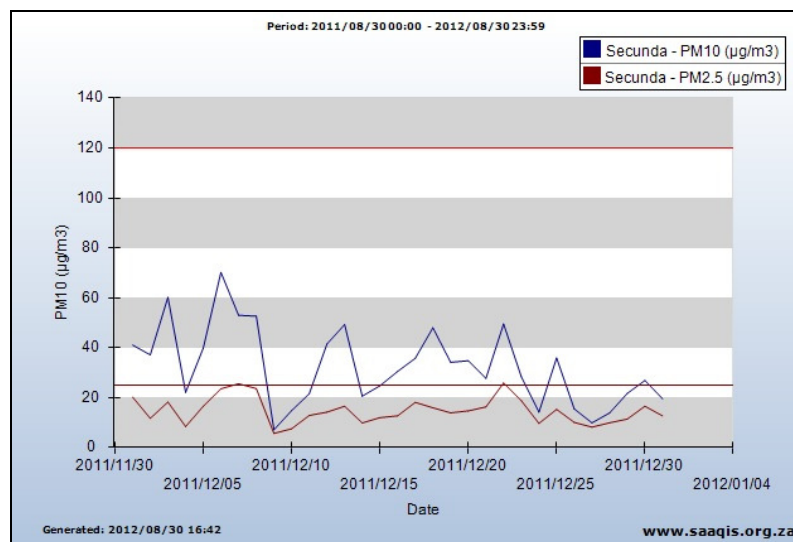


**Figure 6.27:** Integrated proximity and visual exposure index.

Further detail can be obtained from the Visual Impact Specialist Report in **Appendix N**.

### 6.3.13 Ambient Air Quality

The Department of Environmental Affairs (DEA) operates a monitoring network over the Highveld region at the residential areas of Hendrina, Ermelo, Middleburg, Secunda and eMalahleni. The closest monitoring station to the proposed operations is located at Secunda. The highest daily and PM<sub>10</sub> and PM<sub>2.5</sub> concentrations for the period December 2011 (period for which there is information available) is given in **Figure 6.28**.



**Figure 6.28:** Daily measured PM<sub>10</sub> and PM<sub>2.5</sub> ground level concentrations ( $\mu\text{g}/\text{m}^3$ ) at the Secunda DEA monitoring station (for the period December 2011) (as downloaded from the SAAQIS website)

No exceedances of the National Ambient Air Quality Standard (NAAQS) for PM<sub>10</sub> and PM<sub>2.5</sub> were observed for the short monitoring period available. It should be noted however, that the monitoring period is for 1 month only and may exceed the NAAQS if a full monitoring period is assessed.

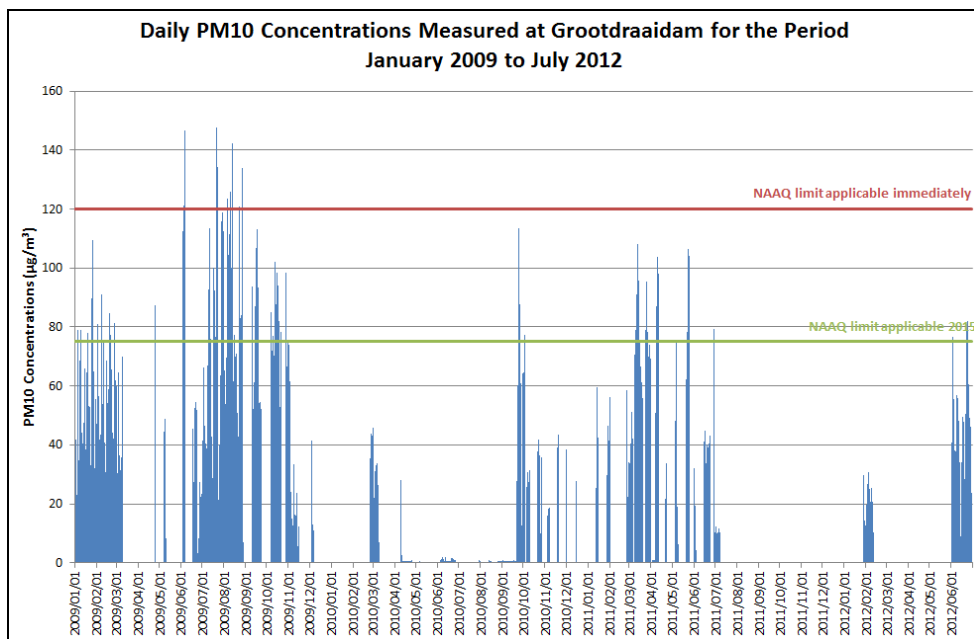
The ambient measured daily PM<sub>10</sub> concentrations from the Eskom Grootdraaidam monitoring site is provided in **Figure 6.29** for the period 2009 to 2011 with measured frequency of exceedance of NAAQS provided in **Table 6.15**. The ambient PM<sub>10</sub> measurements should be evaluated in context with the data availability of the monitored data. As the data availability at Grootdraaidam is relatively poor for the period 2009 to 2011, the predicted frequency of exceedance of the National Ambient Air Quality limits for PM<sub>10</sub> may be even higher than actual measured values.

High ambient particulate concentrations have been found to coincide with low ambient temperatures and low rainfall (Burger, 1994). Increases in domestic coal burning and poor atmospheric dispersion potentials, together with persistent industrial emissions, combine to produce elevated ambient concentrations during winter months. High concentrations during summer months are usually associated with increases in fugitive dust emissions. Rainfall events result in a reduction of airborne concentrations due to

reductions in the potential for fugitive dust emissions and due to the removal of particulates in the atmosphere by raindrops. Other sources of particulates in the vicinity of the Tutuka power station include domestic fuel burning in the residential communities of Standerton, coal mining near the power station, agricultural activities for example ploughing of fallow fields prior to planting and the production of synfuels in Secunda.

**Table 6.15:** Measured daily ambient PM<sub>10</sub> concentrations at Eskom's Grootdraaidam monitoring station for the period 2009 to 2011

Monitoring Period	Data Availability (%)	Number of Exceedances of the NAAQ limit of 120 µg/m <sup>3</sup> (applicable immediately)	Exceedance of the NAAQS (applicable immediately) (Y/N)	Number of Exceedances of the NAAQ limit of 75 µg/m <sup>3</sup> (applicable 2015)	Exceedance of the NAAQS (applicable 2015) (Y/N)
2009	53	9	N	60	N
2010	31	0	Y	4	Y
2011	19	0	Y	16	N



**Figure 6.29:** measured daily PM<sub>10</sub> concentrations for the Eskom Grootdraaidam monitoring station.

Further detail can be obtained from the Air Quality Specialist Report in **Appendix O**.

### 6.3.14 Social Environment

Tutuka Power Station is situated in the Mpumalanga Province and within the Lekwa Local Municipality area of jurisdiction. The Lekwa Local Municipality is situated in the south-western part of the Gert Sibande District Municipality. The municipality is surrounded by the following local municipalities, Pixley ka Seme and Msukaligwa on the east, Dipaleseng on the west and Govan Mbeki on the north. In the south the municipality shares the

boundary with Phumelela Local Municipality which is in the northern part of the Free State Province.

Lekwa Local Municipality has Standerton as its major urban node, whilst Morgenzon which is 45km north east of Standerton serves as a satellite node.

The town of Standerton was named after Adrian Hendrik Stander who was the owner of the farm on which the town was established. Standerton is a large commercial and agricultural town lying on the banks of the Vaal River which specialises in cattle, dairy, maize and poultry farming. The town is situated 1 540 meters above sea level. The tenth largest dam in South Africa namely "Grootdraai Dam" is just 12 kilometers out of town and is a one of the town's major tourism attractions.

Another area of some spatial importance to Lekwa Local Municipality is Morgenzon, some 45km north-east of Standerton. This is historically a local service centre that served (and still does) the surrounding commercial farming areas with basic needs. Despite its potential due to its location along a major route (R35) to Volksrust via the N11 from Bethal, it is still largely under-developed as a service centre due possibly to the competition offered by the more attractive business centres of Ermelo, Bethal and even Standerton itself.

Thuthukani is located some 18km North-East of Standerton and it began essentially as a workers village for the Tutuka Power Station which is situated about 3km east of the village. It is divided into two main sections namely, the eastern section belonging to Eskom and the western section owned by New Denmark Mining Company.

The socioeconomic analysis is specifically aimed at spatial related matters, i.e. demographics, employment and income and economic profile.

- **Demographics**

The Lekwa Local Municipality (Lekwa) has a population of about 117 833, representing approximately 12% of the Gert Sibande District. It comprises of about 11 communities and approximately 32 241 households. The area is primarily consisted of urban residential settlements, significant farmland communities and quite significant industrial communities in different areas and town across the municipalities. The Municipality spans an area of approximately 4 603km<sup>2</sup> which equates to 14% of the overall Gert Sibande District (+/-31 970km<sup>2</sup>). The average density of the region 26 persons/km (the area estimates are calculated using Planet GIS data).

The main areas are concentrated around Standerton, Sakhile, Rooikoppen, Sivukile, Azalea Thu-Thukani and Meyerville. Other areas include Stanfield Hill, Morgenzon and the outlying areas of rural Lekwa.

**Table 6.16** below gives an indication of the population numbers per ward within the Lekwa Local Municipality.

**Table 6.16:** Ward Population Numbers

Description	Population Stats Sa 1996	Population Stats Sa 2001	Population Dwa 2008	Population Global Insight 2008
Ward 1	5930	6796	7822	7755
Ward 2	3971	4551	5238	5193
Ward 3	8420	9650	11106	11011
Ward 4	4042	4632	5332	5286
Ward 5	5277	6048	6961	6901
Ward 6	4013	4599	5293	5248
Ward 7	5898	6759	7780	7713
Ward 8	3602	4128	4751	4710
Ward 9	13271	15209	17505	17355
Ward 10	6573	7533	8670	8596
Ward 11	6816	7811	8991	8914
Ward 12	7561	8665	9973	9887
Ward 13	10789	12365	14231	14109
Ward 14	3942	4518	5200	5155
<b>Total</b>	<b>90105</b>	<b>103264</b>	<b>118853</b>	<b>117832</b>

**Table 6.17** below includes the settlement summary for Lekwa Local Municipality.

**Table 6.17:** Lekwa Settlement Summary

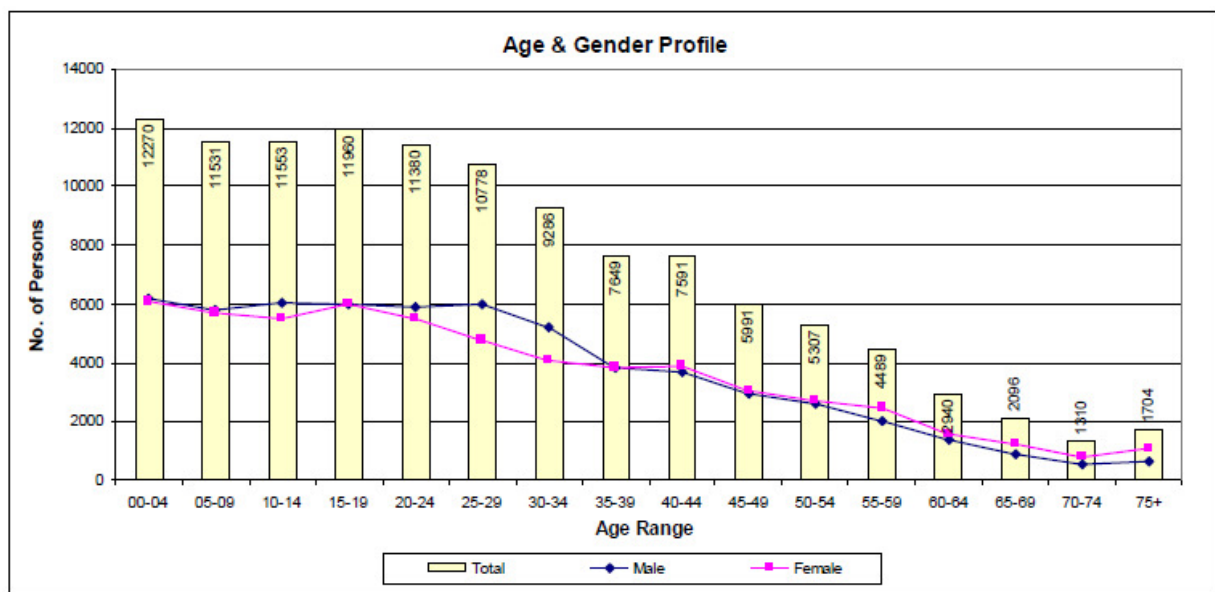
SETTLEMENT NAME	POPULATION				HOUSEHOLDS				HH Size
	Urban - Formal Town	Industrial	Farming	Grand Total	Farming	Industrial	Urban - Formal Town	Grand Total	
Azalea	389	0	0	<b>389</b>	0	0	111	<b>111</b>	3.5
Azalea Ext 1	4840	0	0	<b>4840</b>	0	0	1381	<b>1381</b>	3.5
Early Bird Farm	0	0	287	<b>287</b>	82	0	0	<b>82</b>	3.5
Meyerville	4063	0	0	<b>4063</b>	0	0	1160	<b>1160</b>	3.5
Morgenzon	1765	0	0	<b>1765</b>	0	0	504	<b>504</b>	3.5
Rooikoppen	14876	0	0	<b>14876</b>	0	0	4246	<b>4246</b>	3.5
Rural Lekwa	0	0	16011	<b>16011</b>	3177	0	0	<b>3177</b>	5.0
Sakhile	26788	0	0	<b>26788</b>	0	0	7646	<b>7646</b>	3.5
Sakhile Ext 5	900	0	0	<b>900</b>	0	0	257	<b>257</b>	3.5
Sakhile Ext 6	834	0	0	<b>834</b>	0	0	238	<b>238</b>	3.5
Sivukile	882	0	0	<b>882</b>	0	0	252	<b>252</b>	3.5
Sivukile Ext 1	1549	0	0	<b>1549</b>	0	0	442	<b>442</b>	3.5
Sivukile Ext 2 & 3	3758	0	0	<b>3758</b>	0	0	1073	<b>1073</b>	3.5
Sivukile Ext 4	1302	0	0	<b>1302</b>	0	0	371	<b>371</b>	3.5
Standerton	8210	0	0	<b>8210</b>	0	0	2343	<b>2343</b>	3.5
Standerton Ext 1	0	644	0	<b>644</b>	0	184	0	<b>184</b>	3.5
Standerton Ext 3	2788	0	0	<b>2788</b>	0	0	796	<b>796</b>	3.5
Standerton Ext 4	5219	0	0	<b>5219</b>	0	0	1490	<b>1490</b>	3.5
Standerton Ext 6	12326	0	0	<b>12326</b>	0	0	3518	<b>3518</b>	3.5
Standerton Ext	3657	0	0	<b>3657</b>	0	0	1044	<b>1044</b>	3.5

7									
Stanfield Hill	1257	0	0	<b>1257</b>	0	0	359	<b>359</b>	3.5
Thu-Thukani	5488	0	0	<b>5488</b>	0	0	1567	<b>1567</b>	3.5
<b>Grand Total</b>	<b>100891</b>	<b>644</b>	<b>16298</b>	<b>117833</b>	<b>3259</b>	<b>184</b>	<b>28798</b>	<b>32241</b>	<b>3.7</b>

### • **Age and Gender Profile**

The age and gender profile of the Municipality can be defined as generally young (**Figure 6.30**). This is denoted by a representation of approximately 40% of the population below the age of 20 years, yet overall 59% is below the age of 30 years. The balance of the population is made up of approximately 26% between 30 – 50 years and up to 11% above 50 years.

The age related analyses show that the main development areas for the Lekwa Local Municipality should focus on initiatives to address areas such as education, socio-economic development, skills and entrepreneurship.



**Figure 6.30:** Age and Gender Profile

### • **Socio-Economic Summary**

The following provides a summary of the socio-economic profile of the Lekwa Local Municipality:

- Approximately 85% of the population is settled in urban areas and less than 14% in rural areas of Lekwa.
- The largest settlements include Standerton and Sakhile representing a combined total of 49% of the total population.
- The average household density across Lekwa is between 3.5 to 3.7 persons per household. The urban settlements with approximately 3 – 4 persons per household and in the rural areas with almost 5 persons per household.

- Other income related observations indicate that more 11% of the population earn below R1 000 and 23% of the total population earn below R1 500.
- A large number of people in Lekwa may be considered relatively poor with an estimated 42 687 people living in poverty. The estimated number of indigent households is expected to be more than 7 000 households with coverage of between 25 000 to 40 000 people as beneficiaries. This makes the Municipality economically vulnerable because only less than 35% of the population earn income that subsidise services to the larger population of the Municipality.
- There are significant differences in level of income inequality due several factors including that a large segment of the population is either economically inactive (45%) or unemployed (17% of the total).
- A significant number of the population (19.5%) are also social grants recipients and the largest contribution for all grants is "child support grants" (13% of total population).