

UPGRADING OF THE EXISTING DENSE MEDIA SEPARATION PLANT AT SISHEN MINE: SOCIAL IMPACT ASSESSMENT

6 February 2018

Prepared by Atlegang Social Intelligence for EXM Advisory Services Pty Ltd

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LIST OF ABBREVIATIONS

Term	Abbreviation
Acquired Immuno Deficiency Syndrome	AIDS
Dense Media Separation	DMS
Environmental Impact Assessment	EIA
Environmental Impact Assessment Regulations	EIAR
Environmental Management Programme	EMPr
EXM Advisory Services (Pty) Ltd	EXM
Ga-Segonyana Local Municipality	Ga-Segonyana LM
Gamagara Local Municipality	Gamagara LM
Human Immunodeficiency Virus	HIV
Interested and Affected parties	IAPs
Integrated Development Plan	IDP
Joe Morolong Local Municipality	Joe Morolong LM
John Taolo Gaetsewe District Municipality	John Taolo Gaetsewe DM
Public Participation Process	PPP
Sishen Iron Ore Mine	Sishen Mine
Sishen Mine Dense Media Separation Plant Upgrade Project	UDMS Project
Sishen Socio-Economic Assessment Tool Report, 2014	Sishen SEAT
Social Impact Assessment	SIA
Social and Labour Plan	SLP
South African National Census of 2011	Census 2011
Spatial Development Framework	SDF
Statistics South Africa	Statistics SA
Ultra-High Dense Media Separation	UHDMS
Ulysses Gogi Modise Wellness Clinic	UGM Wellness Clinic

EXECUTIVE SUMMARY

This document details the Social Impact Assessment for the proposed Sishen Mine Dense Media Separation Plant Upgrade Project to be developed by Sishen Iron Ore Company (Pty) Ltd.

Sishen Iron Ore Company (Pty) Ltd is investigating the feasibility of upgrading the existing Dense Media Separation (DMS) plant at Sishen Mine to allow for processing using Ultra High Dense Media Separation technology (UHDMS). The upgraded process plant will have the capability of processing both high (A-grade) and low grade (C-grade) ore simultaneously, to produce a saleable iron ore product. An additional primary crusher will be erected to provide additional crushing capacity for the processing of C-grade material. Low grade material to be processed will originate primarily during the run-of-mine and will be processed directly. However, some material originating from certain mine residue stockpiles or waste rock dumps will also be added to the process. Approximately 12 million tons per annum of C-grade material will be processed producing 2-4 million tonnes per annum of additional product from Sishen Mine.

The following social receptors were identified:

- Gamagara Local Municipality
- Settlements in Gamagara including; Kathu, Dibeng, Sesheng, Mapoteng and Olifantshoek
- Joe Morolong Local Municipality
- Ga-Segonyana Local Municipality

Two potential negative social impacts have been identified. They are increased pressure on infrastructure and services linked to influx of job seekers and workers and increased social pathologies linked to influx of workers and job-seekers. For each impact, specific mitigation measures have been recommended. Sishen Iron Ore Company (Pty) Ltd must implement the mitigation measures recommended in this report to bring negative impacts to acceptable levels.

The following positive impacts are expected to occur:

- Enhanced local skills development opportunities
- Higher employment and increased disposable incomes of households
- Enhanced socio-economic development resulting from investment in socio-economic development through the SLP and CSI projects

Recommendations are made on how these positive impacts can be enhanced.

From a social perspective, given the low severity of negative impacts and the ability to mitigate them as well as the possible positive impacts and enhancements thereof, it is recommended that the project be given due consideration. The mitigation measures recommended in this report be must adhered to.

SPECIALIST'S DETAILS & EXPERTISE

Mashadi Monaledi	<p>Mashadi Monaledi is a social sustainability practitioner and holds a Masters' degree in Development and Management. She has 9 years' experience in socio-economic development. Her expertise includes the following fields:</p> <ul style="list-style-type: none">• Social impact assessments• Stakeholder engagement• Corporate social investment planning & implementation• Social and labour planning & implementation• Social risk management• General social research
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DECLARATION OF INDEPENDENCE

I, Mashadi Monaledi, author of this report, duly declare that I am an independent consultant. I confirm that I have no business, financial, personal or other interest in the activity or application aside from the compilation of this social impact assessment. I declare that the report was compiled based on objective research and analysis of the proposed Sishen Mine Dense Media Separation Plant Upgrade Project and the receiving social environment.

M Monaledi

Signature

6 February 2018

Date

1 INTRODUCTION AND TERMS OF REFERENCE

Atlegang Social Intelligence has been appointed by EXM Advisory Services to conduct a Social Impact Assessment (SIA) and compile a SIA Report for inclusion in the Environmental Impact Assessment (EIA) for the proposed upgrading of the existing Dense Media Separation (DMS) plant at Sishen Iron Ore Mine (Sishen Mine) to allow for processing using Ultra High Dense Media Separation technology (UHDMS) by Sishen Iron Ore Company (Pty) Ltd. The upgrade will allow for the processing of low grade iron ore material to produce a saleable iron ore product.

The purpose of this report is to provide baseline information regarding the social environment to be affected by the proposed upgrade of the DMS plant at Sishen Mine. The baseline information provides an understanding of the socio-cultural and economic contexts in which the proposed project will take place in. From this, the possible social impacts that may arise as a result of the proposed project have been determined. Further, the report also makes recommendations on how negative impacts can be managed and/or mitigated and proposes ways in which positive impacts can be enhanced. All these components will ultimately assist decision-makers in making informed decisions by providing information on the potential or actual consequences of their proposed activities.

Discounting the social impacts of a project can negatively change the cost-benefit equation of project and even undermine the overall viability of a project. UNEP notes that SIAs for projects have the following benefits:

- Reduced negative impacts on those affected;
- Enhanced benefits to those affected;
- Avoiding delays and obstruction by assisting to gain a social and legal licence to operate;
- Lower costs of the project; and
- Improved stakeholder relations.

Given the above, it is important to conduct a well-considered SIA. The SIA process involved the following activities:

- Collecting baseline socio-economic information so as to understand the affected social environment comprehensively;
- Identifying potential social impacts of the project on stakeholders using the baseline information; and
- Developing recommendations on how the negative impacts of the project can be mitigated and/or managed and how the positive impacts of the projects can be enhanced.

2 PROJECT OVERVIEW

Sishen Mine is an existing mining operation, mining and processing of iron ore. The mine is located near the town of Kathu in Gamagara Local Municipality in the Northern Cape Province. The mine's currently beneficiates A-grade and B-grade ore (haematite containing >58% iron) by means of Dense Media Separation (DMS). All other material originating from the run of mine is placed on site as residue dumps or stockpiles due to the absence of a suitable beneficiation process available to process the low-grade ore. The Sishen Iron Ore Company (Pty) Ltd (SIOC) is investigating the feasibility of upgrading the existing DMS Plant at Sishen Mine to UHDMS to allow for the processing of low grade iron ore material to produce a saleable iron ore product.

Ultra-High Dense Media Separation (UHDMS) is a technology that will allow for the processing of future low-grade material (particularly C-grade material) originating from the ongoing mining operations as run of mine (ROM) as well as some of the low-grade material that has historically been dumped on site due to the lack of available technology.

The Sishen Mine Dense Media Separation Plant Upgrade Project (UDMS Project) will entail the processing of approximately 12 Mtpa of C-grade material to produce 2-4 Mtpa of standard grade lump and fine product over the remaining life of mine (LOM). The C-grade material to be processed will be sourced from the ROM (is part of the hanging and footwall that are already included in the mining sequence) as well as surface stockpiles. C-grade material arising from the ROM since January 2016 has also been stockpiled separately on some of the waste rock dump areas with the anticipation that it could be processed through the future UHDMS plant.

An additional primary crusher will be required for the processing of some of the C-grade material as the existing DMS and JIG plant crushers do not have capacity to process all the additional ROM. It is envisaged that an additional primary crusher with a capacity of 6 Mtpa is required. However, the possibility of installing a larger crusher to accommodate additional crushing capacity for other material originating from the mine is also being considered.

All the DMS components at the existing DMS processing plant will be converted to UHDMS processes by the replacement of the drums currently used in beneficiation process with cyclones and modifying the existing media density circuits well as crushing circuits. Such modifications will take place within the existing plant buildings with no expansion to the plant footprint area required. Some additional conveyors and a pipeline will be put in place to link the components at the processing plant.

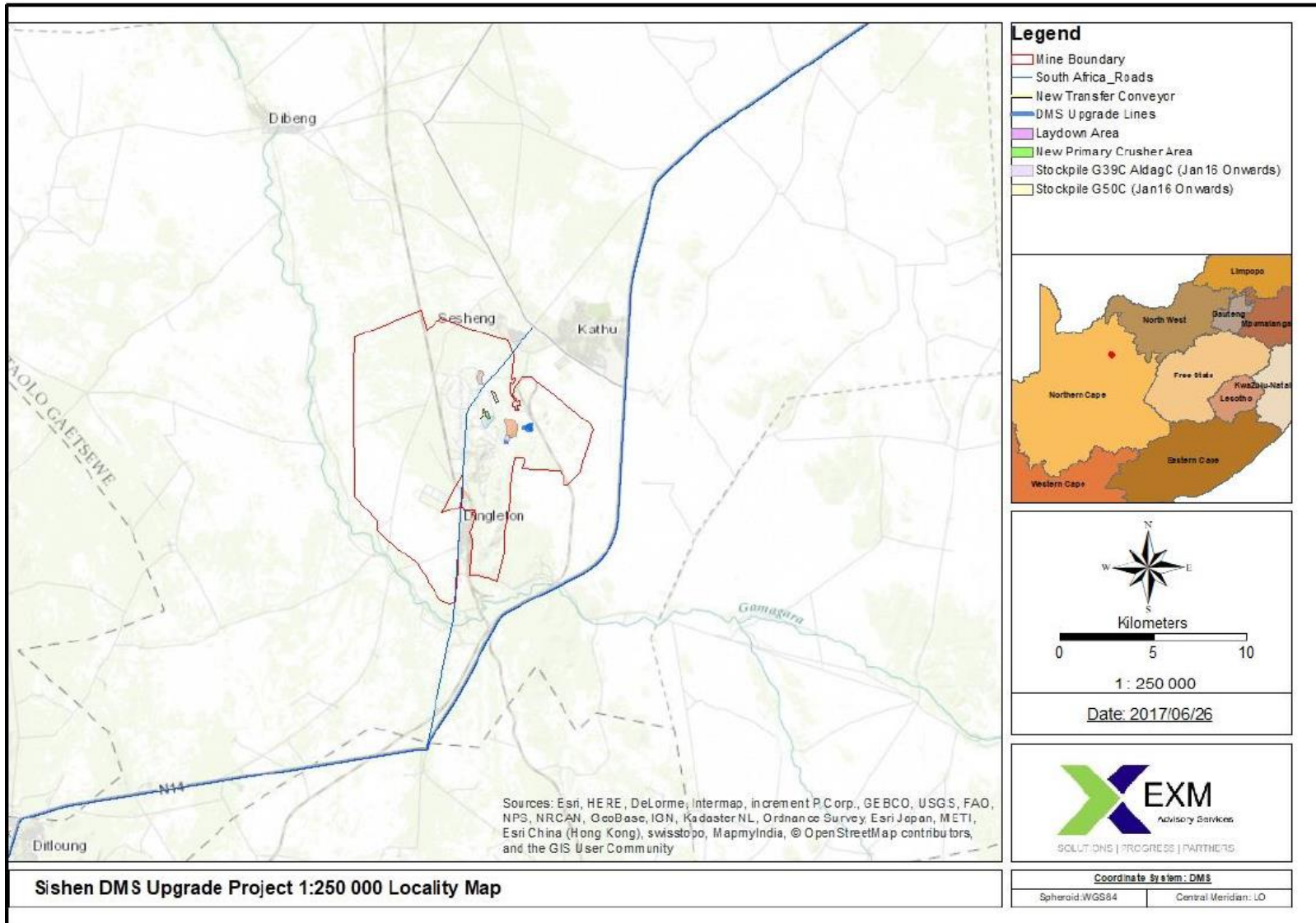
The slimes and discard material originating from the upgraded plant will be deposited at the existing waste disposal facilities at Sishen Mine. Should the project be deemed feasible construction activities would commence in March 2019 with the upgraded plant reaching full production in April 2021.

It is estimated that during construction 495 employees will be directly employed by Sishen Iron Ore Mine (Pty) Ltd. One hundred and twenty-eight people will be employed by Sishen Mine during the operational phase. Table 1 indicates the occupational levels required during the operation phase of the project.

Table 1: Occupation levels requirements during operation phase

Area of work	Occupation	Number of staff members
Mining (66)	Operators (GR1)	66
Plant (38)	Operators (GR2)	18
	Operators (GR1)	12
	Shift Supervisor Assist	4
	Operations Controller	4
Engineering (22)	Artisans	12
	Supervisor	1
	Operators (GR1)	2
	Boiler makers	2
	Fitters	2
	Master Fitters	3
Mine Technical Services (2)	Geo technician	1
	Geologist	1

Figure 1: Locality Map



The following social receptors were identified:

- Gamagara Local Municipality
- Settlements in Gamagara including; Kathu, Dibeng, Sesheng, Mapoteng and Olifantshoek
- Joe Morolong Local Municipality
- Ga-Segonyana Local Municipality

3 SOCIAL IMPACT ASSESSMENT APPROACH

3.1 Study Methodology

Scientific social research methods were used for this SIA. This included a mix of qualitative and quantitative research methodologies. In the collection of secondary data qualitative and quantitative approaches to data collection were utilised.

3.2 Sources of information

A study of available literature was conducted. The literature studied included academic literature on SIAs, statistics from Statistics SA, documents published by state organs, reliable sources gathered from the internet as well as information provided by Sishen Mine and EXM. The comprehensive list of sources utilised are:

Document	Author
Census 2011 Municipal Report, Northern Cape	Statistics South Africa
Community Survey 2016, Provinces at a glance	Statistics South Africa
District Health Barometer 2014/2015	National Department of Health
Ga-Segonyana Local Municipality Integrated Development Plan (IDP) 2017/2018	Ga-Segonyana Local Municipality
Gamagara Local Municipality Integrated Development Plan (IDP) 2016/2017 Review	Gamagara Local Municipality
John Taolo Gaetsewe Spatial Development Framework Review, 2017	John Taolo Gaetsewe District Municipality
National Senior Certificate School Performance Report, 2014, 2015, 2016, 2017	Department of Basic Education
Poverty Trends in South Africa, 2017	Statistics South Africa
Precinct crime statistics	http://www.crimestatssa.com
Quarterly Labour Force Survey, Quarter 3 2017	Statistics South Africa
Sishen Best Practice Model UGM – Getting to zero 2015	Kumba Iron Ore Limited
Sishen DMS Upgrade Economic Impact Assessment, 2017	Demacon Market Studies
Sishen Mine SEAT Report, 2014	Kumba Iron Ore Limited

The Real Economy Bulletin, Provincial Review 2016: Northern Cape	Trade & Industrial Policy Strategies
UGM Wellness Clinic HIV Programmes, Presented by Alta Buys	Anglo American

Feedback from the public participation process (PPP) including comments & minutes from the public meeting and a Future Forum meeting in which the project particulars and the EIA process were presented to municipal officials of John Taolo Gaetsewe DM as well as Ga-Segonyana LM, Gamagara and Joe Morolong LM and unions were reviewed and incorporated into the SIA to inform the baseline, impact identification and impact description and assessment. Professional judgement based on experience gained with similar projects with similar socio-economic conditions was also utilised.

3.3 Legislative considerations

This SIA was compiled in accordance with requirements of the National Environmental Management Act, 107 of 1998 (NEMA) and Annex 6 of the Environmental Impact Assessment Regulations (EIAR) (733 of 2014), which outline the specific requirements for specialist reports. Table 2 indicates where each requirement has been addressed in this report.

Table 2: Legal requirements for social impact assessment report

Section	NEMA Regulations (2014) - Appendix 6	Relevant page / section in report
1	A specialist report or a report on a specialised process prepared in terms of these Regulations must contain:	
(a) i	the person who prepared the report; and	Page 1
(a) ii	the expertise of that person to carry out the specialist study or specialised process;	Page 1
(b)	a declaration that the person is independent in a form as may be specified by the competent authority;	Page 1
(c)	an indication of the scope of, and the purpose for which, the report was prepared;	Section 1
(d)	the date and season of the site investigation and the relevance of the season to the outcome of the assessment;	Section 3. Seasonality is not relevant for SIA.
(e)	a description of the methodology adopted in preparing the report or carrying out the specialised process;	Section 3
(f)	the specific identified sensitivity of the site related to the activity and its associated structures and infrastructure	Section 4

(g)	an identification of any areas to be avoided, including buffers;	None identified
(h)	a map superimposing the activity including the associated structures and infrastructure on the environmental sensitivities of the site including areas to be avoided, including buffers;	Section 2
(i)	a description of any assumptions made and any uncertainties or gaps in knowledge;	Section 3.4
(j)	a description of the findings and potential implications of such findings on the impact of the proposed activity, including identified alternatives, on the environment;	Section 5
(k)	any mitigation measures for inclusion in the Environmental Management Programme (EMPr);	Section 6
(l)	any conditions for inclusion in the environmental authorisation	Section 6
(m)	any monitoring requirements for inclusion in the EMPr or environmental authorisation	As per EMPr
(n)	a reasoned opinion -	
.i	as to whether the proposed activity or portions thereof should be authorised and	Section 6
.ii	if the opinion is that the proposed activity or portions thereof should be authorised, any avoidance, management and mitigation measures that should be included in the EMPr, and where applicable, the closure plan;	Section 6
(o)	a description of any consultation process that was undertaken during the course of carrying out the study;	Section 3.2
(p)	a summary and copies of any comments that were received during any consultation process, and -	PPP feedback included in EIA.
(q)	any other information requested by the competent authority.	None requested.

3.4 Assumptions & limitations

During the course of the study, the following assumptions were made and the following limitations were identified:

3.4.1 Assumptions made in the course of conducting the SIA

- It is assumed that the information provided by the Sishen Iron Ore Company (Pty) Ltd. and EXM is accurate. This includes the site layout and project overview as described in Section 2 as well as the list of activities during the construction and operational phases of the project.

- The SIA assumes that all mitigation measures defined in the other specialist studies and EIA report will be implemented and that the mitigation will bring the significance of impacts to acceptable levels; these studies may influence several of the social impacts.

3.4.2 Limitations of the study

- The specialist relied on secondary data. Extensive research has been conducted on Sishen Mine's local area, the information was deemed sufficient.
- The social environment is ever changing and is influenced by numerous factors that also change constantly. Given this, and the fact that external factors fall outside of the scope of the study, it is challenging to forecast all impacts with high accuracy. To counter this limitation, the researcher relied on experience with similar projects and took care to identify and address the most likely impacts and to establish mitigation strategies that are most appropriate given the social context.
- Social impacts can be felt physical or can be perceived, thus, identifying and quantifying impacts is not always possible.
- In some instances, there was a lack of current social data in some areas. In some instances, the latest available statistics covered 2011.
- At the time of the study, only the economic specialist assessment was available for review.

4 SOCIO-ECONOMIC BASELINE

This section provides a socio-economic baseline description of the area. The information will be utilised to form an understanding of the socio-cultural and economic contexts in which the proposed UDMS Project will be developed. The understanding will be utilised to establish the possible social impacts of the project.

4.1 Summary of indicators

Aspect	Northern Cape Province	John Taolo Gaetsewe DM	Ga-Segonyana LM	Joe Morolong LM	Gamagara LM
Population size	1 193 780	242 264	104 408	84 201	53 656
Number of households	353 709	72 310	32 669	23 919	15 723
Household size	3.4	3.4	3.2	3.5	3.4
Percentage of population between 15 and 34	36.5	38.8	39.3	32.3	48.3
Sex ratio	99.8	96.5	93.6	83.1	129.7
Major source of energy for lighting: Electricity	89%	88%	88%	86%	89%
Percentage of household with access to piped water*	94%	91%	92%	88%	96%
Percentage of households with access to flush toilet	69%	31%	23%	7%	86%
Most prevalent dwelling type: Formal	83%	81%	82%	80%	79%
Persons 20 years or older who have completed grade 12	255 880	45 334	21 848	8 209	15 277
Unemployment rate	29.9%	29.7%	33.7%	38.67%	17.7%
Average household income	R86 158 ⁺	R78 640	R78 292	R43 514	R156 494

Source: Statistics SA, 2016, 2017; Demacon, 2017

* Piped water inside the dwelling/house; Piped (tap) water inside yard; Piped water on community stand; Neighbour's tap; and Public/communal tap

⁺ Statistics South Africa, Census 2011

4.2 Description of the area

The UDMS Project is a brownfields development that will take place within Sishen Mine in the Northern Cape. The zone of influence (local area) of Sishen Mine is the John Taolo Gaetsewe District Municipality (John Taolo Gaetsewe DM). The district municipality is made up of Gamagara Local Municipality (Gamagara LM), in which the mine is located, and Joe Morolong (Joe Morolong LM) and Ga-Segonyana Local Municipalities (Ga-Segonyana LM), which are labour-sending areas.

4.3 Area outlook

4.3.1 Provincial outlook

The Northern Cape Province is located on the western side of South Africa. Internationally, it borders Botswana and Namibia to the North. Within the country, the province shares borders with the North West, Free State, Eastern Cape and Western Cape Provinces. The Northern Cape is the largest province in South Africa, covering an area of 30% of the country's landmass. It consists of 5 district municipalities - Frances Baard, John Taolo Gaetsewe, Pixley ka Seme, Namakwa, and ZF Mgcawu.

Because of its low rainfall and dry arid conditions, the Northern Cape Province has low population densities. It accounts for 2.2% of the country's population, with a population of 1 193 780 (Statistics SA, 2016). Between 2001 and 2011, the population of the province grew by 1.44% while between 2011 and 2016, the population grew by 4%. The largest population group in the province is Black Africans (48.1%) followed by Coloureds (43.7%), Whites (7.7%) and Indians/Asians (0.5%). The predominant languages spoken in the Northern Cape are Afrikaans, Setswana, IsiXhosa and English respectively.

Mining and agriculture contributed greatly to the economy of the Northern Cape Province. According to Demacon (2017), the province is rich in mineral resources. The province produced approximately 37% of South Africa's diamond output, 44% of its zinc, 70% of its silver, 84% of its iron ore, 93% of its lead and 99% of its manganese.

Despite the province's endowment in mineral resources, it experiences high poverty rates. According to Statistics SA, in 2015, 45.6% of households in the Northern Cape Province were

considered poor. Statistics SA's Quarterly Labour Force Survey puts the provincial unemployment at 29.9%, with a labour force participation rate of 55.6% in the third quarter in 2017.

According to the Real Economy Bulletin (2016), the Northern Cape Province has been earmarked for several major infrastructure projects, which include large scale solar power plants and the Square Kilometre Array.

With reference to social infrastructure, according to the Community Survey, in 2016, 83% of households in the Northern Cape Province lived in formal housing, 69% had access to flush toilets, 94% had access to piped water, and 89% had an electricity connection. Eleven percent of residents over 20 years old had no formal education while less than 8% have an education level higher than grade 12.

4.3.2 Outlook of John Taolo Gaetsewe District Municipality

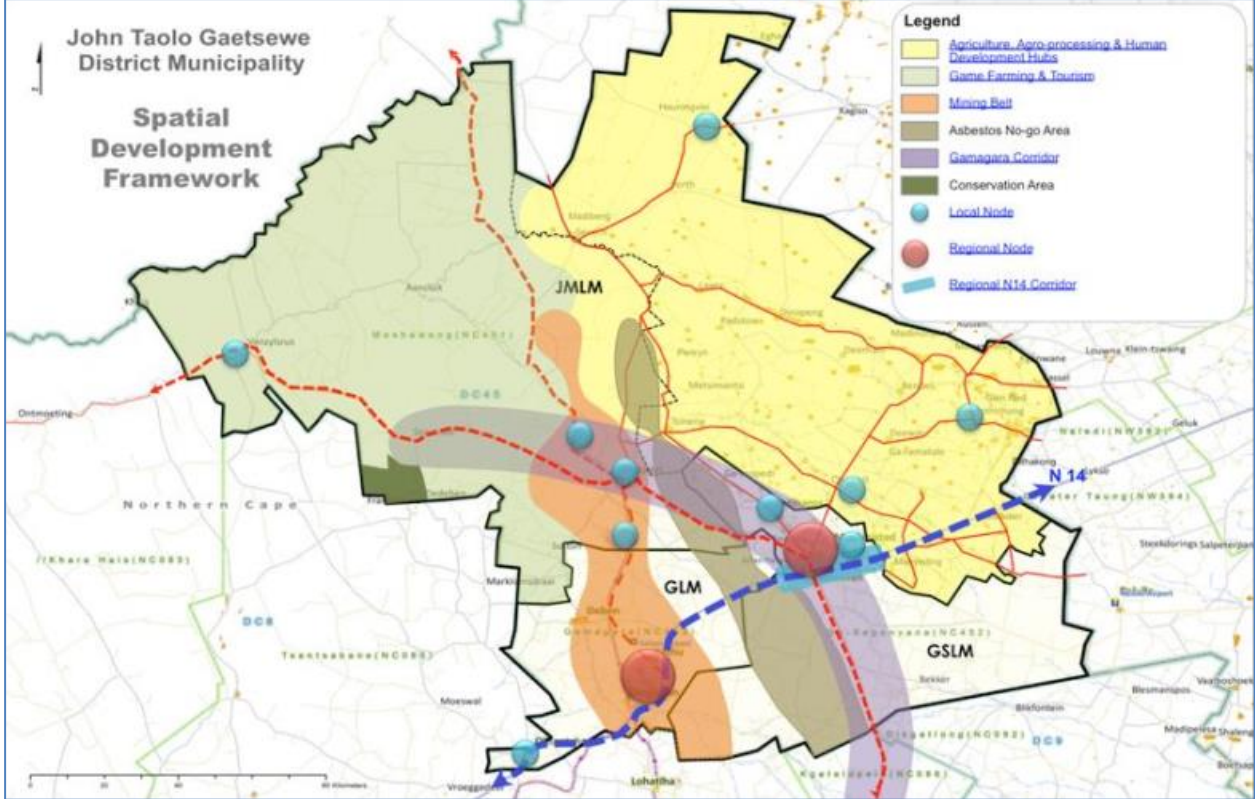
John Taolo Gaetsewe DM is the second smallest district municipality in the Northern Cape, occupying 6% of the province's geographical area and is home to approximately 16% of the provincial population. It is bordered by Siyanda and Francis Baard District Municipalities to the south and west; Dr Ruth Segomotsi Mompati District Municipality in the North West Province to the east and northeast; and Botswana to the northwest.

Joe Morolong LM is the largest local municipality within John Taolo Gaetsewe DM followed by Ga-Segonyana LM, with Gamagara LM being the smallest. The district is made up of urbanised areas and rural settlements. According to the Sishen Socio-Economic Assessment Tool Report, 2014, (Sishen SEAT), there are 186 towns and settlements within the district municipality, 80% of which are villages in the Joe Morolong LM. Formal towns in the south of the John Taolo Gaetsewe DM are surrounded by vast, sparsely populated farmland. In the north, there are scattered small rural villages with a higher population density.

Ga-Segonyana LM and Joe Morolong LM predominantly inhabited by Black Africans, 79% and 96% respectively. Just over 42% of the Gamagara LM residents are Black Africans, while 32.7% of Gamagara LM residents are Coloureds. Whites constitute 24.6% of the population of Gamagara LM (Sishen SEAT). Corresponding to the racial profiles, Setswana is the primary home language in Ga-Segonyana LM (78.4%) and Joe Morolong LM (90.1%), while 51.6% of residents of Gamagara LM speak Afrikaans and 32.3% speak Setswana.

According to the John Taolo Gaetsewe SDF Review (2017), the key economic sectors in the district are mining, social services, agriculture, tourism, manufacturing, and construction, with mining is being the largest employer followed by the agricultural sector. According to Sishen SEAT, the economy of John Taolo Gaetsewe DM is based on mining, which was 68% of district Gross Value Added (GVA), followed by community, social and personal services at 12%. Agriculture and manufacturing, which are strong growth sectors and job creators, play a very insignificant role in the local economy of the district. Figure 2 shows the economic activity of the district as per Spatial Development Framework.

Figure 2: John Taolo Gaetsewe District Municipality Spatial Outline



Source: Demacon, 2017

According to the John Taolo Gaetsewe SDF Review (2017), the main mining companies in the district are BHP Billiton, Assmang, Kumba, Kudumane Manganese Resources, UMK, and Amari. The major operational mines in the area are: Hotazal Manganese Mine, King Mine, Khumani Mine, Nchwaning, Gloria Mine, UMK Mine, Kalagadi Mine, Black Rock Mine, Sishen Mine, Wessels Mine and Mamatwan Mine.

The John Taolo Gaetsewe SDF Review (2017) cites that the Northern Cape Department of Economic and Tourism SMEC Report 2013 identified the following three distinctive mining areas that will have a bearing on the district’s future urban developments:

- Avontuur Mining Field in the north of the district

- Kalahari Manganese Field between Kathu and Hotazel/Blackrock
- The northern tip of the Postmansburg Manganese Fields and south of Kathu, with mostly iron ore mines such as Sishen, Khumani and Burke Mines.

Although agriculture is the second most significant economic activity in the district, it does not contribute much to the district's economy and employs only 4.67% (John Taolo Gaetsewe SDF Review) of the active labour force. Given that the district is characterised by extensive tracts of land, the rural land is used for cattle, sheep, goat and game farming, with commercial hunting in the winter. Cultivation of land is mainly restricted to the area stretching from Hotazel to Avontuur, Aansluit, and in tracts of land along the Molopo River.

Commercial livestock farming is mainly in the western half of Joe Morolong LM and Ga-Segonyana LM, with 80% cattle, 12% sheep, 4% goats and 4% game. Subsistence farming is prevalent in the eastern half of Joe Morolong LM, which consists mainly of livestock keeping, poultry and planting vegetables. According to the Sishen SEAT, in 2011, 48% of the households in the Joe Morolong LM depended on subsistence farming. Approximately 22% of Ga-Segonyana LM households and approximately 11% of Gamagara LM households were involved in commercial farming.

The district's tourism industry can be split into eco-tourism, which mostly in the east and north east of the district; educational tourism and cultural tourism. Notable sights are The Eye in Kuruman; Khai Apple Recreation Resort; The Kalahari Raptor Trail that goes through Kuruman, Kathu, Olifantshoek, Upington to Augrabies Falls National Park; Kathu Forest; Moffat Mission in Kuruman, Wonderwerk Caves and Dithakong.

4.3.3 Outlook of Sishen Mine's zone of influence

Sishen Mine's zone of influence extends across the John Taolo Gaetsewe DM. The mine is located close to Kathu, Dibeng, Sesheng and Olifantshoek towns within the Gamagara LM, with Joe Morolong LM and Ga-Segonyana LM being the main labour sending municipalities.

According to the Sishen SEAT, the former Moshaweng Local Municipality and the District Management Area, which was previously part of the North West Province, were combined to establish the Joe Morolong LM through redemarcation. The Joe Morolong LM serves 11 wards and 154 villages, most of which were a result of forced removals in the 1960s and 1970s, or a need for traditional livestock herding areas with water.

Ga-Segonyana LM was established in 2000 through the amalgamation of Kuruman and Mothibstad Municipalities. It is the district's regional centre and has 33 residential areas, which are divided into 13 wards. Rural villages are administered through a traditional authority system with two senior traditional leaders who represent Batlharo Ba-ga Motlhwane and Batlhaping Ba-ga Jantjie in the municipal council.

Gamagara LM is mining dependent, with Sishen Mine being the primary employer. The main settlements in Gamagara are:

- Kathu, the capital urban node and administrative capital of Gamagara LM was established as a town to serve Sishen Mine in the 1980s
- Sesheng, the main township in Gamagara; initially established as hostels for Sishen Mine workers; the hostels were subsequently converted into family units by the Sishen Mine
- Mapoteng, an RDP housing area established to provide additional accommodation for mineworkers, it has since seen a mushrooming of informal settlements
- Dingleton, which is 10km south of Sishen Mine, was built by Kumba Iron Ore's predecessor, Iscor, to serve the mine and has been under negotiation for resettlement since 2008 owing to Sishen Mine's expansion to the west
- Dibeng an important urban node that serves the local agricultural communities.

Communities in Sishen Mine's zone of influence are very unevenly distributed, from fast-growing, urbanised areas to rural areas where there is little development. According to Statistics SA, in 2011, the population density was 21 people/km² in the Ga-Segonyana LM, and 16/km² in the Gamagara LM and only four people/km² in the Joe Morolong LM.

The Sishen SEAT states that the district's economy is undiversified and vulnerable because of its strong reliance on mining. Kathu, in Gamagara LM and Kuruman, in Ga-Segonyana are growing rapidly due to new mining activities while many of the villages in Joe Morolong LM have no expectation of new developments. Furthermore, most services and transport are tied to the mining sector.

4.3.3.1 Population and household overview

According to the Sishen SEAT, the populations of Gamagara LM and Ga-Segonyana LM grew by 79.36% and 33% respectively between 2001 and 2011. During the same period, Joe Morolong LM contracted by 8.6%. Between 2011 and 2016, a similar trend continued, albeit at a slower rate – populations of Gamagara LM and Ga-Segonyana LM grew by 28.93% to 53 656 and 11.49% to 104 408 respectively, while Joe Morolong LM contracted by 5.95% to 84 201 (Statistics SA,

2016). The population growth is indicative of the increase in mining and other economic activities in the area, coupled with migration from Joe Morolong LM to Gamagara LM and Ga-Segonyana LM. The Sishen SEAT also attributes the contraction of Joe Morolong LM population to the high prevalence of HIV and AIDS in the area. Overall, there was a population growth of 7.77% in John Taolo Gaetsewe DM between 2011 and 2016. See Table 3 for further details.

Table 3: Population distribution and household sizes in the local area municipalities

Area	Population		Household		Household Size	
	2011	2016	2011	2016	2011	2016
Ga-Segonyana LM	93 651	104 408	26 816	32 669	3.5	3.2
Joe Morolong LM	89 530	84 201	23 707	23 919	3.8	3.5
Gamagara LM	41 617	53 656	10 808	15 723	3.9	3.4
John Taolo Gaetsewe DM	224 799	242 264	61 331	72 310	3.7	3.4

Source: Statistics SA, 2016

There’s a positive correlation between growth in population and the number of households. Table 3 indicates that the 7.77% growth in population of John Taolo Gaetsewe DM, from 224 799 in 2011 to 242 264 in 2016, was accompanied by a 17.90% growth in the number of households from 2011 to 2016.

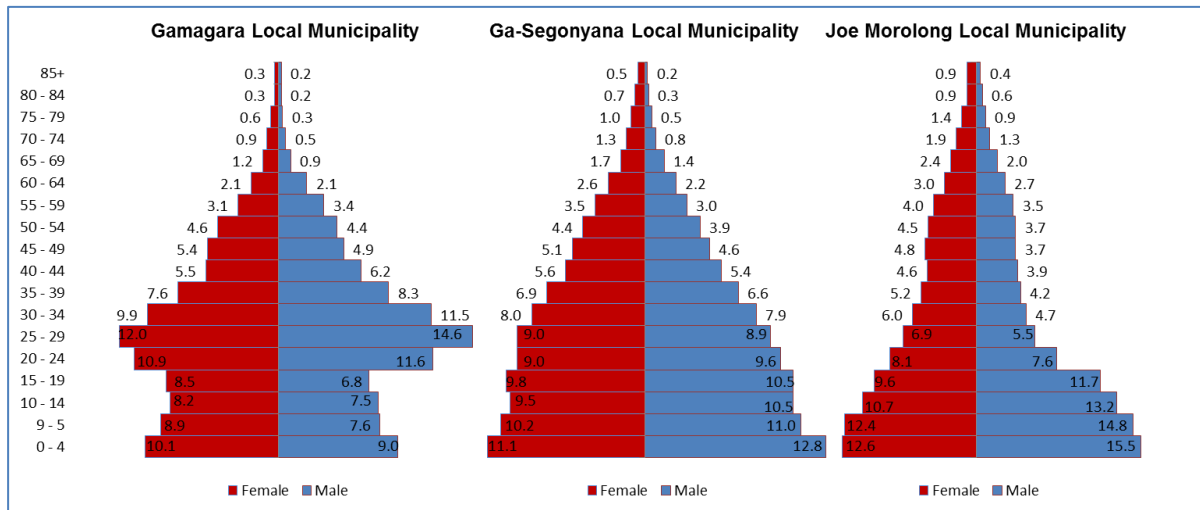
At a local municipality level, the Community Survey (Statistics SA, 2016) shows that the increase in population in Gamagara LM led to a 45.48% increase in households to 15 723 between 2011 and 2016. Over the same period, the number of households in Ga-Segonyana LM grew by 21.83% to 32 669 from 26 816, but the number of households in Joe Morolong LM remained relatively the same at 23 919 in 2016.

Household sizes decreased within all local municipalities. According to Statistics SA, the average household size in the John Taolo Gaetsewe DM decreased to 3.4 in 2016 from 3.7 in 2011.

4.3.3.2 Population composition

4.3.3.2.1 Age and sex

Figure 3: Age and sex distribution in the local area municipalities



Source: Demacon, 2017

Figure 3 indicates that in 2017, Ga-Segonyana LM and Joe Morolong LM were characterised by a developing age pyramid, whereas Gamagara LM had a large population of people between 20 and 35 years old. This is a reflection of the mining activities within the area, which primarily attracts mining employees and job seekers. Demacon (2017) states that owing to Sesheng and Kathu being mining towns, a large number of the population are employed at the mines as permanent or contract employees. A high number of job seekers are also attracted to the Gamagara LM. These job seekers are mainly youth from Joe Morolong LM or the rural parts in Ga-Segonyana LM where few job opportunities exist.

This is also highlighted in the Sishen SEAT, where there is an overrepresentation of males between 25 and 29 years old. The Community Survey (Statistics SA, 2016) indicates that in 2016, 56.5% of Gamagara LM residents were male, whereas the male populations in Ga-Segonyana LM and Joe Morolong LM were 48.4% and 45.4% respectively. In 2011, the proportion of males in Gamagara LM, Ga-Segonyana LM and Joe Morolong LM were 54.6%, 48% and 46.1% respectively; thus showing an increase in the male populations of Gamagara LM and Ga-Segonyana LM from 2011 to 2016 and a decline in the male population in Joe Morolong LM.

4.3.3.3 Social service profile of Sishen Mine’s zone of influence

This section gives a description of the social context of the local area, providing a deep understanding of the conditions under which the inhabitants of the local area live. The potential

social impacts of the UDMS Project were established and subsequently assessed through this social profile.

4.3.3.3.1 Access to health care

According to the Sishen SEAT and John Taolo Gaetsewe SDF Review (2017), John Taolo Gaetsewe DM has 40 clinics, 20 mobile clinics and four hospitals in Kathu, Olifantshoek, Kuruman and Batlharos (see Figure 4). The Sishen SEAT states that access to healthcare and provision of medical facilities are challenging in isolated and sparsely populated areas, which include rural parts of Ga-Segonyana LM and Joe Morolong LM. John Taolo Gaetsewe SDF Review (2017) indicates that the vast distances and small catchment areas are major obstacles to achieving economies of scale, as evidenced in 2009 when Northern Cape district hospitals had the highest costs per patient in South Africa.

Table 4: Health care facilities in the local area municipalities

Municipality	Hospitals	Clinics	Mobile Units
Gamagara LM	2	6	0
Ga-Segonyana LM	2	7	20
Joe Morolong LM	0	27	

Source: Sishen SEAT, 2014; John Taolo Gaetsewe SDF Review, 2017

As per Table 4, although Joe Morolong LM does not have a hospital, it has the highest concentration of clinics in John Taolo Gaetsewe DM with 27 clinics at a ratio of approximately 2 clinics per ward. According to the John Taolo Gaetsewe SDF Review (2017), the nearest hospitals to the municipality are in Kuruman and Vryburg. The available clinics are said to be too inadequate to service the communities and result in residents travelling great distances for health care.

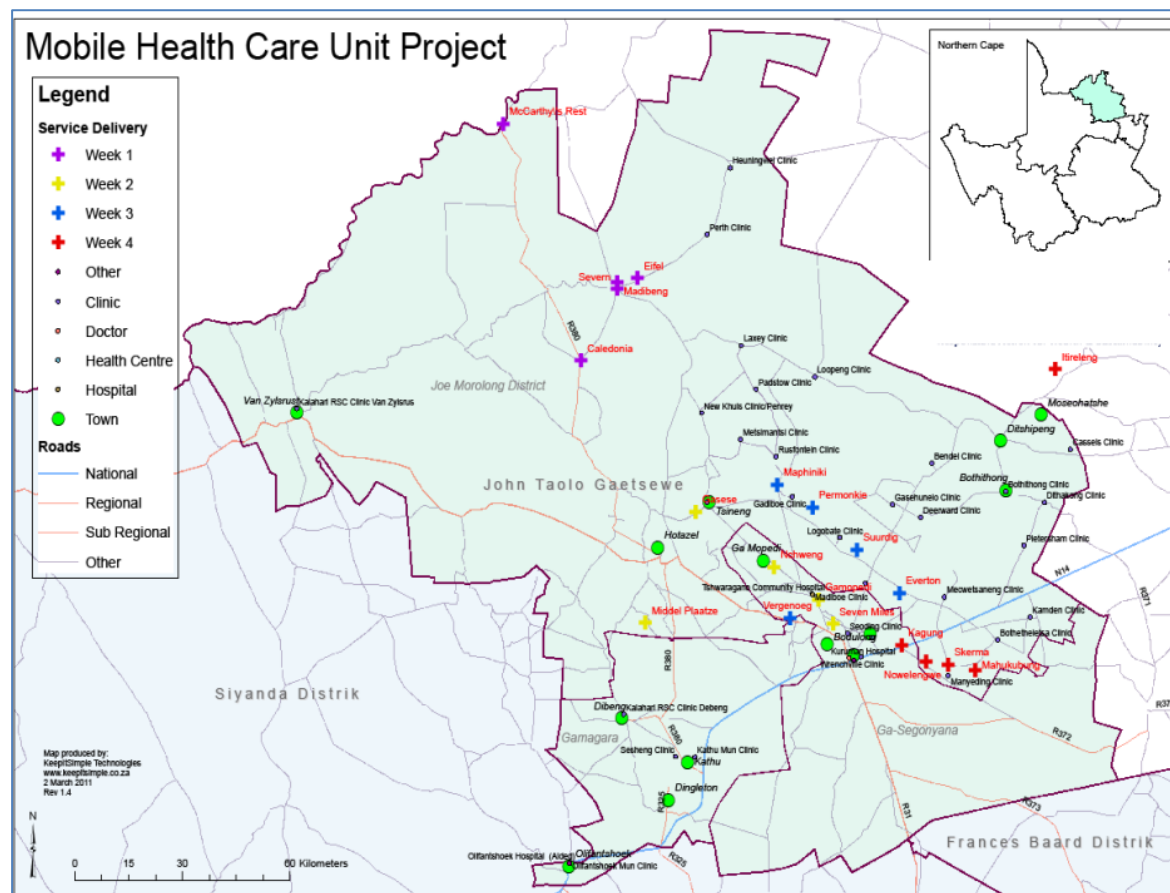
The inadequacy of health care facilities were These issues were reiterated in focus groups held by Sishen Mine in 2014, where participants voiced concerns over shortages of ambulances, particularly in Joe Morolong LM as well as overcrowding at the hospitals in Gamagara LM (kathu) and Ga-Segonyana LM (Kuruman). The SAPS in the area reported that at times there are no ambulances to transport patients and police vehicles are the used to transport them to hospitals. Other key mentions from the Sishen SEAT consultations were:

- The shortage of medical professionals in Kathu
- The need to increase capacity in public hospitals
- The need for a provincial hospital for the Gamagara LM as patients had to be transported to Kuruman or Kimberley for specialised medical treatment

- People with disabilities were not properly catered for with many having to wait long periods of time for wheelchairs, crutches and prosthetic limbs
- The shortage of beds in hospitals.

Figure 4 shows the distribution of medical professionals and healthcare facilities in the local area municipalities.

Figure 4: Health care facilities in the local area municipalities



Source: Anglo American, 2011

According to the District Health Barometer (2015), John Taolo Gaetsewe DM is seen as struggling with child related illnesses, with one of the highest mortality rates for children below 5 years old. Of particular concern is the higher incidence of pneumonia among children, with an increase from 98.6 cases per 1,000 children in 2011–12 to 106.9 in 2012–13.

Further, with 688 per 100 000 of population, TB incidence in the district in 2013 was above the national average of 593 and amongst the highest in the country. Treatment rate was even lower at 62.2%, well below the 82% national target and 77.9% national average treatment rate. John Taolo Gaetsewe DM had the second lowest cure rate for TB in the country at 49.9%. The Sishen SEAT attributes this to geographical constraints owing to remoteness of some communities from facilities, the low-income status of many households and the inadequacy of some healthcare

services. It must be noted that the majority of the residents in John Taolo Gaetsewe DM rely on public healthcare facilities, with less than 13% of the district’s population are covered by medical aid.

HIV/AIDS is a serious concern in the John Taolo Gaetsewe DM. According to the District Health Barometer (2015), in 2013, HIV/AIDS was one of the top 3 broad causes of death in the district - HIV/AIDS and TB accounted for the largest proportion of deaths among females and males within the 25 – 64 years age group, and the second largest proportion of death in the 15 – 24 years age group. During Sishen SEAT focus groups, stakeholders felt that the growing informal settlement population, alcohol abuse, prostitution and related problems that were previously unknown to Gamagara LM and directly associated with the growing mining activities contributed to the HIV/AIDS infections. However, there has been progress in the fight against HIV/AIDS.

Sishen Mine has undertaken several healthcare provision initiatives in John Taolo Gaetsewe DM., these initiatives include the following:

- 20 Batho Pele mobile health units that provide critical health service to the remote communities in the Joe Morolong LM and Ga-Segonyana LM
- Ulysses Gogi Modise Wellness Clinic (UGM Wellness Clinic), which is located in Kathu, in partnership with Department of Health and the Gamagara LM, providing community oriented primary health care programmes, counselling as well as HIV, AIDS and TB-related treatment. UGM Wellness Clinic also distributes fortified porridge and milkshakes to malnourished and underweight TB, HIV/AIDS patients, and avails a social worker to assist people with applications for identity documents, birth certificates and social grants.
- The funding of an ambulance station adjacent to UGM Wellness Clinic and counselling services from Family and Marriage Society of South Africa (FAMSA).

4.3.3.3.2 Access to education

According to the Sishen SEAT, in 2014, there were 175 public schools that were staffed with 2 203 educators which catered to 66 844 learners in John Taolo Gaetsewe DM.

Table 5: Number of schools in the local area municipalities

Municipality	Primary schools	Middle schools	Secondary schools	Further education
Gamagara LM	6	0	3	1

Ga-Segonyana LM	22	1	22	4
Joe Morolong LM	132	3	27	0

Source: Sishen SEAT, 2014

Table 5 indicates that the highest number of primary schools is in Joe Morolong LM, but there is a disproportionately lower number of secondary schools and no further education institutions. The Sishen SEAT highlights that the education profile (see Table 6) of John Taolo Gaetsewe DM reflects the high levels of poverty and socio-economic disparities among the three local municipalities, especially Joe Morolong LM. Access to education in rural areas is hampered given that some areas are up to 30km away from the closest school. Learners who live more than 3.5Km away from the nearest school are provided with transport by the Northern Cape Department of Education.

Table 6: Basic education profile of population aged 20 years+ in the local area municipalities

Municipality	No schooling	Some primary	Complete primary	Some secondary	STD 10 / Grade 12	Higher education
Gamagara LM	10.6%	11.3%	5.5%	33.3%	26.6%	12.6%
Ga-Segonyana LM	9.7%	17.3%	4.9%	34.3%	23.7%	10.0%
Joe Morolong LM	22.9%	26.6%	5.2%	27.8%	13.4%	4.1%

Source: Demacon, 2017

The basic education profile of the population aged 20 years+ in the local municipalities as shown in Table 6 is symptomatic of poor access to education and quality of education offered at schools, especially in the Joe Morolong LM given its large rural population. The Sishen SEAT notes that as a result, there is pressure on the few schools in the urbanised areas as there has been an ongoing migration of learners from the rural schools to these few, better-resourced schools. Admission and accommodation of new learners has been a huge challenge in Dibeng and Kathu in Gamagara LM as well as Kuruman and Mothibstad in Ga-Segonyana LM. The schools are struggling to meet demand – although Kathu Primary School enrolled 1 600 learners in 2014, approximately 350 more than the previous year, it still had a waiting list of 100 learners in September 2014.

The pressure on urban schools has had negative impacts of overcrowding and poor teacher: learner ratios in the urban areas. Conversely, rural schools are experiencing decreasing numbers of learners, which has resulted in the Northern Cape Department of Education closing down some of the rural schools due to low numbers of learners. Should this trend persist, continued pressure on urban schools may have an impact on the quality of education.

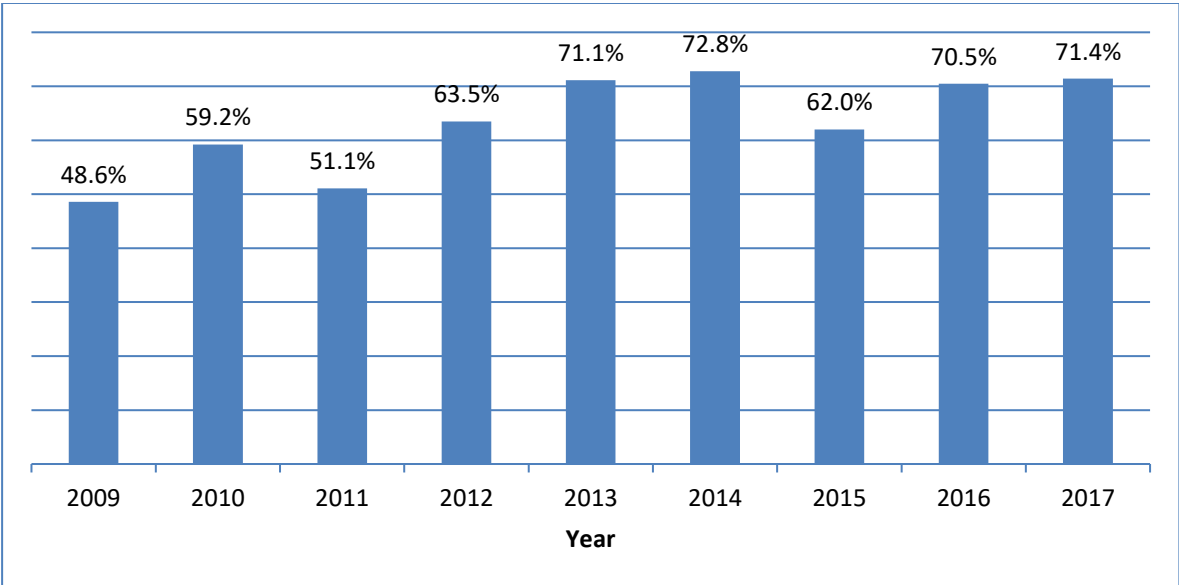
According to the Sishen SEAT, schools are not receiving adequate allocation of teachers and resources from the Department of Education to address their needs, particularly in the rural areas.

To ease the pressure on the urban schools, it is necessary to improve the quality of education in the rural areas. This scarcity extends to the provision of basic social services such as water, healthcare and sanitation, which are inadequate in some cases; thus making it hard to attract competent educators and subsequently leading to a poor education offering, which directly impacts drop-out rates.

The Sishen SEAT states that the majority of the district’s youth are rendered unemployable due to lack of education and skills. Table 6 shows that only 17.5% of the population of the Joe Morolong LM aged 20 years or older either completed secondary school or higher education, while in the Gamagara LM and the Ga-Segonyana LM the figure was slightly higher at 39.2% and 33.7% respectively.

This can be seen in Table 6 which indicates that only 17.5% of the population of Joe Morolong LM aged 20 years or older either had completed secondary school or higher education compared to 39.2% and 33.7% in Gamagara LM and Ga-Segonyana LM respectively. This situation is further exacerbated by the lack of further education institutions in the district.

Figure 5: National senior certificate pass rate in the district municipality



Source: Sishen SEAT, 2014; NSC School Performance Report 2014, 2015, 2016, 2017

The John Taolo Gaetsewe DM has seen an improvement in education levels. The matric (grade 12) pass rate increased from 48.9% in 2009 to 71.4% in 2017 as shown in Figure 5. The Sishen SEAT cites the 2013 National Assessment Report to highlight the continued achievement of better mathematics results by grades 3, 6 and 9 from the previous years.

Sishen Mine has been acknowledged for its contribution to the quality of and access to education, with 64% of community members attesting to the mine's contribution in the 2011 Community Survey. This was reiterated in focus group discussions with educators in 2014 who held the sentiment that their schools would be adversely affected if the mine's support fell away. Initiatives implemented by Sishen Mine included the following:

- The funding and implementation of 24 education projects which benefited at least 10 600 learners between pre-school age through to grade 12 across rural and urban areas in the district were beneficiaries
- Collaborating with, John Taolo Gaetsewe DM, local business, NGOs, Departments of Labour and Social Development, and Gamagara Business Forum in order to initiate youth development programmes to improve skills and employability. Between 2012 and 2014, Sishen Mine invested over R8 million invested in youth development programmes.
- The establishment and running of an accredited training facility, Tshipi Skills Training Centre, which provides training for Sishen Mine employees, members of the community, including employees of other mines in the area. It provides general and artisan training, as well as safety health, environment and quality (SHEQ) training, IT training, adult basic education and training (ABET), and management and leadership training.
- The establishment of the Sivos Training for apprentice training
- The Mining and Plant Training Centres for operator training, and learnerships for engineering (civil, electrical and mechanical), ore beneficiation and surface mining.
- Funding bursaries in core mining disciplines, including engineering, mining, surveying, metallurgy, geology. Between 2012 and 2014, 203 bursaries were awarded. Upon completion of studies, the graduates undergo a structured programme, Professionals in Training (PIT), to further development them in their fields of study. During the same period, approximately R80 million was invested in the PIT programme.

4.3.3.4 Social infrastructure profile of Sishen Mine's zone of influence

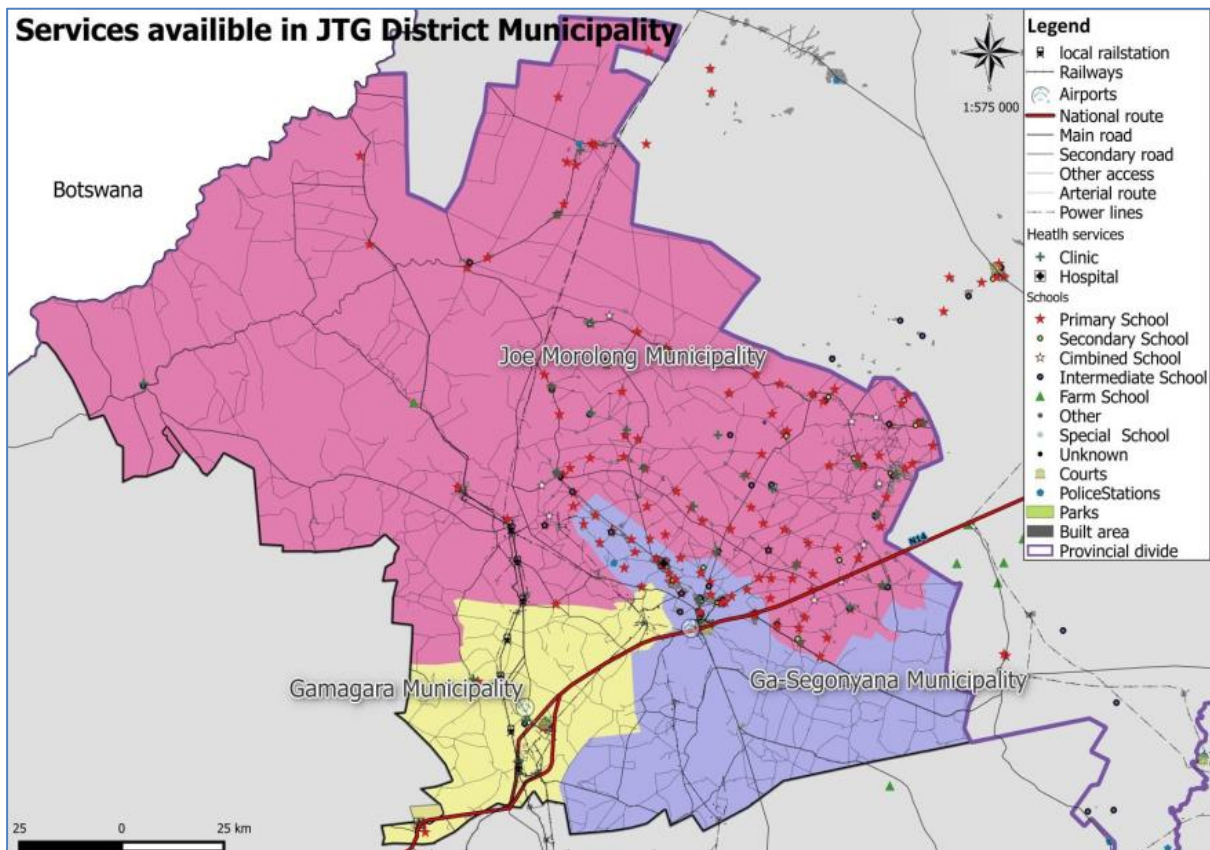
The John Taolo Gaetsewe SDF Review (2017) indicates that service delivery in the district is still a major challenge, particularly in the poorest areas, although strides have been taken to decrease the service delivery backlogs. Inadequate provision of potable water and sanitation has been particularly challenging. The majority of the district households have access to electricity, but very few have access to piped water within their homes, regular refuse removal and flush toilets, with rural areas suffering the brunt of this unavailability of services. As a primarily rural area, Joe Morolong LM is the worst performer in terms of service delivery in the district.

Owing to poor levels of and lack of opportunities, there is a constant migration out of Joe Morolong LM to Gamagara LM and Ga-Segonyana LM, as people search for better prospects. This migration puts a strain on the service provision capacities the receiving municipalities.

In the Community Survey (Statistics SA, 2016), the lack of and inadequacy of social services, particularly housing, and safe and reliable water supply, were listed in the top 5 challenges for John Taolo Gaetsewe DM's households.

Figure 6 shows the social services available in John Taolo Gaetsewe DM.

Figure 6: Available social services in the district municipality



Source: John Taolo Gaetsewe SDF Review, 2017

4.3.3.4.1 Access to water

The Sishen SEAT indicates that John Taolo Gaetsewe DM is located within the Lower Vaal Water Management Area. There is very little surface water and there are no rivers with permanent water flow. As a result, water for mining, industrial and residential use comes from the following sources:

- Groundwater via boreholes and water pumped from mining operations in the dewatering process

- The Kuruman Eye, a natural source of water
- Vaal-Gamagara pipeline where potable water is supplied through the Vaal-Gamagara Government Water Supply Scheme

Table 7: Access to piped water in the local area municipalities

Municipality	Access to piped Water inside dwelling			Access to piped water within the community
	2001	2011	2016	2016
Gamagara LM	61.50%	59.11%	60.38%	88%
Ga-Segonyana LM	13.90%	19.90%	11.86%	92%
Joe Morolong LM	6.10%	9.10%	3.65%	96%
John Taolo Gaetsewe DM	16.80%	22.60%	39.01%	91%

Source: Statistics SA, 2016; John Taolo Gaetsewe SDF Review, 2017

Although 91% of the district population had access to piped water within the community as indicated in Table 7, access to piped water inside the dwelling is still poor and unevenly distributed among the local municipalities. Gamagara LM performed best 60.38% of the households having access to water inside their dwellings in 2016, and Joe Morolong LM performing the worst with only 3.65% having access to water inside their dwellings in 2016. It should be noted that as a result of the growth in local municipality population and an increase in informal settlements, there was a reduction in access to piped water inside dwellings between 2001 and 2016.

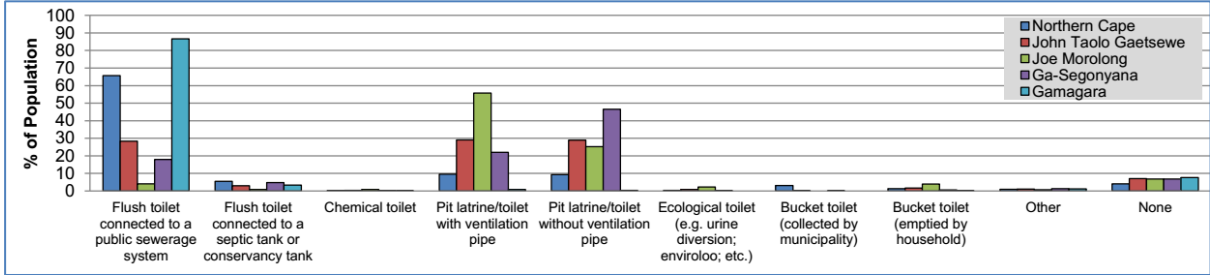
In 2014, Sishen Mine had 23 dewatering boreholes that pumped water to Sedibeng Water, which supplies Gamagara LM, including impacted farmers and residents in Dingleton. The mine also supplies raw ground water directly to Kathu where it is used for potable and garden water. Extra export pipelines were under construction to boost water supply into the Vaal Gamagara pipeline and minimise surface discharge of groundwater into the environment by tying in with a future aquifer recharge scheme at Khai Appel. Sishen Mine is also involved in a project to return additional treated effluent from Kathu waste water treatment to increase the export of groundwater to Sedibeng Water.

4.3.3.4.2 Access to sanitation

Figure 7 indicates that in 2016 less than one in three of the district's population (28.29%) had access to a flush toilet connected to a sewerage system, which is significantly lower than the national (54.99%), Northern Cape Province (65.74%) and the other district municipalities figures (all over 60%). Backlogs are cited as the primary reason. Gamagara LM had the highest access to flush toilets at 86%, Ga-Segonyana LM at 23% and Joe Morolong at a lowly 7%. Joe Morolong LM is the worst performer with regards to sanitation services, with 81% of its household having

access to a pit latrine. More worrying are the households in the district without any access to sanitation given the health and hygiene implications. In Gamagara, the use of flush toilets is challenging as large numbers of job seekers have settled informally, causing overcrowding. The sanitation system, which consists of four pumps in Mapoteng and six pumping stations in Kathu, was built to accommodate five people per household. However, up to 20 people reside on each plot, which explains recurring issues with the provision and maintenance of bulk services.

Figure 7: Levels of sanitation in the district municipality



Source: John Taolo Gaetsewe SDF Review, 2017

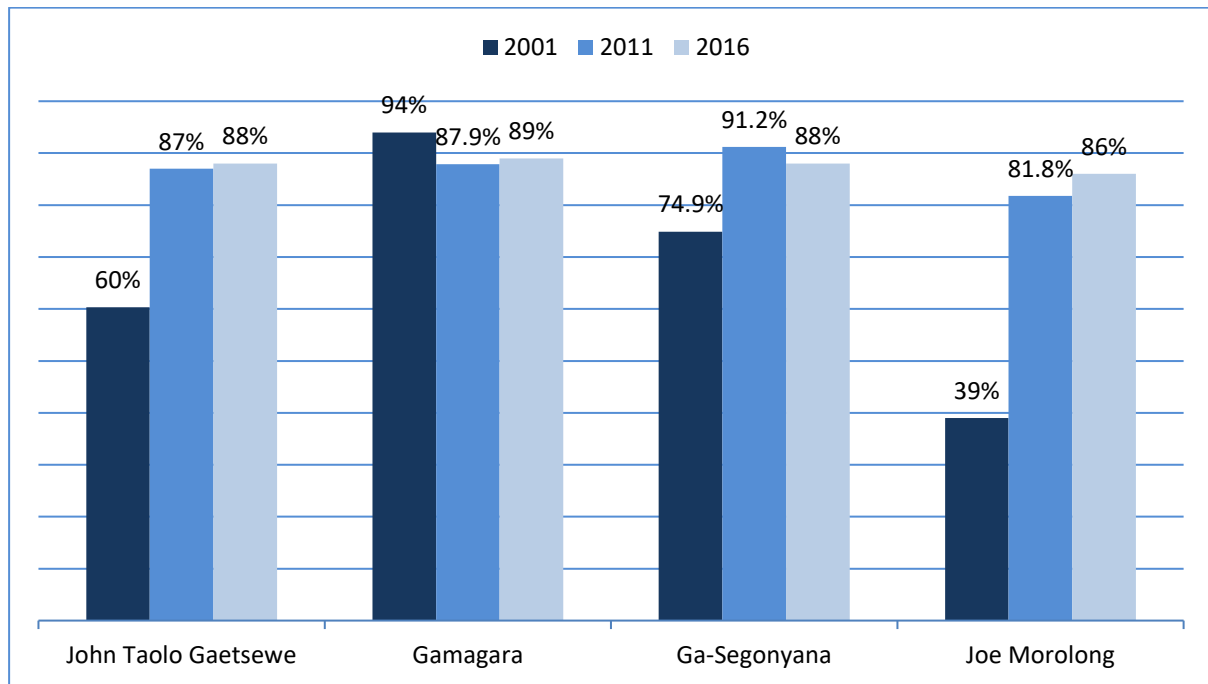
Sishen Mine has a service level agreement (SLA) with the Gamagar LM, which was established in 2010, where the mine contributes to the development and/or upgrade of bulk infrastructure linked to Kumba and Kumba-related housing developments in the local municipality. This is done through financial contributions as well as provision of engineering and project management expertise. The SLA includes sewer, water, electricity and storm water upgrades in Kathu and Sesheng.

4.3.3.4.3 Access to electricity

Looking at

Figure 8: Access to electricity for lighting in the local area municipalities, there was notable growth in access to electricity in the district from 2001 to 2016, with 87% of the district household having access to electricity for lighting. Joe Morolong LM, with its sparse population, spread out communities, service delivery backlogs and huge dependency on grants and subsidies had a remarkable increase in access to electricity from 39% in 2001 to 86% in 2016. The decline in access to electricity in Gamagara LM from 94% in 2001 to 89% in 2016 was as a result of the growth in the number of informal settlements.

Figure 8: Access to electricity for lighting in the local area municipalities



Source: Sishen SEAT, 2014; Statistics SA, 2016

The Sishen SEAT indicates that there is insufficient bulk electricity for Gamagara LM and Ga-Segonyana LM, although the majority of households have access to electricity. As Eskom faces difficulties to effectively meet current energy demands in South Africa, major additional bulk supplies of electricity are required for future expansions. The mine reported in 2014 that it seconded a civil engineer to the Gamagara LM to build capacity, which had a positive effect to the development of electricity and sewerage.

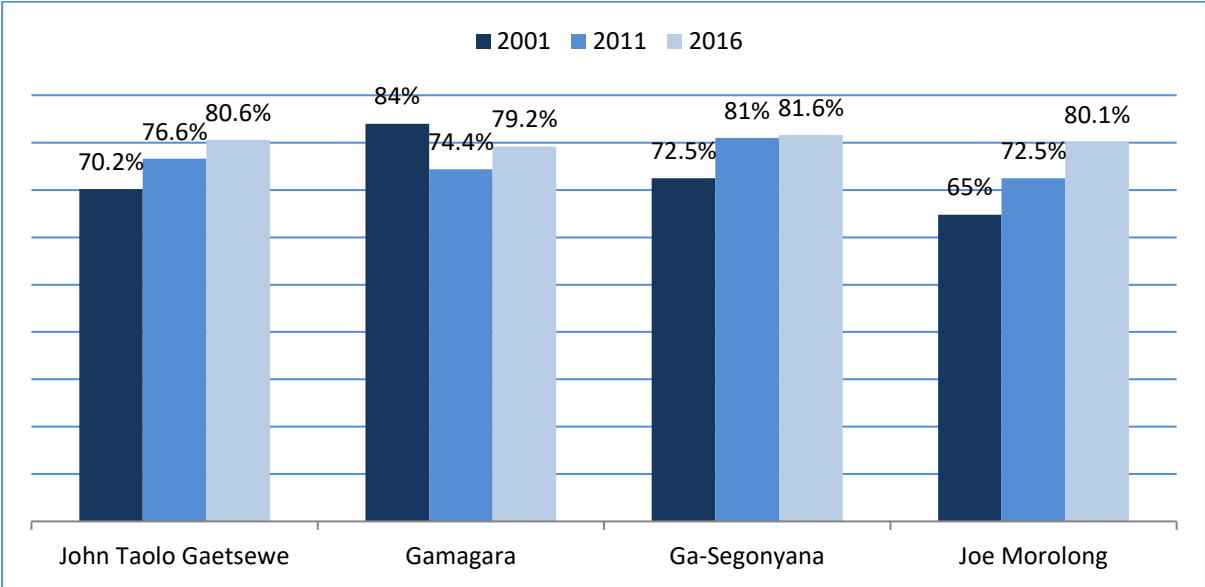
According to the John Taolo Gaetsewe SDF Review (2017), the development boom in the Gamagara Corridor has a consequence of putting great pressure on the existing electricity infrastructure, as the area requires as much electricity as the City of Bloemfontein given all the new mines and other related developments in the Gamagara Corridor.

4.3.3.4.4 Access to housing

As noted earlier, in 2016 there were 15 723 households in Gamagara LM with an average of 3.4 people per household; Ga-Segonyana LM had 32 669 households with an average of 3.2 people per household and Joe Morolong LM had 23 919 with an average of 3.5 people per household. As shown in Figure 9, access to formal housing increased from 70.2% to 80.6% in the district, with the most growth in access to housing occurring in Joe Morolong LM from 65% in 2011 to 80.1% to 2016. Gamagara LM experienced a decline in formal housing to 79.2% from 84% in 2001, albeit an increase from 74.4% in 2011. The Sishen SEAT attributes the mining boom for

the high demand for housing in urbanised areas. The migration to the Gamagara LM and Ga-Segonyana LM resulted in the increase of informal settlements and put pressure on the social services infrastructure. In Gamagara, the greatest development of informal settlements is in Mapoteng.

Figure 9: Access to formal housing in the local area municipalities



Source: Sishen SEAT, 2014; Statistics SA, 2016

Sishen Mine has an affordable housing project which seeks to make housing affordable for its employees. In the past, it has done this by:

- Providing all employees with a housing allowance that enables them to either purchase or rent accommodation
- Providing home loan subsidies for first time home owners below senior management to buy any property within 80km of Kathu
- Constructing fully serviced quality, affordable houses and flats to rent and/or or sell to employees at prices below market value

According to the Sishen SEAT the mine’s housing project is for employees only, with contractors having to find their own accommodation. In 2014, approximately a third of employees working at the mine were contractor employees. Where their employers do not make arrangements for accommodation, these employees rent structures such as garages or Wendy houses, mostly in backyards. Job seekers without an income settle in informal structures which are mushrooming.

According to John Taolo Gaetsewe SDF Review (2017), the residential influx and the growing informal settlements in Kathu and Mapoteng among others, have resulted in a demand for additional land for urban development. As at 2014, 7.6% of the district’s population lived in

informal settlements from 5.1% in 2011, with Kathu's worsening over the same period and access to land in Gamagara being a challenge as most of the land is privately owned. The Sishen SEAT cites SAPS and the Gamagara Council as stating that owing to lack of proper accommodation, areas such as Mapoteng are experiencing overcrowding, with up to nine shanties erected on one plot. Ultimately, pressure on service delivery in the municipality outstrips the capacity of Gamagara LM IDP and budget process.

It should be noted that the above is limited to low cost housing and well as RDP housing. A search on property24.co.za indicates that there are currently 250 houses on the market with most ranging from R 395 000 to R 1 555 000 (mid income to high income earners). This is corroborated by Demacon (2017) which concluded that supply exceeds demand for housing in the area. Demacon (2017) found that between June 2015 and May 2016, the number of houses that were for sale doubled to 400 houses. The increase in housing stock has also depreciated the prices of houses.

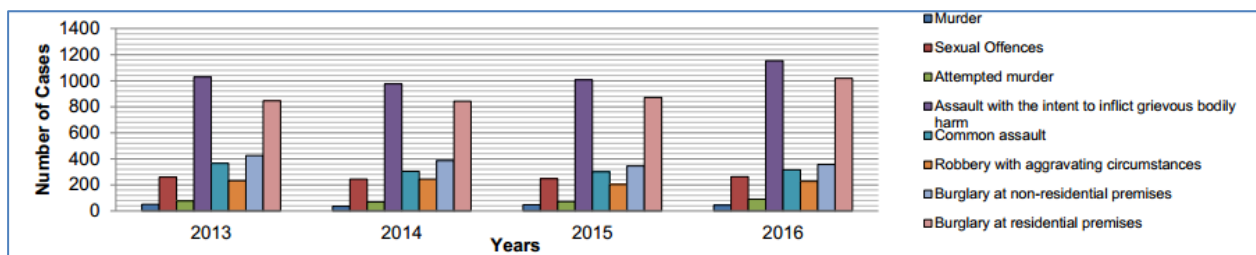
4.3.3.5 Social pathologies in Sishen Mine's zone of influence

4.3.3.5.1 Crime

According to the Sishen SEAT, there are 11 police stations/precincts in John Taolo Gaetsewe DM, three of which are located in Gamagara LM (Kathu, Dibeng and Olifantshoek), four in the Ga-Segonyana LM (Kuruman, Mothibistat, Wrenchville and Batlharos) and four in Joe Morolong LM (Bothitong, Heuningvlei, Tsineng and Vanzylsrus). According to the statistics received from eight of the police stations, the most common crimes in all three local municipalities in the district were "Assault with intent to inflict grievous bodily harm" and "Common assault". The highest concentrations were in Kuruman and Kathu. Serious crimes, such as "Murder" and "Attempted murder" were most prominent in Kuruman, but at lower levels to the national figures.

According to the Sishen SEAT, between 2013 and 2014, there was a sharp increase in "Robbery with aggravating circumstances" in Kathu and Kuruman, and to a lesser extent in Dibeng. Similar sharp increases were observed in "Burglaries at residential premises", particularly in Kathu. "Sexual crimes" were most common in Kuruman, Kathu and Tsineng. Kuruman and Tsineng experienced moderate decreases in the number of sexual crimes reported during the same period, whereas Kathu experienced a slight increase. This trend appears to still be in effect as seen in Figure 10, which illustrates the number of cases reported in the district between 2013 and 2016.

Figure 10: Number of cases reported in the district municipality



Source: John Taolo Gaetsewe SDF Review, 2017

Looking at the latest precinct crime statistics (<http://www.crimestatssa.com>, 2017), there has not been a significant increase in the number of cases reported in Kathu, while Kuruman and Mothibistad have increased particularly cases pertaining to non-residential premises burglaries, vehicle thefts and robbery. There was an increase in the number of cases reported for Drug-related crime in Kathu, Kuruman and Mothibistad.

According to the John Taolo Gaetsewe SDF Review (2017), there has been a significant population of destitute migrants in Kuruman, primarily from Joe Morolong LM, who have failed to get employment in the town as a result of limited number of job opportunities. The migration has led to among other impacts, an increase in crime. Although migration was primarily to Kuruman, Kathu has increasingly been targeted and it is envisioned that it will continue to grow in popularity given the lack of job prospects in Kuruman.

4.3.3.5.2 Other social pathologies

According to the John Taolo Gaetsewe SDF Review (2017), the mining industry, through its propensity to employ predominantly young men and keep them away from “home” for extended periods of time, provides a fertile breeding ground for socially undesirable and dangerous behaviours such as prostitution and substance and alcohol abuse. There is also an unforeseen consequence of mining development in a rural area of increasing jealousy and tensions between indigenous inhabitants and outsiders who earn huge salaries relative to those of the indigenous inhabitants of the district.

Sishen SEAT consultation stakeholders highlighted contractor camps, particularly Shelela Camp, as being a breeding ground for social ills such as prostitution, alcohol and drug abuse that typically occur when single men with money have few recreational options. Educators also mentioned that teenage girls were getting into relationships with mine contractor employees as a means to access money, which further fuelled alcohol abuse, prostitution, teenage pregnancies and a higher drop-out rate from secondary schools. Another big concern was contractor employees

staying behind after their contracts had expired, adding to the number of unemployed in need of social support, as there was a lack of formal demobilisation programmes.

Sishen Mine supports efforts to combat social pathologies in the municipality by supporting the work of, and working with NPOs and local authorities in programmes, which include:

- UGM Wellness Clinic that services the community providing HIV/AIDS testing and counselling, HIV/AIDS, STI and TB awareness, male circumcision, and others
- Counselling and social services from Family and Marriage Society of South Africa (FAMSA)
- A partnership with SAPS on emergency response to accidents and incidents within Kathu in the Gamagara LM
- A project to combat the increased levels of crime in partnership with SAPS
- The implementation of a contractor social management procedure.

These efforts to address social pathologies are frustrated by limited resources and the continued influx of job seekers and other migrants into the area.

4.3.3.6 Employment and income overview of Sishen Mine’s zone of influence

4.3.3.6.1 Employment and unemployment

Demacon (2017) indicates, as per Table 8 that in 2016, 45.3% of the John Taolo Gaetsewe DM’s population was economically active, with 70.3% being employed. The labour sending municipalities had lower economically active segments – 50.8% and 26.2% economically active in Ga-Segonyana LM and Joe Morolong LM respectively than Gamagara whose economically active population made up 65.2% of the entire population. The unemployment rates for Ga-Segonyana LM and Joe Morolong LM were much higher than the 25% national average, with unemployment rates of 33.7% in Ga-Segonyana LM and 38.6% in Joe Morolong LM. Gamagara LM had an unemployment rate of 17.7%.

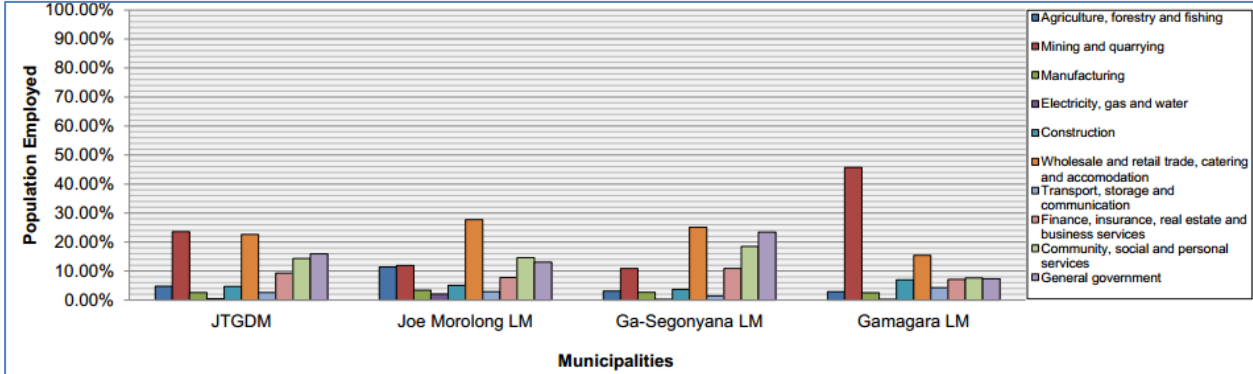
Table 8: Employment in the local area municipalities

Municipality	Economically Active	% of economically active who are employed	% of economically active who are unemployed
John Taolo Gaetsewe DM	45.3%	70.3%	29.7%
Gamagara LM	65.2%	82.3%	17.7%
Ga-Segonyana LM	50.8%	66.3%	33.7%
Joe Morolong LM	26.2%	61.4%	38.6%

Source: Demacon, 2017

According to the John Taolo Gaetsewe SDF Review (2017), wholesale and retail is the biggest contributor towards employment for the Joe Morolong LM and the Ga-Segonyana LM, while the Gamagara LM is largely dependent on mining, which employed 45.7% of the municipality’s economically active population in 2015. Figure 11 shows the percentage of the local workforce per employment sector.

Figure 11: Percentage of population per employment sector



Source: John Taolo Gaetsewe SDF Review, 2017

According to the Sishen SEAT, Sishen Mine is the main employer within the Gamagara LM and the source of livelihood for a significant portion of the local population. The report determined that the induced employment ratio was 3:1 - one person’s employment in the mining industry (direct or indirect) benefits three other people economically, especially when the mining employees spend their earnings locally. As a result, a multiplier of 0.44 is applied to the total number of mining employees to establish the number of induced jobs.

In 2014, Sishen Mine had 8 233 direct employees, 5 613 indirect employees and 260 employees through their CSI initiatives. Consequently, applying the 0.44 multiplier, Sishen Mine created 6 207 induced jobs. Hence, there were 20 313 jobs linked to Sishen Mine. The Sishen SEAT further determined that given that there were 20 313 jobs linked to Sishen Mine in 2014, 49 767 people were dependent on Sishen Mine for their livelihood. This was determined with the premise that the average household size is 3.5 and approximately 70% of household incomes of the employees of Sishen Mine are derived from Sishen Mine.

4.3.3.6.2 Household income

Demacon (2017) indicates that over time Gamagara LM and the Kuruman area in the Ga-Segonyana LM have developed middle income earning communities owing to development

brought mainly by mining activities. However, the rest of the district is made up of low to middle income earning communities. The decent jobs, benefits and share schemes offered by Sishen Mine and other mines have contributed to the higher income profiles in the developed areas. In 2016, the weighted average household income in the Gamagara LM was R155 252 per annum, followed by the Ga-Segonyana LM at R77 670 per annum, and Joe Morolong LM at R43 169 per annum.

This disparity within the John Taolo Gaetsewe DM is further evidenced by a Gini coefficient of 0.6, indicating high levels of inequality, slightly lower than the Northern Cape Province level of 0.606 (John Taolo Gaetsewe SDF Review, 2017), and varying dependency ratios of 39 in the Gamagara LM, 58 in the Ga-Segonyana LM and 85 at Joe Morolong LM (Sishen SEAT, 2014).

The John Taolo Gaetsewe SDF Review (2017) highlights that there is a high dependency on government grants and subsidies in the district, with a very high 85% grants and subsidies received as a percentage of total income in 2016. Joe Morolong LM generates very little revenue and 78% of households are largely dependent on government grants and subsidies. Approximately 46% of income received (as a percentage of total income) was through government grants and subsidies in Ga-Segonyana LM. Gamagara LM had the lowest level of grants and subsidies as a percentage of total income at 6.6%; this low figure is attributed the growing mining activity in the municipality which enables people to earn an income.

5 IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION

5.1 List of identified Social Impacts

The following impacts have been identified:

- Increased pressure on infrastructure and services linked to influx of job seekers and workers
- Increased social pathologies linked to influx of workers and job-seekers
- Enhanced local skills development opportunities
- Higher employment and increased disposable incomes of households
- Enhanced socio-economic development resulting from investment in socio-economic development through the SLP and CSI projects

5.2 Assessment of identified impacts

The following is the section is the assessment of the above-mentioned impacts.

5.2.1 Increased pressure on social infrastructure and services linked to influx of job seekers and workers

5.2.1.1 Impact description

The influx of people into an area necessitates more social infrastructure and services, including housing and related services as well as education and health facilities in the host municipality. This is currently the case in Gamagara LM. It is expected that the UDMS Project will attract more job seekers and workers to the Gamagara LM, more particularly Kathu, Sesheng, Mapoteng, Dibeng and Olifantshoek, as these are the closest settlements to the mine. This influx will naturally increase the need for social infrastructure and services. The migration of job seekers and employees (particularly from the neighbouring Joe Morolong LM and the rural parts of Ga-Segonyana LM) into Gamagara LM is not a new phenomenon. The population of Gamagara LM grew by 79.36% between 2001 and 2011 and by almost 30% between 2011 and 2016. This migration puts a strain on the service provision capacities on Gamagara LM, which is already unable to adequately provide services to its current population.

As alluded to in sections 194.3.3.3.1 and 4.3.3.3.2, the education and health facilities are taking strain as a result of influx. The hospital in Gamagara is experiencing the shortage of medical professionals and overcrowding while the schools, there is overcrowding, poor teacher:learner ratios and pressure on school social services, which in turn affect the quality of education.

Sishen Mine has taken measures to improve healthcare provision and education in John Taolo Gaetsewe DM including Gamagara LM (see sections 4.3.3.3.1 and 4.3.3.3.2). These actions assist in alleviating pressure on resources, however, they are still inadequate and would come under greater pressure due to the influx of job seekers. With regards to health care, Sishen Mine has a dedicated clinic and emergency response facilities which serve mine and contractor employees. From a primary health care perspective, the additional employees would utilise this service and thus not place undue pressure on the public health care services. However, job seekers who do not secure work would not have access to these facilities and thus place pressure on the public health system.

Although Gamagara LM fares well in most service delivery areas (see Section 4.3.3.3), there has been a reduction in access. For instance, Gamagara LM experienced a reduction in the proportion of household access to piped water inside dwellings over the period 2001 to 2016 which was partially due to the growth in local municipality population and an increase in informal settlements. Housing and related infrastructure is a particularly key issue. Sishen Mine's housing project is for Kumba employees only, with contractors having to find their own accommodation. In 2014, approximately a third of employees working at the mine were contractor employees and where employers did not provide housing, contractor employees resorted to renting structures such as garages or Wendy houses, mostly in backyards. Due to influx of job seekers and the lack of proper housing to accommodate them, there's been a mushrooming of informal settlements in Sesheng and Mapoteng.

The mine has implemented a number of projects in an effort to assist in alleviating these challenges (see section 4.3.3.4) The contributions of Sishen Mine reduce to pressure on services and infrastructure, however, even by Sishen Mine's admission, influx of people (partially due to the mine's presence) put pressure on local service delivery to such a point where the capacity of Gamagara LM to deliver services is outstripped.

With regard to housing, Sishen Mine will not provide housing to workers during the construction and operation phase of the project but will however provide a housing allowance. Ultimately, during construction and operation, workers will have to make their own arrangements but will have the resources to do so. Further, should there be contractor employees, they would need to make their own accommodation arrangements unless their employers do so on their behalf.

It is anticipated that during the construction phase job seekers and workers (mainly unskilled or semi-skilled workers) will migrate to the area to take advantage of the construction job

opportunities. Given Sishen Mine's employment policies, it is expected that the majority of job seekers and workers would be from within John Taolo Gaetsewe DM, particularly Joe Morolong LM and the rural parts of Ga-Segonyana LM. Unskilled and semi-skilled migrant labourers will likely settle where accommodation is available and not costly. Sesheng, Dibeng and Mapoteng are the easiest areas to settle in as migrants would be able to find inexpensive accommodation or even erect informal dwellings at one of the recently formed informal settlements. Mapoteng poses the greatest risk due to the existing informal settlements. It is anticipated that migrant job seekers and/or workers who can afford higher rental rates would also likely settle in Kathu and the formal houses located in Sesheng and Dibeng. There would thus be increased pressure on social services and infrastructure in these areas. Migrants who occupy skilled, professionally qualified and management positions are likely to settle in Kathu where fully serviced houses are available for rental and sale.

During operation, approximately 128 semi-skilled, skilled and professionally qualified workers as well as managers will be needed. Migrant workers would require housing in close proximity to the mine. It is expected that semi-skilled, low income employees (who would make up the bulk of employees) and job seekers will settle in nearby residential areas including Sesheng, Mapoteng, Dibeng and Olifantshoek. The impact will likely be felt in these areas. As noted above, Sishen Mine provides housing allowances to employees and has a number of mechanisms/programmes to assist employees to acquire decent housing. The mechanisms will likely place less pressure on resources as employees will settle in areas which are already established, however this is not guaranteed as some migrants would try to save money by settling in cheap or free accommodation. As noted in 4.3.3.4, housing for mid-high income earners is available in Kathu, thus, this segment will not place too much pressure on services and infrastructure.

5.2.1.2 Impact assessment

The impact is expected to begin in pre-construction and be greatest during the construction phase when most employment opportunities will be available. It is anticipated that some construction workers and job seekers will move on as soon as construction is completed as opportunities for jobs will be limited and require greater levels of skill. However, many job seekers may remain during the operation phase because they are stranded or have decided to stay in the area despite not having employment. This is particularly likely of job seekers from the rural parts of Ga-Segonyana and Joe Morolong where job opportunities are very limited.

Given that the majority of workers and job seekers will be from the mine's area of influence (John Gaetsewe DM), most of the impact will shift from the labour sending municipalities to Gamagara LM where the mine is located.

The construction phase provides the most number of employment opportunities. It is anticipated that the most pressure on social services and infrastructure will occur during this phase. As construction work is temporary, it is likely that low income earners will settle in the cheapest accommodation possible to save money, regardless of the housing allowance, thus increasing pressure on services and infrastructure.

During operation, there will be employment opportunities for semi-skilled, technically and professionally qualified workers as well as managers. Although the limited number of jobs and the skills requirements will discourage some of the former construction workers and work seekers from migrating or staying in the area, it is anticipated that as an area that is economically sound and growing, and has experienced great migration in the last decade, many work seekers and construction workers are likely remain to take advantage of future job opportunities as has happened in the past. It is anticipated that middle and high income earning operation employees would be able to afford private residences and services and would thus not exacerbate service, infrastructure and housing backlogs.

It cannot be quantified how many job seekers will move to the abovementioned areas during, however, experience with similar projects, as well as the experience of Gamagara LM itself indicates that there will be some influx of job seekers. Given that the project will take place in areas where the influx of job seekers is fairly common, the impact is expected to be low.

After closure, should no other job opportunities present themselves in the area, the workers remaining will likely leave the area to pursue employment opportunities elsewhere.

The impact will be direct and negative because of the presence of workers. It will be negative and indirect as a result of the influx of job seekers. The area has already experienced influx of job seekers because of new economic activities, including Sishen Mine itself, thus, the impact will be cumulative.

5.2.2 Increased social pathologies linked to influx of workers and job-seekers

5.2.2.1 Impact description

The increase of people in an area often leads to increased social pathologies such as crime, higher prevalence of HIV/AIDS and sexually transmitted infections, as well as drug and alcohol abuse.

The highest concentrations of crime are in Gamagara LM and Ga-Segonyana LM. In Gamagara, particularly, Kathu (including Sesheng and Mapoteng) and Dibeng have seen a sharp increase of “Robbery with aggravating circumstances” and “Burglaries at residential premises”. There has also been a slight increase in “Sexual crimes” and “Drug-related crime” in Kathu, including Sesheng and Mapoteng.

The trend of increases crimes could potentially be exacerbated by the increased number of job seekers and workers moving into the area. Robberies and burglaries at residential premises may be exacerbated by an increased number of job seekers with no employment and therefore no income. Furthermore, there may be an increase in “Drug related crimes”, violent crimes and “Sexual crimes” due to drug and alcohol abuse as well other factors. It is not anticipated that the vast majority of work seekers and workers would engage in criminal activities, as this has not been the case in the past, however, it cannot be excluded that some may engage in criminal activities. Criminal activities are likely to take place where job seekers and workers settle including Kathu, Mapoteng Dibeng, Sesheng and Olifantshoek.

John Taolo Gaetsewe DM has in the last 10 years experienced social conflict in the form of protests, marches and disruption of businesses. The social conflict is attributed to factors such as high youth unemployment, perceived poor service delivery and the perceived limited economic benefits from mining activities in the area. As seen in Section 0, Sishen Mine has attracted large numbers of young people seeking employment to Gamagara LM, however, relatively few of the job seekers have the skills to find employment, leading to higher unemployment rates among young people and resultant disgruntlement and disillusionment which has erupted social conflict.

There is a possibility that social conflict may increase due to increased influx of job seekers and workers. It would likely be the result of fights over limited social services, particularly in informal settlements and job opportunities as has happened in the past as well as employment of migrants by Sishen Mine. Social conflict is likely to occur in areas where migrants settle as outlined including Kathu, Sisheng, Mapoteng, Dibeng and Olifantshoek.

Increases in the number of people in the area as well as increased disposable income among workers may result in increases in drug and alcohol abuse, higher rates of prostitution and casual sexual relations. Such activities would lead to higher prevalence of HIV/AIDS and sexually transmitted infections. The impact is likely to affect areas where workers and job seekers would settle including Kathu, Sisheng, Mapoteng, Dibeng and Olifantshoek as well as sexual partners of anyone becoming infected in the area. A major concern would be teenage girls entering into relationships with workers for material gain which has possibly exacerbated the situation and also raised school drop-out rates among teenage girls.

5.2.2.2 Impact assessment

The influx of job seekers and the presence of workers might result in higher incidents of social pathologies during the pre-construction as more job seekers move into the area to take advantage of the job opportunities available during construction. Social pathologies are expected peak at construction phase where the most employment opportunities and the most people will be employed.

During operation, job opportunities will be fewer and require skills that most job seekers will not likely have. It is anticipated that some job seekers will go back to their settlements; it is however anticipated that many will remain, particularly those from the rural parts of Ga-Segonyana LM and Joe Morolong LM where job opportunities are very limited. Hence, there will be a decrease in social pathologies, although it is anticipated that they will be higher than before project implementation.

After closure, it is anticipated that social pathologies as a result of the project would be minimal to non-existent as workers will find alternative employment and most job seekers would also move on.

The impact will be negative. The area has already experienced influx of job seekers and an increase in social pathologies as a result of economic activities, including mining projects, thus, the impact will be cumulative and low.

5.2.3 Enhanced local skills development opportunities

5.2.3.1 Impact description

As outlined in section 4.3.3.3.2 education levels in Joe Morolong LM are low, while in Gamagara LM and Ga-Segonyana LM, education levels are significantly better. Despite this, all the municipalities experience high youth unemployment rates as most young people lack the requisite education and skills levels to secure employment.

During construction, general construction experience and expert knowledge will be required. There is likely to be on the job training of unskilled and semi-skilled labourers as well as opportunities for those with skills to further develop their skills or acquire new ones.

During operation, semi-skilled, skilled and professionally qualified workers as well as managers will be needed. Sishen Mine acknowledges the importance of equipping its own staff members and community members with skills that ensure/enhance their employability. To this end, the mine already spends at least 5% of its annual payroll on human resource development on staff and community members. The mine has made the following human resource development programmes available to its staff and community members:

- Learnerships
- Portable skills training
- Bursaries and graduate professional in training and internships
- ABET

It is anticipated that those employed during the operation phase and community members will have the opportunity to participate in the human resource development programmes, thus developing and perfecting their skills and making them more employable.

As it is anticipated that the majority of those who will be employed during construction and operation will be from John Taolo Gaetsewe DM and given that Sishen Mine runs its human resource development programme throughout the district, the impact is anticipated to be district wide.

5.2.3.2 Impact assessment

It is anticipated that the enhancement of skills will take place during construction and throughout operation and likely have an impact on most employees and a number of community members.

Although such training has a point of completion, the skills acquired will be utilised by employees and community members throughout their working lives to make or keep them employable and enhance their income earning potential.

After closure of the Mine, it is not anticipated that human resource development programmes will be implemented by Sishen Mine, thus the impact on additional people will not be available, however, for those who have acquired skills the impact will continue.

The impact will be positive and low. The impact will be cumulative given that human resource development programmes are already being implemented by Sishen Mine and other mines in the district.

Human resource development programmes will have the greatest impact on those who participate in them. They are also likely to have an impact on participants' dependents as beneficiaries would be better able to earn or enhance their household incomes.

5.2.4 Higher employment and increased disposable incomes of households

5.2.4.1 Impact description

The unemployment rate in John Taolo Gaetsewe DM is 29.7% with Joe Morolong LM and Ga-Segonyana LM having higher unemployment rates than Gamagara LM. Youth unemployment is considered a major challenge in the municipality and has in the past resulted in protest action. The UDMS project will create 495 jobs during construction and 128 jobs during operation. Utilising the SEAT's calculation that the average household size is 3.5 and approximately 70% of household incomes of the employees of Sishen Mine are derived from the mine, it can be determined that approximately 1 212 individuals would be dependent on Sishen Mine for their livelihood during construction and approximately 313 would be dependent on Sishen Mine for their livelihood during operation. Further, it is anticipated that during both construction and operation, indirect and induced jobs will be created during the mine's operation, thus further increasing the employment levels in the district.

Higher employment brings with it higher disposable incomes for the households of those who are employed as a result of the project. An increase in disposable income is often associated with enhanced standard of living. Such enhancements may manifest in the following ways:

- Access to better nutrition
- Access to better living conditions (e.g. Social services and better housing)

- The ability to procure household goods
- Access to improved health care and education facilities.

5.2.4.2 Impact assessment

The most benefits (in terms on numbers) to higher employment and resultant increased disposable incomes will be felt during the construction period as the largest number of individuals will be employed during this time. However, the gains will be short terms as a large majority of construction workers will find themselves without employment after construction.

During the operation phase, less jobs will be created, but the impact will be longer term.

After closure, it is not anticipated that employment and resultant increases in household incomes will not be felt.

5.2.5 Enhanced socio-economic development resulting from investment in socio-economic development through the SLP and CSI projects

The Mining Charter requires that mining operations reinvest 1% of net profit after tax in in socio-economic development initiatives in their host communities and labour sending areas. Sishen Mine, has, through its community development programmes improved the lives of local people and households. As outlined in parts of section 4.3.3.3, the mine has invested in education and health. Further, it has invested in municipal infrastructure, welfare, poverty alleviation in the form of small business development, youth development initiatives as well as ad hoc donations and projects. In 2014 alone, the mine spent R64.5 million on socio-economic development and between 2012 and 2014, approximately R241 million was invested in the district.

Sishen Mine also contributes to socio-economic development through the support and development of small businesses in its local area. It does this through its Small Business Hubs at Kathu and Kuruman, which provide financial, technical and implementation support to local small, medium and micro enterprises (SMMEs) including Black Economic Empowerment (BEE) enterprises. Sishen Mine further contributed to socio-economic development through its procurement management; between 2012 and 2014, the mine spent R6 billion on black owned or empowered companies within a 100km radius of the mine.

It is anticipated that the UDMS Project will enhance Sishen Mine's ability to contribute to socio-economic development initiatives that will ultimately assist in the development of John Taolo Gaetsewe DM and the upliftment of its people. Such benefits would be realised through:

- Better health care and education system
- Improved infrastructure and improved technical capacity at municipalities
- Improved standard of living due to poverty alleviation initiatives such as enterprise development and the resultant employment opportunities created
- Diversified local economy

5.2.5.1 Impact assessment

It is anticipated that the impact will take place during construction and throughout operation and likely have an impact on project beneficiaries throughout the John Taolo Gaetsewe DM.

The impact will be positive and moderate. The impact will be cumulative given that socio-economic development programmes are already being implemented by Sishen Mine and other mines in the district.

The socio-economic development programmes will have the greatest impact on those who participate in them. Some, such as SMME development and procurement from black owned or empowered companies within a 100km radius of the mine will also benefit the dependents of beneficiaries.

After closure of the Mine, it is not anticipated that socio-economic development initiatives will be implemented by Sishen Mine. It is however anticipated that the initiatives will have long lasting impacts on participants well after the programme has ceased.

6 MITIGATION & SOCIAL MANAGEMENT PLAN

Impact/s addressed	Action	Responsibility	Timeframe
6.1 Increased pressure on infrastructure and services linked to influx of job seekers and workers	<ul style="list-style-type: none"> • Recruit locally, where possible and especially at unskilled and semi-skilled level, and make it clear that where skills are available, locals will be given first preference. This applies to both Sishen Mine and its contractors. • Each position should be advertised with the relevant minimum requirements stated. Information regarding employment needs should be communicated well in advance of each phase of the project in which employees will be required. • UDMS Project employees will be incorporated into Sishen Mine's affordable housing project. • Hiring at both construction and operation phase should take place formally in accordance to with relevant legislative requirements and nationally acceptable methods. No recruitment should take place 'at the gate'. • Communicate with Gamagara LM and relevant government departments regarding existing infrastructural needs and how the UDMS project could potentially directly and indirectly increase the pressure on the infrastructure. The needs should be discussed in the context of the constraints the municipality has and will have in providing services and infrastructure. • Project information should be effectively communicated throughout all stages of the project to ensure that expectations of all stakeholders are managed. • Contractor camps will be avoided where possible and feasible. 	Sishen Iron Ore Company (Pty) Ltd and contractors	Pre-construction and construction. Ongoing throughout project life.

<p>6.2 Increased social pathologies linked to influx of workers and job seekers</p>	<ul style="list-style-type: none"> • To mitigate the potential increase in HIV/AIDS prevalence and the spread of sexually transmitted diseases, the following steps will be taken: <ul style="list-style-type: none"> ○ UDMS Project employees and contractor employees should be included in Sishen Mine’s HIV/AIDS management strategy. As part of this, workers will be trained on HIV/AIDS and STI prevention and management. Workers should also have access to counselling and testing. ○ If no HIV/AIDS committee has been formed, an HIV/AIDS committee which include management, union representatives and local community members should be formed. • To mitigate the potential increase in drug and alcohol abuse, the following steps will be taken: <ul style="list-style-type: none"> ○ UDMS Project employees and contractor employees will be subject to the Drug and Alcohol Abuse Policy implemented by Sishen Mine. ○ UDMS Project employees and contractor employees will be trained on the adverse impacts of drug and alcohol abuse. • UDMS Project employees will be subject to regular testing on site for alcohol and drug abuse as other Sishen Mine employees. • To mitigate the potential increase in crime, the Code of Conduct that addresses the illegal activities by workers (including prostitution; illegal sale or purchase of alcohol; sale, purchase or consumption of drugs; illegal gambling or fighting) must apply to UDMS Project employees and contractor employees. 	<p>Sishen Iron Ore Company (Pty) Ltd and contractors</p>	<p>Pre-construction and construction.</p> <p>Ongoing throughout project life.</p>
<p>6.3 Enhanced local skills development opportunities</p>	<ul style="list-style-type: none"> • On the job training will be encouraged and be a prerequisite, where possible, for contractors and/or service providers • Sishen Mine will continue the inclusion of the human resource development programme in its Social and Labour Plan. • The human resource development programme will take cognizance of the local economy’s present and future skills needs to ensure that the skills provided to community members and employees are relevant to the economy. 	<p>Sishen Iron Ore Company</p>	<p>Pre-construction and construction.</p> <p>Ongoing throughout project life.</p>

<p>6.4 Higher employment and increased disposable incomes of households</p>	<ul style="list-style-type: none"> • Where possible, labour should be sourced from the local area (John Taolo Gaetsewe DM) • If a skills database exists within the local area, it should be made available to contractors to enhance the procurement of labour from the local area. • If a skills database does not exist, Sishen Mine will establish a skills desk where local potential employees can submit their CVs. • Information regarding job requirements should be clearly stated to enable those with suitable skills to make their skills available for the project. • The recruitment process should promote gender equality. • Where possible, Sishen Mine will continue procuring as much as possible from local small businesses; this will stimulate indirect job creation. 	<p>Sishen Iron Ore Company (Pty) Ltd and contractors</p>	
<p>6.5 Enhanced socio-economic development resulting from investment in socio-economic development through the SLP and CSI projects</p>	<ul style="list-style-type: none"> • In implementing socio-economic development projects and to enhance socio-economic development potential, Sishen Mine will assess community needs in consultation with the relevant stakeholders including the relevant municipalities, other relevant state organs, communities and non-profit organisations. 	<p>Sishen Iron Ore Company (Pty) Ltd</p>	<p>Pre-construction and construction. Ongoing throughout project life.</p>

7 CONCLUDING REMARKS

It is the opinion of the social sustainability specialist that the application by Sishen Iron Ore Company (Pty) Ltd. for the UDMS Project be duly considered. The following potential negative and positive impacts have been identified:

- Increased pressure on infrastructure and services linked to influx of job seekers and workers
- Increased social pathologies linked to influx of workers and job-seekers
- Enhanced local skills development opportunities
- Higher employment and increased disposable incomes of households
- Enhanced socio-economic development resulting from investment in socio-economic development through the SLP and CSI projects

For each impact, specific mitigation measures have been recommended. Sishen Mine must implement the mitigation measures recommended in this report to bring negative impacts to acceptable levels. The anticipated positive impacts should be enhanced as per the recommendations made in the report.

The greatest social risk of the project is influx of migrant workers and job seekers into the area as a result of the large construction workforce required in the unskilled and semi-skilled occupation levels. Influx is likely to cause increase pressure on services and infrastructure in the nearby communities. Further, influx is also likely to cause an increase in social pathologies. The failure to maximise local employment, especially where such people are available in the district could result in community dissatisfaction and possibly unrest which is a real risk to the project. This needs to be taken seriously and an employment strategy focussed on local employment needs to be developed and communicated clearly.

The operational impacts are not expected to be as severe as during construction, as less jobs will be available and it is likely that some job seekers will return to their homes. However, past experience indicates that many job seekers would settle in local communities despite not having jobs in the hopes of taking advantage of future job opportunities. Further, most persons required are semi-skilled with plant operators making up the bulk of employees. It is thus imperative that the employment of local people be pursued where skills are available and that employees be assisted in finding appropriate accommodation where possible.