded) in a battle that lasted fifteen minutes.

The Battle of Bronkhorstspruit must have taken place on the farm Klipeiland 524 JR as is indicated on the 1:50 000 topographical map of Bronkhorstspruit 2528DC.

The graveyard in which the British soldiers were buried was subsequently moved to make way for a road. The site is situated outside Bronkhorstspruit, some 2.5 kilometres down the road to Delmas. A Garden of Remembrance is situated on one side of the road and a national monument sign on the other side of the road. Both are protected sites.

7.3   Socio-Economic Environment

In order to address the overall objective of this study, it was necessary to compile a detailed description of the study area. The first subsection below provides a profile of the social processes in terms of demographic, economic, institutional and empowerment, socio-cultural, geographical and biophysical baseline conditions in the study area. Each subsection concludes with a table summarising how the project is likely to change these baseline profiles, and the related impacts that could be expected as a result of the project.

A change process can be defined as change that takes place within the receiving environment as a result of a direct or indirect intervention. A potential impact follows as a result of the change process. However, a change process can only result in an impact once it is experienced as such by an individual/community on a physical and/or cognitive level.

7.3.1   Baseline Demographic Processes

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

Population

The Kungwini Local Municipality (KLM) covers an area of approximately 2 202 km^2 and in 2007 had a total population of 104 150 people. Compared to the population size of 2001, when the population stood at approximately 160 752 people, this means that the population size within the KLM decreased at an average rate of 9 434 people per annum or a total of 56 602 over the 6-year period between 2001 and 2007. This population decrease also brought about a change in the population density in the area from 73.0 persons per km^2 in 2001 to 47.3 persons per km^2 in 2007.

The City of Tshwane Metropolitan Municipality (CTMM) covers an area of 2 175 km^2, which is more or less the same size of the KLM. In 2001, the CTMM had a total population of 1 982 228 people (with a population density of approximately 911.8 people per km^2), which increased at an average rate of 60 612 persons per annum to a total population of 2 345 907 people in 2007. This increase in the population size also affected the population density in the area, which grew at an average of 27.9 persons per km^2 to a population density of approximately 1 079.1 persons per km^2 in 2007. As is the

case with the KLM, the predominant population group is Black African (74.6%), followed by White (22.1%).

In 2007, the CJMM was home to close on 3.9 million people. When compared to 2001, this translates to an average population growth rate of approximately 20.5%. The city's population is therefore expanding at an average rate of 110 480 people per annum. The population density is high at approximately 2 363.6 persons per km2, which is more than double than that of the CTMM and approximately 50 times higher than the population density of the KLM. However, it should be noted that known high density areas such as Alexandra and Soweto might skew this data, whereas previously known 'white areas' are known to have lower population densities.

In 2001, the KLM had a total of 50 427 households which steadily decreased at a rate of 3 127 households per annum to a total of 31 666 households in 2007. In both the CTMM and the CJMM the number of households increased between the years 2001 and 2007, by approximately 26 379 additional households per annum in the CTMM, and 14 854 households per annum in the CJMM. The total number of households in the CTMM therefore stood at 686 641 in 2007, whereas in the CJMM it stood at 1 116 014 households.

It seems that in both areas (the CTMM and the CJMM) the number of households developed more ore less on par with the population growth rate so that there has been an average increase of 0.1 persons per household over the 6-year period between 2001.

The predominant population groups in the whole of the study area remained the same between 2001 and 2007 and are therefore still Black African (84.0% for the KLM, 74.6% for the CTMM and 74.8% for the CJMM), followed by White (14.1% for the KLM, 22.1% for the CTMM and 15.0% for the CJMM). In all the areas, the female population group was slightly bigger than that of their male counterparts at 51.2% for the KLM, 50.1% for the CTMM and 50.4% for the CJMM.

More than two thirds (ranging between 66% and 70%) of the total population of the study fall within the working age category, which is defined by Statistics South Africa as the ages between 15 and 64.

Table 27 below provides an overview of the population demographics of the study area in relation to South Africa as a whole, the province and the district. From this table it is evident that there are more females than males in the study area, which, might be ascribed to the migrant labour patterns in South Africa where the male moves to a different area in search of work. If this is the case, it can very well be assumed that these males are employed elsewhere and would therefore not be seeking work at the proposed project. It is therefore necessary to take cognisance of the fact that a large segment of work seekers might be female.

TABLE 27: SUMMARY OF POPULATION CHARACTERISTICS

	South Africa	GP	CJMM		CTMM		MDM		KLM	
	2007		**2001**	**2007**	**2001**	**2007**	**2001**	**2007**	**2001**	**2007**
Area size (km^2)	1 219 912	16 927	1 645		2 175		4 063		2 202	
Total population	48 502 063	10 451 713	3 225 301	3 888 180	1 982 233	2 345 907	160 752	153 539	160 752	104 150
			Average increase of 110 480 persons per annum		Average increase of 60 612 persons per annum		Average decrease of 1 202 persons per annum		Average decrease of 9 434 persons per annum	
Population density (people per km^2)	39.8	617.5	1 960.7	2 363.6	911.8	1 079.1	39.6	37.8	73.0	47.3
			Average increase of xxx persons per km^2 per annum		Average increase of 27.9 persons per km^2 per annum		Average decrease of 0.3 persons per km^2 per annum		Average decrease of 4.3 persons per km^2 per annum	
Total households	12 500 610	3 175 579	1 006 742	1 165 014	597 515	686 641	50 427	46 503	50 427	31 666
			Average increase of 26 379 households per annum		Average increase of 14 854 households per annum		Average decrease of 654 households per annum		Average decrease of 3 127 households per annum	
Avg. persons per household	3.9	3.3	3.2	3.3	3.3	3.4	3.2	3.3	3.2	3.3
Predominant Population Groups	Black African (79.5%)[5]	Black African (75.2%) White (18.4%)	Black African (73.5%) White (16.0%)	Black African (74.8%) White (15.0%)	Black African (72.6%) Whites (23.9%)	Black African (74.6%) Whites (22.1%)	Black African (78.0%) Whites (20.0%)	Black African (77.9%) Whites (19.9%)	Black African (78.0%) Whites (20.0%)	Black African (84.0%) Whites (14.1%)
			Black African population increased by approximately 1.3%, whereas White population decreased by approximately 1.0%.		Black African population increased by approximately 2.0%, whereas White population decreased by approximately 1.8%.		Both the Black African and White population decreased by approximately 0.1%, respectively.		Black African population increased by approximately 6.0%, whereas White population decreased by approximately 5.9%.	
Predominant Gender	Female (50.8%)[9]	Male (50.3%)	Male (50.0%) Female (50.0%)	Female (50.4%)	Female (50.7%)	Female (50.1%)	Male (52.3%)	Male (51.3%)	Male (52.3%)	Female (51.2%)
Predominant Age Group	Working age (% unknown)	Working age (70.0%)	Working age (73.2%)	Working age (70.4%)	Working age (71.0%)	Working age (70.6%)	Working age (70.0%)	Working age (67.9%)	Working age (70.0%)	Working age (66.2%)

Education

An overview of the educational profile for the study area on local municipal level is provided in Figure 64. Overall it would appear as if the area is characterised by a semi-skilled to skilled population, which is reflected in the fact that, in 2007, only a small minority of the population has had no form of formal education.
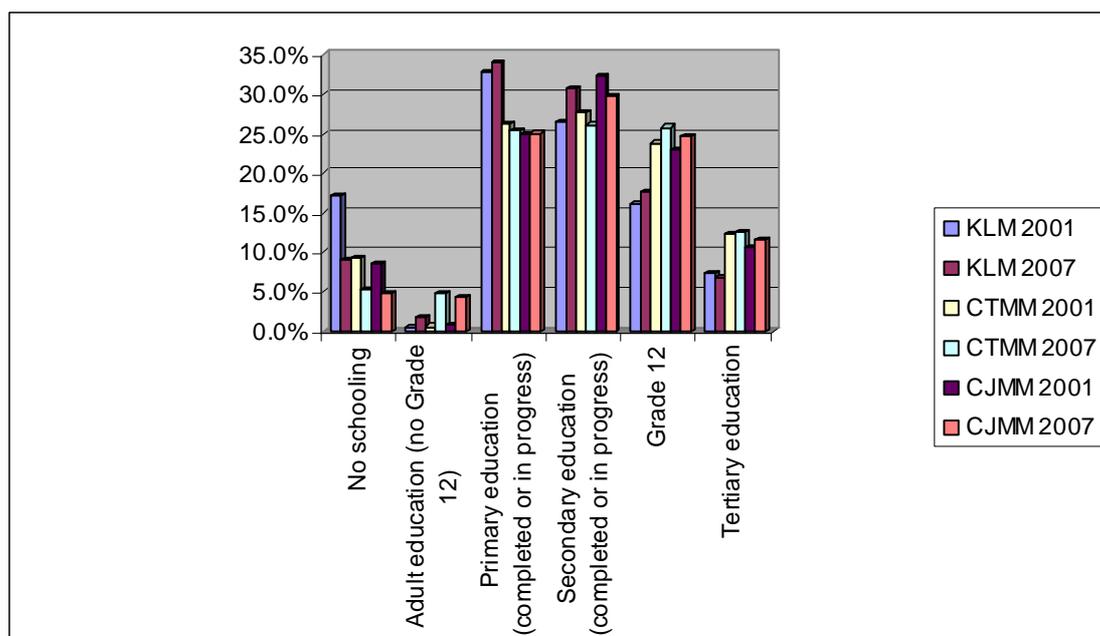
FIGURE 64: COMPARATIVE EDUCATIONAL PROFILE (GROUPED) FOR THE STUDY AREA

When considering the educational levels reported for the total population of the study area between 2001 and 2007, the number of people who attended and/or completed a primary level education, decreased as reflected in Figure 64 above. On the upside, the number of people who have had no schooling also decreased, while at the same time the number of people who completed some form of secondary education increased.

The number of people who obtained a higher (post-Grade 12) qualification also increased. The increase in the secondary and tertiary educational levels could be as a result of people's need to get out of the poverty cycle, thereby realising that some form of education might be beneficial.

One of the driving forces behind social change is educational attainment, which in turn is linked to poverty levels as there appears to be a correlation between the level of educational attainment and income levels. People with higher educational levels tend to be economically better off, and therefore contribute more to the reduction of the unemployment rate. Educational attainment is also linked to poverty in the sense that funds are required to further studies, therefore people living in less favourable economic conditions tend to be unable to further their education, which in turn holds them in a downward poverty spiral.

7.3.2 Baseline Geographical Processes

Geographical processes relate to land use patterns and infrastructure in the area. This section therefore describes the land use in the study area from a social perspective, specifically in terms of settlement patterns and land use developments.

Land use is defined as "the way land is developed and used in terms of the types of activities allowed (agriculture, residences, industries, etc.) and the size of buildings and structures permitted. Certain types of pollution problems are often associated with particular land uses, such as sedimentation from construction activities".[6]

Another definition of land use is as follows: "Patterns of land use arise naturally in a culture through customs and practices, but land use may also be formally regulated by zoning, other laws or private agreements such as restrictive covenants".[7]

A general assessment of the land uses in the study area indicated the following trends:

- Residential;

- Commercial cattle and crop farming;

- Mining; and

- Industries.

The following subsections briefly describe the land use trends in the municipal areas that formed part of the study area, namely the KLM, the CTMM and the CJMM.

Kungwini Local Municipality

According to the KLM IDP, agriculture is the most dominant land use in the total district area of Metsweding. Even though agriculture accounts for approximately 80% of the land use in the district, it only contributed approximately 3.7% to the local economy[8]. The bulk of production within the agriculture sector takes place on privately owned commercial farms, notably farms around Bronkhorstspruit. The most significant farming commodities are cattle and crop farming. In terms of crop farming, commodities include maize, ground-nuts, sunflowers, cotton and sorghum.

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[6] www.soil.ncsu.edu/publications/BMPs/glossary.html

[7] www.wikipedia.org/wiki/Land_use.html

[8] Kungwini Local Municipality Integrated Development Plan 2008/09

Vegetables are mostly produced on subsistence farms, which are cultivated for private use or sometimes sold on the informal market.

The tourism industry in the KLM is regarded as small, but developing. The best known tourist attractions in the area include the following:

- Bronkhorstspruit Dam;

- Various nature reserves;

- Conference and accommodation facilities;

- Nan Hua Buddhist temple; and

- Sizanani Cultural village.

Mining is another important land use within the KLM, and includes the extracting and beneficiating of minerals including solids, liquids and crude petroleum and gas. These minerals are extracted through underground and surface mining operations, as well as quarries. The majority of mines within the KLM extract silica.

According to the KLM IDP, there is a total of 23 informal settlements within the KLM, ranging in size from as small as 9 shacks to as large as 4 000 shacks per settlement.

Figure 65 to Figure 67 below provides an overview of the land use surrounding the proposed transmission power line corridor sections within the KLM's area of jurisdiction.

FIGURE 65: LAND USE SURROUNDING THE NORTHERN ALTERNATIVE WITHIN THE KLM

FIGURE 66: LAND USE SURROUNDING THE CENTRAL ALTERNATIVE WITHIN THE KLM

FIGURE 67: LAND USE SURROUNDING THE SOUTHERN CORRIDOR WITHIN THE KLM (NEW CORRIDOR PARALLEL TO EXISTING TRANSMISSION POWER LINE IN DISTANCE)

City of Tshwane Metropolitan Municipality

The City of Tshwane Metropolitan Municipality (CTMM) has developed a spatial development strategy to guide its Spatial Development Framework (SDF). It is believed that the CTMM should not be viewed as a single city, but rather as a polycentric (multi-nodal) metropolitan region. Currently the CTMM experiences development pressure in the central, eastern and southern parts of the city. Furthermore, the continued outward urban sprawl hampers the delivery of effective municipal services to these areas, even in cases where such developments are located within existing urban areas. The main aim of the Tshwane Spatial Development Strategy (TSDS) is therefore to integrate

the municipal areas to enable an efficient, equitable, liveable and sustainable urban environment. In support of this aim, the following objectives have been identified:

- Residential areas should be integrated with areas of economic and social opportunity;

- Those segments of the population who are living in poverty should be integrated in to the mainstream functioning of the city;

- Increase the density in strategic areas within the CTMM;

- Areas that are suitable to economic development should be identified;

- Movement networks within the CTMM should be identified;

- Direct infrastructure investment should take place within strategic focus areas;

- Human settlements should be sustainable and foster healthy communities;

- The CTMM should play a unique roll within the GP; and

- A sustainable metropolitan area should be created in terms of environmental, social and economic aspects.

Furthermore, the CTMM has identified the metropolitan open space network as an important structuring element and therefore the presence of such open spaces has a decisive influence on where development would be allowed. Open spaces include rivers, mountains, protected areas, dams, nature reserves, wetlands, etc. These areas are excluded from any future developments to ensure that the ecological integrity of the city is protected.

The CTMM have also identified potential movement corridors and encourages development in relation to these movement corridors. Currently four existing and/or potential corridors have been identified:

- The N1/Ben Schoeman Highway link between Johannesburg/Midrand and Tshwane;

- The R21 link between Tshwane and O.R. Tambo International Airport;

- The Bakwena-Platinum Highway Corridor (Zone of Choice); and

- The Mabopane-Centurion Corridor around the proposed western bypass.

Apart from the protection of open spaces and the enhancement of developments along movement corridors, certain specialised activity areas have also been identified. A specialised activity area is an area that makes provision for specialised development such as industrial areas, educational areas, high-tech areas, etc. These specialised activity areas are mostly closely interlinked with the development corridors described above. The majority of these specialised activity areas are located within the quadrant between the PWV9, the N1 and the PWV2.

Figure 68 below provides an overview of the land use surrounding the proposed transmission power line corridor section within the CTMM's area of jurisdiction.

FIGURE 68: LAND USE SURROUNDING THE PROPOSED ROUTE CORRIDOR SECTION THROUGH THE CTMM

City of Johannesburg Metropolitan Municipality

In keeping with the CJMM's 2030 vision for the City of Johannesburg, economic growth and improved levels of production and consumption should be socially, economically and environmentally sustainable. This in turn will require integrated management of the natural environment, the built environment and the human environment. In terms of these three environments the preferred state is as follows[9]:

- *Natural environment*: the remaining biodiversity, ecosystems and natural open spaces should be conserved and scarce natural resources should be used efficiently.

- *Built environment*: the cultural and historical heritage of the area should be conserved, and buildings and open spaces should be aesthetically pleasing and designed in such a way that it supports ecological principles.

- *Human environment*: the environment in which people work, relax and interact should be safe and healthy, the air and water should be clean and noise should not be invasive. The environment

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[9] COJ State of the Environment, 2003.

should also provide sufficient opportunities for leisure and should promote individual and community well-being.

The CJMM has a nodal hierarchy that distinguishes between mixed use nodes and specialist nodes. Every node has a distinct character with its own development rationale. The growth of these nodal points is regulated by the City to prevent situations where, for example, non-residential uses creep into residential nodes. Nodes are mostly characterised by:

- Activity clusters based on convenience and accessibility;

- Highly accessible by both public as well as private transport and transport routes;

- Mixed activities and diverse public facilities;

- Density of development; and

- A definite nodal core that supports mostly pedestrian traffic, but which does not exclude vehicular traffic completely.

In addition to these development nodes, there are also two major corridors in the city, namely the East-West Corridor and the North-South Corridor. Applicable to this study is the North-South Corridor which runs north of the municipal boundary along the alignment of the N1/M1 highways. The corridor is characterised by high-tech industries and offices.

Figure 69 to Figure 71 below provides an overview of the land use surrounding the proposed transmission power line corridor sections within the CJMM's area of jurisdiction.

FIGURE 69: LAND USE SURROUNDING THE LULUMISA SUBSTATION IN THE DIEPSLOOT AREA

FIGURE 70: LAND USE SURROUNDING PROPOSED ROUTE CORRIDOR NORTH OF THE N14

FIGURE 71: OLIEVENHOUTBOSCH WITH CORRIDOR IN DISTANCE (PARALLEL TO EXISTING TRANSMISSION POWER LINES)

7.3.3 Baseline Economic Processes

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

Employment and Economic Sectors

Table 28 below provides an overview of the employment and economic sectors of the study area in relation to South Africa as a whole, the province and the district. From this table it is clear that the study area is not only characterised by a predominantly semi-skilled to skilled male population, but also a fairly high employment rate where, on average, close on three quarters of the working age population within the study area is formally employed.

Overall it would therefore appear as if the economy of the study area is growing at a steady pace. As economic industries are growing, more employment opportunities are created thereby further reducing the unemployment rate, creating sources of income which in turn leads to the creation of other opportunities such as further education, a need for housing (which in turn creates further employment opportunities, both directly and indirectly), etc.

TABLE 28: SUMMARY OF EMPLOYMENT AND ECONOMIC SECTORS

	South Africa	GP	CJMM		CTMM		MDM		KLM	
	2001	**2007**	**2001**	**2007**	**2001**	**2007**	**2001**	**2007**	**2001**	**2007**
Employed*	33.7%	52.2%	45.8%	53.7%	46.2%	52.0%	49.2%	52.6%	49.2%	55.7%
Unemployed*	24.0%	21.6%	27.3%	22.6%	21.5%	17.1%	19.4%	12.1%	19.4%	14.5%
Not economically active	42.3%	26.3%	27.0%	23.7%	32.3%	25.9%	31.4%	25.9%	31.4%	29.8%
Employment rate**	58.4%	70.7%	62.7%	70.4%	68.2%	75.3%	71.8%	81.3%	49.2%	79.4%
Predominant industry	Community services (29.1%)	Manu-facturing (16.7%)	Unspecified (68.4%)	Unspecified (17.4%)	Unspecified (68.8%)	Unspecified (19.1%)	Unspecified (68.5%)	Unspecified (26.7%)	Unspecified (68.5%)	Unspecified (26.1%)

Household and Personal Income

In 2001, one in every 5-6 households in the study area had no annual household income. In addition, approximately a third of the households within the metropolitan areas (Tshwane and Johannesburg) lived below the acceptable minimum standard, with approximately a half (48.9%) of households in Kungwini who lived below the minimum standard. The minimum acceptable standard is nationally defined as an annual household income of at least R20 000 per annum.

Unfortunately Community Survey 2007 did not include data on household incomes and therefore this report also includes an overview of personal income (which was covered in CS 2007) in an attempt to provide an overview of the baseline economic conditions of individuals in the area.

The graph below (Figure 72) provides a comparative overview of the personal income levels of individuals in the study area between 2001 and 2007. However, it should be noted that the 'no income' category also includes persons under the age of 14 (who is not regarded as people within a working age category and therefore would earn no income) as well as persons from the 'not economically active' population, who are therefore not only unemployed, but who are also not actively seeking employment and therefore also do not earn an income.
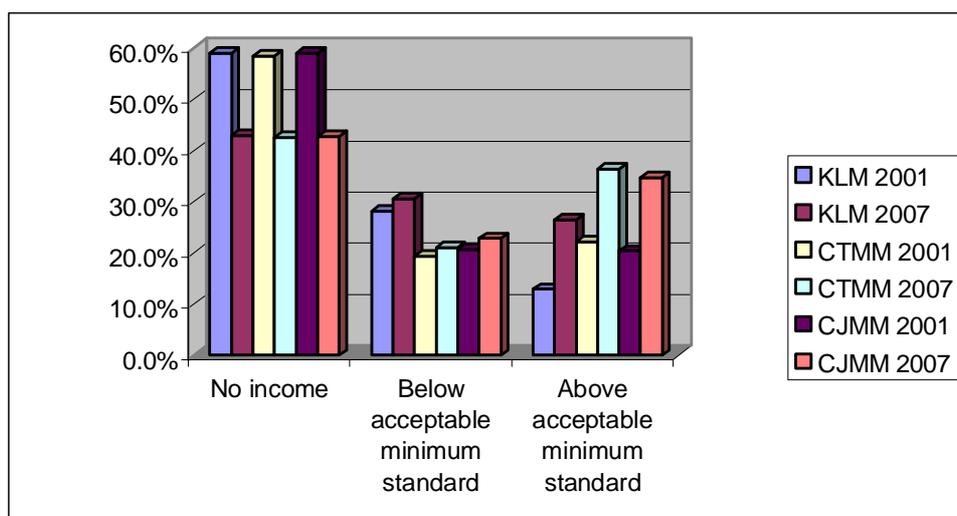
FIGURE 72: OVERVIEW OF MONTHLY PERSONAL INCOME (2001 AND 2007 COMPARED)

The number of individuals with no personal income decreased by between approximately 15% and 18% over the 6 year period between 2001 and 2007, bearing in mind that a large segment of those with no personal income are either under the age of 14 or not economically active. The number of individuals who earn a personal monthly income below the national accepted minimum standard (defined as earning at least R1 600 per month) has increased by an average of 2% across all the municipal areas between 2001 and 2007. The number of individuals who earn above the acceptable minimum standard increased on average by approximately 14% in the study area.

From this data, it would appear as if more people entered the economic market, which is linked to the increased employment rate and the broadening of the economic sectors within the study area.

7.3.4   Baseline Empowerment and Institutional Processes

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

Municipal Services

The years between 2001 and 2007 saw a steady increase in the delivery of municipal services to the households within the study area.

The municipal infrastructure is mostly located within the urban areas of the municipal areas. Municipal infrastructure backlogs are mostly confined to the previously disadvantaged township areas, and, as could be expected, in informal settlement areas. The outlying rural areas rely almost exclusively on water and sanitation services that are below Reconstruction & Development Programme (RDP) standard. In terms of water services, RDP standard is defined as piped water either within a dwelling or within 200m of such a dwelling. Sanitation services on par or above RDP standard is defined as any waterborne sanitation services that are connected to a municipal sewerage system or a ventilated pit latrine (VIP) system.

Table 29 below provides an overview of the municipal services of the affected area in relation to the province and the district as a whole. No data could be obtained for the overall municipal service delivery in South Africa.

TABLE 29: OVERVIEW OF MUNICIPAL SERVICE DELIVERY TO THE AFFECTED AREAS

	South Africa	GP	CJMM		CTMM		MDM		KLM	
	2001	**2007**	**2001**	**2007**	**2001**	**2007**	**2001**	**2007**	**2001**	**2007**
Energy Cooking	Not available	Electricity (81.3%)	Electricity (78.5%)	Electricity (88.2%)	Electricity (71.3%)	Electricity (74.1%)	Electricity (56.3%)	Electricity (70.1%)	Electricity (56.3%)	Electricity (71.3%)
Energy Heating	Not available	Electricity (76.7%)	Electricity (77.2%)	Electricity (84.7%)	Electricity (70.2%)	Electricity (70.2%)	Electricity (53.8%)	Electricity (60.3%)	Electricity (53.8%)	Electricity (59.4%)
Energy Lighting	Not available	Electricity (83.3%)	Electricity (85.1%)	Electricity (89.4%)	Electricity (79.9%)	Electricity (77.4%)	Electricity (70.3%)	Electricity (79.2%)	Electricity (70.3%)	Electricity (82.8%)
Refuse	Not available	Removed once a week (84.8%)	Removed once a week (90.9%)	Removed once a week (90.2%)	Removed once a week (77.6%)	Removed once a week (75.5%)	Removed once a week (46.7%)	Removed once a week (50.0%)	Removed once a week (46.7%)	Removed once a week (45.4%)
Sanitation	Not available	RDP standard or above (86.1%)	RDP standard or above (88.2%)	RDP standard or above (92.4%)	RDP standard or above (74.9%)	RDP standard or above (76.3%)	RDP standard or above (68.7%)	RDP standard or above (68.8%)	RDP standard or above (68.0%)	RDP standard or above (67.4%)
Water	Not available	RDP standard or above (97.9%)	RDP standard or above (93.4%)	RDP standard or above (98.3%)	RDP standard or above (94.0%)	RDP standard or above (97.3%)	RDP standard or above (77.7%)	RDP standard or above (86.5%)	RDP standard or above (77.7%)	RDP standard or above (86.2%)

Empowerment and Participation

In terms of baseline empowerment processes, the hierarchy of needs as set out by Maslow, offers an insightful backdrop in terms of people's potential level of involvement in the EIA process and the issues that might be pertinent to them in a development of this nature. Maslow argued that the type of need that a person experiences is dependent on the fulfilment of other needs. The various categories of needs are organised in a hierarchy, which indicates which level of need has to be fulfilled before the next level of need would be experienced (refer to Figure 73).

Therefore, in order to expect people to fully participate in a process that might affect their future, people would have to function on a higher level within the hierarchy of needs (the need for self esteem, characterised by knowledge and understanding needs as well as the need for an environment that is aesthetically appealing, as indicated by the dashed red arrow). This means that their basic needs had to be met first (as indicated by the solid red arrow). The flipside is that people, who live in poverty as a result of high unemployment rates, low income levels and a poor education, struggle to survive on a daily basis and are therefore more focused on their more basic needs.
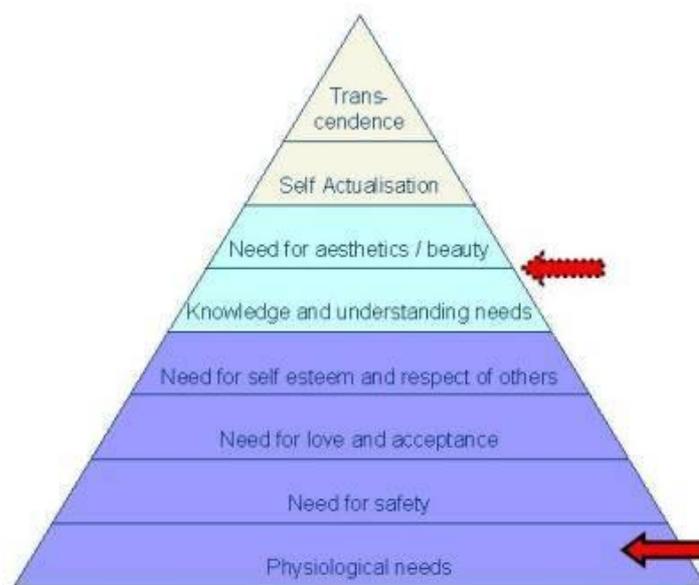
FIGURE 73: MASLOW'S HIERARCHY OF NEEDS

Source: www.arrod.co.uk

People who are more focused on their basic needs are therefore in a sense disempowered to fully participate in the process. The issue here is not that these communities are misinformed or lack information as such, but rather that these communities are ignorant about their rights and responsibilities as participants in the process. In such an instance it can very well be expected that such community members' expectation of the project mostly relates to employment opportunities. However, due to the fact such residents mostly function on a very basic needs level, they might fail to comprehend the "bigger picture" or in other words, the associated impacts (both negative and positive) that the proposed project would bring to their area. Their lack of understanding has bearing on future generations that will inhabit the area.

7.3.5   Baseline Socio-Cultural Processes

Socio-cultural processes relate to the way in which humans behave, interact and relate to each other and their environment, as well as the belief and value systems which guide these interactions. The expected impacts on the socio-cultural process will be explained in the impact assessment section below.