



REPORT

Draft Spatial Development Framework

Review of the 2013 Spatial Development Framework

Client: Matjhabeng Local Municipality

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(Matjhabeng Local Municipality, 2016/2017)



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Executive summary

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Background and purpose

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Acronyms

SDF	Strategic Development Framework
MLM	Matjhabeng Local Municipality
HDA	Housing Development Agency
SPLUMA	Spatial Planning and Land Use Management Act
AMD	Acid Mine Drainage
ARM	Pg 75
B&B	Bed and Breakfast
BA	Basic Assessment
BNG	Breaking New Ground
CBDs	Central Business District
CRDP	Comprehensive Rural Development Programme
CRUs	Community Residential Units
CSIR	Council for Scientific and Industrial Research
DEA	Department of Environmental Affairs
DOA	Department of Agriculture
DoE	Department of Energy
DoHS	Department of Human Settlements
DOT	Department of Transport
DRDLR	Department of Rural Development and Land Reform
DWA	Department of Water Affairs
EC	Electronic Conductivity
EIA	Environmental Impact Assessment
EMO	Environmental Management Officer
EMPs	Environmental Management Plans
EVA	Economic Value Added
FBS	Pg 20
FEPA	Freshwater Ecosystem Priority Areas
FET	Further Education and Training
FS	Free State
FSGDS	Free State Growth and Development Strategies (2005-2014)
FSSDF	Free State Spatial Development Framework
GAP	Pg 80
GDP	Gross Domestic Product
GIS	Geographical Information Systems
GFI	Gold Fields Index
GGP	Gross Geographic Product
GHS	General Household Survey
GNR	Government Notice Regulations
GVA	Gross Value Added
HDA	Housing Development Agency
ICT	Information Communications Technology
IDC	Industrial Development Cooperation
IDP	Integrated Development Plan
IDZ	Industrial Development Zones
IHSP	Integrated Human Settlement Plan
IPAP	Industrial Policy Action Plan
IRPTN	Integrated Rapid Public Transport
ITPs	Integrated Transport Plans
IUDF	Integrated Urban Development Framework
JORC	Pg 83
LED	Local Economic Development
LM	Local Municipality
LTPF	Long Term Planning Framework
MBA	Masters of Business Administration
MD	Magisterial Districts
MIP	Manufacturing Investment Programme
MLM	Matjhabeng Local Municipality



MPRDA	Mineral and Petroleum Resources Development Act (Act No 28 of 2002)
MRAs	Pg 140
mS/m	Milli Siemens per meter
MSA	Municipal Systems Act, 2000
MTSF	Medium Term Strategic Framework
NADP	National Airports Development Plan
NATMAP	National Transport Master Plan
NCAP	National Civil Aviation Policy
NDP	National Development Plan 2030
NEMA	National Environmental Management Act (Act No 107 of 1998)
NFSCLP	Pg 134
NGP	New Growth Path
NMT	Pg 176
NSDP	National Spatial Development Perspective
NSEDP	National Spatial Economic Development Perspective
NTSS	National Tourism Sector Strategy
NUSP	National Upgrading Support Programme
OAG	Old Age Grant
p.a.	Per Annum
PC	Pg 19 Project Committee (Not Sure)
PGDS	Provincial Growth Development Strategy
PGM	Platinum Group Metals
R&D	Research and development
RDP	Reconstruction and Development Programme
RHDHV	Royal Haskoning DHV
RSA	Republic of South Africa
RTMC	177
SA	South Africa
SABI	South African Irrigation Institute
SAMREC	Pg 83
SANBI	South African National Biodiversity Institute
SANRAL	South African National Road Agency Ltd
SAPS	South African Police Services
SDF	Spatial Development Framework
SDGs	Sustainable Development Goals
SEZs	Special Economic Zones
SIPs	Strategic Integrated Projects
SMME	Small, Medium Micro Enterprise
SPC	Spatial Planning Categories
SPLUMA	Spatial Planning and Land Use Management Act, (Act No 16 of 2013)
TVET	Technical Vocational Education and Training
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USA	United States of America
WMA	Water Management Area
WSA	Water Services Act, (Act No 108 of 1970)
WSDP	Water Services Development Plan
WUA	Water Users Association
WWTW	Wastewater Treatment Works



1 Executive summary

[Note that this section will be completed in the final version of the Review of the Matjhabeng Municipal Spatial Development Framework]



2 Background and purpose

2.1 Project objectives

Matjhabeng Local Municipality (hereinafter referred to as ‘MLM’) appointed Royal HaskoningDHV (Pty) Ltd (hereinafter referred to as RHDHV) to assist with the following statutory and strategic planning processes in fulfilment of the relevant applicable statutory obligations:

- Review its Spatial Development Framework (SDF) in terms of section 26(e) of the Local Government: Municipal Systems Act (2000), and section 21 of the Spatial Planning and Land-Use Management Act, 2013 (SPLUMA).
- Develop a Housing Sector Plan (or Integrated Human Settlement Plan) as a component of the Integrated Development Plan in terms of the Municipal Systems Act (MSA) 32 of 2000,
- Develop a Water Services Development Plan in terms of Sections 12 and 13 of the Water Services Act (Act No 108 of 1970); and
- Develop a new Land Use Scheme in terms of Chapter 5 of the Spatial Planning and Land Use Management Act (Act No. 16 of 2013)

It was envisaged that the integration of the above listed processes would enable effective integration and alignment of planning, management and development processes across sector boundaries. However, to achieve this effective integration, the following objectives must be fulfilled:

- Compile a comprehensive analysis / status quo perspective of the Municipality’s spatial, socio-economic, infrastructural and human settlement environment.
- Review and assess national, provincial, and municipal policies, priorities, plans, and planning legislation to determine which development principles each one addresses, so that these principles can be used to inform the preparation of a draft SDF in the next phase of the project.
- To understand the administrative, management and institutional context within which the Municipality is operating, in its endeavour to meet its developmental and governance obligations.
- Review and revise the Municipality’s SDF in substantial fulfilment of ruling legislation and policy and in close collaboration with key officials including the Spatial Planning Portfolio Councillors and Development Planning technical staff. The revised SDF should enable the Municipal Planning Tribunal and mandated official to make suitably informed and consistent land development decisions in terms of SPLUMA.
- Revise priorities and proposals reflected in the Municipality’s IDP and as incorporated in the SDF, and:
 - Prepare a Human Settlement Development Plan for the associated planning horizon (likely to be the 5-year IDP / SDF cycle).
 - Prepare a Water Services Development Plan
- Develop a Land Use Scheme that will enable the Municipality to respond to its land use needs and challenges.
- Assist in capacitating key municipal role-players associated with planning.



Furthermore, the following development principles shall apply to these objectives¹:

- **Spatial Justice** - Past spatial and other development imbalances must be redressed through improved access to and use of land by disadvantaged communities and persons.
- **Spatial Sustainability** - Spatial planning and land use management systems must promote the principles of socio-economic and environmental sustainability through encouraging the protection of prime and unique agricultural land, promoting land development in locations that are sustainable, limit urban sprawl and consider all current and future costs to all parties involved in the provision of infrastructure and social services to ensure the creation of viable communities.
- **Efficiency** - Land development must optimise the use of existing resources and the accompanying infrastructure, while development application procedures and timeframes must be efficient and streamlined to promote growth and employment.
- **Spatial Resilience** - Securing communities and livelihoods from spatial dimensions of socio-economic and environmental shocks through mitigation and adaptability that is accommodated by flexibility in spatial plans, policies and land use management systems.
- **Good Administration** - All spheres of government must ensure an integrated approach to land use and land development and all departments must provide their sector inputs and comply with prescribed requirements during the preparation or amendment of SDFs. This principle is the fulcrum of this framework largely because implementation of the spatial planning vision and objectives is not only highly dependent upon a strong coordinating role of central government, but is also predicated upon good governance mechanisms, incorporating meaningful consultations and coordination with a view to achieving the desired outcomes across the various planning spheres and domains.

2.2 Process and timeframes

Attached as **Error! Reference source not found.** is the project programme and key milestone dates.

Table 2-1: Project Programme

Milestone Deliverable & Activity	Start Date	End Date	Duration (Work days)	Key Milestone Date	Key Milestone Weekday
SDF Review & IHSP	17-Jan-18	30-May-18	90	30-May-18	Wednesday
Milestone A1: Inception Report	17-Jan-18	14-Feb-18	21	14-Feb-18	Wednesday
Prepare draft Inception Report	17-Jan-18	29-Jan-18	9	29-Jan-18	Monday
Submit to PC for review prior to ratification	30-Jan-18	31-Jan-18	2	31-Jan-18	Wednesday
PC Meeting: Milestone ratification	01-Feb-18	01-Feb-18	1	01-Feb-18	Thursday
Prepare final Inception Report	02-Feb-18	09-Feb-18	6	09-Feb-18	Friday
Submit to PC for review prior to ratification	10-Feb-18	13-Feb-18	2	13-Feb-18	Tuesday
PC Meeting: Ordinary	14-Feb-18	14-Feb-18	1	14-Feb-18	Wednesday
Milestone A2: draft amended SDF	02-Feb-18	11-Apr-18	46	11-Apr-18	Wednesday

¹ See page 13 of the Guidelines for the Development of Provincial, Regional and Municipal Spatial Development Frameworks and Precinct Plans, Final Draft, September 2014, Department of Rural Development and Land Reform



Milestone Deliverable & Activity	Start Date	End Date	Duration (Work days)	Key Milestone Date	Key Milestone Weekday
Compile draft Report & submit for internal collation	02-Feb-18	14-Mar-18	29	14-Mar-18	Wednesday
Collation and submit to PC for review	15-Mar-18	19-Mar-18	3	19-Mar-18	Monday
PC reviews prior to ratification	20-Mar-18	10-Apr-18	13	10-Apr-18	Tuesday
PC Meeting: Ordinary	11-Apr-18	11-Apr-18	1	11-Apr-18	Wednesday
Milestone A3: draft Integrated Human Settlement Plan	09-Feb-18	11-Apr-18	41	11-Apr-18	Wednesday
Compile draft Report & submit for internal collation	09-Feb-18	19-Mar-18	27	19-Mar-18	Monday
Collation and submit to PC for review	20-Mar-18	22-Mar-18	2	22-Mar-18	Thursday
PC reviews prior to ratification	23-Mar-18	10-Apr-18	11	10-Apr-18	Tuesday
PC Meeting: Ordinary	11-Apr-18	11-Apr-18	1	11-Apr-18	Wednesday
Milestone A4: final amended SDF	20-Mar-18	30-May-18	46	30-May-18	Wednesday
Compile revised Report	20-Mar-18	30-Apr-18	25	30-Apr-18	Monday
Stakeholder engagement	09-Apr-18	30-Apr-18	14	30-Apr-18	Monday
Compile final Report and submit for internal collation	01-May-18	15-May-18	10	15-May-18	Tuesday
PC Meeting: Ordinary	09-May-18	09-May-18	1	09-May-18	Wednesday
Collation and submit to PC for review	16-May-18	18-May-18	3	18-May-18	Friday
PC reviews prior to ratification	19-May-18	29-May-18	7	29-May-18	Tuesday
PC Meeting: Special	30-May-18	30-May-18	1	30-May-18	Wednesday
Milestone A5: final Integrated Human Settlement Plan	27-Mar-18	30-May-18	42	30-May-18	Wednesday
Compile revised Report	27-Mar-18	30-Apr-18	21	30-Apr-18	Monday
Stakeholder engagement	09-Apr-18	30-Apr-18	14	30-Apr-18	Monday
Compile final Report and submit for internal collation	01-May-18	18-May-18	13	18-May-18	Friday
PC Meeting: Ordinary	09-May-18	09-May-18	1	09-May-18	Wednesday
Collation and submit to PC for review	19-May-18	22-May-18	2	22-May-18	Tuesday
PC reviews prior to ratification	23-May-18	29-May-18	5	29-May-18	Tuesday
PC Meeting: Special	30-May-18	30-May-18	1	30-May-18	Wednesday
Land Use Scheme	20-Mar-18	26-Jul-18	87	26-Jul-18	Thursday
Milestone B1: Land Use Framework	19-May-18	13-Jun-18	18	13-Jun-18	Wednesday
Compile Report & submit for internal collation	19-May-18	05-Jun-18	12	05-Jun-18	Tuesday



Milestone Deliverable & Activity	Start Date	End Date	Duration (Work days)	Key Milestone Date	Key Milestone Weekday
Collation and submit to PC for review	06-Jun-18	08-Jun-18	3	08-Jun-18	Friday
PC reviews prior to ratification	09-Jun-18	12-Jun-18	2	12-Jun-18	Tuesday
PC Meeting: Ordinary	13-Jun-18	13-Jun-18	1	13-Jun-18	Wednesday
Milestone B2: Land Use Zoning Map	20-Mar-18	11-Jul-18	76	11-Jul-18	Wednesday
Compile Map & submit for internal collation	20-Mar-18	03-Jul-18	70	03-Jul-18	Tuesday
Collation and submit to PC for review	04-Jul-18	06-Jul-18	3	06-Jul-18	Friday
PC reviews prior to ratification	07-Jul-18	10-Jul-18	2	10-Jul-18	Tuesday
PC Meeting: Ordinary	11-Jul-18	11-Jul-18	1	11-Jul-18	Wednesday
Milestone B3: Land Use Regulations	23-May-18	26-Jul-18	47	26-Jul-18	Thursday
Compile Land Use Regulations & submit for internal collation	23-May-18	17-Jul-18	40	17-Jul-18	Tuesday
Collation and submit to PC for review	18-Jul-18	20-Jul-18	3	20-Jul-18	Friday
PC reviews prior to ratification	21-Jul-18	25-Jul-18	3	25-Jul-18	Wednesday
PC Meeting: Special	26-Jul-18	26-Jul-18	1	26-Jul-18	Thursday
Water Services Development Plan (WSDP)	02-Feb-18	29-May-18	77	29-May-18	Tuesday
Milestone C1: draft Water Services Development Plan	02-Feb-18	11-Apr-18	46	11-Apr-18	Wednesday
Compile draft WSDP & submit for internal collation	02-Feb-18	19-Mar-18	32	19-Mar-18	Monday
Collation and submit to PC for review	20-Mar-18	22-Mar-18	2	22-Mar-18	Thursday
PC reviews prior to ratification	23-Mar-18	10-Apr-18	11	10-Apr-18	Tuesday
PC Meeting: Ordinary	11-Apr-18	11-Apr-18	1	11-Apr-18	Wednesday
Milestone C2: final Water Services Development Plan	20-Mar-18	29-May-18	45	29-May-18	Tuesday
Compile revised WSDP	20-Mar-18	30-Apr-18	25	30-Apr-18	Monday
Stakeholder engagement	09-Apr-18	30-Apr-18	14	30-Apr-18	Monday
Compile final WSDP and submit for internal collation	01-May-18	15-May-18	10	15-May-18	Tuesday
PC Meeting: Ordinary	09-May-18	09-May-18	1	09-May-18	Wednesday
Collation and submit to PC for review	16-May-18	18-May-18	3	18-May-18	Friday
PC reviews prior to ratification	19-May-18	29-May-18	7	29-May-18	Tuesday



2.3 Overview of the municipality

Matjhabeng is home to about 430 000 people, accounting for 15.1% of the Free State population and less than 1% of the nation. It ranks 11th in terms of population size among South African municipalities. It is part of the part of the Lejweleputswa District Municipality, and covers an area of 5 155 km². The major settlements of Allanridge, Odendaalsrus, Welkom, and Virginia form an urban belt that sits atop the Witwatersrand gold reefs. Contrastingly, Hennenman and Ventersburg are not mining towns, but are supported by agriculture. Ventersburg has the benefit of being located on the north-south national route (N1). Extensive dryland cropping takes place throughout much of the area together with livestock farming especially in the south-east, while irrigated agriculture is practiced along the Sand and Vet rivers.

Matjhabeng, one of 22 secondary cities in South Africa and the only one in the Free State (John, 2012), is in the same league as Kimberley, Klerksdorp, Rustenburg and Newcastle. Unlike these, however, its dependence on mining for employment has been persistent (Bernstein et al., 2005). With a diminishing economy since 1996, outmigration has been a dominant feature, and per capita income is below national and metro averages as well (John, 2012).

Over the last three decades, gold mining has lost ground (StatsSA, 2018). A large measure of Matjhabeng's original economic base of cost-effective gold mining has disappeared, and thousands of jobs have been lost (Bernstein et al., 2005). Of every three gold mining jobs in 1995, two no longer exist (StatsSA, 2018).

Matjhabeng is grappling with how to come to terms with changing economic conditions that underpin its economic base. Moving away from dependence on primary or secondary activity or large firms to innovative business is necessary. According to the State of South Africa Cities Report (SACN, 2016) tertiary services drive city economies, although growth in manufacturing is still important in its contribution to absorbing semi-skilled labour. Creative ideas abound, and competitive advantages can be harnessed such as low property prices, tourism related infrastructure such as the Phakisa race track, and the largest rum distillery in South Africa. Recent developments of several solar farms, and the potential to exploit natural gas resources, has diversified the economy although job opportunities in these ventures are limited.

Besides innovation, key drivers of city economic success, resilience and inclusion, are education, and infrastructure investment according to SACN's (2016) chapter about productive cities. While skills and knowledge capabilities are drivers of economic success, Matjhabeng's population has average levels of education.

Matjhabeng has improved the level of access to water with 93.7% of the population having access to piped water inside the dwelling or yard, and only 2 500 households are without a basic level of water service. Overall 15.0% use pit or bucket toilets, or have no sanitation facility. According to the 2016 Community Survey (StatsSA, 2016) lack of services such as refuse removal, inadequate roads, and inadequate sanitation were the main difficulties facing the municipality, according to most household respondents, except for lack of employment opportunities. Besides addressing long-standing backlogs, which are currently escalating rapidly because of informal settlement on mining properties (Van der Walt, 2018), there is a need for serviced land, and addressing gaps in post-apartheid planning and development to address inequality.

Posing a serious risk to sustainability and economic growth is crime such as stock theft and illegal mining, which has significant costs and wide ranging negative effects.

Crucial to making the difference is the inclusion of business organisations, and good leadership, with a commitment to the city and its people, and the determination to implement a plan for expansive economic



growth (Bernstein et al., 2005). While a city's capacity to absorb labour means that it will increase demographically, it is not guaranteed that its economy will grow. According to John (2012) this would depend of whether each new citizen costs the city less than they benefit from them. Furthermore, such a cost-benefit analysis depends on the type of employment sectors, its infrastructure capacity and the state of municipal finance (John, 2012). Document structure

This document is the first milestone towards the compilation of the situational analysis of MLM. It is a critical step towards the review of the SDF, and the establishment of setting new targets and strategies for the SDF. As such, this document contains:

Chapter	Description	Page number
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Background and purpose

Policy context and vision directives

Spatial challenges and opportunities

Synthesis

Conclusion

References

Annexure 1: Land cover 2013/14
Accuracy Assessment

Annexure 2: Policy overview

3 Policy context and vision directives

This Chapter only discusses the implications of various and extensive International, National, Provincial and Municipal legislation and policy directives for the study area. For a general description and introduction to the legislation and policies please see **Annexure 2**.



3.1. National policy context

3.1.1. The National Development Plan 2030 (NDP)

The National Development Plan 2030 (NDP) sets out government's long-term VISION and strategic approach to exercising its mandate, with the stated overall aim of eliminating poverty and reducing inequality by 2030. It also sets out its basic objectives and proposed actions in relation to what is perceived as South Africa's fundamental development challenges, from developing the economy and creating employment, to fighting corruption and achieving nation building and social cohesion.

NATIONAL DEVELOPMENT PLAN - VISION 2030

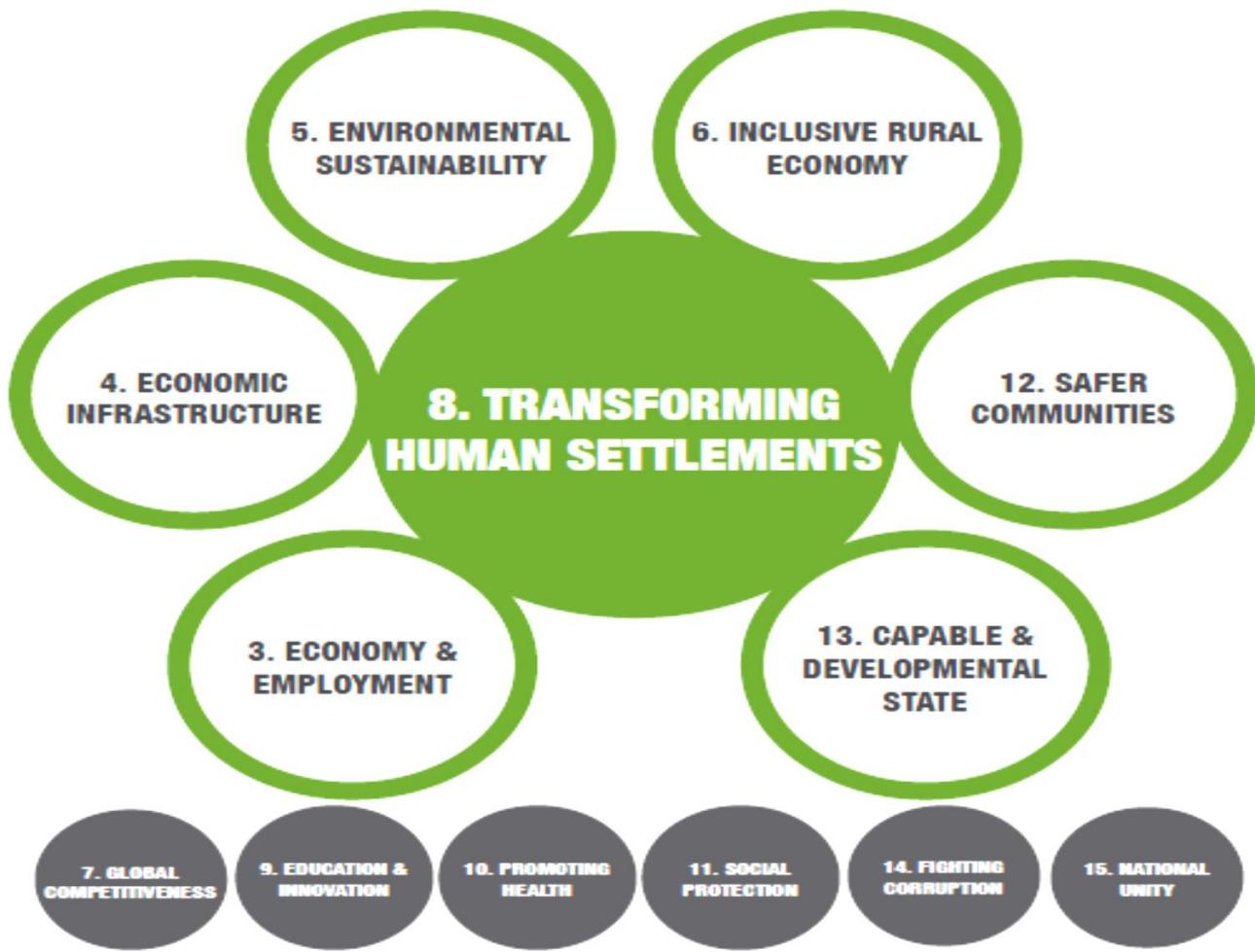


Figure 1: Key spatial directive chapters of the NDP

From a spatial development perspective, chapter 8 of the NDP deals with transforming human settlement and the national space economy. Targets set out in this chapter include:

- more people living closer to their places of work;
- better quality public transport; and
- more jobs in close proximity to low income residential areas.

To achieve these targets the NDP advocates measures to prevent further development of housing in marginal places, increased urban densities to support public transport, incentivising economic activity in and adjacent to



townships; and engaging the private sector in the gap housing market. Importantly, it also proposes embracing of a principle-led approach to planning (as opposed to past control-oriented planning).

Also of importance to Matjhabeng Municipality, Chapter 6 sets out specific targets and goals towards establishing a more inclusive rural economy through integrated rural development. The focus here is on increased investment in new agricultural technologies, research and the development of adaptation strategies for the protection of rural livelihoods and expansion of commercial agriculture.

3.1.2. Integrated Urban Development Framework (IUDF)

The IUDF is government's policy position to guide the future growth and management of urban areas. It responds to the post-2015 Sustainable Development Goals (SDGs), in particular to Goal 11: Making cities and human settlements inclusive, safe, resilient and sustainable. It also builds on various chapters of the National Development Plan (NDP) and extends on Chapter 8 'Transforming human settlements and the national space economy' and its vision for urban South Africa. The IUDF is steering urban growth towards a sustainable growth model of compact, connected and coordinated cities and towns.

To achieve this vision, the following four overall strategic goals are introduced:

- Spatial integration: To forge new spatial forms in settlement, transport, social and economic areas.
- Inclusion and access: To ensure people have access to social and economic services, opportunities and choices.
- Growth: To harness urban dynamism for inclusive, sustainable economic growth and development.
- Governance: To enhance the capacity of the state and its citizens to work together to achieve spatial and social integration.

Also, important not to lose focus on crosscutting issues of rural-urban interdependency and the need for a more comprehensive, integrated approach to urban development that responds to both the urban and the rural environments.

3.1.3. The Spatial Planning & Land Use Management Act (SPLUMA)

SPLUMA is a framework act for all spatial planning and land use management legislation in South Africa and seeks to promote consistency and uniformity in procedures and decision-making. It requires national, provincial, and municipal spheres of government to prepare SDFs.

Chapter 4 of the Act sets out the focus and general requirements to guide the preparation and compilation of SDF products, with Section 12 (1) sets out general provisions requiring that all SDFs must:

- interpret and represent the spatial development vision of the Municipality;
- be informed by a long-term spatial development vision;
- represent the integration and trade-off of all relevant sector policies and plans;
- guide planning and development decisions across all sectors of government;
- guide any decision in terms of the (any) Act relating to spatial planning and land use management;
- contribute to a coherent, planned approach to spatial development;
- provide clear and accessible information to provide direction for investment purposes;
- include and integrate previously disadvantaged areas, areas under traditional leadership, rural areas, informal settlements, slums and land holdings of government agencies;
- address historical spatial imbalances in development;
- identify the long-term risks of particular spatial patterns of development and the policies and strategies necessary to mitigate those risks;
- provide direction for strategic developments, infrastructure investment;
- promote efficient, sustainable and planned investments by all sectors



- indicate priority areas for investment in land development;
- promote a rational and predictable land development environment;
- take cognizance of any environmental management instrument already adopted by an authority;
- give effect to legislation and policies on mineral resources and sustainable utilisation of agricultural resources

The Development Principles set out in Section 7 of SPLUMA are:

- Spatial justice
- Spatial sustainability
- Spatial resilience
- Spatial quality; and
- Spatial efficiency

It should be noted that the listed development principles of SPLUMA represent the overarching principles for spatial development, as set out in the NDP on page 277. This is a significant alignment between the acts, and illustrates their importance in the development of South Africa.

Spatial Development Framework Forms Part of the IDP

As is contemplated in Section 26 (e) of the Municipal Systems Act, the Spatial Development Framework forms part of the Municipality's Integrated Development Plan (IDP). It is also important to note the following additional purposes of the SDF:

- It should be a key element in the integration of development processes across sectors.
- It has a longer time horizon than an IDP and should therefore provide the consistent long-term spatial context for the IDP.
- It needs to set the spatial strategy for development in the Municipality

Statutory Status of the Spatial Development Framework

In terms of Section 35 (2) of the Municipal Systems Act, the Spatial Development Framework has statutory status (2) and overrides any other plan for the area or portions of a Municipality that may have been compiled previously and which is described in the Physical Planning Act (Act No. 125 of 1991).

Such plans would include regional development plans, regional structure plans and more localised plans such as Urban Structure Plans. As such, the Spatial Development Framework becomes the principle instrument for forward planning and decision-making on land development in the Municipal area.

3.1.1 Other legislation

There are several other pieces of legislation that need to be considered in the drafting of a SDF.

The importance of the natural environment has been realized by government and over the past 10 years many new pieces of legislation and policies have been adopted to better manage and conserve the environment. The following are the key informants in the management and protection of the Environment.

- The Conservation of Agricultural Resources Act (No. 43 of 1983)
- The Environment Conservation Act (No. 73 of 1989)
- The National Environment Management Act (NEMA – No. 107 of 1998)

² *This term means that the Spatial Development Framework's provisions are applicable in law and the Municipality and other public or private development agencies are bound to apply its provisions and/or principles when considering land development*



- The National Heritage Resources Act (No. 25 of 1999)
- The National Forests Act (No. 84 of 1998)
- The National Water Act (No. 36 of 1998)

It is vital to ensure that municipalities are familiar with the legislation to comply with and implement the legislation.

3.2 Provincial policy objectives

In terms of the Free State Growth and Development Strategy (2005-2014) and the Free State Spatial Development Framework (2009), many structuring elements have been identified which has a spatial impact within the Matjhabeng Local Municipality.

3.2.1 Free State Growth and Development Strategies 2005-2014

The Free State Provincial Growth and Development Strategy's (FSPGDS) goal is to align the provincial and national policies and programmes and to guide development in terms of effective and efficient management and governance to achieve growth and development. The PGDS has identified priority areas primarily based on the social, economic and developmental needs of environment, namely:

- Economic development and employment creation
- Justice and crime prevention
- Efficient administration and good governance
- Social and human development

The FSPGDS spells out the broad objectives and priority areas within which service delivery and transformation should take place. The FSPGDS serves as a guiding principle when government departments and municipalities (local and district) lay out their budget allocations, key growth and development priorities at the beginning of each year.

3.2.1 Free State Spatial Development Framework (2005/6)

The National Spatial Plan Development Perspective (NSDP) has been localized through the Free State Growth and Development Strategy (FSGDS) as well as the Free State Spatial Development Framework.

Although the Free State Province is in the process of updating the previous Spatial Development Framework. This process is still underway without amended spatial directives. For such reason, key elements from the existing Spatial Development Framework have been identified, which are:

Centres

Centres represent a classification of localities according to specific and specialized services of regional or provincial importance.



Welkom is identified as an administrative and educational centre. All other urban nodes in Matjhabeng Local Municipality are identified as service centres.

Nodes

These are localities where development (facilities, services and economic opportunities) tend to concentrate.

Welkom is identified as a Collective Economic Node, as it displays 4 or more NSDP categories of potential. Welkom serves as the main service centre in the district with specialised institutional and commercial services. Welkom, Odendaalsrus and Virginia are identified as Retail and Private Service Nodes. The potential of these centres is based on overall household income and consumer spending.

Welkom is also earmarked as a manufacturing node for the high value differentiated goods and as a manufacturing node for labour intensive mass-produced goods.

Mining Nodes include Welkom, Odendaalsrus and Virginia.

Welkom and Virginia are identified as important Tourism Attraction Nodes for events, entertainment and mining tourism with Odendaalsrus being a Tourism Surrounding Node culminating from the locality and potential of the Phakisa racetrack.

Hubs

These are localities with concentrated development (facilities, services and economic opportunities) of such importance and with a sphere of influence of provincial extent. Specialization of services or products can take place.

The larger the influence sphere of a node, the more intense the development associated with the node and the greater the density and area that the node will occupy.

The jewellery hub is proposed for Virginia.

Transport Axes

Transport axes are routes of high mobility (movement) that establish a linking between areas of significance, with an optimal travel time. The potential is provided for development to locate itself in relation to these movement routes.

The N1 national road which runs through Ventersburg is such a road.

Development Corridors

Development corridors are characterized by higher order ribbon-like development along the routes that can be classified as transport (movement) axes. These corridors promote economic activity at specific locations along these distribution routes. It thus not necessarily implies that development will be continuous for the full length of the corridor. It is foreseen



that the presence of economic activity along these routes will require special attention in terms of the planning of ingress and exists to and from commercial activities in order not to interfere with the mobility of the corridor itself.

Economic development should thus be promoted along development corridors, but care should be taken not to impact negatively on the mobility of the corridor

- The R30 road through Lejweleputswa District constitutes a major transport axis, linking Bloemfontein with Klerksdorp in the North West Province. Welkom and Bothaville are located along the route. A well-established road network and the north-south railway (Brandfort/Theunissen/Virginia/Hennenman) occur along this axis. This route carries large volumes of heavy vehicular traffic because of service delivery to the mines and associated economic activities in the area.
- The R34 road linking Welkom with Kroonstad.

Zones

Zones are areas with common identifying characteristics and usually have a homogeneous land use associated with it. It comprises medium to large sections of the spatial environment and may include land uses associated with agricultural or human settlement developments. Different kinds of zones were distinguished:

Tourism Zones:

- Tourism zones are areas that have a high environmental quality or cultural/historic heritage and are characterized by tourist destinations. Supporting infrastructure like arts and crafts stalls, bed and breakfasts, restaurants, etc. should be developed at strategic localities within these zones.

Commercial Agriculture Zones:

- Commercial agriculture zones are the larger agricultural land units that accommodate a diversity of agricultural production for the commercial market. These areas usually surround the urban nodes.
- The potential of the land depends on the soil quality and the availability of water. It is recognised that all currently cultivated and grazing land be protected from urban development and that future extension should be guided by in-depth analysis that considers soil potential, carrying capacity, type of agriculture, availability of water, etc.
- Smaller subdivision of agricultural land and change of land use will thus be considered on an individual basis and after proper analysis of the present situation and future impact of the proposed development have been done in consultation with the relevant authorities.
- Subdivision of farmland will only be approved if proven sustainable.
- Agro-processing plants may develop on farms, but only if proven sustainable.



- Alternative land use practices in particularly different types of products and farming methods should get attention in future.

Irrigation Zones:

- Irrigation zones are areas with smaller commercial agricultural units with normally a higher production yield per hectare. These units incorporate irrigation schemes and are concentrated along watercourses and dams.
- Irrigation schemes of the Vet and Sand River in Matjhabeng Local Municipality have the potential to be extended.

3.2.2 Medium term strategic framework (2014-2019)

The Medium Term Strategic Framework (MTSF) has two over-arching strategic themes – radical economic transformation and improving service delivery. Radical economic transformation is about placing the economy on a qualitatively different path that ensures more rapid, sustainable growth, higher investment, increased employment, reduced inequality and de-racialisation of the economy. The main pillars for achieving radical economic transformation through rapid and inclusive growth are

- Addressing spatial imbalances in economic opportunities
- Productive investment crowded in through the infrastructure build programme
- Expanded opportunities for historically excluded and vulnerable groups, small businesses and cooperatives

The MTSF aims to improve the quality and consistency of services, which requires improvements in the performance of the public services, municipalities and service providers. Key priorities aimed at improving the quality of service delivery include institutionalising long-term planning; forging a disciplined, people-centred and professional public service; empowering citizens to play a greater role in development; and building an ethical public service

3.3 District Policy context

3.3.1 Lejweleputswa District Municipality Integrated Development Plan (2011/12)

In terms of the Lejweleputswa District Municipality IDP the mission and vision is as follows:

- Vision: A perfect partner in service excellence by 2014.
- Mission: The Lejweleputswa District Municipality mission is aligned to the defined roles of facilitation, coordination and support. Lejweleputswa District Municipality embraces a service delivery perspective through sound financial management, harnessing of a customer-centred culture, internal processes



structured towards professionalism and the creation of a learning, growth and development environment.

3.3.2 Lejweleputswa District Municipality Spatial Development Framework (2008)

The Lejweleputswa District Municipality Spatial Development Framework was prepared in 2008 and was primarily structured to address three sub-sections, namely:

- Regional Spatial Elements;
- Rural Spatial Elements; and
- Urban Spatial Elements.

3.4 Local policy objectives

3.4.1 Matjhabeng Local Municipality IDP

Vision:

- To be a benchmark developmental Municipality in service delivery excellence.

Mission:

- To be a united, non-racial, non-sexist, transparent and responsive Municipality;
- To provide municipal services in an economic, efficient and effective way;
- To promote a self-reliant community through the promotion of a culture of entrepreneurship;
- To create a conducive environment for growth and development;
- To promote co-operative governance; and
- To promote a dynamic community participation and value adding partnership.

3.4.2 Matjhabeng Local Municipality Spatial Development Framework Review (2011)

The previous Matjhabeng Local Municipality Spatial Development Framework Review was conducted by the officials of the Municipality and contained in summary, the following guidelines/proposals:

Spatial Development Trends and Issues

The physical integration of Matjhabeng into one Town is at present not possible due to the physical distance between the towns as well as mining activities forming physical restrictions (Venterburg, Virginia 20km, Allanridge, Odendaalsrus 15km, Hennenman, Welkom 25km etc.).

The integration of existing twin towns (old Black and White towns) should first be addressed to optimally utilise existing infrastructure and increase the density of established towns.



Where a new development extends the present town limits, it must form a homogeneous extension of the town and not be a pimple in the middle of the veld.

Integration between Ventersburg and Mmamahabane is almost complete and further development direction should be given in the Matjhabeng Structure Plan.

Integration between Hennenman and Phomolong will be difficult due to some physical restrictions like spruit, sewerage works and a Dumping site, but must be pursued.

Virginia and Meloding can to some extent be integrated via a southern link over the farm Schoonheid. The land use plan for Mining Land would assist in clarifying this and other opportunities for integration.

Allanridge and Nyakallong also have physical restrictions of a pan, a sewerage works and a major provincial road separating them, but the Matjhabeng Structure Plan should give clear direction.

Bronville, Thabong Riebeeckstad, Kutloanong, Odendaalsrus and Welkom can be integrated over the longer term and should develop in line with the proposals of the Goldfields Structure Plan Phase

Localized Spatial Development Principles

Optimal utilisation of natural and infrastructural resources, and integrated planning principles, with a ‘project cradle to grave’ vision, should drive all development. Effective and efficient procedures and processes for applications and consents should be pursued to facilitate development initiatives. Future trends with a spatial impact, for example HIV/Aids, needs to be carefully monitored and planning should take place accordingly in a pro-active and holistic manner.

- The core areas of the Goldfields including Welkom/Thabong, Odendaalsrus/Kutlwanong, and Virginia/Meloding should be encouraged to develop as a compact integrated sub-region.
- Development in towns must be channelled to develop towards each other as indicated by the Goldfields Guide Plan.
- Defunct or undeveloped mining land including infrastructure should be reclaimed for urban functions to create the ideal compact sub-regional urban structure.
- The location of residential and employment opportunities should be near or integrated with each other.
- The densification and development of urban areas must be focussed to optimise existing civil engineering services, opportunities and facilities, first.
- The eradication of informal settlements as well as the prevention of illegal squatting/the resettlement of such informal settlements should be pursued as a priority.

Land Development for residential purposes will be guided by the following

- All open land in the different urban areas previously earmarked for residential development should be developed as a priority.



- All defunct or undeveloped mining land and open spaces between urban areas should be developed as a second priority or simultaneously with developments highlighted as a priority.
- The existence of well-established residential areas with high land values should be protected against urban decay. Transitional zones between low and high residential income areas can be planned to assume the projection of well-established residential areas. These transitional zones must be planned to the satisfaction of the Municipality and these zones can include any land use providing for the desirable transition.
- Areas indicated for residential development should make provision for the different income levels of the population. These areas can also be differentiated on between different income levels. Different tenure options should be made available.
- The minimum stand sizes should adhere to the policies of the national and provincial governments.
- Mining hostels in the past offer housing to mainly heads of households and could be utilised for high density family based residential development and or education facilities, community facilities, commercial hive development on ground floor with residential development on top floors.
- Private hostels should be upgraded to high-density family or single dweller units and ownership of land should be promoted.

Defunct or undeveloped mining areas

Land development of defunct or undeveloped mining areas, when needed for urban development (rehabilitation through urban development), should be guided by the following:

Defunct or undeveloped mining areas

- Residential

Detail studies concerning the feasibility to convert hostel buildings to high density units, education facilities, community facilities or commercial hives at ground level with residential development on the top level should, be carried out before any decision regarding the utilisation of land is taken.

Existing mining villages and open areas around these villages should be planned to form balanced township extensions.

- Shaft areas and reduction plants

Defunct shaft areas should be utilised for non-noxious industrial and commercial land uses and should be planned as an integrated development unit into the surrounding neighbourhoods.



- **Rock and refuse dumps**

Rock and refuse dumps in the area should be rehabilitated and township development can only proceed when dumps are removed and rehabilitated.

- **Existing industrial areas**

Existing industrial areas should be incorporated into any future detail town planning as industrial areas.

- **Explosive magazines**

Defunct explosive magazines should be rehabilitated when development is considered. Note must be taken regarding the limitation for residential development when explosive magazines are still in operation.

- **Concession stores, mining offices and security training areas**

Concession stores should be incorporated as local business areas in proposed development areas.

Mining offices should be used as office/park - commercial/park facilities and the high quality of gardening should be continued to enhance the tranquillity of the area.

Existing security training areas should be used as community facilities for example a school, orphanage, old age home, etc.

- **Sports Facilities**

Existing mining sport facilities should be re-utilised in future urban developments as sport zones. Adjacent hostels to these facilities should be converted for indoor sport such as karate, wrestling, boxing, etc.

- **Mine Water Canals**

Mine water canals still in operation when township development proceeds in earmarked mining areas should be incorporated and safeguarded in respect to pollution and health within the guidelines of the National Department of Health, Department of Water Affairs and Forestry and Department of Environmental Affairs.

- **Excavation Areas**

These areas need to be rehabilitated before or during urban development processes.



– Existing Mining Road Networks

These roads are assets and should be incorporated in future development plans as internal/external linkages.

– Railway Network Systems

If development in a mining area proceeds, investigations should be done to establish the feasibility of re-using existing railway lines for alternative uses such as industrial, commercial or rail based transportation systems.

– Slimes Dams

Due to radiation levels no slimes dams can be re-used for urban development purposes. Slimes dam footprints can only be reused once all contamination has been satisfactorily addressed.

– Trees

Existing plantations should be incorporated into any development plans.

Infrastructure

– Mining Services:

Future development teams should liaise closely with mining officials to determine which mining services can be removed or should be accommodated in development plan proposals.

– Civil Engineering:

Before development can proceed on undeveloped/defunct mining land the following investigations must be done:

- the capacities and condition of bulk services supply to development areas should be determined and evaluated for compliance with municipal requirements.
- existing sewerage and water reticulation networks, which may be utilised in developments, should be evaluated for compliance with municipal requirements.
- the general conditions of existing roads should be verified to determine whether these roads comply with geometric standards and municipal requirements.

Environmental Issues



It is important that mining houses clarify environmental restrictions such as radiation, acid mine drainage, subterranean water quality, general contamination and geotechnical restrictions before land is to be developed for urban land usage.

It is further important to realise that mining land is to be released in terms of the Mineral and Petroleum Resources Development Act of 2002, MPRDA no: 28 of 2002 as amended, before mining land could be used for urban purposes.

Mixed Land Use Nodes

Existing infrastructure at defunct mining areas caused by changes in the economic base of the Goldfields offers development opportunities that must not be overlooked by developers and local authorities. It is proposed, therefore, that certain areas in the Matjhabeng be earmarked as mixed land use nodes to encourage developers to make investments in these areas that in turn will create work opportunities that are greatly needed to the Matjhabeng area.

Industrial

The following areas are proposed as industrial areas to make up the need:

- The portion of land to the east of the market (\pm Sha being portions 4 to 17 of erf 10640 and \pm 39ha being the remainder of the farm Uitsig 151).
- The land to the south and south-east of Voorspoed-Oos Extension 12 industrial areas (about 460 ha being a portion of the remainder of the farm President Steyn 154). This land should thus be obtained if it is needed for industrial development.
- The land between Arrarat Street, Alma Drive and Western Holdings shaft for light industries, commercial development and industrial parks (about 86 ha being the eastern portion of the remainder of Mealiebult 146).

Regarding light industries, the following areas are proposed:

- Along Provincial Road P2/3 (Alma road extension);
- Along Provincial Road (P1/2 Theunissen/ Odendaalsrus) between Welkom and Odendaalsrus.

Heavy industries are encouraged to settle south of Welkom towards Virginia.

Community Facilities

Tertiary Education is currently only located in Welkom. Open land to the north of the existing tertiary education component should be reserved for future extensions or additional facilities.



Open Space

Informal

An integrated network of open spaces should be designed to link natural areas and community facilities with residential areas. This is particularly important in low income areas where pedestrian movement is high due to lower vehicle ownership levels.

Existing drainage areas, lake areas, exotic and indigenous plantations as well as Thorn veld areas should form part of the network of open spaces and retention facilities should be planned in these areas to prevent storm water hazards.

Formal

Community recreation parks should be identified in future developments. One community recreation area per population of 60 000 should be provided to serve local recreational needs.

Urban Agriculture

The principle of urban agriculture as an urban land use is accepted and the proposals are as such that continuity of normal urban development will not be disrupted. There is a need for agricultural holdings/ small farms with a size of 1-25 ha to provide for a range of needs in the community.

Public Transport

The areas planned for Taxi ranks must be developed since these locations have been planned to serve as major assemble nodes on a macro basis. At a micro level provision must further be made for taxis at the different decentralised suburban business nodes.

Cemeteries

Cemeteries at Kutloanong, Bronville, Phomolong and Meloding need to be addressed.

Refuse Removal

The refuse areas currently serving Welkom, Thabong, Bronville and Odendaalsrus are sufficient to serve needs for the IDP period. Special attention should be given to the introduction of refuse transfer stations. Investigations should further be done to utilise defunct mining areas for example slimes dams for purposes of refuse areas or waste disposal sites. Due to radiation levels defunct slimes dam areas are restricted for urban development



3.4.3 Matjhabeng Local Municipality Sector Plans

No sector plans are available in the Matjhabeng Local Municipality. A service provider was appointed towards the end of 2012 to prepare a 'Local Economic Development Strategy'. At present only the status quo has been completed.

3.4.4 Precinct Plans

Many Precinct Plans have been commissioned by Harmony to be undertaken on portions of their land for the purposes of formalization. Although most of the precinct plans is still being prepared, the Bronville Masimong Precinct Plan have been completed. Inputs deriving from this plan will be incorporated into the Spatial Development Framework proposals.

3.4.5 SDFs of adjacent municipalities

Based on the assessments of the adjacent municipal areas' Spatial Development Frameworks, the following aspects were identified which could influence the Matjhabeng Local Municipality Spatial Development Framework:

- The railway linkage between Wesselsbron and Bothaville;
- The Sand River which stretches from Virginia in a westward direction towards Hoopstad. This system has been identified for irrigation purposes;
- The good connectivity between Matjhabeng Local Municipality and adjacent Municipalities;
- The N1 National road which traverse Kroonstad and Matjhabeng Local Municipality (Ventersburg);
- The Willem Pretorius Nature Reserve is located along the northern boundary of Setsoto Local Municipality which is adjacent to Matjhabeng Local Municipality. This resort could strengthen the tourism potential of the Municipality;
- There are several national and international events that takes place within some of the adjacent municipal areas such as the Bothaville Nampa Animal Agricultural Show which attracts thousands of visitors annually (Nala Local Municipality) and
- Most of adjacent land uses to Matjhabeng Local Municipality is agricultural of nature which has limited impact on the spatial structuring of the Municipal area.

3.5 Draft vision statement

During the review process it is important to 'test' the progress which the Municipality has achieved against this vision; as well as, whether this vision is still relevant or if it should be adjusted.
In the 2013/14 SDF MLM has embraced the following vision:

**"To be a united, non-racial, transparent, responsive, development and efficient municipality
that renders sustainable services, so as to improve the quality of life in the community"**



The holistic development vision was informed by:

- Areas of future economic and infrastructural capital investment is defined;
- Investor confidence is established as local and external stakeholders is presented with a clear development vision;
- The structuring of the urban environment and establishment of linkages between urban and rural components;
- The objectives of integration, infill and densification is promoted to encourage the establishment of viable and sustainable communities; and
- To acknowledge and incorporate environmentally sensitive areas into the holistic planning vision.

The above vision statement is further upheld by the following mission statement:

- To provide municipal services in an economic, efficient and effective way.
- To promote a self-reliant community through the promotion of a culture of entrepreneurship.
- To create a conducive environment for growth and development.
- To promote co-operative governance.
- To promote a dynamic community participation and value adding partnership.

To guide the above vision and mission statements, a number of themes were formulated and developed to give more direction to the priorities. The respective themes are as follows:

Table 3-1: Municipal themes and priorities, in line with the SDF vision

Theme	Priorities
Municipal Services to all Residents	<ul style="list-style-type: none"> Ensure access to water services to every household. Ensure access to electricity to every household. Provide sanitation to every household. Provide refuse pick-up to every household. To respond to existing health issues to improve and protect the health of all residents and decrease the incidence of preventable illness with public education programs. Provide road access to property. Ensure safe and secure environment. Provide access to sports and recreation facilities. To render economic information to all residents of the municipality. To ensure maintenance of infrastructure, equipment and property. To facilitate the provision of social and housing services. Provision of sites and municipal services.
Sustainable Growth and Improved Quality of Life	<ul style="list-style-type: none"> To work with other spheres of Government to improve the quality of life by creating employment. Encourage strategies and alliances to promote access to quality



	<p>employment opportunities in Matjhabeng.</p> <p>Develop labour intensive projects to create local employment.</p> <p>To consider the health of our citizens as part of the planning process.</p> <p>To improve and protect Matjhabeng natural environment and ensure it remains a healthy environment to live and work in.</p> <p>To protect rural land and promote the continued viability of agriculture in Matjhabeng.</p> <p>Develop policies that give preferential treatment to local business.</p> <p>Develop strategies and alliances that change the economic base of Matjhabeng.</p> <p>Dynamic Marketing of the economic potential of the area worldwide.</p> <p>To develop a land use management plan and spatial development framework.</p> <p>Provision of training and supporting services to the community.</p>
Accessible, Accountable and Responsible Municipality	<p>To raise public awareness and market the services available.</p> <p>Optimal usage and selling of municipal services.</p> <p>To optimally engage the community in the development of the Municipality Policies and Programs.</p> <p>To continue to improve in technology to achieve efficiencies and the most effective delivery of programs and services to meet the growing demand for electronic and other new service delivery channels.</p> <p>Enhance partnerships with the public and private sector organisations.</p> <p>To allow for flexibility in the municipality's endeavoured to adapt to the changing institutional changes.</p> <p>To adhere to Batho Pele principles and other relevant statutory requirements.</p> <p>To aggressively combat corruption in an endeavour to eliminate it.</p> <p>To ensure accessibility to the municipal buildings for people with disability.</p> <p>To ensure that funds allocation is activity based in all operations.</p> <p>To ensure proximity and accessibility of services to all communities.</p>

Table 3-2: Objectives organised acknowledging the urban-rural relationship, but also the differences in the needs of urban and rural areas

Urban	Rural
<ul style="list-style-type: none"> ■ The effective integration of historically advantaged and disadvantaged communities; 	<ul style="list-style-type: none"> ■ Provide a conducive environment for agricultural production;



- | | |
|---|---|
| <ul style="list-style-type: none"> ■ To maximize the vacant land potential to the benefit of the community; ■ To promote the optimization of existing CBD's and to encourage residential densification within these areas; ■ To encourage the utilization of existing vacant industrial stands; ■ To minimize the impact of existing mining activities on future development areas; ■ To promote environmentally sustainable practices; ■ To maximize the usage of existing engineering services; ■ To maximize the existing intermodal transport systems in support of each other (road, rail and air); ■ Encourage the growth and development of the tourism capabilities; ■ Promote the establishment of complimentary land uses in historically disadvantaged areas to address imbalances; ■ Promote the establishment of integrated housing projects, thereby providing options to different income levels linked to different housing typologies; ■ Encourage the upgrading of existing informal settlements in support of each other; and ■ Provide for the establishment of urban agriculture within urban areas. | <ul style="list-style-type: none"> ■ Enhance food security in the area; ■ Be environmentally sensitive by protecting the endangered fauna and flora species; and ■ Promote urban and rural linkages. |
|---|---|

4 Spatial challenges and opportunities

When reading this section, it should be noted that this 2018 SDF is only a review of the 2013 SDF. Great effort has been made to identify the gaps in the previous SDF, and to provide updated information. Furthermore, because this is a SDF, the information has been represented on maps to give a perspective of locality, extent and condition as far as possible.

However, a comprehensive baseline assessment was not undertaken, due to numerous constraints. Therefore, many gaps and uncertainties still exist – these have been highlighted in the respective sections with the hope that this may be addressed in future SDFs.



It is important that a comprehensive status quo assessment be undertaken for the whole municipality, across all sectors. Without certainty regarding the current state and the associated impacts, of the various activities taking place in the municipality, appropriate plans cannot be put in place. Nor can the extent of the impact of plans that have been implementation, be fully understood.

4.1 Biophysical analysis

This section provides an overview of the ‘biophysical’ aspects of the MLM. The categories of: climate and weather patterns, topography, geology and soils, are discussed as they describe the ‘natural setting’ and the associated opportunities and constraints based on the condition of the land. While, land cover and land uses provide perspective on what is currently taking place in the municipality, to what extent, and how rapidly this has changed over time. Agriculture and mining are the two ‘biggest’ land uses in the municipality – agriculture covers the largest area, and mining although significantly smaller in area, is the greatest GDP contributor. Therefore, these two aspects of land use are unpacked in greater detail. Furthermore, biodiversity and water resources are significant natural resources that humanity relies on for productive and healthy lives, and therefore more information is provided on these aspects. These categories provide an understanding of the current state of both the natural environment and the associated resources, and human related activities within this context. These are important aspects to consider with regards to spatial planning, as this is the basis of opportunities and constraints within which those plans must fall.

4.1.1 Climate and weather patterns

MLM municipality experiences a semi-arid climate. Figure 2 illustrates the historical record of different climate variables for the MLM as recorded over 1998-2012. Typically, the average summer (November – March) temperatures range from 27.4°C and 10°C, with the highest temperature recorded is 33°C and the lowest being 2°C (National Oceanic and Atmospheric Administration, 2014). Whereas the average winter (May – August) temperatures vary between -2°C (minimum) and 24°C (maximum). Furthermore, MLM is a winter rainfall region, during which time the region receive an average annual rainfall of 425mm, this average annual rainfall varies across the municipal area between 400mm and 600mm (Climate Information Portal, 2012). As a result, MLM experiences warm wet summers and cold winters which is beneficial for some agricultural practices. The variability of these climate conditions is shown in the maps labelled Figure 3 to Figure 6.

The Figure 7 illustrates what is the climate capability for the region, when considering suitable temperature and rainfall ranges for various agricultural and human activities. The western border of the local municipality experiences the most favourable conditions in terms of temperatures and precipitation, while most of the area is ‘less favourable’ but still conducive to agricultural practices, and other activities.

This climate capability should be compared to soil capability, as presented in Figure 11; as well as land capability which considers the overlap of climatic and soil capability to understand what the variability of these conditions spatially (see Figure 12).

The Free State province has had few incidents of droughts and floods (Mbileni, 2015). With increasing variability of rainfall and a warming climate, associated with climate change, it is likely that the municipality will continue to experience associated natural disasters. MLM is dependent on irrigation for agriculture, domestic and mining activities; and, therefore these natural disasters are a



concern. The drought conditions need to be addressed in terms of the climate change strategy response plans (Clair M and Zwane, 2016).

In addition, the Free State Environmental Vulnerability Assessment indicates that climate models conducted at a national level, highlight impacts of a doubling in carbon dioxide concentrations in the central areas of South Africa, which includes the Free State (Mbileni, 2015). The predicted increase in carbon dioxide contributes towards climate change in the region. However, a climate change strategy for the province has not yet been developed (Clair M and Zwane, 2016).

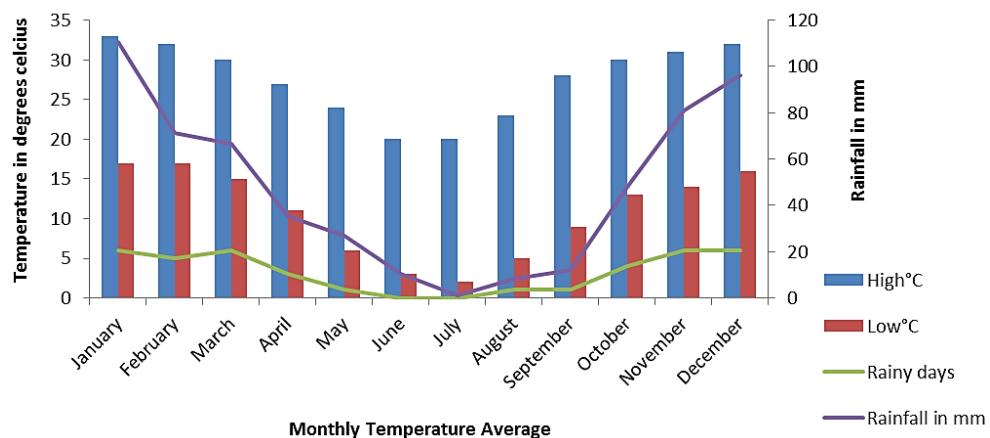


Figure 2: Weather patterns of MLM from 1998-2012 (National Oceanic and Atmospheric Administration, 2014).



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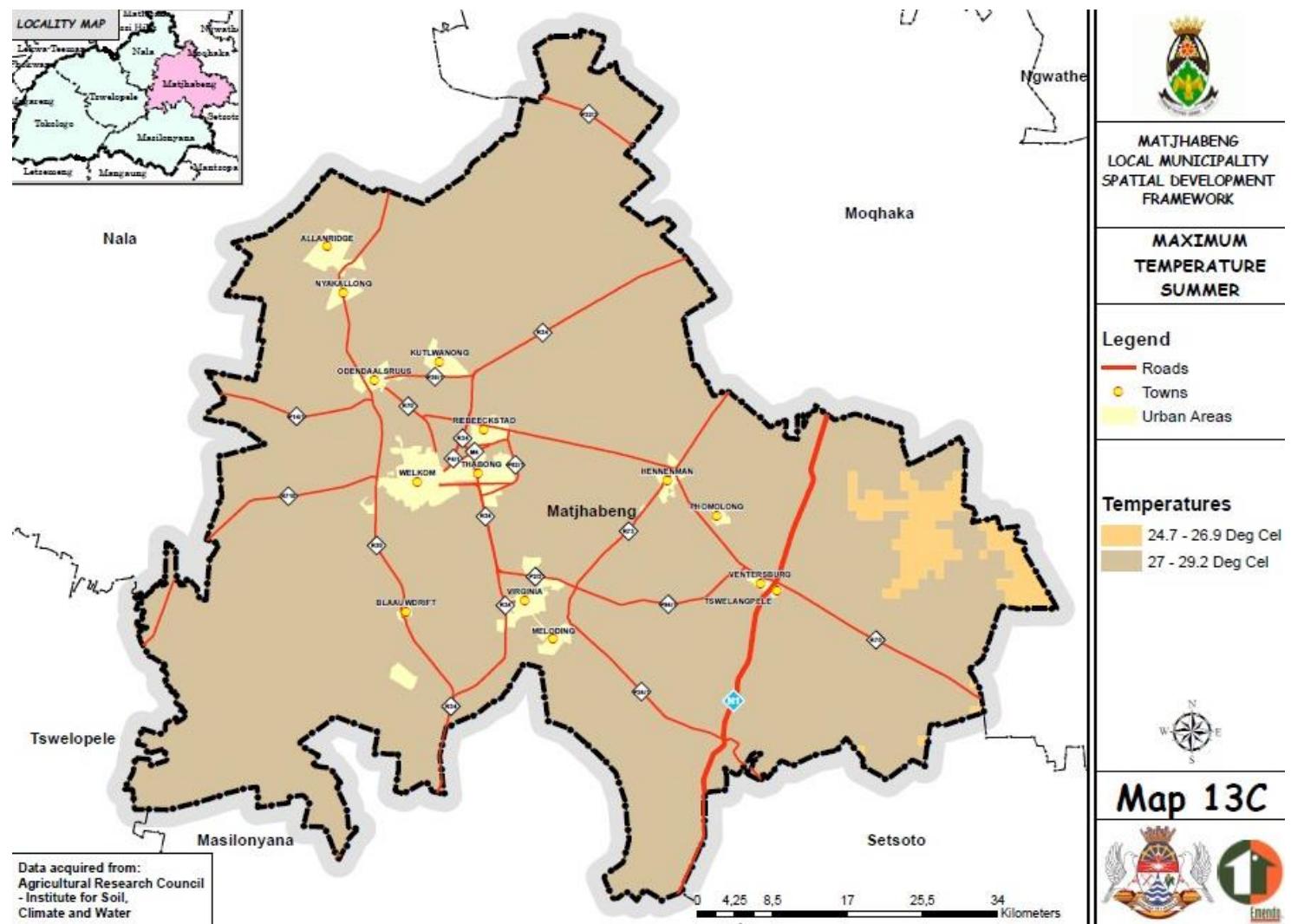


Figure 3: Maximum temperatures in summer (Nov-March)



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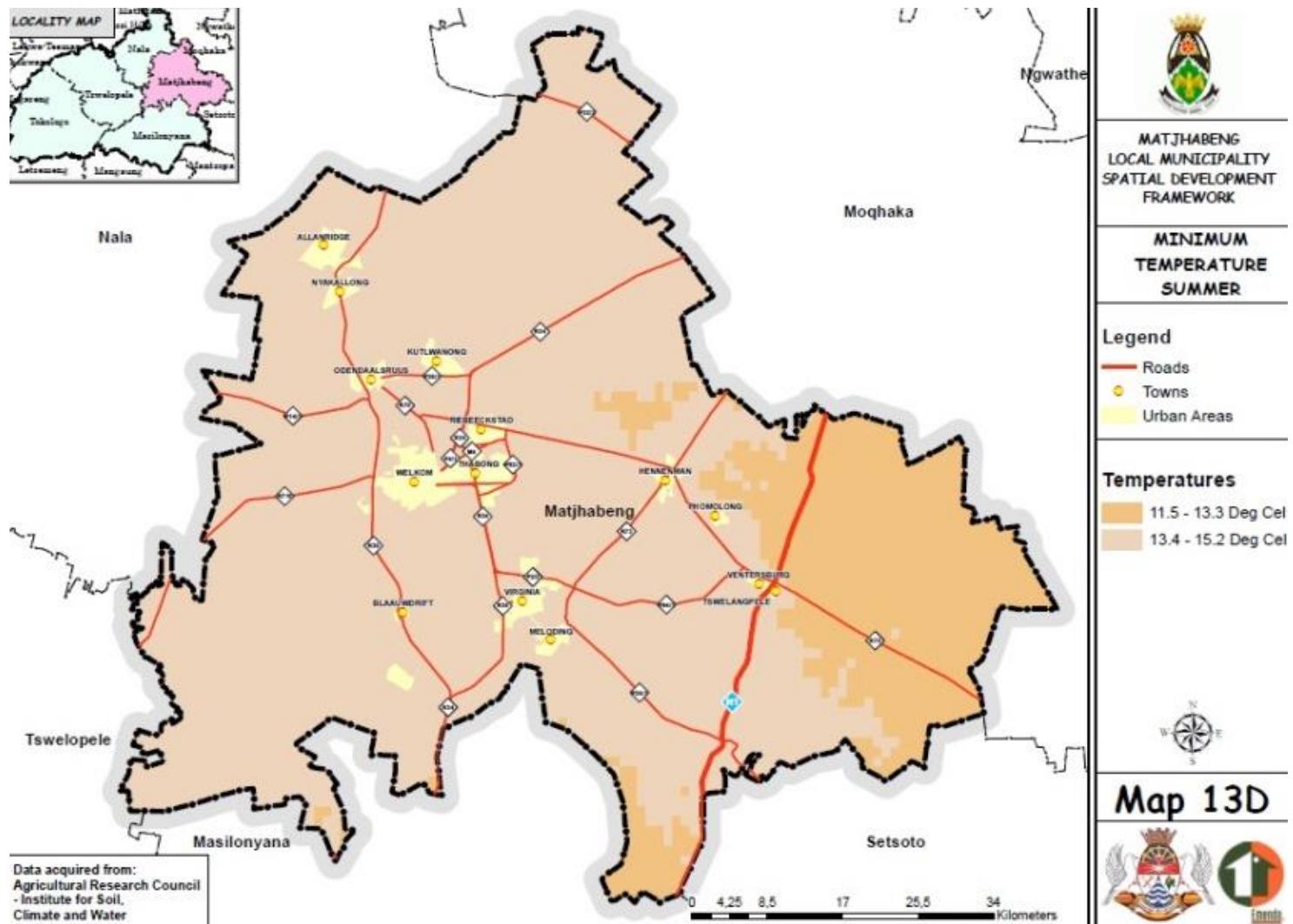


Figure 4: Minimum temperatures in summer (Nov-March)

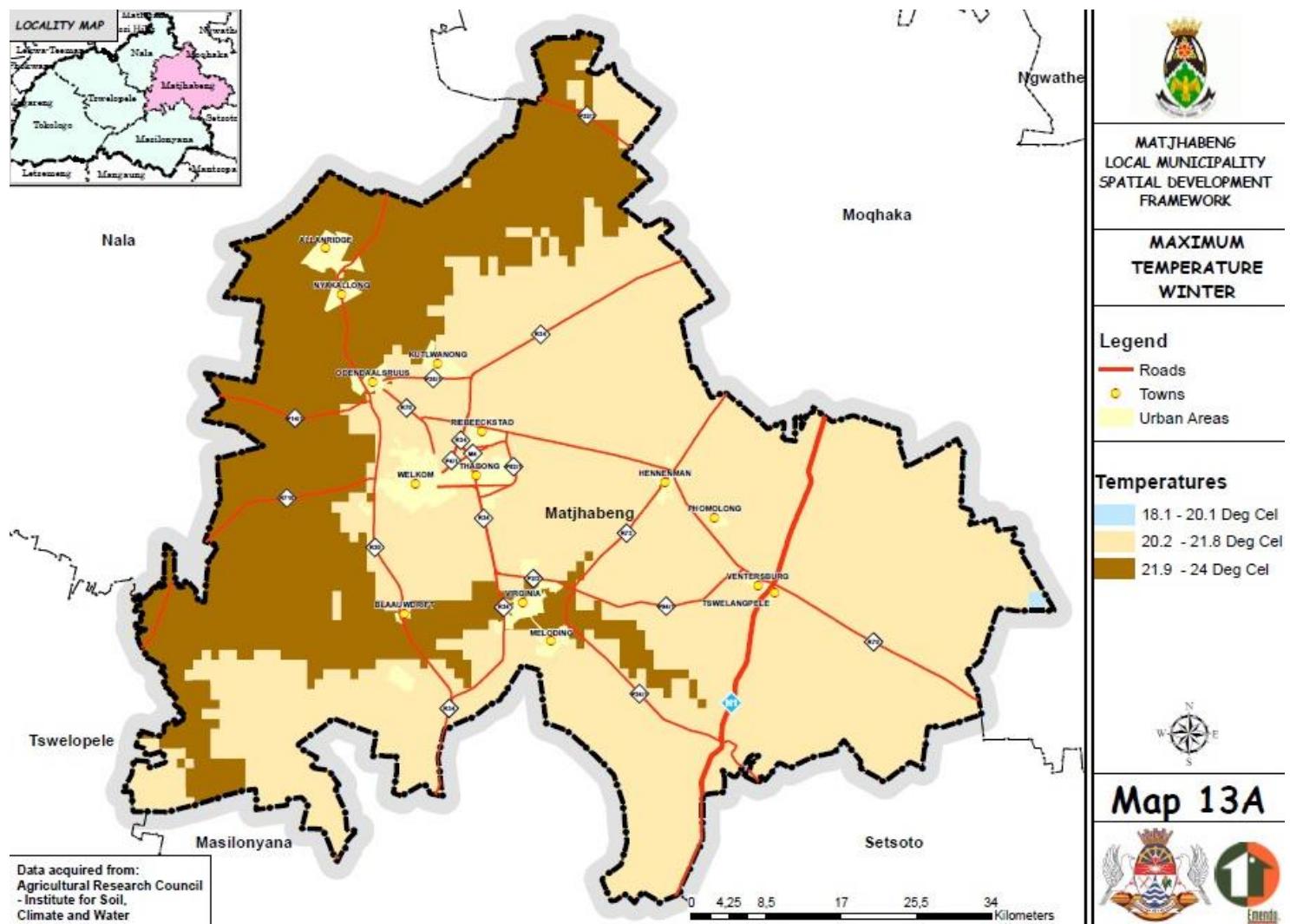


Figure 5: Maximum temperatures in winter (May-Aug)



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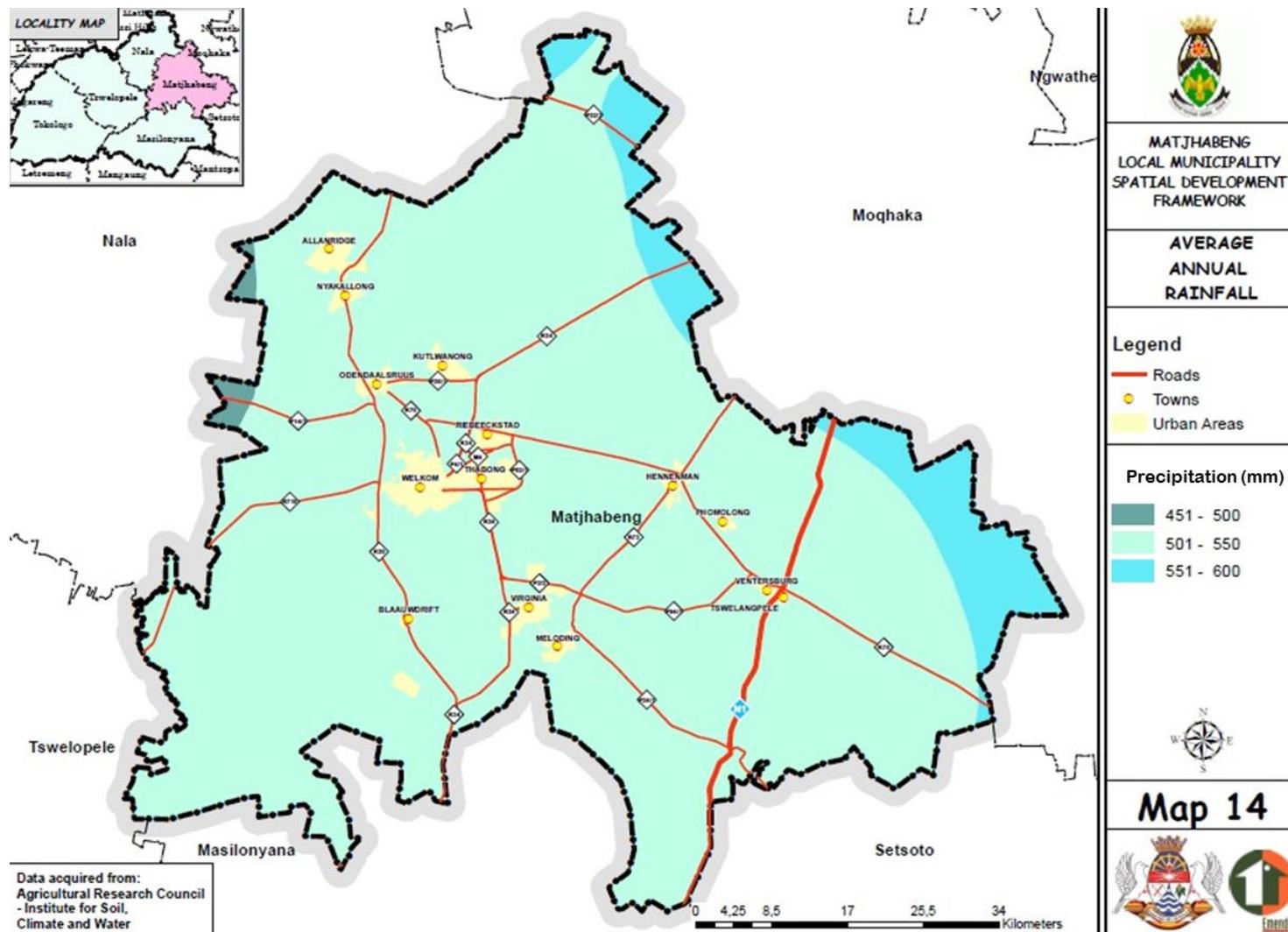


Figure 6: Average annual rainfall



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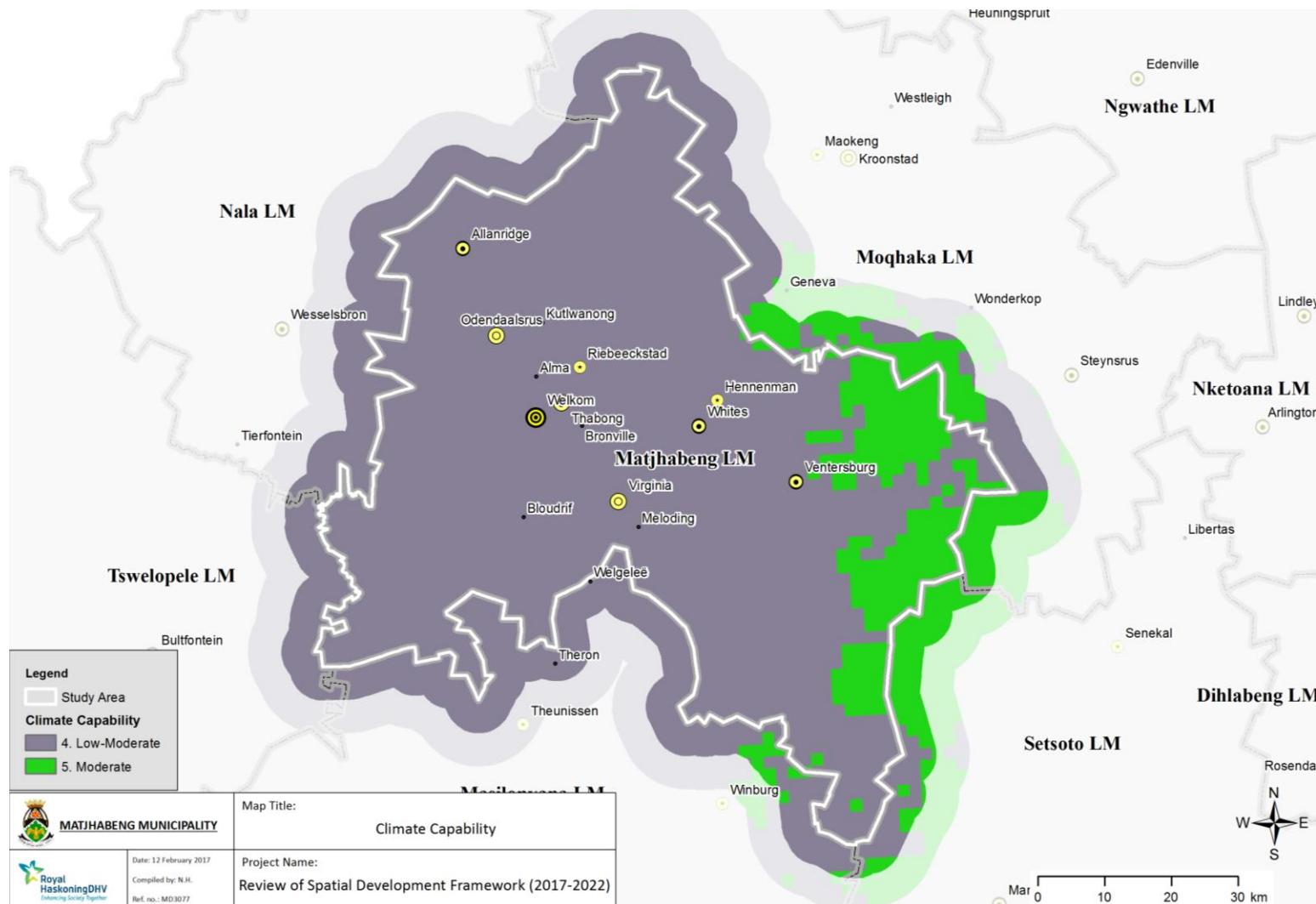


Figure 7: Climate capability



4.1.2 Topography

The elevation of MLM ranges between 1260m and 1560m above sea level, with the highest region located in the southeast (Ventersburg) and the lowest area is situated towards the west (west of Welkom). The elevation of the Municipality is illustrated in Figure 8.

The slope gradients of the entire Municipality have been classified as geotechnical classes, based on the run-off and infiltration rate of water, the extent of erosion, soil depth and cost of development according to the geotechnical classification for development in Partridge, (Matjhabeng Local Municipality, 2013)(see Figure 9). These slope gradients are important for deciding where development can or should take place. These classes are:

- Class 1 +2 (0-2): Intermediately Favourable
- Class 3 (2-6): Most Favourable
- Class 4 (6-12): Intermediately Favourable
- Class 5 (12-18): Least Favourable
- Class 6 (> 18): Least Favourable

From the analysis of the slope gradient it is evident that most of the slope classes are Class 4 or less. This suggests that most of the area is favourable for development.

However, when considering future land uses of the municipality, other aspects such as climate and soil capability must also be considered to determine suitable areas a host of activities, and not just development. For example, soil capacity and climate have a huge bearing on agricultural activities; while productive areas which are feasible for agricultural are also often highly valuable for ecological purposes; while favourable conditions and settlement patterns must also be established for housing, socio-economic purposes and even mobility – these aspects are discussed further in the rest of the chapter.

4.1.3 Geology and soils

The dominant geo-structural rock formations of Matjhabeng are Adelaide subgroup and Beaufort group seen mainly in the Eastern and North south belt (see Figure 10). The Beaufort Group and Adelaide Subgroup are mainly represented by the sedimentary rocks. These sediments lithify in the form of quartzite, shale and mudstone.

Table 4-1, summarises the rock types found in the municipality, and describes the mineral ology and value that this geology offers.



Table 4-1: Summary of the mineral profile of MLM (Groenewald A, 2013; Majhabeng Local Municipality, 2013)

MINERAL	ROCK TYPE	DESCRIPTION
Shale and Mudstone	Sedimentary	<p>Fine grained, clastic sedimentary rock composed of mud that is a mix of flakes of clay minerals and tiny fragments (silt-sized particles) of other minerals, especially quartz and calcite.</p> <p>Shale is relatively fragile, and therefore is rarely used for building materials or industrial uses in its raw form. However, when processed it can be used as an additive in cement and art clay products.</p>
Quartz	Igneous	<p>A type of volcanic (igneous) rock containing large conspicuous crystals of quartz and a fine grained to glass groundmass.</p> <p>Quartz is a common, and well known, rock. It is also one of the most varied minerals, occurring in all different forms, habits and colours – and, an associated diversity of names. It has little commercial value, but it is considered by some to have healing properties and is used in art and jewellery.</p> <p>Porphyry refers to the texture of the rock. Quartz Porphyry is commonly reported in the area.</p> <p>Arenite or quartz arenite is also commonly reported. With arenite referring to grain size, rather than chemical composition. These rocks are formed through erosion.</p>
Dolerite	Igneous	<p>The dolerite is a very hard igneous rock which occurs as either sills or dykes. Dolerites are associated with gold mining, crust stone and ornamental stones. Furthermore, the good physical and chemical properties of the rock make it suitable for a wide variety of uses. When crushed it can be used as aggregate in concrete, as road sub-base and in flush seals; as facing stone in building construction, and as armour stone, amongst other uses.</p>
Andesite	Igneous	<p>The word andesite is derived from the Andes Mountains in South America, where it is commonly found.</p> <p>Andesite is formed by lava flows, which have cooled rapidly at the surface. As a result, they generally contain small crystals but not quartz.</p> <p>It is typically found along with granite and diorite.</p> <p>Andesite can be used as a substitute for building, but it is typically used only for decoration. It is mainly used in the construction of roads.</p>



This geology gives rise to a soil profile which is 45% loam-sandy clay soils and 25% sandy clay soils (Lejweleputswa District Municipality, 2016-2017). The arability of the soil across the municipality holds marginal arable potential (approx. 90%), with some pockets of moderately arable land in the east (approx. 10%) (see Figure 11). There is only a small area which is not arable, in the southern region.

When considering the geology and soil capacity, in addition to a range of factors such as slope classes and climate, the land capability is considered. This capability suggests particular ‘uses’ of areas of the municipality, based on the conditions available (see Figure 12). From this analysis, only small portions of the municipality are considered less favourable, while the extent of the municipality is varying degrees of moderately favourable for purposes such as agriculture and human habitation. With the western boundary of the municipality holding the highest potential.



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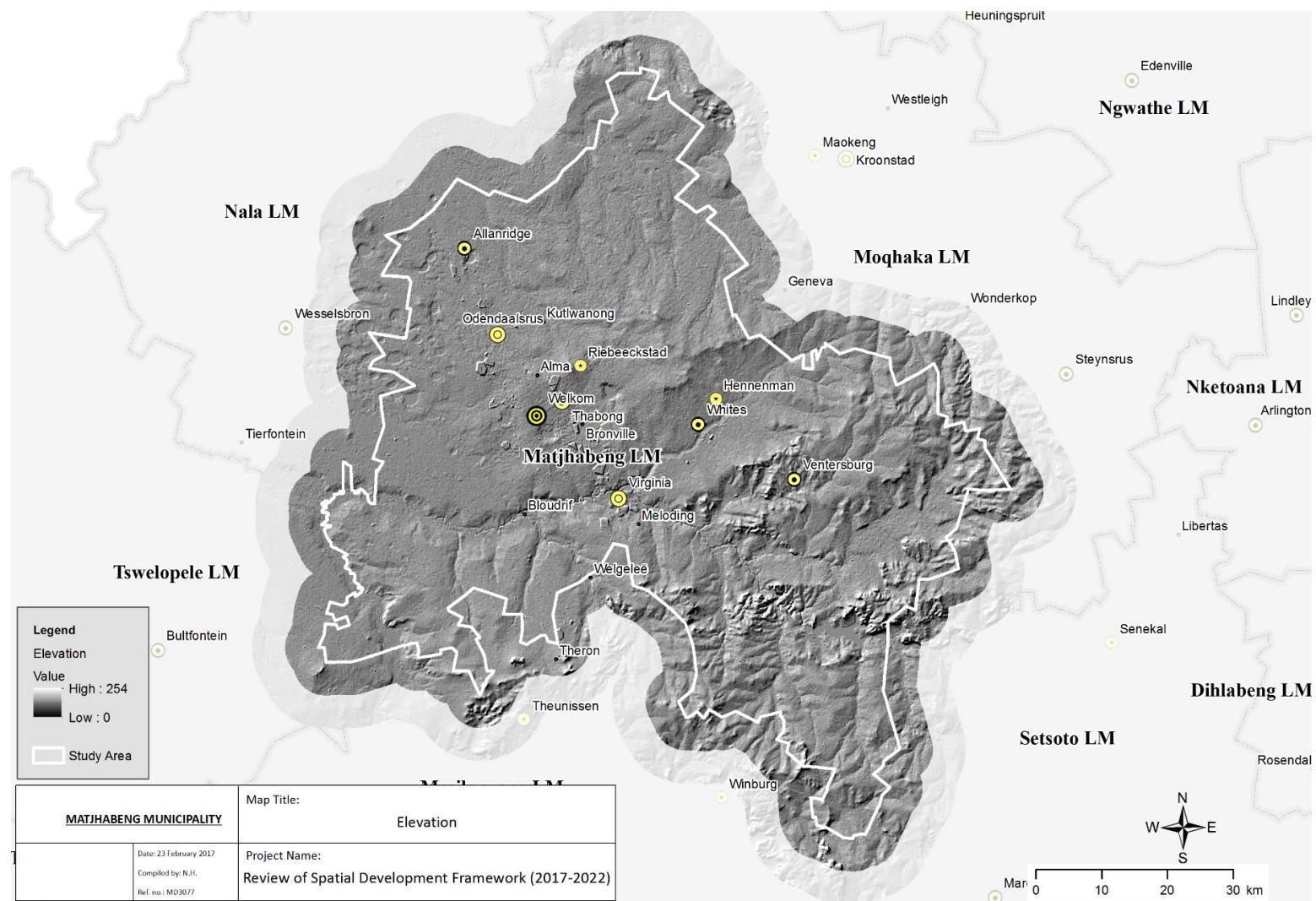


Figure 8: Elevation



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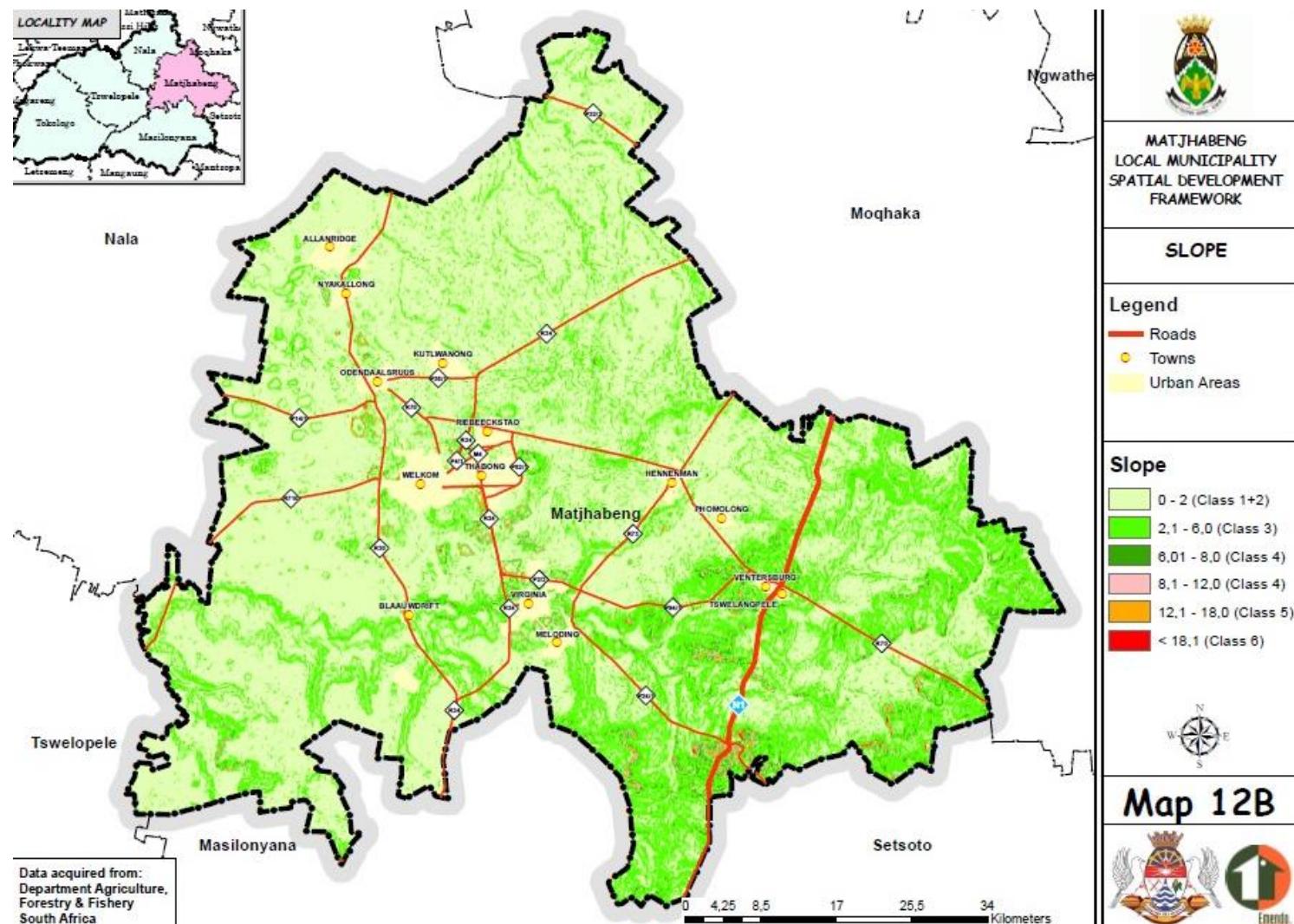


Figure 9: Slope classes



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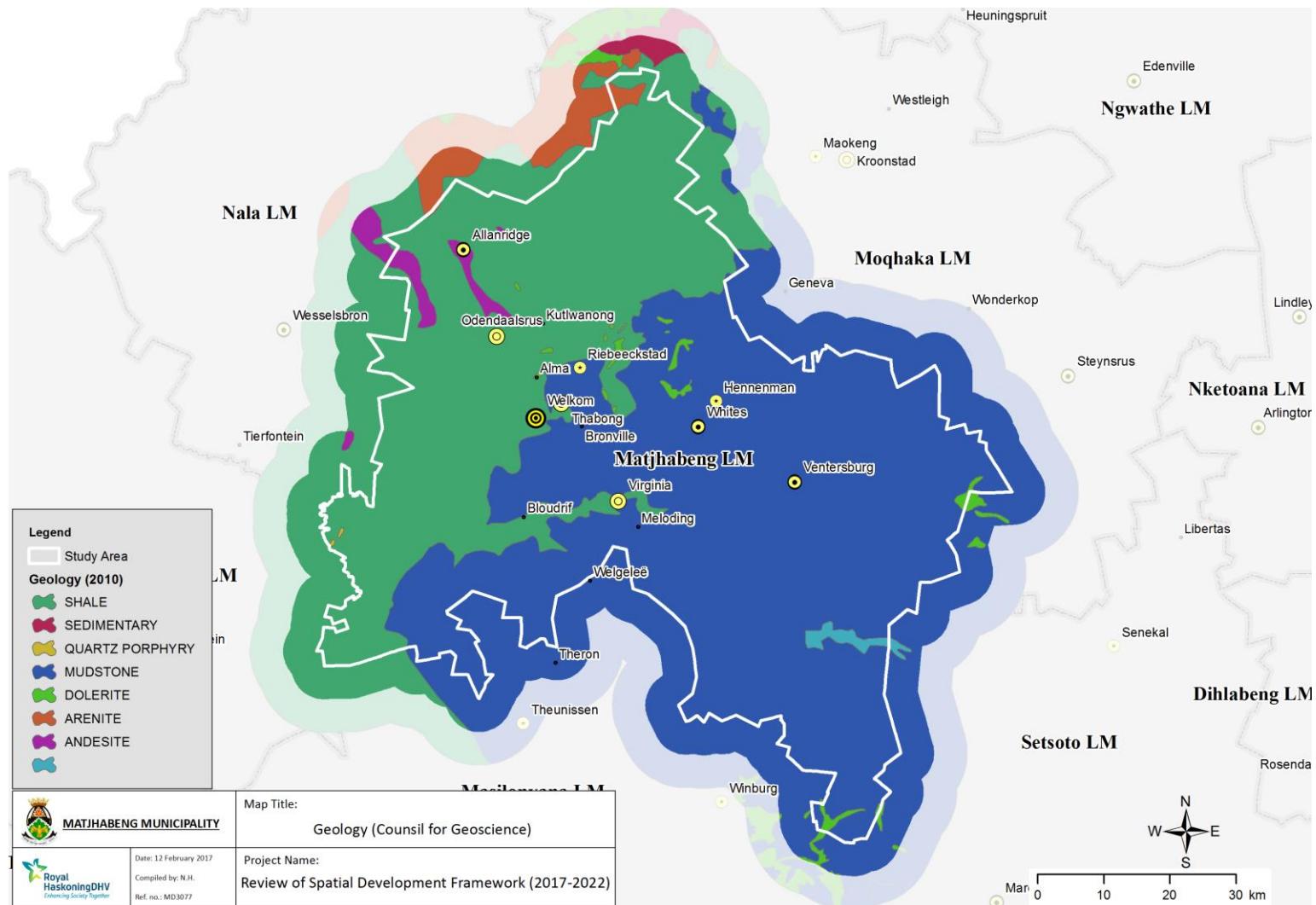


Figure 10: Geology



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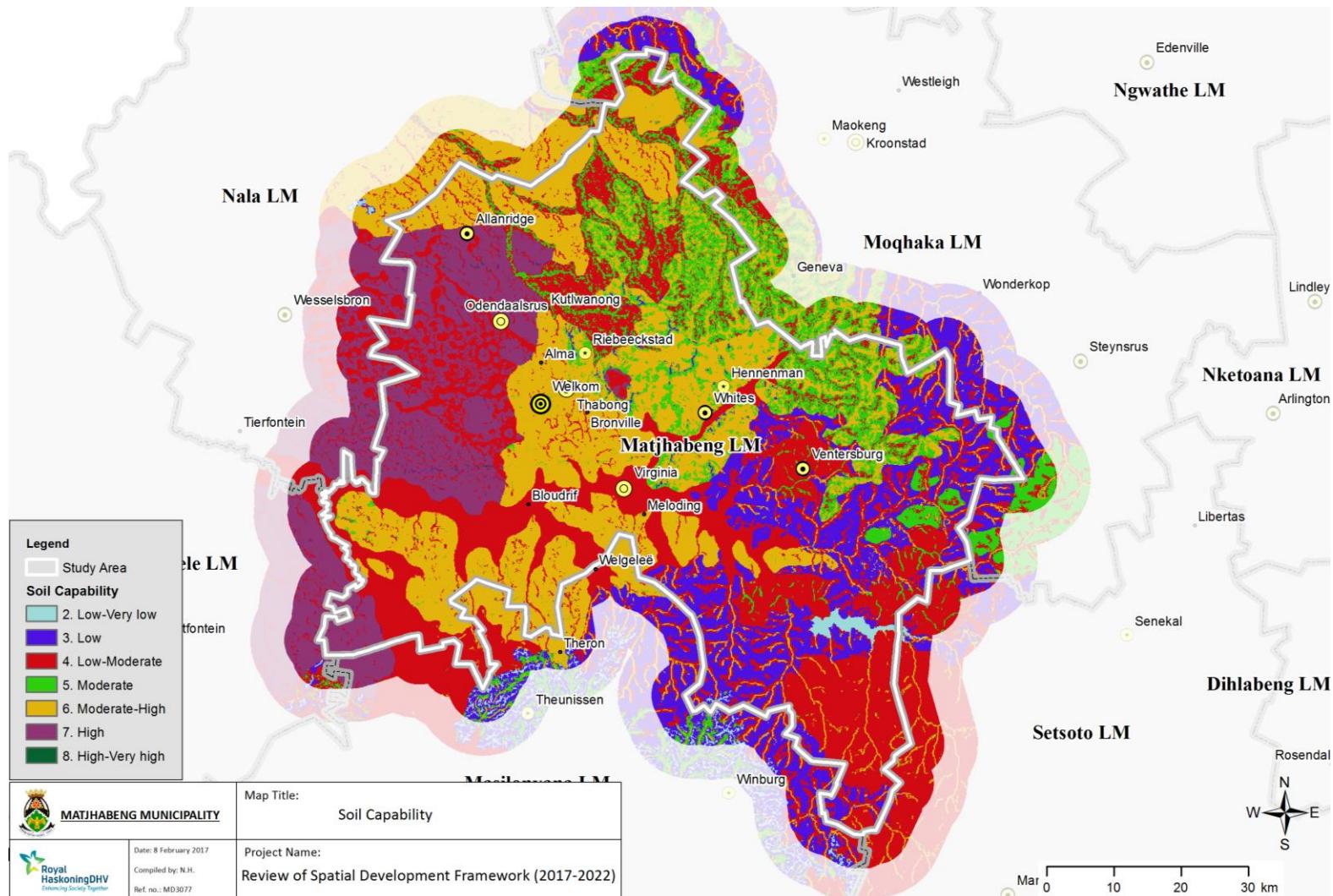


Figure 11: Soil capacity



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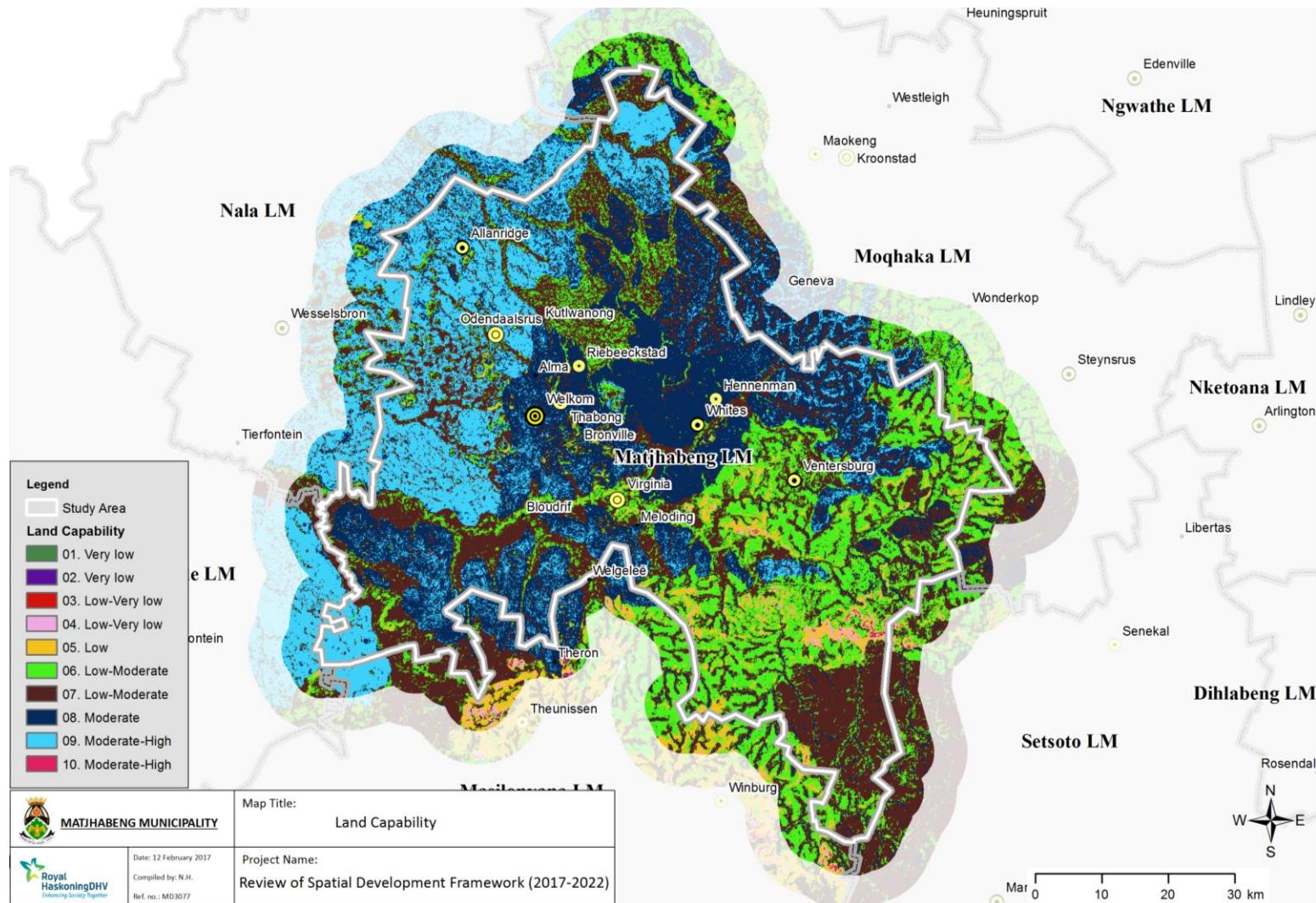


Figure 12: Land capability



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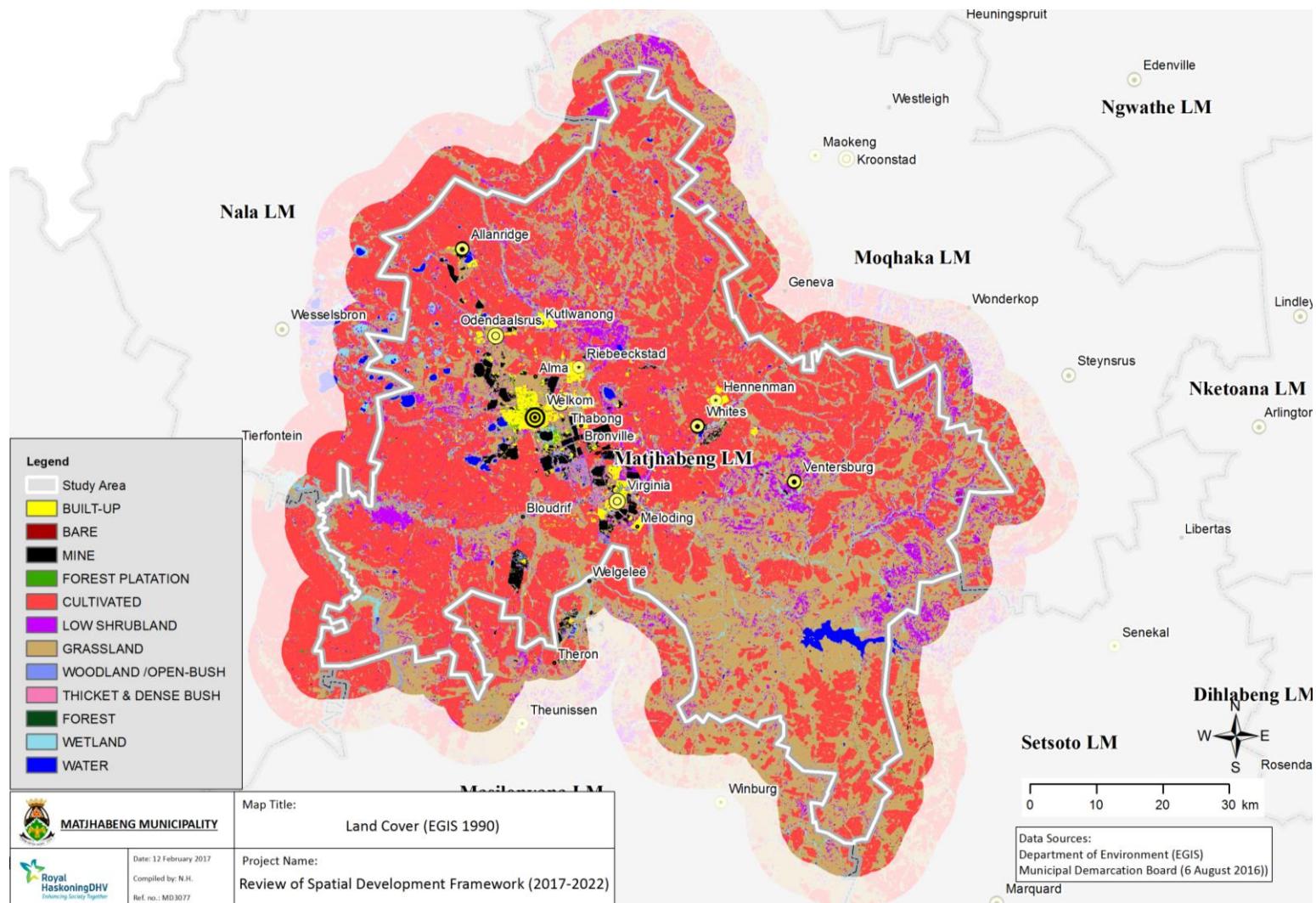


Figure 13: Land cover (1990 data)



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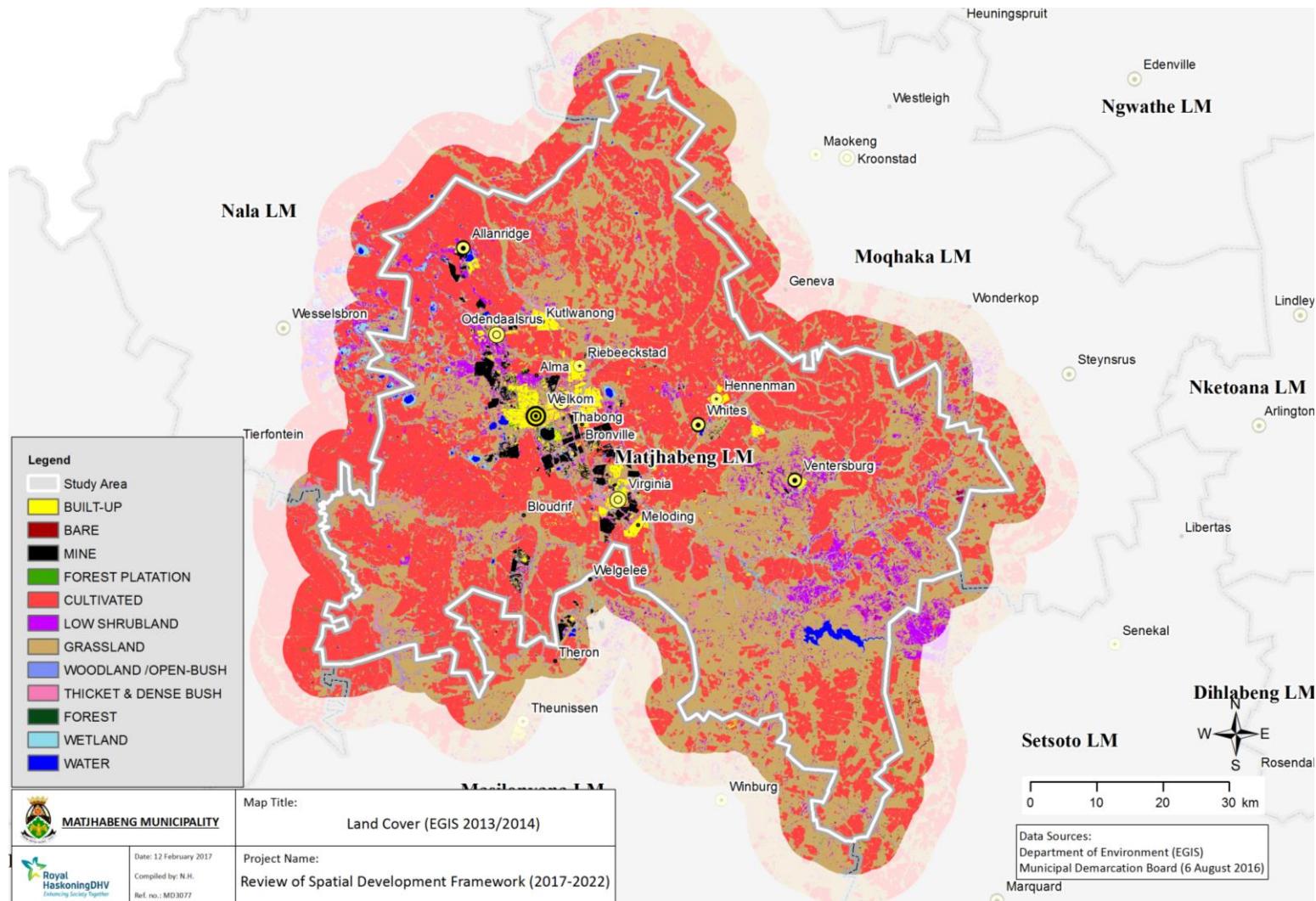


Figure 14: Land cover (2013/14 data)



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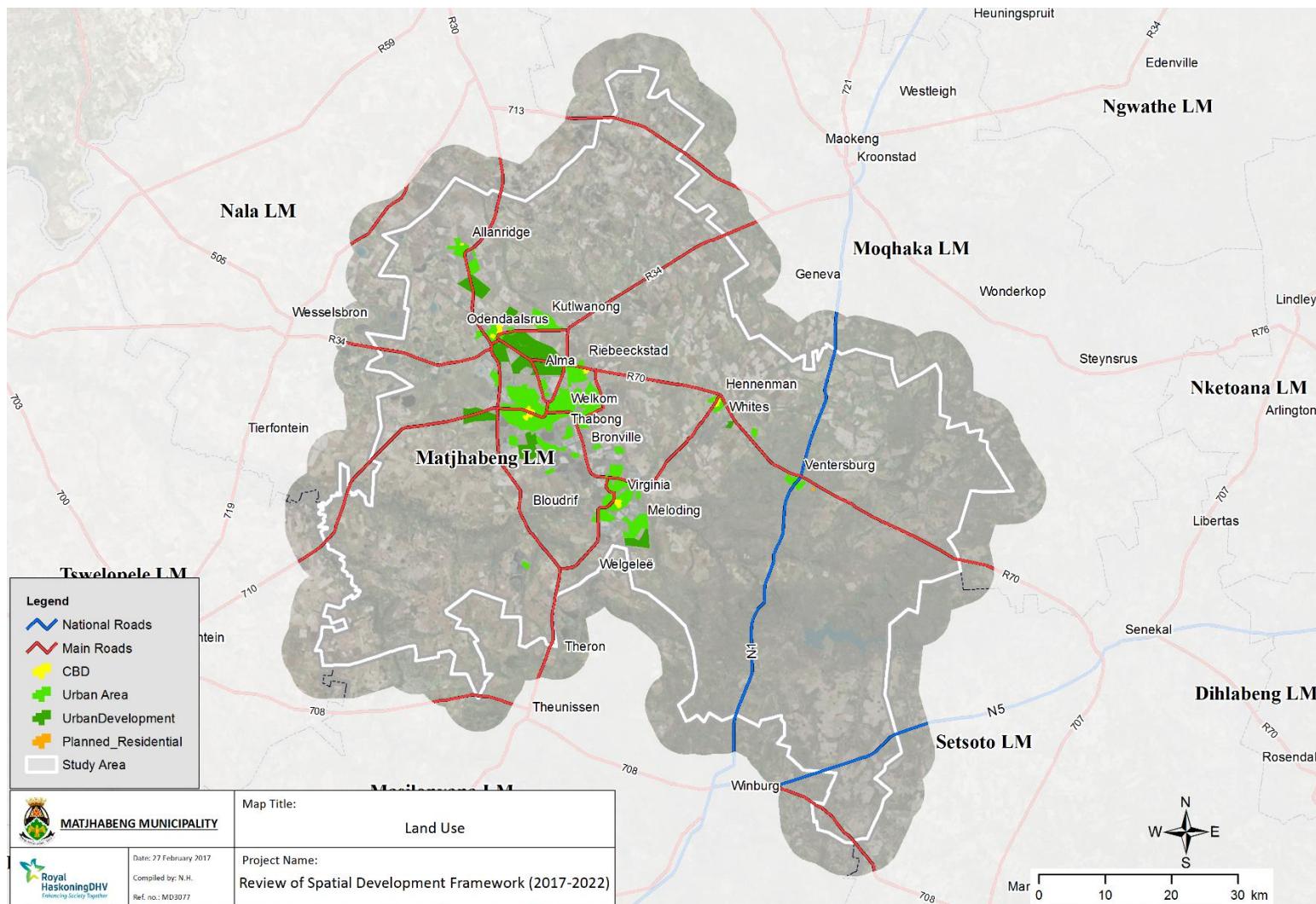


Figure 15: Urban development patterns



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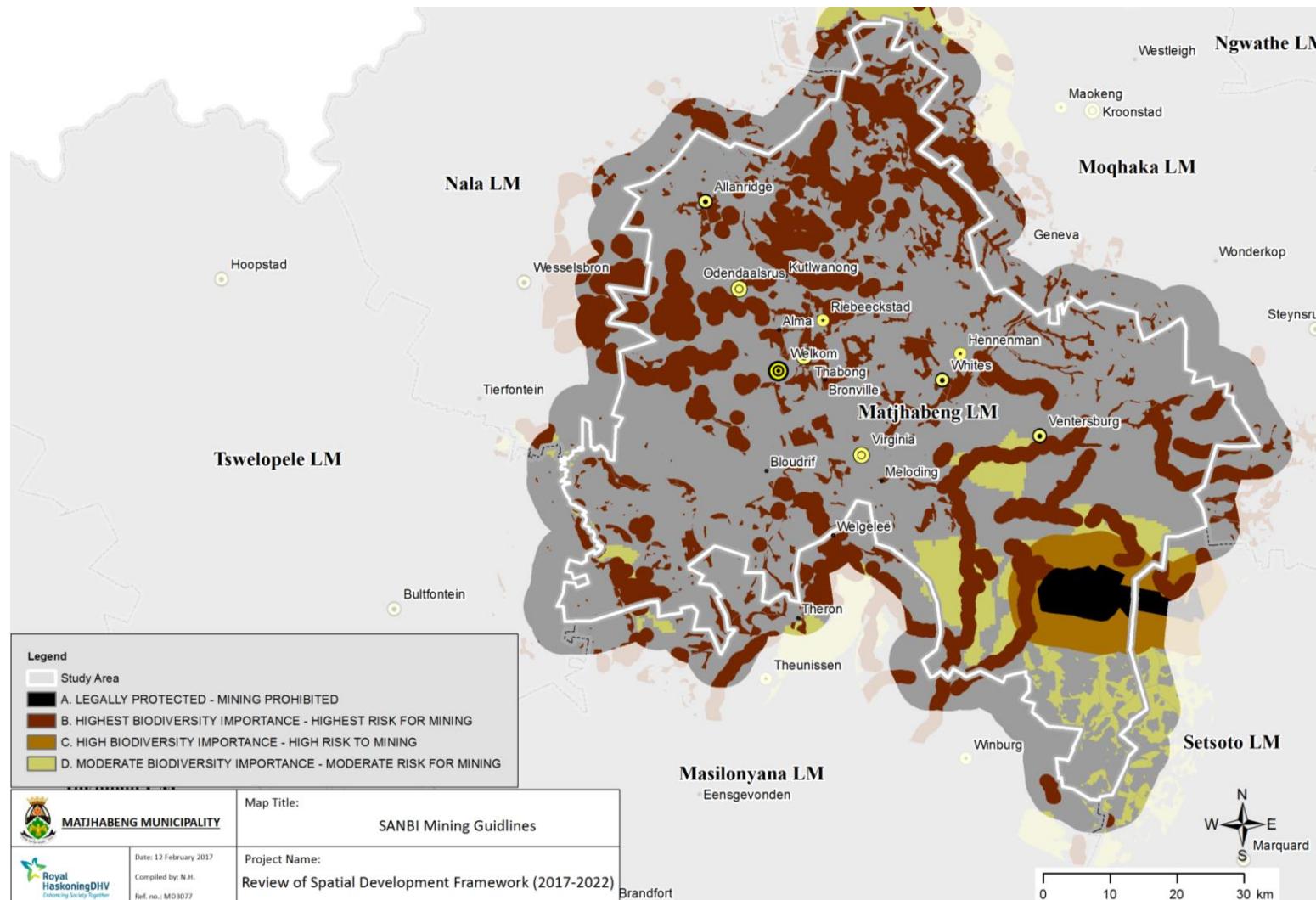


Figure 16: SANBI protection zones with regards to mining activities



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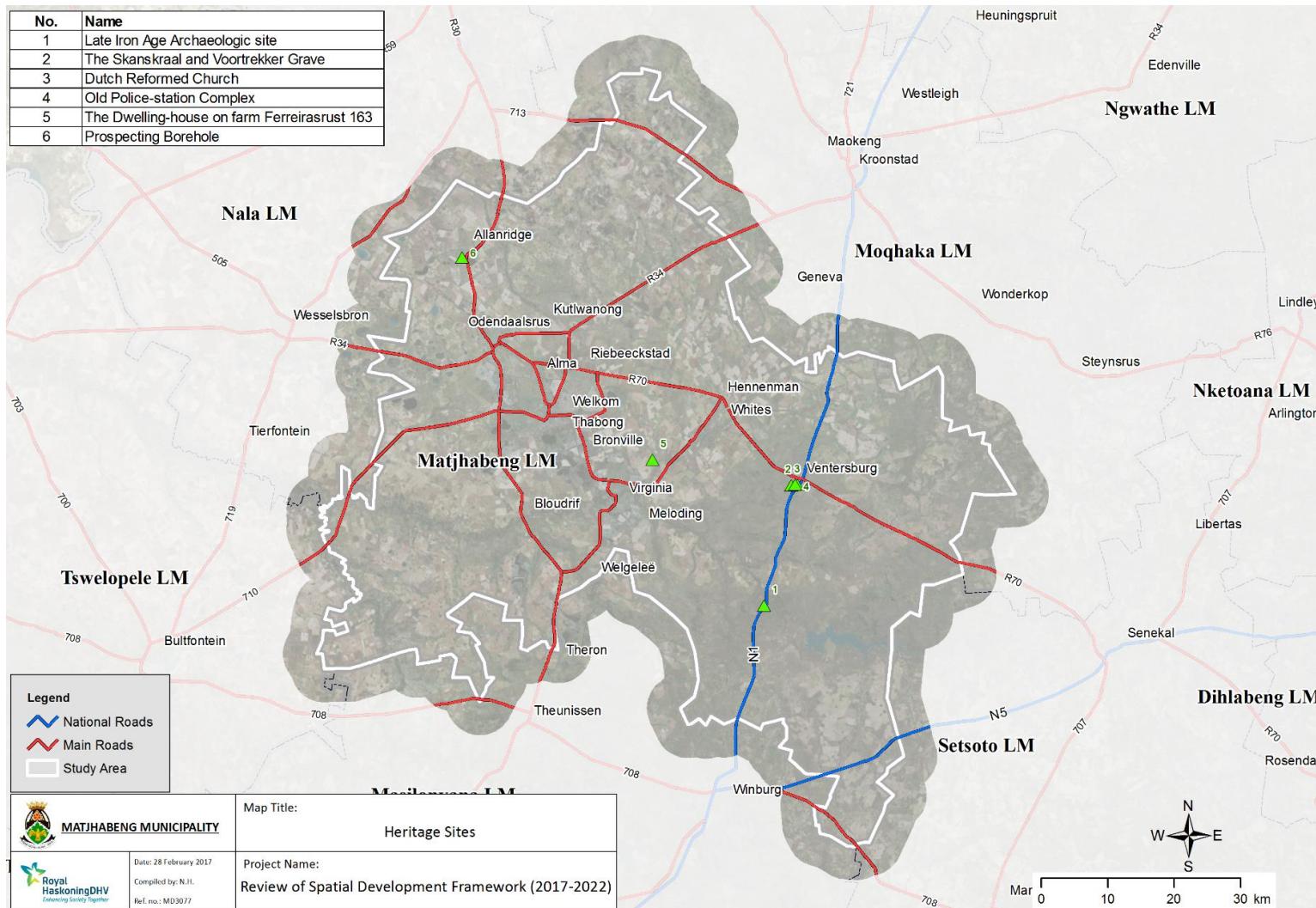


Figure 17: Heritage sites



4.1.4 Biodiversity

MLM lies within the Grassland Biome that is classified as Dry Highland Grassy Bioregion. The Grassland biome provides various ecosystem services such as development and maintenance of deep nutrient rich soils, habitats for foraging, nesting and reproduction of a range of species; and, they reduce the potential for floods, by reducing surface water flow rates thus increasing the rate of absorption into the ground (SANBI, 2013).

Within this Biome, there are a range of vegetation types, some of which include the Bloemfontein Karroid Shrubland (0.1%), Central Free State Grassland (20.62%), Highveld Alluvial Vegetation (15.6%), Highveld Salt Pans (0.9 %), Vaal-Vet Sandy Grassland (52.5%), Western Free State Clay Grassland (7.6%) and Winburg Grassy Shrubland (2.69%) (SANBI, 2017). According to the South African National Biodiversity Institute (2017) the Vaal-Vet Sandy Grassland is classified as endangered. Additionally, the Western Free State Clay Grassland, Winburg Grassy Shrubland and Highveld Alluvial Vegetation are the least threatened vegetation's. The most ecological important grass is known as the red grass or rooi-gras. However, demand for crop production and increased grazing capacity have caused degradation and destruction to this vegetation. Lastly the Central Free State Grassland is considered to hold a vulnerable status (see Figure 20).

The Willem Pretorius Nature Reserve covers 83.2 ha (0.02%) of undulating plains and ridges (Winterback, 1999; SANBI, 2017). The nature reserve offers a variety of species including the vegetation listed above as important habitats, and springbok, kudu, zebra and giraffe, amongst others. This is a significant contribution to conservation and eco-tourism (South Africa Explored, 1998-2018).

However, there are also large eroded areas within the Reserve, which were caused by water runoff from the ploughed lands (Winterback, 1999). These areas will require rehabilitation.

In addition to the terrestrial habitats that characterise the area, Matjhabeng is characterised by four river systems – Koolspruit, Sand, Sandspruit and Vet Rivers. Refer to the map in Figure 22, which shows the main rivers, wetlands and dams in the municipality, and their condition.

Many of the river systems are reported to be in a ‘fair’ to ‘good’ state. This suggests that the rivers are transformed, but still ecologically functioning; with the ‘fair’ condition closer to the natural state than that of ‘good’ (Department of Water Affairs, 2011). In addition, many of the rivers are National Freshwater Ecosystem Protected Areas, upstream management areas, and even fish rehabilitation areas (see Figure 18). There are also several wetlands recorded to be National Freshwater Ecosystem Protected Areas.

However, in 2004 the River Health Programme reported that the state of the rivers is deteriorating at a fast rate. This is mainly due to activities that take place upstream of the rivers. The main pollution sources include various mining industrial activities, urban runoff and return flows from urban locations – these activities impact on both the hydrology (the flow) and water quality of the system. This does not only affect human life but also aquatic ecosystems (Department Of Water Affairs and Forestry, 2004).

Two river systems are moderately to largely modified – indicating that they have been altered (hydrology and pollution levels) such that they no longer represent natural ecological systems. The biological life supported by these systems is limited, with sensitive species unable to survive; and, therefore the biodiversity that these systems supports is limited to hardier species and invasive. Human contact and industrial use without treatment of the water is not recommended.

The largely modified rivers include:



- Sand River, east of Laaudrift;
- Rietspruit, Kromspruit, Erasmusspruit, Koolspruit, Grootspruit and Bosluisspruit; and
- Vet River.

The moderately modified rivers include:

- Sand River, west of Blaaudrift;
- Cronjespruit; and
- Tributaries to the north of Matjhabeng Municipal area.

Water quality in the river systems is of serious concern due to high salinity and nutrient content, that mainly results from urban and industrial return flows as well as mining activities in the Upper Vaal WMA. The closure of mines also attributes to the water quality of these rivers.

The Sand River has unacceptable high salts (2 415 mg/l) from the Welkom-Virginia gold mines (Department of Water Affairs, 2011). The high salts affect the quality of water for drinking and irrigation with serious social and environmental consequences for both the rural and urban communities. In addition to that, there is also very high concentrations of nitrate at 1.05 mg/l and phosphates at 0.50 mg/l - evidently from poorly treated sewage effluent (Department of Water Affairs, 2011).

The water quality in the Sandspruit is characterised by fair salt conditions but poor in terms of phosphate concentrations, with recordings between 0.080 and 0.118 mg PO₄-P/l respectively (Department of Water Affairs, 2011).

Given the location of the Middle Vaal, water quality is affected by a variety of activities – some occurring within the municipality and others upstream. The main economic production in the water management area is by the urbanised and mining sectors of the economy which are largely dependent on the water supplies from the Vaal River.



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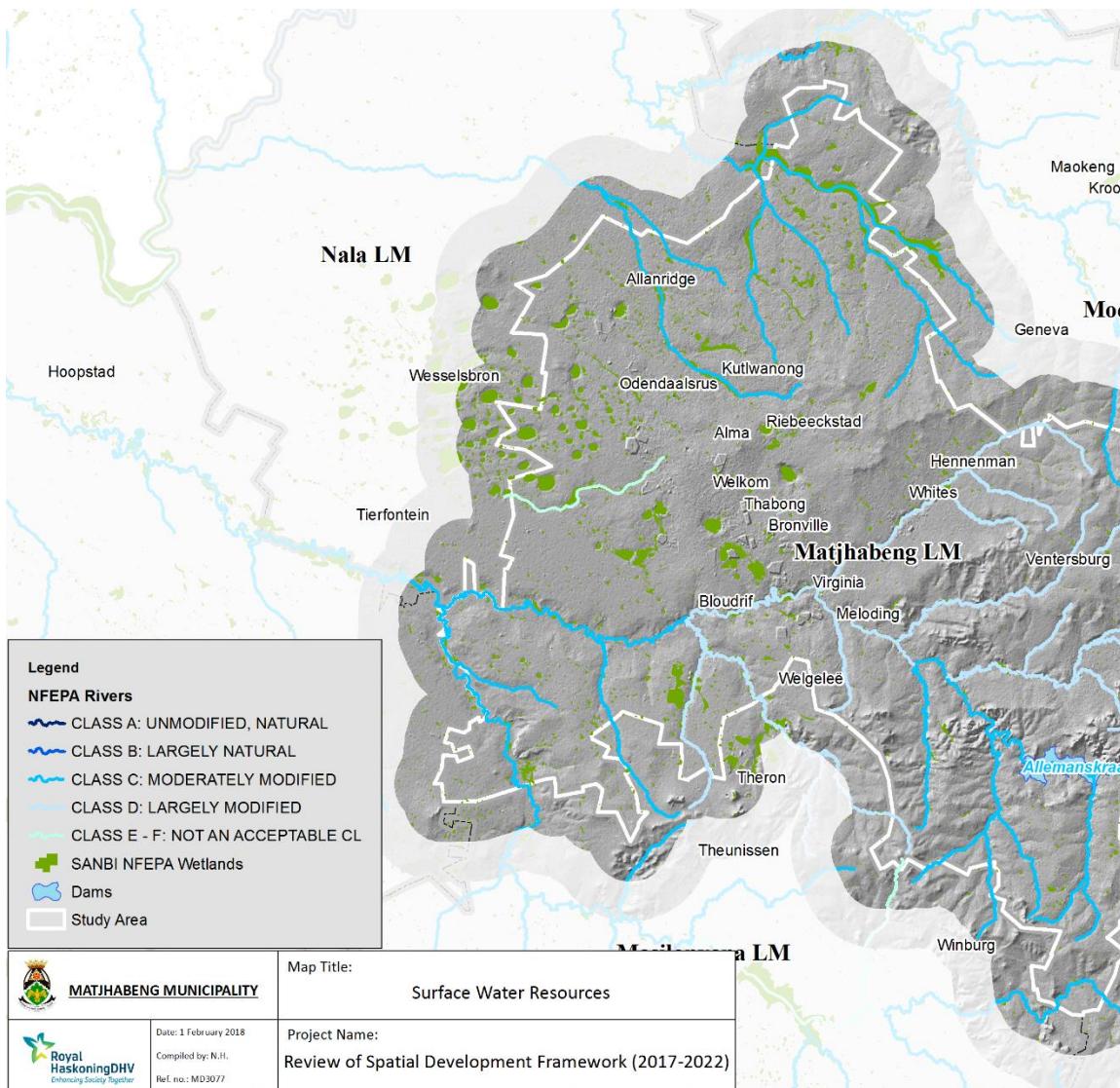


Figure 18: Surface water resources



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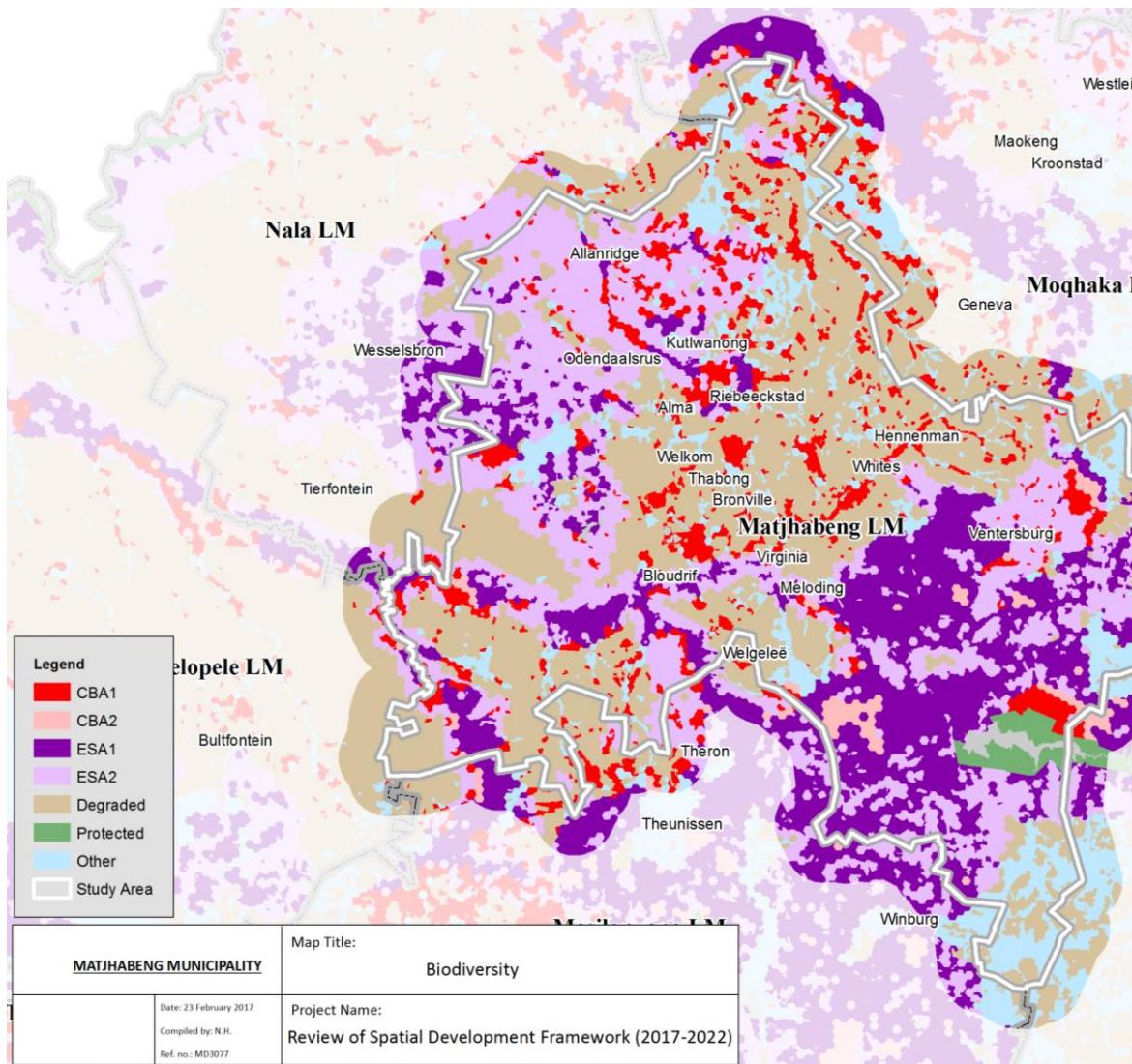


Figure 19: Biodiversity



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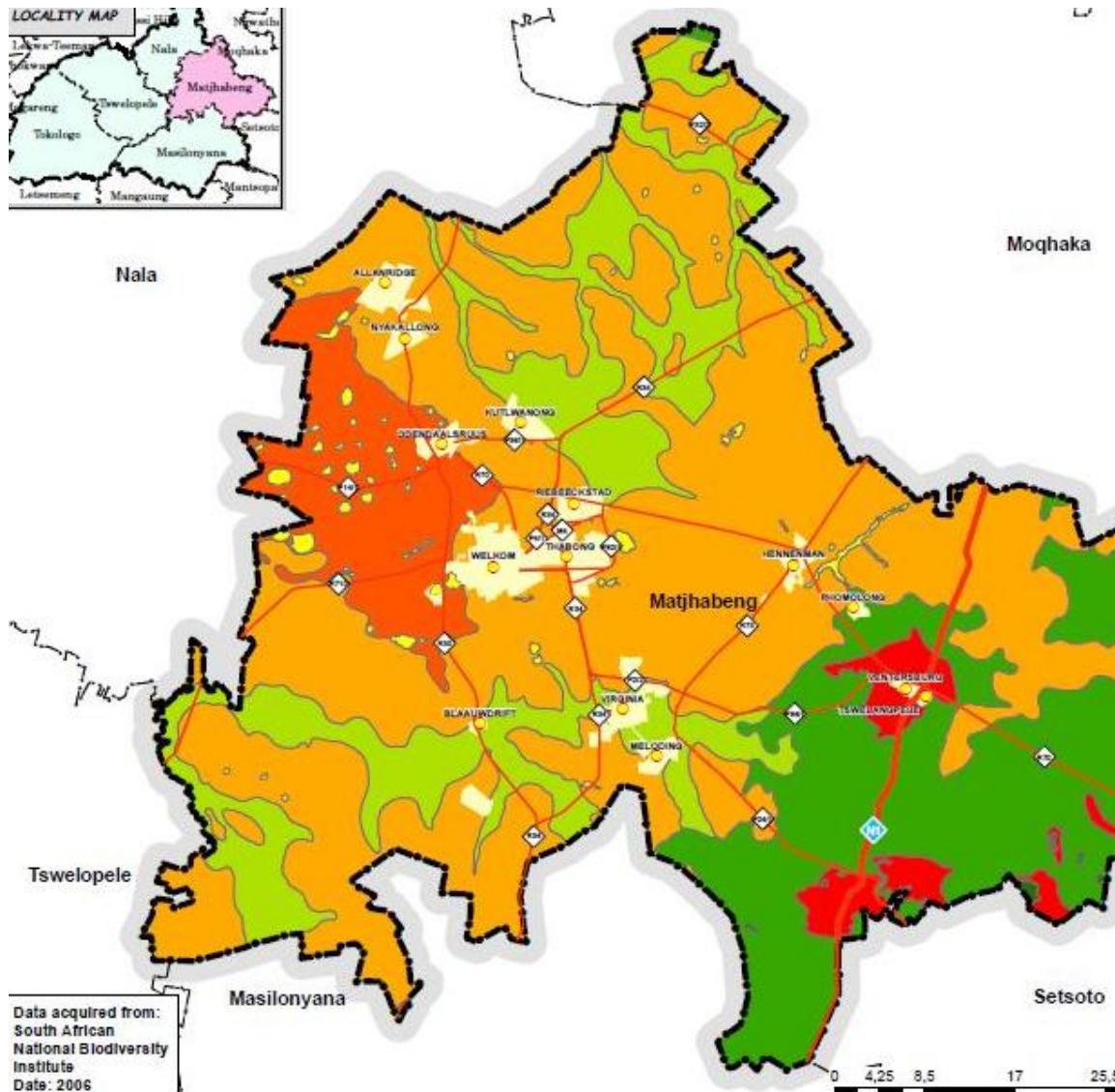


Figure 20: Vegetation types



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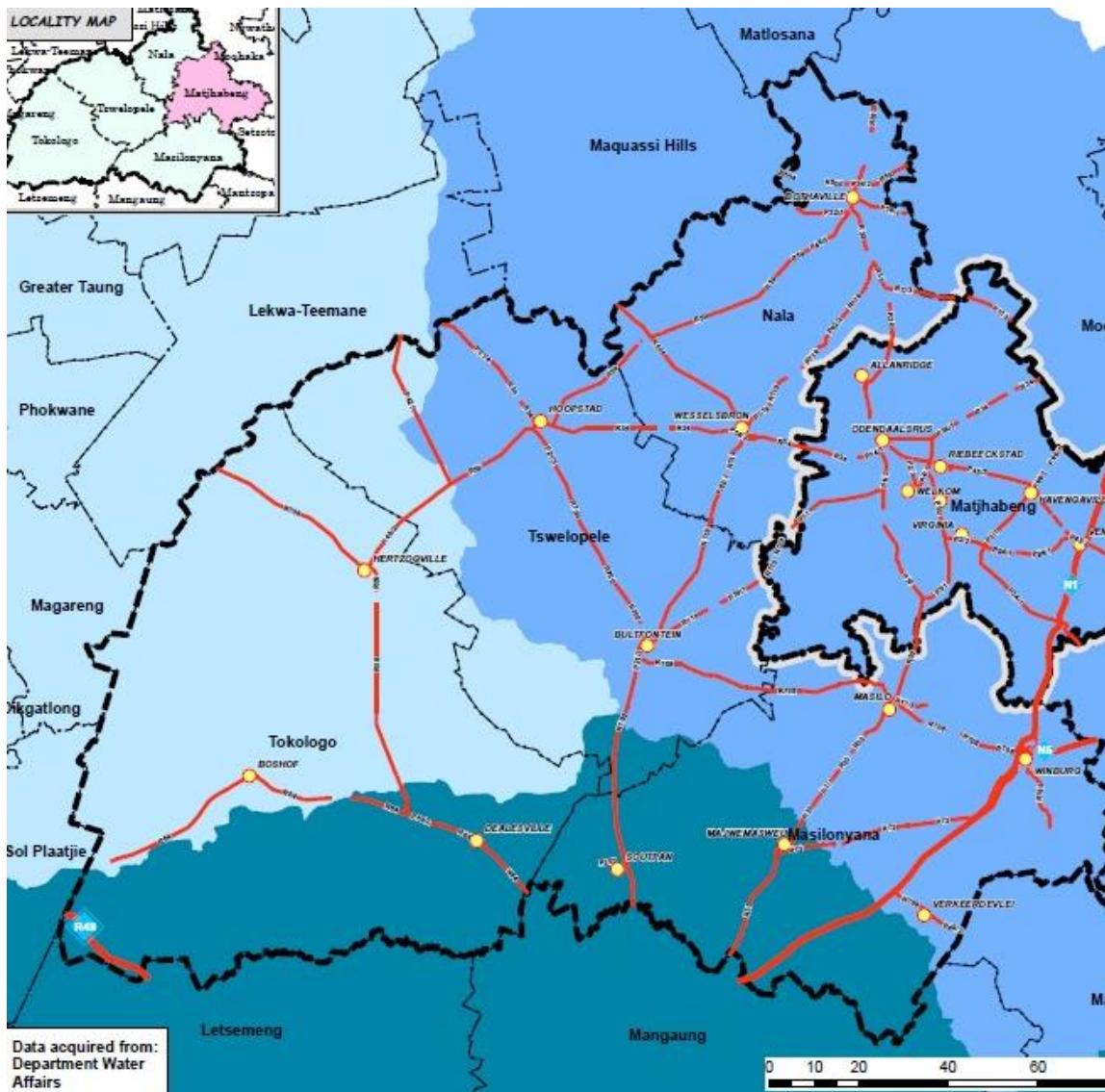


Figure 21: Water Management Areas associated with the Matjhabeng Local Management



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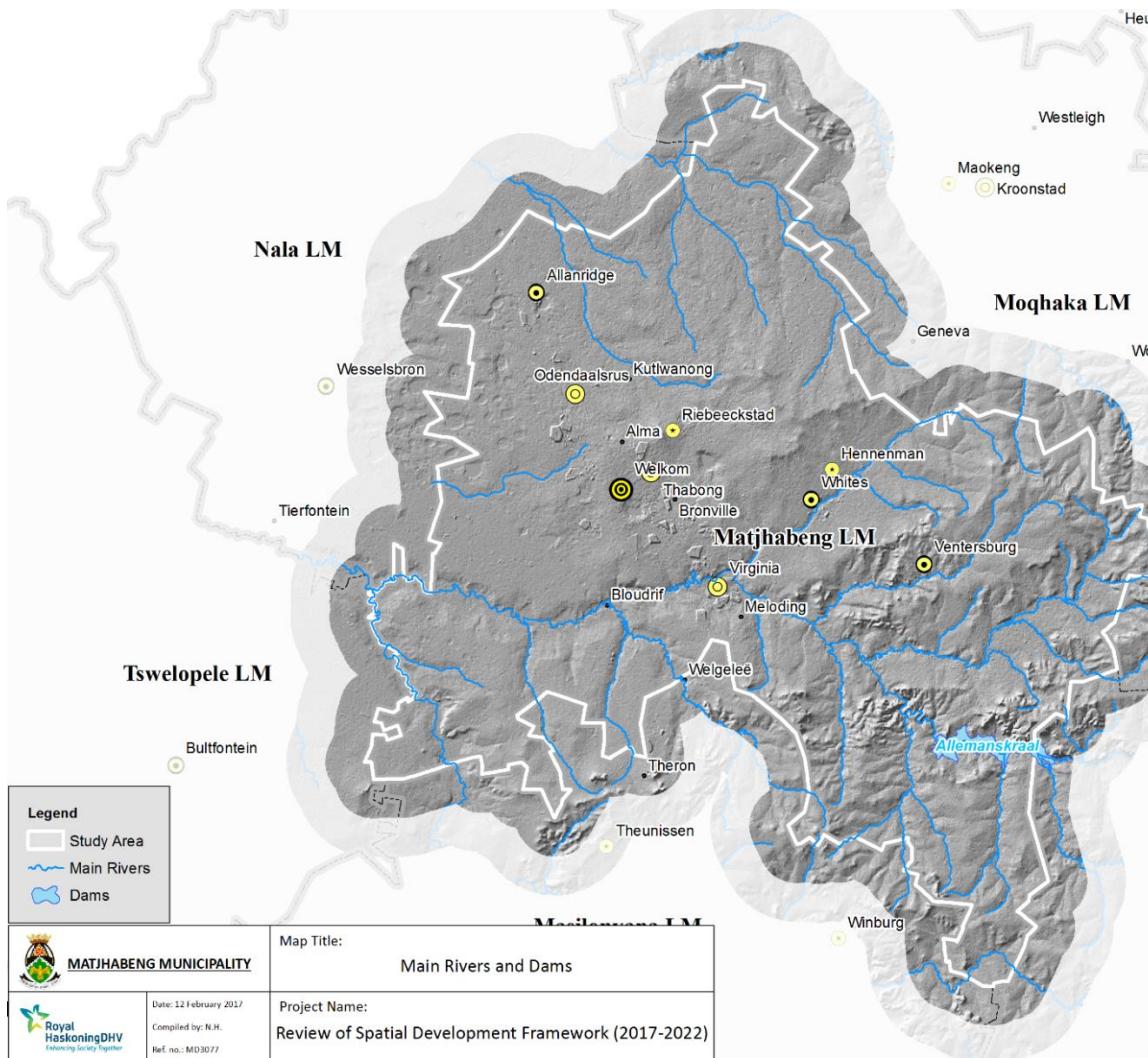


Figure 22: Main rivers and dams



4.1.5 Water resources

South Africa is known as a water stressed country, with climate variability as a major concern followed by human induced activities. Increased water stress affects the water quality, quantity and availability (Department of Water Affairs, 2011).

Water resources are vital for supporting all life forms on earth and the economy of the country. Therefore, for this report, it is important that surface water resources be evaluated in terms of both quality and quantity. This helps to ensure that the magnitude and nature of the water issues are understood, and effective management plans are implemented in time; particularly because surface water quality resources and their management, have previously been reported as poor in MLM.

Availability of surface water resources

The Free State falls within the Upper Vaal, Middle Vaal (which includes the MLM) and Upper Orange Water Management Areas (WMA). While the MLM falls within the Middle Vaal WMA. Each of these WMAs are divided into sub-areas which form the basis of the water requirements for the catchment area – MLM falls within the Sand-Vet subarea (Centre for Development Support, 2004).

Within these WMAs, the Vaal River is the dominant river system, and it represents the bulk of the surface water in the WMA. The Vaal River originates in the Upper Vaal WMA, along with the Wilge, and Liebenbergslei Rivers. In the Middle Vaal, the major rivers include the Mooi, Vet and Vaal. The Upper Orange WMA is the origin of the Modder, Riet, Caledon and Orange Rivers (Department of Water and Sanitation, 2004; Department of Water Affairs, 2011).

Surface water flows that are highly seasonal and variable, with flow in many of the tributaries intermittent. Water runoff is more prevalent in areas where slope differences are more extreme. The most runoff occurs in the Venterburg area followed by an area to the south-west of the Municipal area. Areas with the least runoff are located within the central area where the majority of the urban areas are located.

The Middle Vaal receives about 790 Mm³/a of water from the Upper Vaal. The quantity of transfers that the Middle Vaal receives from the other sources is not known, and most likely varies over time, making it difficult to quantify the volumes in this WMA. In addition, the Middle Vaal WMA transfers about 500 Million m³/annum to the Lower Vaal WMA (Department of Water Affairs, 2011).

There are two main dams found in the Middle Vaal WMA - Allemanskraal Dam on the Sand River and the Erfenis Dam on the Vet River. However, no dams are located in the MLM. However, water from the Allemanskraal Dam is used to service the MLM. The Allemanskraal Dam has a full capacity of 174.6 million cubic meters but currently the water volumes are at 29.4 million cubic meters (DWA, 2017). The largest user is the agricultural sector (134.7 Million m³/annum) for irrigation purposes, followed by urban and mining-and-bulk industrial (62 Million m³/annum) (Department of Water Affairs, 2011).

In addition, significant quantities of water are estimated to be lost through infestations by alien vegetation, much of which occur on the banks of the Vaal River. Nonetheless, there are no significant control structures regulating the flow in the Vaal River within the Middle Vaal WMA (Centre for Development Support, 2004).

Ground water resources

Groundwater occurrence is controlled by weathered bedrock, fractures in the solid bedrock (both vertical and horizontal) and unconsolidated weathered material collecting in valley areas. The character of the local aquifers is determined by: geological setting, and geomorphology topography and drainage patterns.

The Middle Vaal WMA is underlain by fractured aquifers, which are well utilised for rural water supplies. This aquifer is known as the Ecca and Adelaide Group. It is a low yielding aquifer and borehole yields have a median of between 0.1 and 0.5 L/S, with an estimated 54 million m³/a of groundwater available in this WMA (see Figure 23) (Stats SA, 2011a; Denis Moss, 2013).

Roughly 2 934 people have access to this water source with 299 boreholes registered in the MLM (see Figure 24); with a high concentration of boreholes adjacent to the urban areas and along rivers (Stats SA, 2011a; Denis Moss, 2013).

There could be many more boreholes than what has been registered, because new boreholes are being drilled on a continuous basis. In addition, information about boreholes within the mining area could not be obtained. The groundwater quality is measured in milli Siemens per metre (mS/m) using a conductivity metre. The ability of water to carry an electrical current depends on the presence of ions, their total concentration, mobility, valence, relative concentrations and the temperature measurement. The greater the concentration of ions in the water, the greater its ability to conduct electricity.

The amount of material dissolved in water is a major determinant of water quality, and can be measured in three ways: total dissolved solids, salinity (saltiness) or conductivity. Conductivity is an electrical measure of the



number of solids dissolved in a solution, i.e. chemical salts and minerals, present in the water (e.g. calcium bicarbonate, nitrogen species, phosphates, sulphates, chlorides, iron and other metals).

Water in our rivers and dams usually contain low concentrations of ions. If the concentration of ions increases because of pollution, its conductivity increases, the water will begin to taste salty and can become unsafe to drink. Water with a high concentration of ions can kill plants if it is used to water them. This type of water can dissolve (corrode) water pipes or even block the pipes if the ions come out of solution. Most of the plants and animals living in the water will suffer if that water is suddenly polluted by a high concentration of ions.

These contaminants are derived from a variety of sources. Fertilizers may be washed from a field into a river or dam. Factories and mines can also pump wastewater with a high conductivity into rivers and dams. Even from dissolved salts from the rocks around it. Rivers near the sea may also have a high conductivity because seawater has high concentrations of ions.

Depending on the concentration levels and sensitivity of the organism, a range of problems may be caused by this pollution. For example, when electric conductivity exceeds 370 mS/m children might experience mild side effects, heart patients and renal patients will experience increased blood pressure, and some individuals might experience a laxative effect caused by sulphur. Aesthetic problems of water with an EC as high as 150 mS/m, are that it tastes salty and water with an EC higher than 300 mS/m, fails to quench your thirst. Sensitive groups are children under the age of one year, people on alt restricted diets, such as heart and kidney patients and individuals with chronic diarrhoea. In addition, the water quality may impair industrial processes. For this reason, the Department of Water and Sanitation has developed a guideline in terms of 'fitness for use'.

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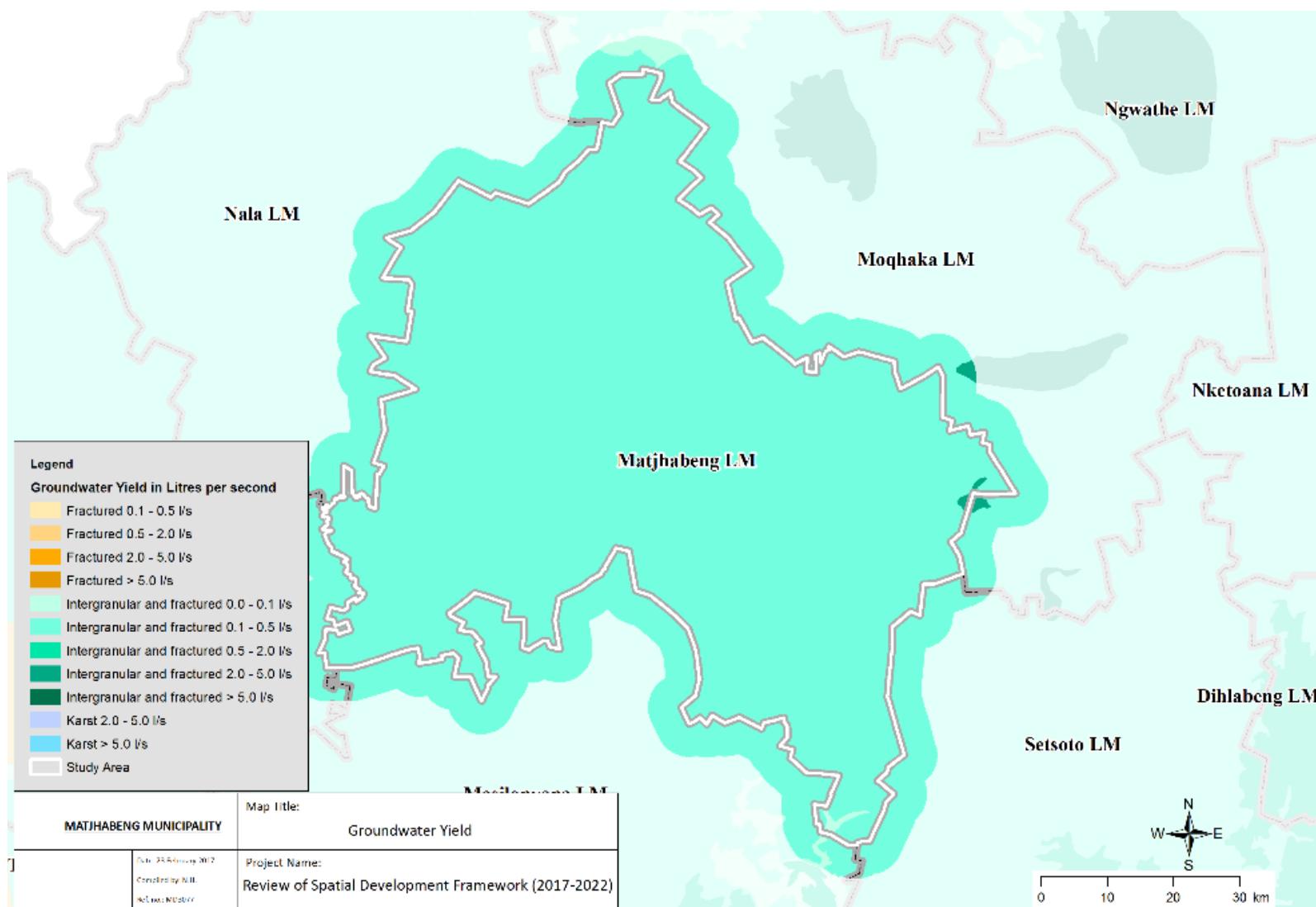


Figure 23: Available groundwater yield



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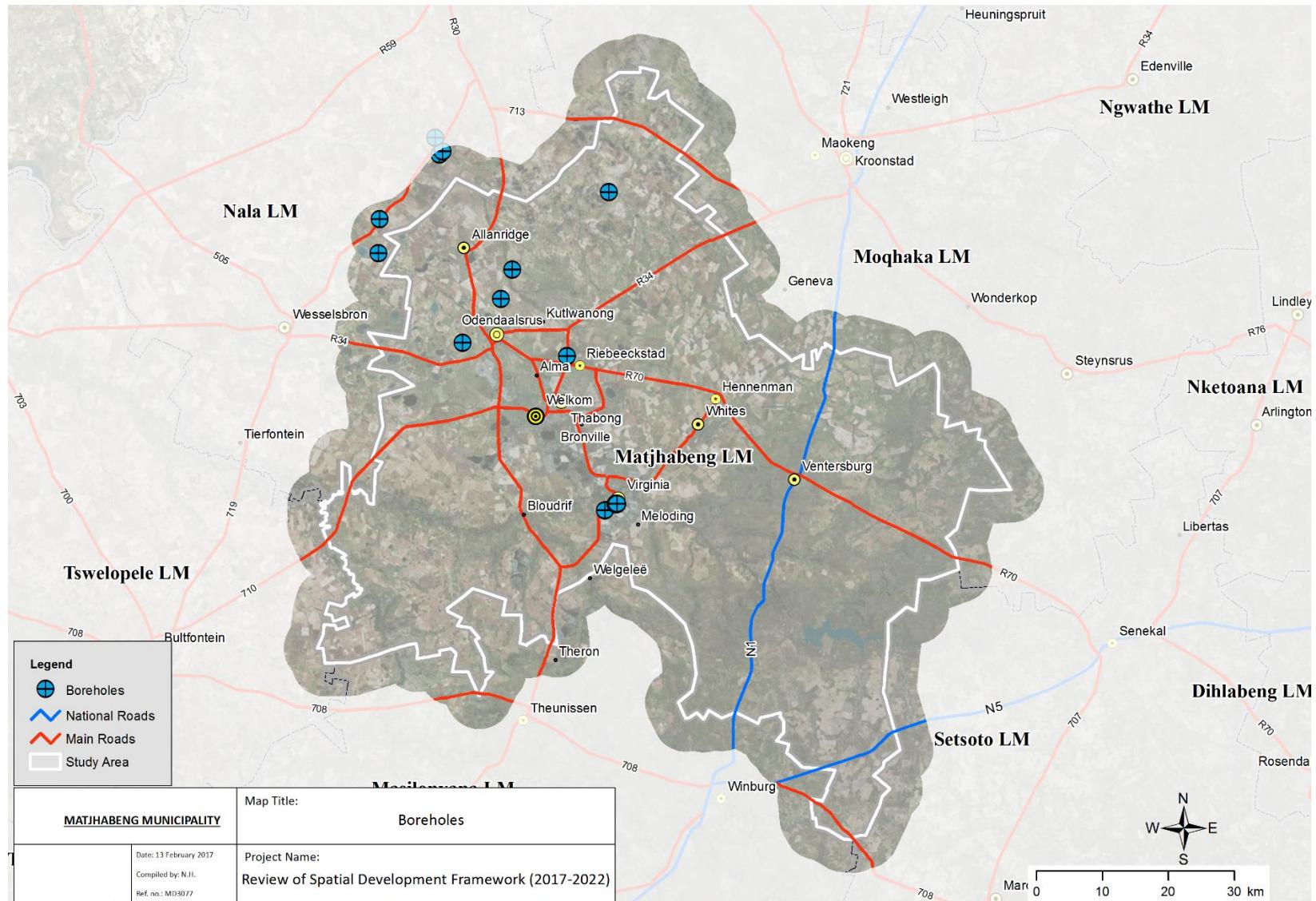


Figure 24: Registered boreholes



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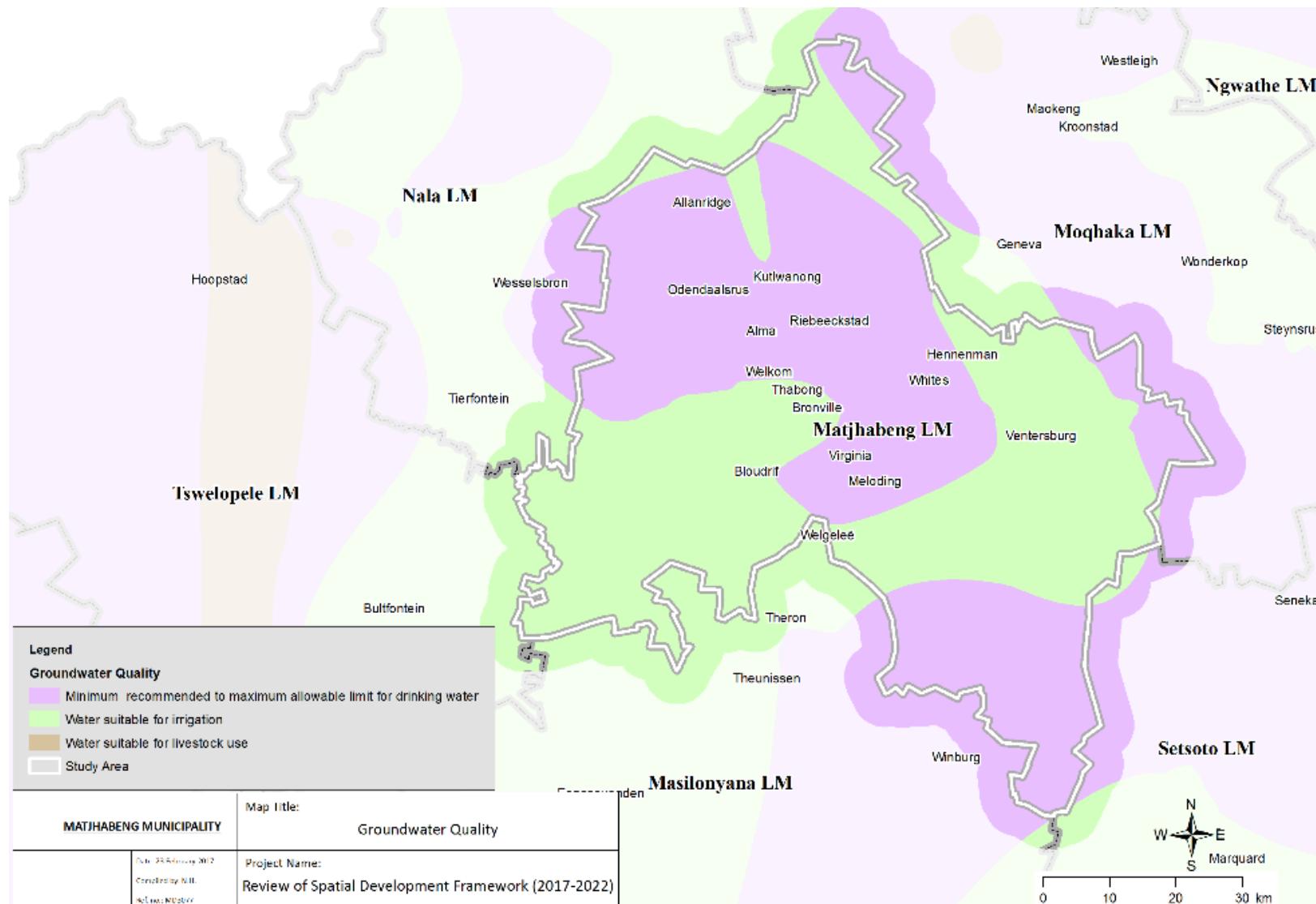


Figure 25: Groundwater quality

4.1.6 Land cover

[include a table with the land cover classes for 1990 and 2013/14; calculate rate of change and the rate of urbanisation]

The 2010 land cover data indicates that 56.4% of the municipality is grassland. This is followed by 34.8% of the area classified as agricultural, cultivated land. The remainder of the land cover classes are significantly smaller – see

Table 4-2: Land cover (National Geo-spatial Information, 2000)

Land cover category	Coverage as a percentage (%)		Percentage change
	2010	2013/14	
Thicket, bushland, bush clumps & high fynbos	0.6%		
Grassland	56.4%		
Forest plantations (Eucalyptus spp.)	0.1%		
Waterbodies	0.5%		
Wetlands	3.8%		
Natural surface	0.2%		
Erosion	0.1%		
Degraded land	0.2%		
Cultivated land	34.8%		
Urban / built up: residential	1.7%		
Urban / built up: commercial	0.1%		
Urban / built up: industrial / transport	0.1%		
Mines and quarries	1.5%		

Agriculture is the predominate land use across the municipality. The 1990 land cover data and the 2013/14 data illustrate the large coverage of cultivation (see Figure 13 and Figure 14 respectively). While, mining remains a major economic activity in MLM, with main nodes of activities associated with the main urban areas across the municipality (compare Figure 14 with Figure 15). There are also a host of other activities related to forestry, eco-tourism, housing (formal and informal), mobility networks and local economic markets. However, these are far less evident from the land cover maps.

4.1.7 Agriculture and land degradation

Over 90% of the land area is covered by cultivated lands and grasslands. Farming practices include irrigated and commercial dryland cropping; and, livestock such as cattle and sheep. Game farming, hunting and fishing are also present in the municipality, but to a lesser degree.

These agricultural activities, while critical for food security, compete with biodiversity and contribute to soil degradation (see Figure 19). South Africa is an arid country, and the MLM also experiences low rainfall quantities. It is therefore important that water conscious farming methods and crops are

made use of; but also, that these methods respect soil health and natural ecosystems. Significant rehabilitation of riparian areas and soil profiles if be required if this degradation continues, as it will impact on both agricultural practices (reducing the soil and land capacity) and the health of ecosystems.

4.2 Economy

4.2.1 Agriculture

Proportionally more Free State households (16.6%) are involved in agriculture than the national average (13.8%) in 2016, although this has shrunk from 24.4% in 2011. Nationally, the highest proportion of households that were engaged in agriculture was the Eastern Cape (27.9%) (Stats SA, 2016a).

'Animals only' farming constituted the main form of household agricultural activity in six of the nine provinces, the three exceptions being Western Cape (27.5%), Free State (31.9%) and Gauteng (18.3%). More than half the Free State households practice crop farming (52.2%). Nationally, 'animals only' and 'crops only' farming accounted for 42.9% and 34.6% of households in agriculture respectively (Stats SA, 2016a).

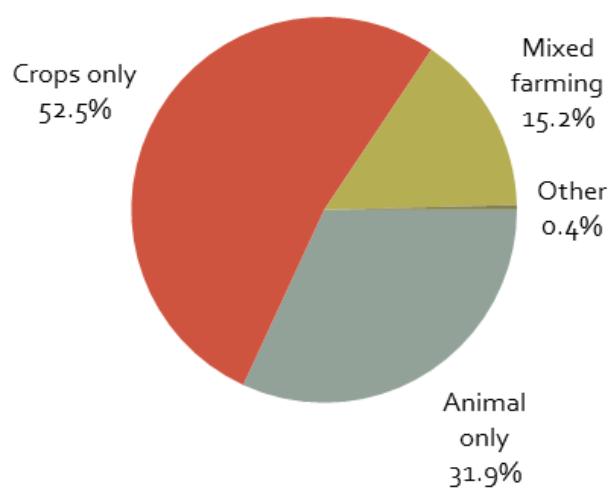


Figure 26: Distribution of agricultural households by type of agricultural activity Free State 2016 (Stats SA, 2016a)

Matjhabeng's agriculture comprises the production of field crops, horticulture crops, and livestock. Although no recent data is available, field crops contributed most to agriculture income, followed by livestock and animal production, and horticultural crops (Stats SA, 2016 as cited in Matjhabeng SDF, 2013). In 2014, the Free State produced 44% of the country's maize and 14% of its wheat (Department of Agriculture, Forestry and Fisheries, 2014). As with the mining sector, agriculture's contribution to the economy is reliant on commodity prices, and input costs, in addition to rainfall.

The area between Odendaalsrus, Wesselsbron and Allanridge has a good dryland maize-production potential yielding 3 to 4 tons per hectare, declining to a yield potential of 2 to 2.5 tons per hectare

towards the east. The soil in the Allanridge area generally has a high-water table, is typically found in areas with Avalon soils, and it is considered high-potential soil. These soils do well in dry years, whereas the Hutton soil found from Odendaalsrus to Kroonstad generally does better in wetter years (Majhabeng Local Municipality, 2013).

Irrigation takes along the Sand and Vet river, and this is managed by Sand-Vet Water Users Association (WUA).

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The map above illustrates areas of irrigated agriculture, dry land cropping and extensive livestock farming. The majority of Matjhabeng is characterised dry land cropping, with pockets of extensive farming in the south-eastern areas, while irrigation farming is practised on the Sand-Vet scheme.

Sand-Vet Scheme

The Sand-Vet Irrigation Scheme is situated to the south of Welkom, downstream of the Allemanskraal Dam in the Sand River and Erfenis Dam in the Vet River. The irrigation scheme was established in the early 1960s with the construction of these dams. the two dams having a combined storage capacity of 381.7 m³/m³/a (207.5 m³/m³/a and 174.2 m³/m³/a respectively) (Cele, 2013).

The total allocations for the Sand-Vet Irrigation Scheme is 75.9 million m³/a, at 7 200 m³/ha/a. A review of the Water Allocation Registration Management System (WARMS) database indicates that the total registered water use in the scheme area is 75.9 million m³/a, which is supplied from the canal infrastructure. (Tlou Consulting , 2013)



The Sand-Vet Water Users Association (WUA) consists of over 200 irrigation farmers, two municipalities and the Sedibeng Water Board. Sedibeng Water has two allocations namely 2.4 m³/m³/a (industrial) and 12.8 m³/m³/a.³

Figure 27: View of the Allemanskraal Dam wall (Tlou Consulting , 2013)

The total scheduled area for irrigation, including the river irrigators, is 11 835.4 ha and a total scheduled quota of 106.15 million cubic meters water per year on full quota (Cele, 2013).

The Erfenis Dam supplies water for irrigation to 5 489 ha. Irrigation takes place mainly along the left bank of the Vet River until the confluence of the Vet and Sand Rivers. There are approximately 72 irrigators in the Erfenis Irrigation Scheme area with an average irrigation area of 72.6 ha. Downstream of the confluence of the Sand and the Vet Rivers, another 1 297 ha of irrigation is mainly supplied directly from the Vet River (Tlou Consulting , 2013).

The Allemanskraal scheme supplies water to 5 049.5 ha of the scheduled area. For the Allemanskraal Irrigation Scheme, water is diverted from Allemanskraal Dam into the main canal. This canal then splits into two separate canals downstream of the dam, supplying water for irrigation on the left and the right banks of the Sand River. Approximately 349.2 ha is irrigated directly from the Sand River i.e. not supplied by the existing canal infrastructure (Tlou Consulting , 2013).

In 2013, an irrigation water use efficiency project was undertaken by Sasol and South African Irrigation Institute (SABI) who teamed up to advance efficient irrigation water use in the Vaal River catchment. The project aimed to develop and promote water use efficiency practices at farm level in

3 Personal communication with Mr A Labuschagne (CEO), Sand-Vet WUA. Tel: 057 352 7375. On 2 March 2018.

the area. The Sand-Vet project activities that were planned for implementation included the following (Cele, 2013):

- Evaluation of several irrigation systems to determine typical application efficiencies and distribution uniformities
- Provision of irrigation scheduling advice and monitoring services to improve water management practices
- Regular feedback of project results to the stakeholders and other interested parties by means of farmers' days and popular articles

Table 4-3: Water use efficiency accounting report history (2015 to 2017) Sand-Vet WUA (Sand)⁴

Year	Agriculture (x1000 m ³)	Industrial (x1000 m ³)	Municipality (x1000 m ³)	Household (x1000 m ³)	Downstream (x1000 m ³)	Other (x1000 m ³)	Total (x1000 m ³)	Released (x1000 m ³)	Total loss (x1000 m ³)	Loss (%)
2015	9 160	10 585	0	624	0	0	20 371	18 238	-2 129	-11.7
2016	2 662	6 022	0	624	0	0	9 307	11 930	2 623	22
2017	8 692	5 766	0	576	0	0	15 035	19 169	4 133	21.6

Increasing demand for water as well as below average rainfall during the last seasons put water resources in the Vaal River catchment under more pressure, and in February 2016 water restrictions were put in place. A Government Notice ⁵ limited the taking of water from the Sand-Vet Water Users Association water supply scheme by all users as follows:

- 92% restriction on water use for Irrigation purposes from the Allemanskraal Dam
- 85% restriction on water use for Irrigation purposes from the Erfenis Dam
- 40% restriction on water use for Domestic and Industrial supply to the towns of Brandfort and Theunissen within the Masilonyana Municipality as well as Bultfontein and Hoopstad within the Tswelopele Municipality.

By the 2017/18 water year the restriction on the Erfenis Dam had been lifted, and a 25% restriction was still applicable to the Allemanskraal Dam.⁶ Water restrictions hamper business growth, affects employment, and jeopardizes food security. Climate change and the resulting water crises faced in South Africa, means that drought needs to be increasingly managed.

As a result of the expected decline in mining activities as well as the projected negative population growth in some parts of the WMA, no significant change in the requirements for water are foreseen. The main issue of concern is the management of water quality within acceptable limits,

⁴ Sand-Vet WUA. [Online]. Available from:

https://www.wateradmin.co.za/sand/sand_history_loss_table.pdf

⁵ GN 19 in GG 39679 of 12 February 2016

⁶ Personal communication with Mr A Labuschagne (CEO), Sand-Vet WUA. Tel: 057 352 7375. On 2 March 2018.

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as this could be severely impacted upon by further urban and industrial development in the Upper Vaal WMA.

It is not anticipated that changes will be required for the transfer of water from the Vaal River to the Welkom-Virginia area in the near future. If any further change is required to the transfer scheme, this will be based on the demand or water requirements. However, because of economic considerations, it may be advantageous for more water to be obtained (purchased) from Allemanskraal Dam for supply to the Welkom-Virginia area, to replace a portion of the water supplied from the Vaal River.

Irrigated crops

The Sand-Vet scheme has a total scheduled area of 11 835.4 ha, at a scheduled quota of 7 200 m³/ha/a. The water quota (water allocation) of 7200 m³ per ha per year is too small to allow double cropping and therefore it is found that farmers tend to specialize in one crop per year (Cele, 2013).

The main types of crops irrigated in the Sand-Vet Irrigation Scheme are wheat, potatoes and maize, which comprise 78% of the crops under irrigation.

The typical crop mix across the scheme is indicated in the table below. The irrigators grow a diversity of crops including maize, wheat, sunflower and vegetables. In recent years the extent of maize grown has increased, as well as the inclusion of peanuts and pecan trees. Oats is no longer growing in the area. Commodity prices influence the type of crops planted each year, as well as rainfall that can complement irrigation.

In 2008 it was reported by the WRC that the main crops under irrigation were wheat (7 154 ha), potatoes (2 201 ha), and maize (2 201 ha).

Domestic water use allocation from Sand-Vet WUA

The Sand-Vet WUA has a contract with the Sedibeng Water as the bulk water service provider of Tswelopele LM, and Masilonyana LM, as well as the supply to the towns of Virginia, Welkom, and smaller towns within the catchment. The domestic water is registered with Sedibeng Water and is 15.2 million m³/a. This is supplied through the Sand main canal.

Table 4-4: Typical irrigated area in Sand-Vet Irrigation Scheme (Water Research Commision (2008) as cited in Tlou Consulting , 2013)

Crop Type	Total Crop Area	Percentage of total area (%)	Production	
			Average yield (ton per ha)	Top yield (ton per ha)
Wheat	7 154	48.00%	5	7
Potatoes	2 201	14.80%	22	27
Maize	2 201	14.80%	8	12
Oats (grazing)	759	5.10%	3LSU	3LSU
Lucerne (grazing)	664	4.50%	3LSU	3LSU
Soya beans	551	3.70%	2	3
Cabbage	414	2.80%	25	30
Rye grass	285	1.90%	3 LSU	4LSU
Sorghum	190	1.30%	3 LSU	4LSU
Pumpkins	172	1.20%	25	30
Carrots	86	0.60%	40	45

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Crop Type	Total Crop Area	Percentage of total area (%)	Production	
			Average yield (ton per ha)	Top yield (ton per ha)
Sweet melons	86	0.60%	25	30
Watermelons	86	0.60%	25	35
Grapes	34	0.20%	25	30
Tomatoes	17	0.10%	40	45
Total	14 900	100%		



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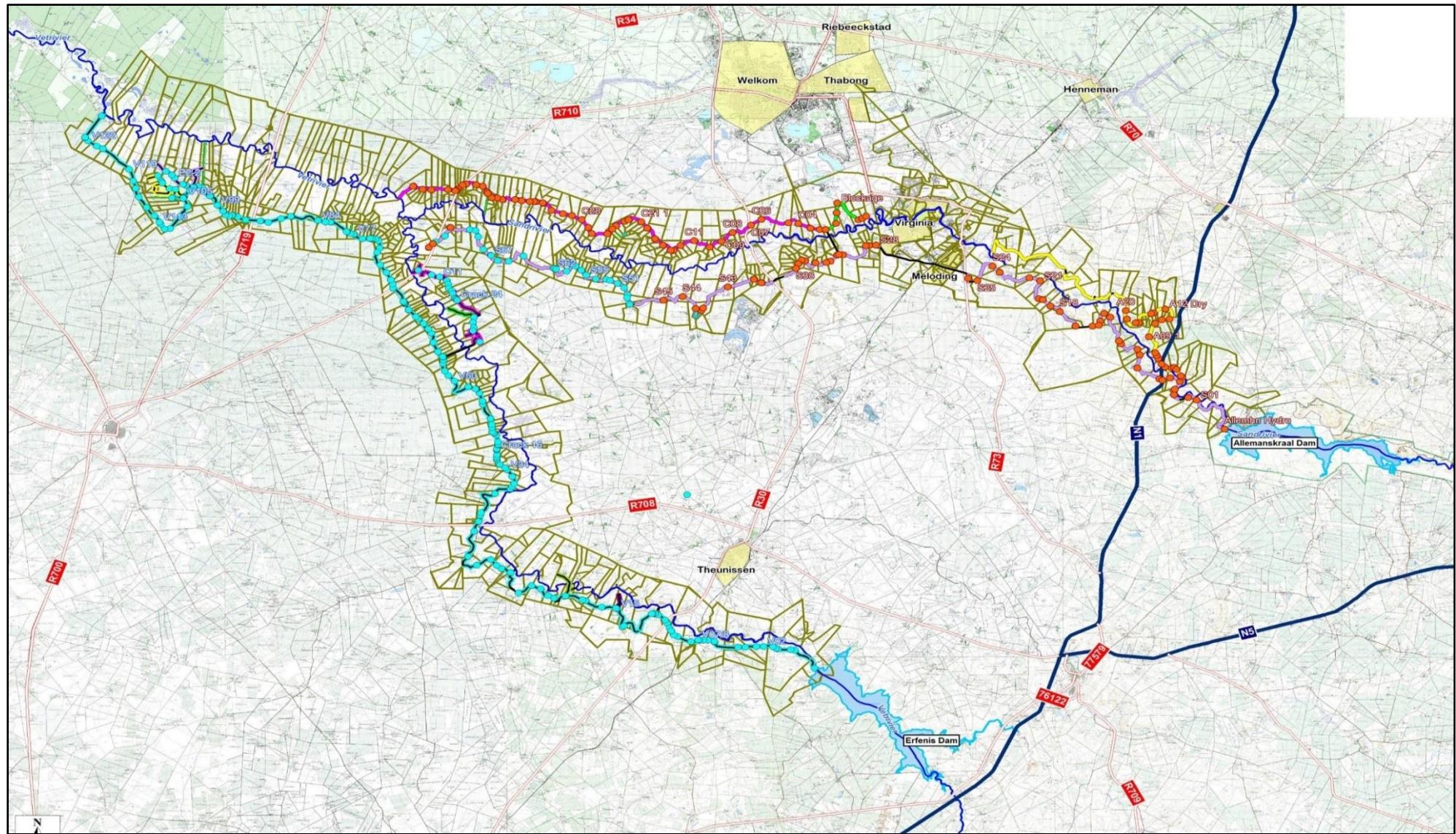


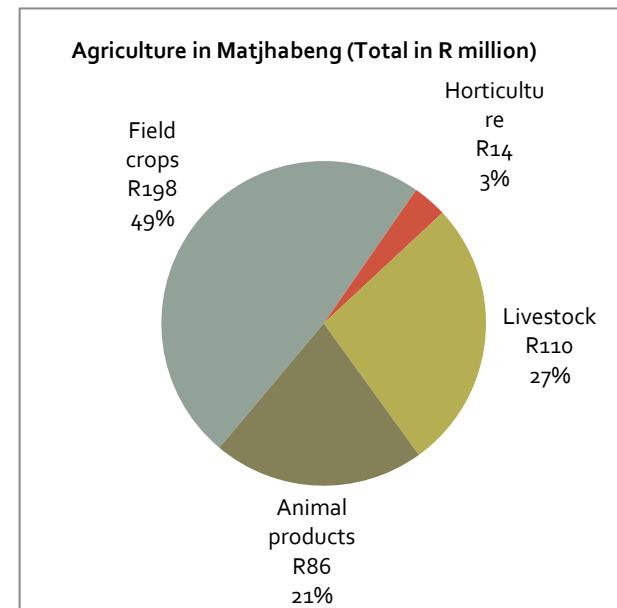
Figure 28: Sand-Vet irrigation scheme layout (Tlou Consulting , 2013).

Dryland crop production (Matjhabeng Local Municipality, 2013).

According to the 2013 SDF, grain represents 98% of the area planted annually in Matjhabeng. Grains such as maize, wheat, sorghum, sunflower seed, soybeans and groundnuts are planted, with maize being the largest contributor (75% of grain planted). Oil seeds e.g. sunflowers, soybeans and groundnuts, are the second largest group of grains, 10.6%, followed by wheat (9.9%), sorghum (4.6), fodder at (0.8%). Vegetables constitute less than 1%.⁷ However, several factors affect the mix of crops selected each season which include commodity prices, input costs, and expected rainfall.

Although maize is the dominant crop in terms of area planted, data indicates that only 5% of the Free State's was planted in Matjhabeng (Matjhabeng Local Municipality, 2013). The Free State is one of three major maize producing provinces, and in 2015/16 over 2 million tons of maize was produced on 700 000 ha with an average yield of 3.16 t/ha.⁸

Figure 29: Agriculture income per sector in R million 2011 (University of the Free State as (2011) as cited in Matjhabeng Local Municipality, 2013).



An estimated 41 200 ha is planted to maize as a dry land crop, and another 1 700 ha under irrigation. Areas with clayish soils and is more typically planted to sorghum and about 2 700 ha or 5% of total area is planted annually. In winter, wheat is planted, and mostly on dry land (approximately 5 800 ha). Oil seed crops are planted on an estimated to 5 600 ha, of which 480 ha is to groundnuts. Lucerne is the only dedicated fodder crop produced, with 450 ha produced under dry land conditions for grazing and 30 ha under irrigation. Potatoes (2 300 ha) are the only significant horticultural crop produced, although a variety of vegetables such as onions, green beans, and pumpkins are planted as well.

Field crops accounted for 49% of the total agriculture income within the Matjhabeng in 2011.

Although grain milling is an opportunity, this industry is dominated by large corporate industries near to Matjhabeng such as a Bothaville, where companies such as Pioneer Foods, and Bothaville Milling are located.

Agricultural opportunities

To determine the spatial needs of the agricultural sector and related activities, such as agro-processing, the plans of the large commercial cooperatives should be consulted, since expansions in this sector are largely driven by their capital expenditure plans.

In addition, the Free State Department of Agriculture and Rural Development has been mandated to prepare an agro-processing strategy for the province. The strategy is to focus on utilizing its raw agricultural produce. The department's declaration entitled, Repositioning the Free State province for agricultural value adding and processing towards 2030: from discussion to action, highlighted 10 key points, including the need for collaboration on development of agro-processing in the province in line with

⁷ Source of information is unknown. (SDF 2013?)

⁸ CEC

the National Development Plan, the Free State Agricultural Master Plan and the Free State Rural Development Plan.

The strategy will comprise elements such as natural resource management, skills and capacity development, funding and finance, value chain integration, development and market development, coordination and information management, spatial planning and promotion of functional rural settlements, and government as retailer and promoter of preferential procurement.

Involvement from organized agriculture, agribusiness and other private sector role players is expected. The department is to prioritize the necessary engagement to get the ball rolling, and is inviting all role players, particularly agribusinesses in the province, to be part of the process (Dean, 2017).

Livestock Production (Stats SA, 2011b)

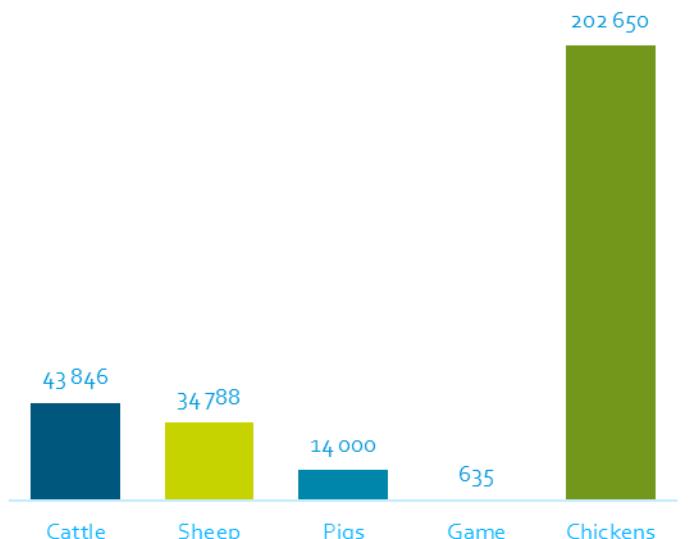
The most recent survey of commercial agriculture by magisterial district was undertaken in 2007 by StatsSA, namely *[South Africa] Census of Commercial Agriculture, 2007, Free State: Provincial Statistics for Selected Products*. The data in this section is therefore dated, but remains relevant in broad terms.

An estimated 16 300 head of cattle were marketed in the production year of 2007. Approximately 18 000 sheep were marketed in the same period, as well as 28 000 pigs. Almost 250 000 chickens that were sold were mostly culled hens from egg production.

Figure 30: Number of livestock on farm as at 28 February 2007 in the five magisterial districts of Matjhabeng (Stats SA, 2011b)

Extensive grazing areas occur mainly around Ventersburg and to the south of it. Cattle are grazed on dryland fodder crops. It is noted that most of the sheep occur in the Ventersburg district. Sheep are more vulnerable to stock theft, and thus farmed in less populated areas.

The main animal derived products included milk and cream, hide and leather as well as wool and chicken eggs. The total milk and cream production was estimated at 10 300000 liters. Wool production was estimated at 123000 kilograms per annum. Egg production was approximately 9 500 000 produced by 202 000 hens.



The contribution of agricultural activities to gross income gives an indication of the importance of these activities in a region. The largest income was derived from cattle, followed by pigs. Game contributed little in 2007, but since then the game industry has grown nationally.

Internal unit

Figure 31: Income from livestock in 2007 in the five magisterial districts of Matjhabeng (Stats SA, 2011b).

Comparing the livestock numbers in Matjhabeng to that of the province, pig production is sizable, with 30% of Free State pigs being farmed in the Virginia district. However, no recent information is available to determine whether this is up-to-date.

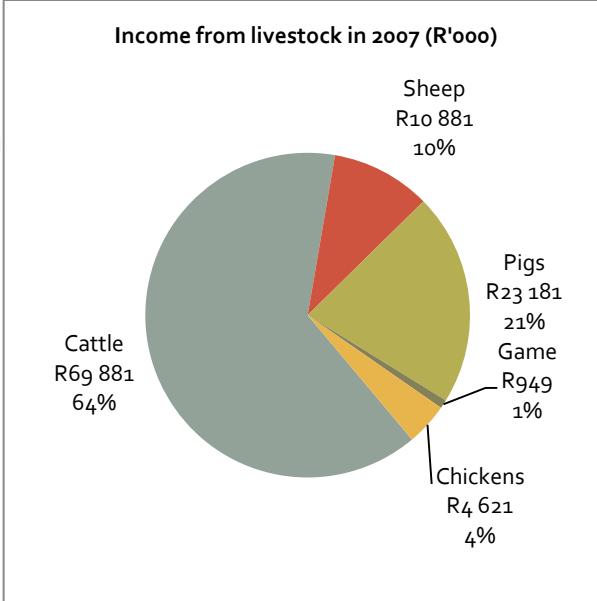


Table 4-5: Livestock numbers in Matjhabeng and the Free State at end February 2007 (Stats SA, 2011b).

Number of livestock on farm as at 28 February 2007	Cattle	Sheep	Pigs	Game	Chickens
Matjhabeng	43 846	34 788	14 000	635	202 650
Free State	1 280 150	2 026 277	46 739	20 026	29 784 822
% of Free State production	3.4%	1.7%	30.0%	3.2%	0.7%

With the relatively flat terrain, and dominant winds during August and September in the dry season, runaway fires need to be managed. Features such as roads, power line servitudes, irrigated agriculture, and rivers act as firebreaks, along with purpose made fire breaks.

Grazing capacity (Bezuidenhout, 2015)

[The following section relies heavily on Bezuidenhout, R. (2015) Time to re-assess your carrying capacity? Farmers Weekly June 16, 2015.]

Studies show that in 2011, 66% of South Africa's rangeland was in various stages of degradation, threatening sustainable vegetation, livestock and wildlife production, and ultimately farming profit. Veld condition and carrying capacity, usually expressed as the area in hectares needed to support either a mature or small stock unit, depends on plant cover, plant composition and production (Bezuidenhout, 2015).

A stocking rate exceeding the carrying capacity damages the veld, reducing animal performance and profitability. On the other hand, improving veld condition by sound management based on correct carrying capacity can increase it in the long term. Establishing the correct carrying capacity on a farm is not easy. Even though the agriculture department has recommendations for every district, carrying capacity can vary considerably from farm to farm and camp to camp.

For example, the norm for the red grass veld of the central Free State is 6ha/MLU, but research shows it can vary in practice between 5ha/MLU and 12ha/MLU depending on veld condition. So, while the department's recommended carrying capacity is a practical guide, it cannot be applied everywhere. Veld condition forms the best basis for determining carrying capacity.

Carrying capacity, has many factors that influence it. And, when any specific factor – from rainfall to management – changes, it alters the carrying capacity to a greater or lesser extent. Usually, rainfall is

more important in arid areas than in areas of high rainfall. But in most of Southern Africa, the factors that dictate carrying capacity are, in order of importance: rainfall, available soil moisture, soil type, soil depth, evaporate-transpiration, veld condition, topography and livestock type.

Veld condition assessment must be linked to veld management which, in turn, is linked to balancing the needs of the livestock with the needs of the vegetation. The ideal is to apply a stocking rate based on a realistic carrying capacity that will allow the veld ecosystem to be used sustainably. The length of the grazing period will obviously have an influence on utilization of species. As it extends, the high-preference species will decline, and less palatable species will be grazed. Sheep tend to maximally graze preferred grasses before grazing relatively less palatable species.

To maintain a sustainable stocking rate, an evaluation of grazing conditions should be undertaken every two or three years. Changes in the veld should be noted, and if sub-climax or pioneer species are replacing indicator climax species, management may be at fault.

Adapted breeds that can be marketed off the veld after weaning should be chosen. These can usually obtain all their nutrition from the veld instead of licks. A farmer should avoid upsetting the grazing ecosystem by disturbing the balance between the needs of the grazing animal and the vegetation, as it can negatively affect sustainable income and increase soil degradation.

The grazing capacity of the Matjhabeng ranges from 4 to 8 per large stock unit per ha, and it deteriorates from west to east.

To be replaced

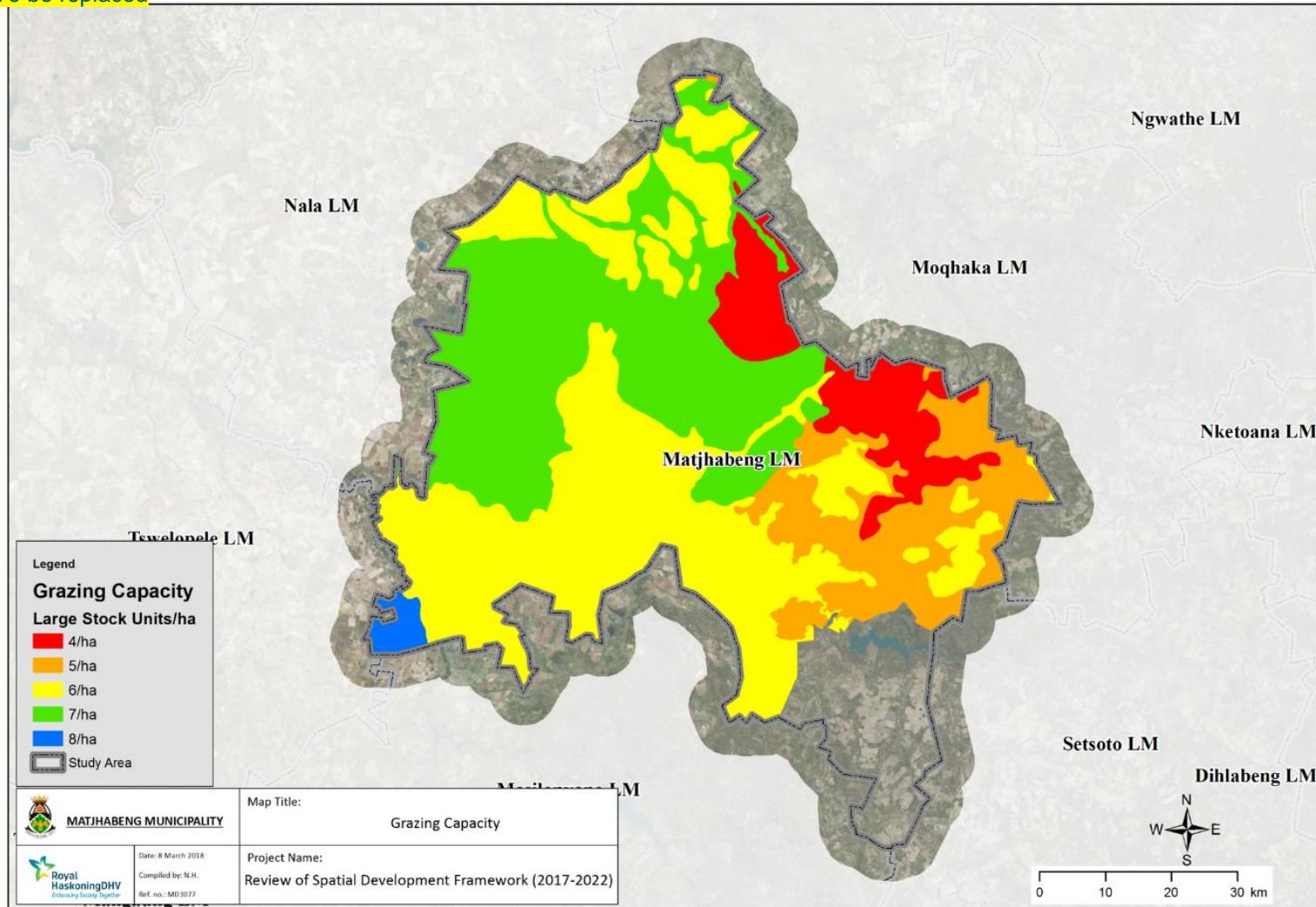


Figure 32: Grazing capacity – map to be updated

4.2.2 Mining

Mining is considered the most important economic sector in the municipality, yet it constitutes only about 1.5% of the land cover (See Table 5)..

The Witwatersrand gold-producing area is underlain by an underground geological formation also known as the Witwatersrand Basin, which is elliptical and stretches over an arc of roughly 400km traversing across the Free State, North West and Gauteng provinces. The basin is covered by younger sedimentary and volcanic rocks and the underlying sedimentary rock has been laid down over a period which ended about 2,700 years ago, when widespread faulting resulted in extensive lava flows. Gold occurs along the northern and western margins of this basin, but not in a continuous band.

The discovery and development of the Free State Goldfields, which is in the south-western corner of the Witwatersrand basin, can be traced back to 1885. In 1938, after intense exploration, which started in 1936, three gold bearing conglomerates were identified. Further drilling led to the identification of the Basal Reef in March 1939, which led to a score of mines being developed, a clear majority of these in the area which today comprises the Matjhabeng Local Municipality. Today mining takes up approximately 1.5% of the land area of the municipality.

Apart from producing gold, the gold mines in the Free State also supply a substantial portion of the total silver produced in the country, and large concentrations of uranium occurring in the gold-bearing conglomerates of the gold fields are extracted as a by-product.

Mining geology

Currently gold mining in the Free State Goldfields takes place in the basin situated on the Kaapvaal Craton, which is filled by a 6-kilometer thick succession of sedimentary rocks, extending laterally for hundreds of kilometres, and which is cut into two sections by the De Bron Fault.

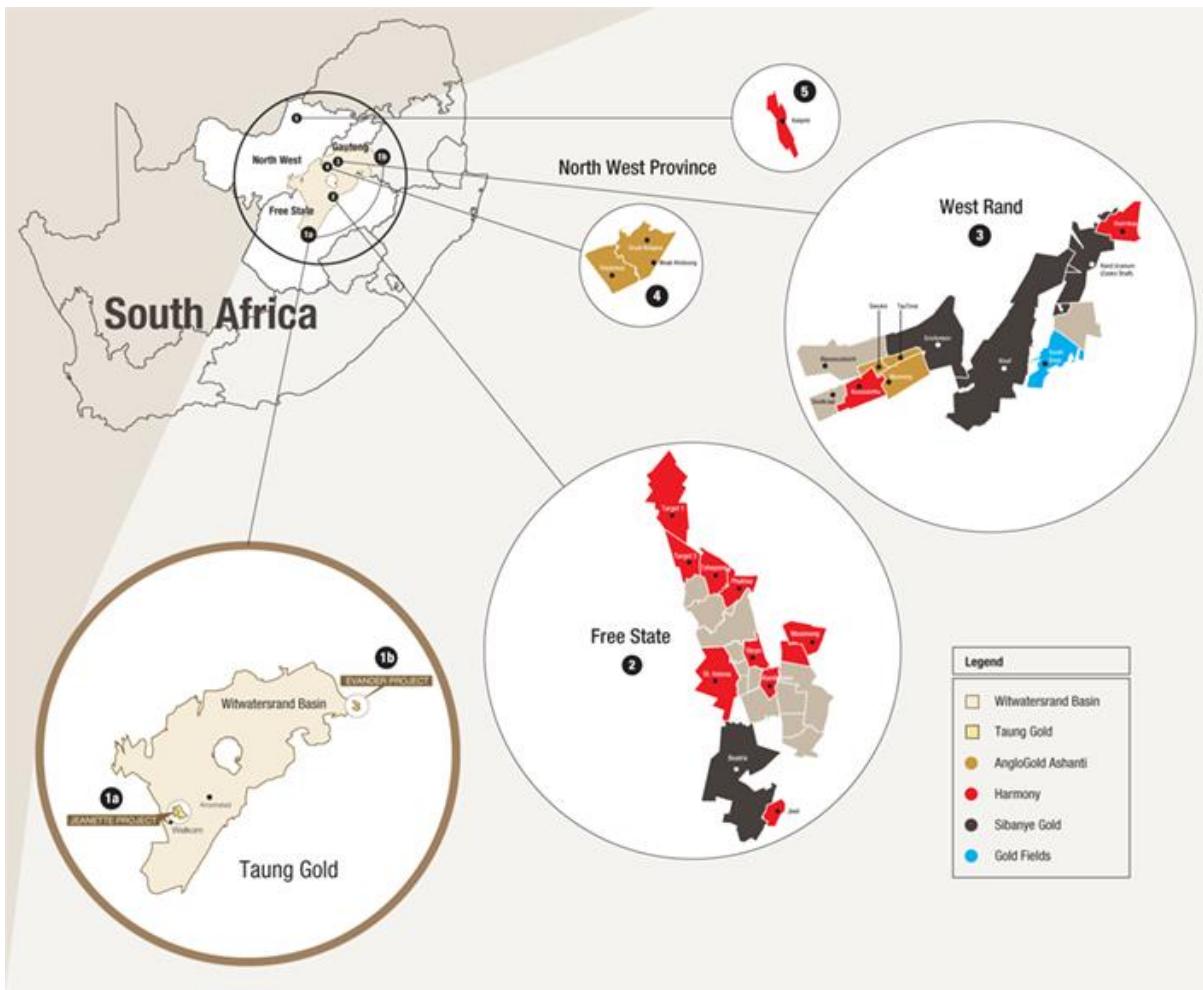


Figure 33: Gold mining in South Africa (Chamber of Mines, 2017)⁹

The De Bron Fault has a vertical displacement of approximately 1,500m as well as a lateral shift of 4km, which allows for the reconstruction of ore bodies of existing mines should this be required. Several other major faults lie parallel to the De Bron Fault, with dips in mines here occurring mostly towards the east, averaging 30 degrees but becoming steeper towards the De Bron Fault. Dips occurring in mines east of the De Bron Fault dip towards the west at 20 degrees, although mining companies have measured dips of up to 40 degrees in more structurally complex mines. The uplifted horst block of the West Rand Group sediment lies between two blocks with no reef preserved. The western margin area is structurally complex and is bound by synclines and reverse thrusts faults. Reefs sub-crop against overlying strata towards the south and east.

The deep-level underground mining generally exploits the narrow, mostly shallow dipping tabular reefs of which the Basal Reef is the most common reef horizon. This reef varies from a single pebble lag to channels of more than 2m thick and is commonly overlain by shale, thickening northwards. The Leader Reef is the second major reef and is located 15-20m above the Basal Reef, and is predominantly mined to the south as it becomes poorly developed with erratic grades towards the north. It consists of multiple conglomerate units, separated by thin quartzitic zones, which can total up to 4m thick. The B Reef is located 140m stratigraphically above the Basal Reef. This reef is a highly channelized, within which the ore grade is excellent but outside the channels there is no grade. Located approximately 40m above the B Reef is the highly channelized A Reef, consisting of multiple conglomerate bands of up to 4m thick.

9 Taung Gold. [Online]. Available from: <http://www.taunggold.com/our-business/jeanette-project>

The Beatrix Reef varies from a single-pebble lag to a multiple conglomerate, often indicating a mixture of the reef with some of the overlying lower grade VS5 material, which is a mixed pebble conglomerate.

Some of the other reefs currently exploited in the goldfields are the Elsburg-Dreyerskuil conglomerates, which comprises of 35 separate reef horizons, staked in a wedged shape, often separated by quartzite beds. The Elsburg Reef is truncated by an unconformity surface at the base of the overlying Dreyerskuil Reef. The Elsburg dips steeply to the east with dips becoming progressively shallower. The thickness of the intervening quartzites reduces close to the sub-outcrop, resulting in the reef coalescing to form composite reef packages that are currently exploited. The Dreyerskuil similarly consists of stacked reefs that dip shallowly to the east, but although these reefs tend to be more laterally extensive than the Elsburg Reefs, they tend to be less numerous.

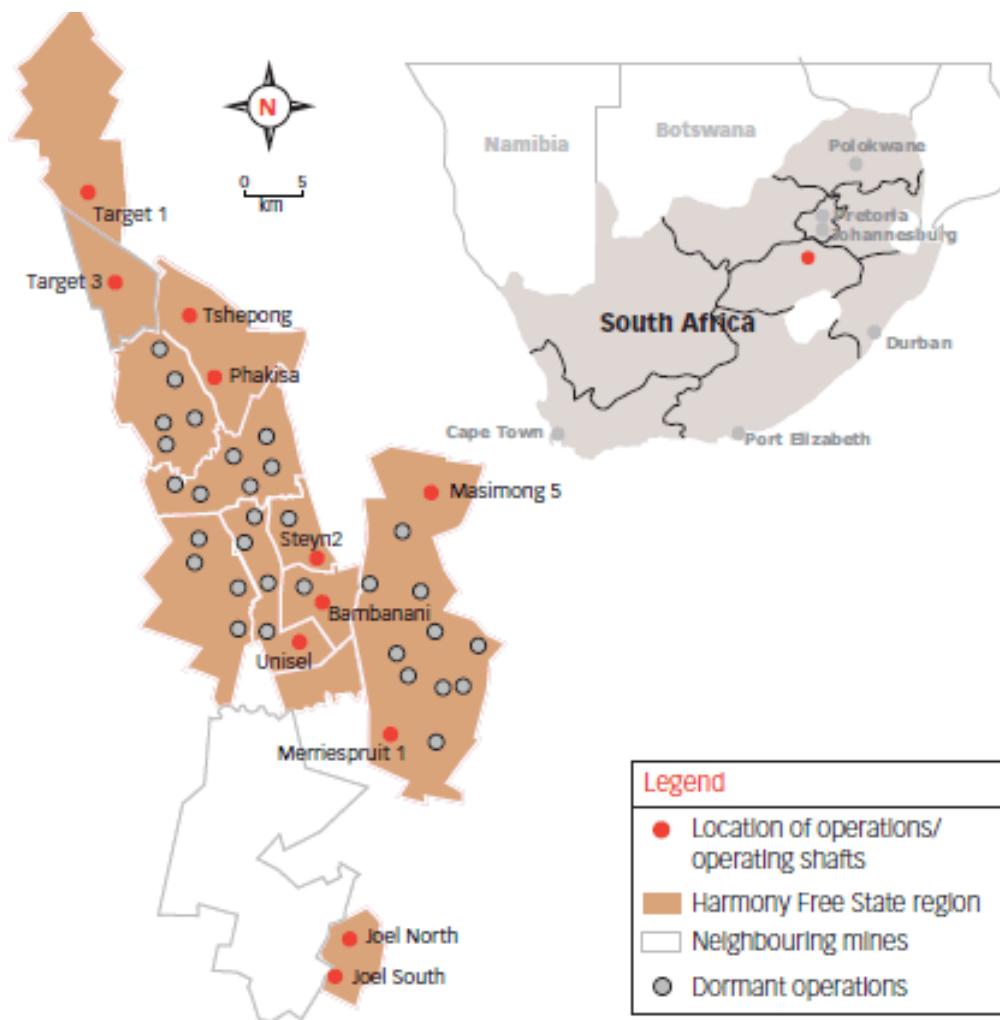


Figure 34: Harmony mines (Harmony and Goldfields, 2013).

Mining operations

The core of the gold mining activities in the municipality is primarily located in a stretch of land from Allanridge stretching south, including Odendaalsrus, Welkom and Virginia, and comprising 16 362.18ha (94 farm portions). The dominant mining houses are Harmony Gold Mining Company and Sibanye-Stillwater, with Taung Gold International aiming to become the third largest mining company in the municipality. Gold One has some undeveloped interests in the Ventersburg area.

Most of Harmony Gold's mines, including tailings treatment, are located within the municipality. The mines operating in 2108 are:

- Tshepong and Phakisa (now operating as one mine), situated near Odendaalsrus

- Target 1 and Unisel, situated near Allanridge
- Masimong, situated near Riebeeckstad
- Joel, situated near Theunissen
- Bambanini, situated near Welkom

As the respective mines falls within the Middle Vaal Water management area, the mines are sub-divided into 5 sub-basins as indicated below (see Figure 14 for the location of mining activities, and Figure 35 and Figure 36 for mine tailings).

The Theunissen Sub-Basin consists of Joel and Beatrix gold mines, stipulated between the De Bron and Stuurmanspan Faults. These mines are not connected through mining, but hydraulic connectivity does exist through the geological structures. Beatrix gold mine pumped in the order of 30 mega litres of water per day (Ml/day), from the Witwatersrand aquifer during the 1990's. This has resulted in a dewatering cone developing in the aquifer, which has dewatered part of Joel mine as well, to the extent that groundwater inflows to Joel seldom exceeded 10 Ml/day. Groundwater abstracted from the mines is allowed to evaporate on the mine property, and some is piped to Welkom, where it is also evaporated.

The Oryx Sub-Basin consists of Oryx gold mine. This mine is isolated from the other mines and the Stuuranspan Fault in the east and the Border Fault in the west, mark its boundaries. This mine has been plagued by large groundwater inflows (60 Ml/day). This water also originates from the Witwatersrand aquifer and temperatures as high as 60° Celsius are recorded. Groundwater which is pumped from the mine is left to evaporate.

The Virginia Sub-Basin consists of the Harmony gold mines (Harmony original, old Virginia, old Saaiplaas, old Erfdeel and old Merriespruit). These mines are all interconnected, and the De Bron Fault marks its western boundary.

The Welkom Sub-Basin consists of the President Steyn (south), St Helena, Harmony (President Brand and Unisel), Freegold (Matjhabeng and Bambanani) and ARM gold mines. The Border Fault forms the western boundary and the Welkom goldfield is separated from the Virginia sub-basin by the De Bron Fault structure.

The Odendaalsrust Sub-Basin consists of the free gold (Tshepong and Jeanette), President Steyn (north) and Target gold mines. The Border structure forms the western boundary and mining to the east is restricted by the Dagbreek fault.

For the Free State Sub-Basin, a regional approach to dewatering may be more effective in reducing the groundwater levels. Pumping rates generally range from 2-23 Ml/day. It does not seem likely that water will decant from any of the gold mines shafts in this region after cessation of mining and flooding of mine workings. However, the serious threat of contamination of the shallow, good quality water from the Karoo aquifer, through the residue deposition on surface or through the large-scale evaporation of saline water pumped from the deep Witwatersrand aquifer, needs to be addressed.

Bambanini is the most profitable mine in the Harmony group, whilst Phakisa has mineral reserves of approximately five million ounces of gold.

Sibanye Gold (now called Sibanye-Stillwater) came into existence because of Gold Fields' decision to unbundle its 100%-owned subsidiary, GFI Mining South Africa, which held all its South African mines, except South Deep. In the process, Sibanye-Stillwater became the owner of Beatrix gold mine. Subsequently Sibanye and Harmony swapped mining right to properties adjacent to their Beatrix and Joel mines. The transaction created value for both companies because it allows the early and optimal extraction of resources, which are now more readily accessible for both mining houses.

Internal use only

In May 2014, Sibanye concluded the offer for Wits Gold's exploration projects located in the municipalities, adjacent to the Beatrix.

Taung Gold International owns the Jeanette Project, which is situated near Odendaalsrus, and which shares a common boundary with Harmony's Target gold mine. The project belonged to AngloGold, who stopped all work at Jeanette in 1955, resulting in the mine not producing an ounce of gold in the 65 years of its existence. In November 2001, ARM Gold/Harmony became the owners of all AngloGold's Free State gold mines, including the Jeanette Project. Old technology and other opportunities persuaded both AngloGold and ARM Gold/Harmony to leave the property largely untouched. In June 2008, Taung Gold International purchased the entire Jeanette Project and with the introduction of new technology plus the availability of infrastructure and skills, it appears as if mining the project has become viable. The project has the potential of a maiden probable reserve of 7.1 million ounces of gold. According to its website, the company has applied for the consolidation of the neighbouring properties to develop a large scale, coherent mine, which will have a target of 9.6 Moz (million ounces of gold) JORC- and SAMREC-compliant indicated resource on the Basal Reef. The JORC (Australasia) and SAMREC (South African) are resource reserve codes that are considered acceptable world-wide for economic investment and market-related reporting. Feasibility work done on the project predict a compliant probable reserve of 7.1 Moz in ore that can be brought to surface at an average gold grade of 11.5 g/t. As of February 2018, planning is at the pre-feasibility level and is expected to progress to a bankable feasibility study.



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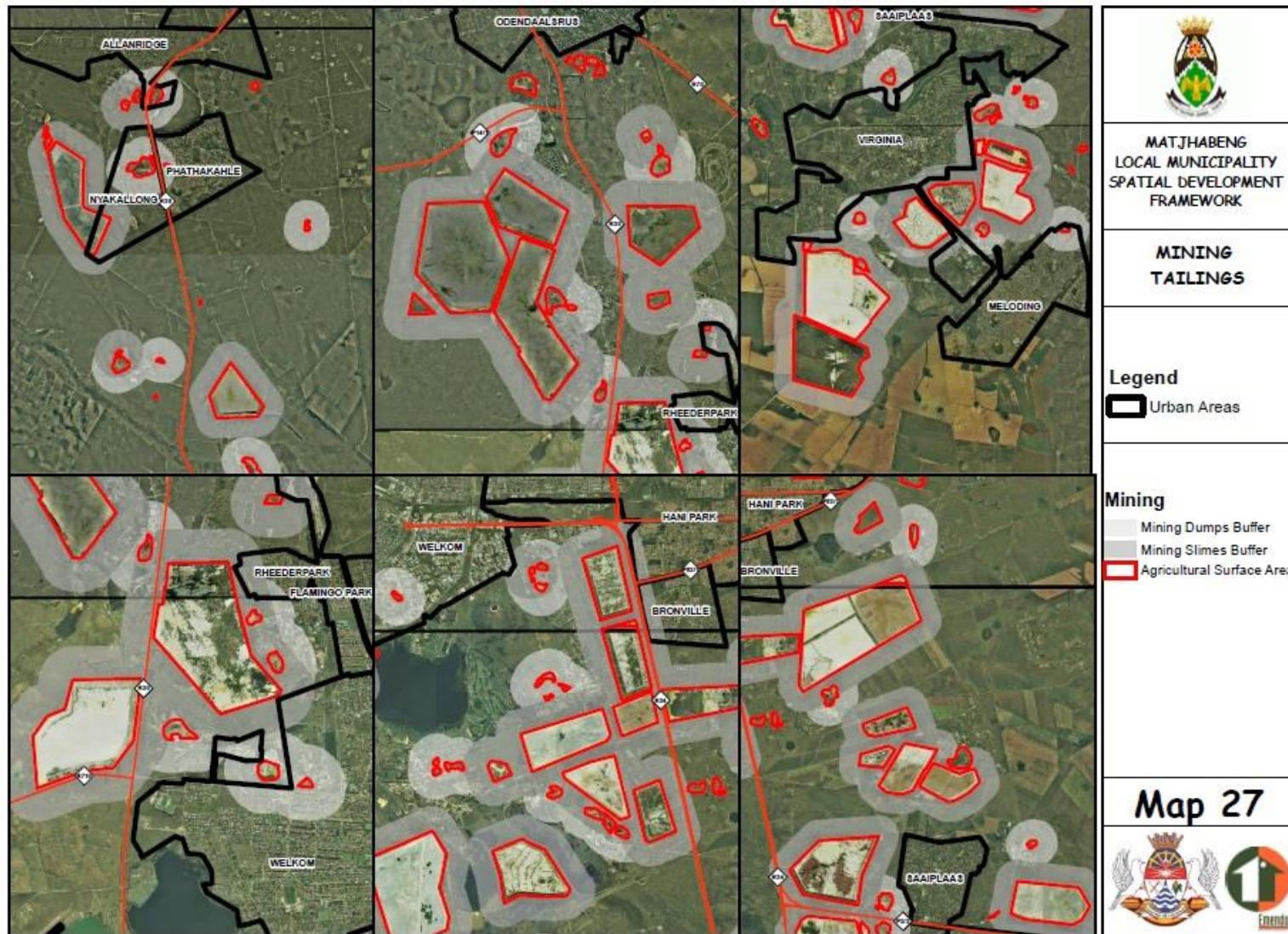


Figure 35: Mining tailings



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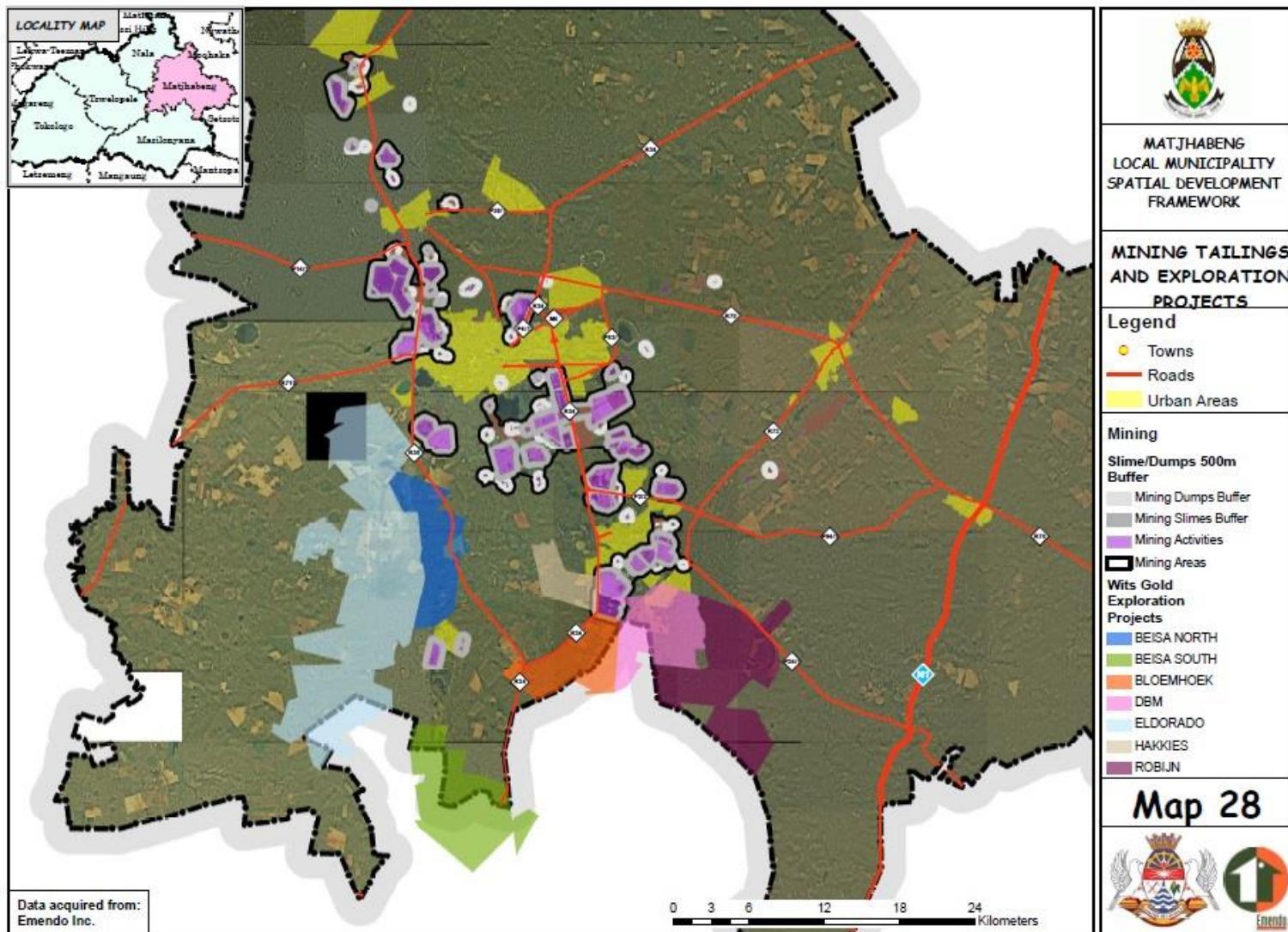


Figure 36: Mining tailings and exploration projects across the MLM



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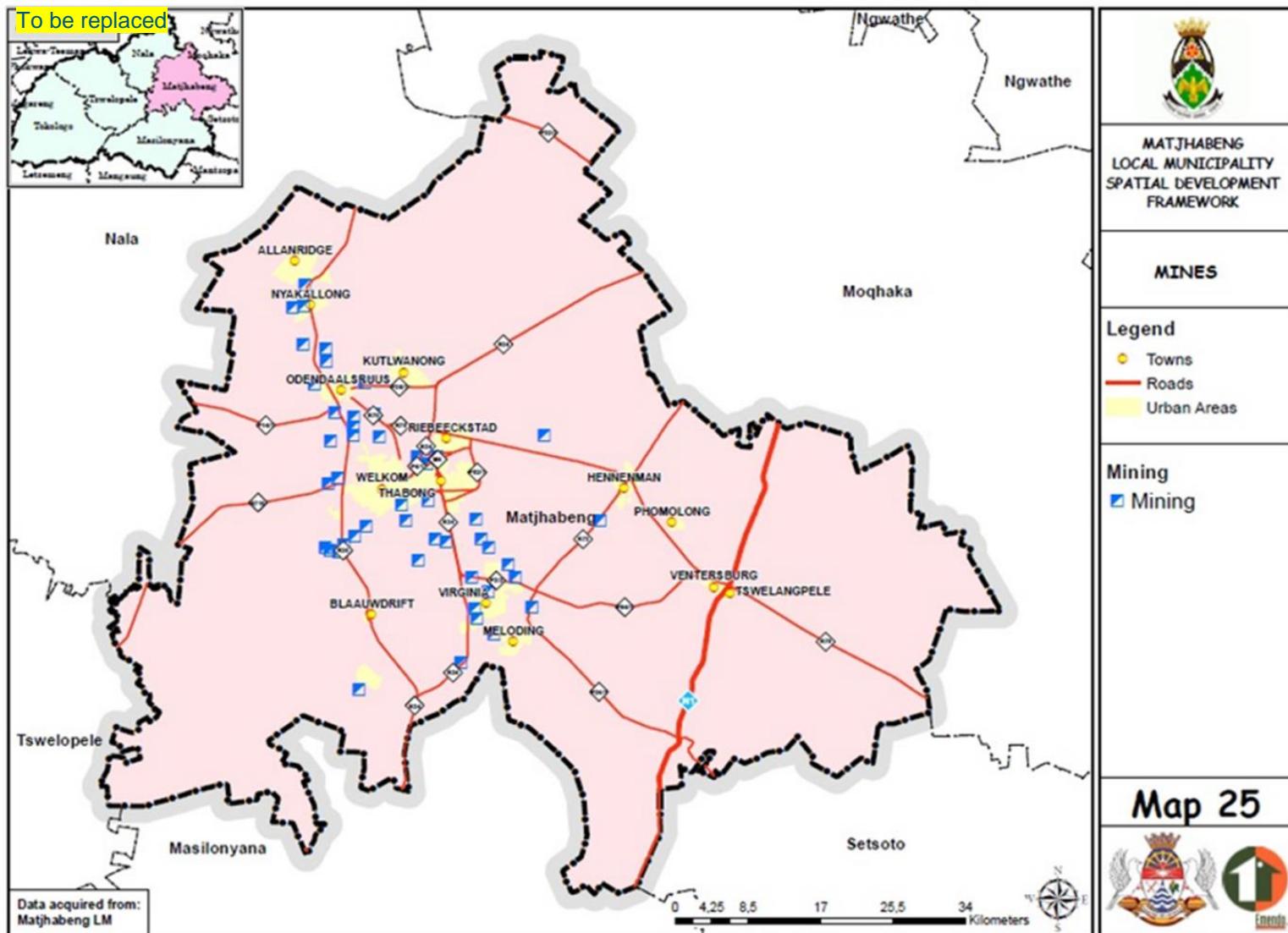


Figure 37: Mining operations map



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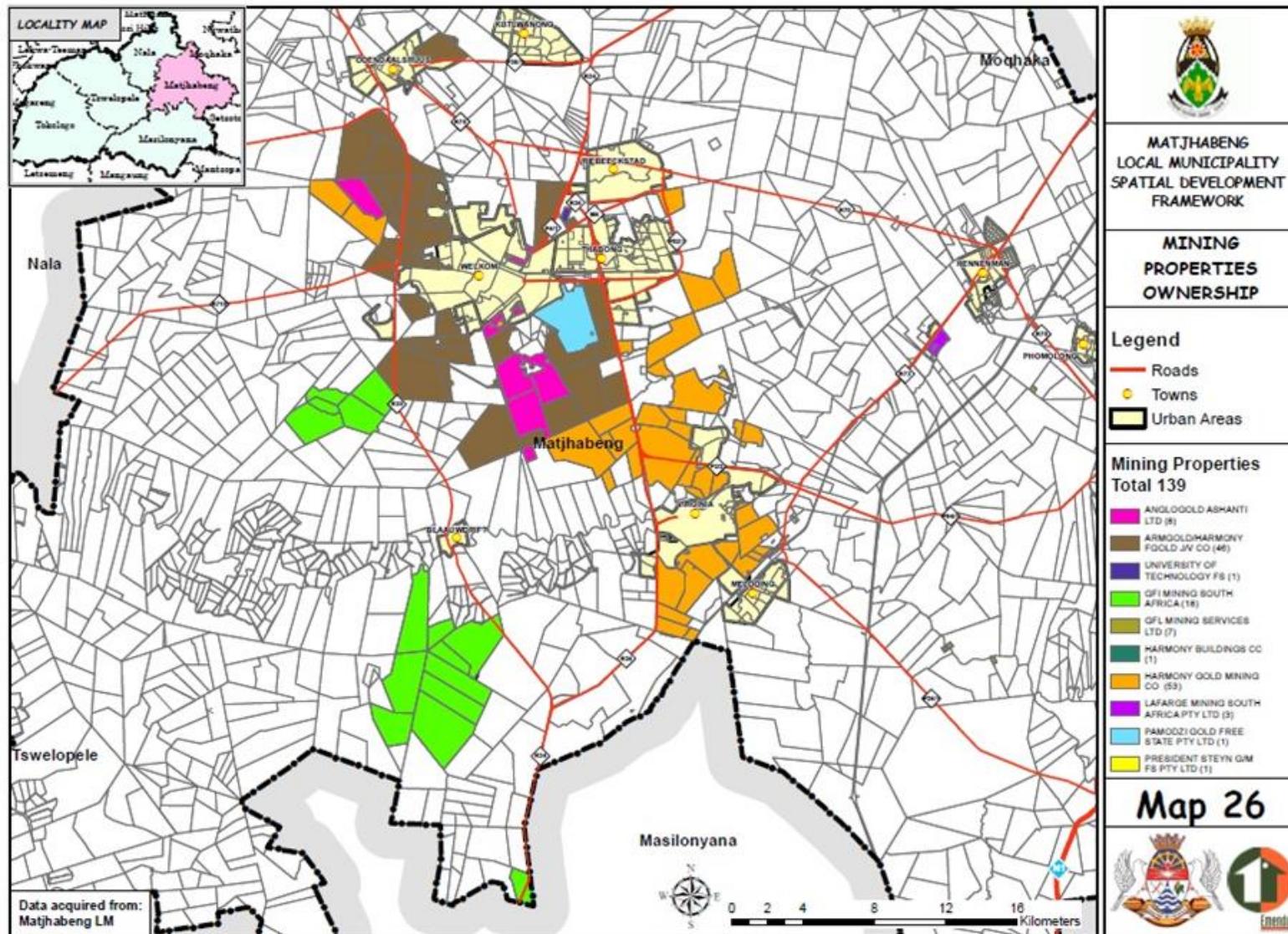


Figure 38: Mining properties map

Mine closures and job losses

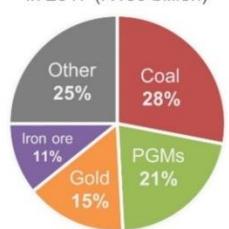
South Africa's gold mining industry is slowly losing its competitiveness in the global mining industry, and although the country dominated the world as the number one gold producer for nearly a century, it was displaced by China in 2009. At the time of writing, South Africa ranks sixth after China, Australia, Russia, Peru and the USA.

Whilst the country's gold sector's glory days started waning in the early 2000s, it was the global financial crisis in 2008 that brought enduring negative effects to the industry. Since then the gold mining industry's contribution to the mining gross domestic product (GDP) in the country has reduced significantly and it is now estimated that some half of the country's gold mines are not profitable, or are classified as marginal.

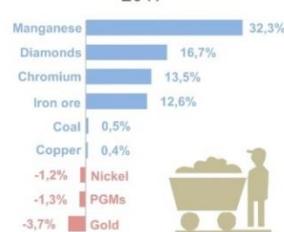
South African mining: winners and losers of 2017

Manganese and diamonds saw high production growth, while gold continued its long-term decline

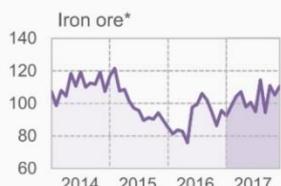
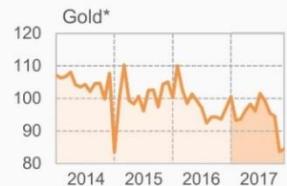
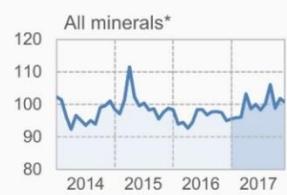
Breakdown of total sales by mineral in 2017 (R460 billion)



Percentage growth in production 2017



Volume of mining production
(Index: 2015=100)



* Seasonally adjusted

Source: Mining: Production and sales, December 2017



THE SOUTH AFRICA I KNOW, THE HOME I UNDERSTAND

Mining production 2014-2017 (Stats SA, 2018)

According to the StatsSA document: Mining: Winners and Losers of 2017 released on 28 February 2018, gold continued its production decline in 2017, slipping by 3.7%, resulting in the annual production index for gold being 46% lower than it was in 2007. StatsSA has published comparable mining production indices that go back as far as January 1980, and these statistics, and general historical trends indicate that gold has now lost its prominent place in the South African economy, and that it only experienced four years of positive growth since 1990, these being 1992, 1993, 2002 and 2013. The largest annual fall was with -16% in 2008 during the global financial crisis.

Stats SA's 2017 Environmental Economic Accounts Compendium indicates that at current production levels, the country only has 39 years of accessible gold reserves remaining (Stats SA, 2017d). Despite its steady fall in production, gold still finds itself in the top three in terms of the value of sales. In 2017, South African mineral sales were dominated by coal (28%) and platinum group metals (21%), followed by gold (15%).

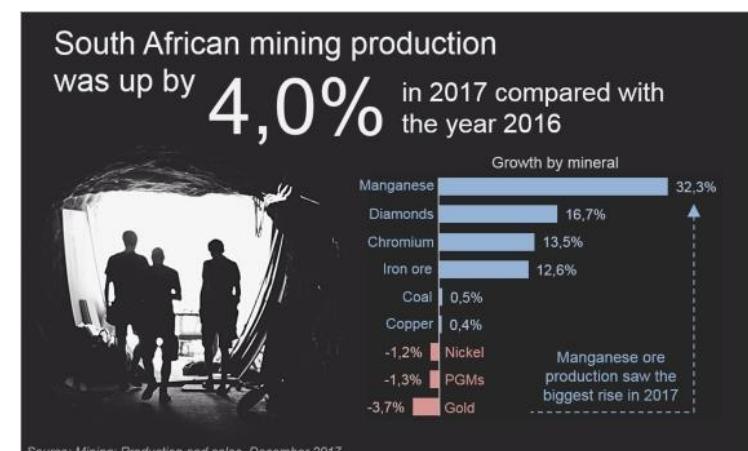


Figure 39: Mining production in 2017

Challenges that face the South African gold sector, and which has an impact on the municipality, include various technical, economic, social and operational challenges. Whilst the volatility of the gold price and that of the rand play a role, more significant challenges are the declining gold resource grade and the escalating costs of production. Mueller and Frimmel's 2010 paper on the numerical analysis of historic gold production cycles, published in the Open Geology Journal (vol.4. pp 29-34), indicate that in mining the relationship between ore grade and energy consumption in mineral processing is exponential. This is true for gold mining. The lower the ore grade, the greater the consumption of energy, reagents, water and other consumables per unit of gold produced. In South Africa, most of the high-grade gold deposits have been exhausted and mines now exploit lower grades. At the 6th International Platinum Conference held at Sun City in October 2014, Dr Cuthbert Musingwini indicated that optimization is now required to derive optimal value from the remaining low-grade and deep-lying deposits. He further mentioned that the average grade of South African gold mines declined from approximately 12g/t in the 1970s, to approximately 5g/t in 2014. It is predicted that if solely the decrease in gold grade since 1968 is plotted and extrapolated into the future, the average gold grade in South African gold mines will be as low as 0.9g/t.

Many gold mines reach depths of close to 4km underground. The ability of mining at such depth is attributed to a lower geothermal gradient compared to other parts of the world. But this also means extensive rock support is necessary to stabilize the work environment and that temperatures as high as 60°C can be experienced at the stope face. This necessitates extensive need for ventilation and refrigeration, which at the high cost of electricity in South Africa, combined with the costs of stabilizing the rock face, plus the declining resource grades, draws a rather bleak picture. Furthermore, the South African gold mining sector is currently locked into existing mine designs and methods, which are cyclic, non-continuous, and rely on equipment that has limited capacity and efficiency. Although mechanization is being used in one gold mine, South Deep, located in Gauteng, mechanization has proven to be difficult to implement, and would be near impossible currently in some mines with stoping width of only about 1m, and thus the sector remains highly labour-intensive.

The Free State goldfields did not escape the decline in the gold industry and several mines and shafts were closed deemed not viable. Employment has been the obvious victim. Just over two in every three gold mining jobs in 1995 no longer exist. According to StatsSA's March 2017 Environmental Economic Accounts Compendium report, employment in the gold-mining industry nationwide decreased by 68.7%

from 380 086 employees in 1995 to 118 939 in 2014. According (Environmental Impact Management Services, 2016) scoping report for the proposed gas production operation, located approximately 20km south west of Virginia, indicates that as many as 100,000 jobs were lost in the mining sector in the municipality since 1995. This means that in 2013, mining only employed approximately 20 000 persons as compared to 120 000 persons in 1995. The scoping report also found that the decline in economic value added (EVA) of the mining industry has not been as severe as that of the job losses in the industry, and that the Matjhabeng economy's core gross geographic product (GGP) remained intact, being in the best 20% rates nationally. (Refer to Matjhabeng Local Municipality IDP 2015/16, pg.23)

As early as 1996, Mike Roussos stated in his MBA thesis that a lack of education among workers can be a significant barrier to productivity in mines because poorly educated employees have low literacy rates; a low skills base; a lack of understanding of business principles; and a lack of understanding of how workers fit into a productive workplace, or why productivity is important. The low levels of education in the municipality becomes especially pertinent now as mines are in decline and workers might need to be reskilled for future jobs in alternative industries, or as in the case of Beatrix Gold Mine, which has a Life of Mine expectancy of another nine years, until 2027 (or up to 2037 should the company implement the De Bron-Merriespruit and Beisa projects it bought from Wits Goldin 2014), the lack of skills in the immediate municipality forces the mine to seek employees from further afield, as indicated in the mine's 2017-2021 Social and Labour Plan. It is nearly inevitable that mines would start choosing to implement modern technologies (as will most likely be the case at the future Jeanette mine), which would increase productivity, but it could also result in further job losses as fewer employees are now able to produce the same or more output. The first employees out the door will be unskilled workers and semi-skilled workers.

Whilst 41.9% of the municipality's population has matric and higher, it is not clear how many of these persons are unemployed and how applicable the attained skills are for the current gold mining activities in the municipality.

Table 4-6: Highest level of education of those aged 20 years and older in Matjhabeng by gender (Stats SA, 2016a).

	N			%		
	Male	Female	Total	Male	Female	Total
Higher education	8 426	9 966	18 392	6.0%	7.1%	6.6%
Matric & above	58 642	58 941	117 582	41.8%	42.0%	41.9%
At least Gr4	129 325	128 847	258 172	92.2%	91.9%	92.0%
No schooling	4 434	4 412	8 846	3.2%	3.1%	3.2%
Total (excluding Unspecified & Don't know)	140 338	140 265	280 604	100.0%	100.0%	100.0%

According to the 2011 Census, Matjhabeng Local Municipality's unemployment rate was just over 37% and its youth unemployment rate was estimated at 50%. There is also an outmigration from urban centres such as Virginia, and it is possible that the out-migration would be led by skilled workers looking to find work elsewhere in the province or country.

Abandoned mines

Matjhabeng Local Municipality has large clusters of abandoned and derelict mines. These areas are characterised by massive dilapidated structures, which are often vandalised and pose serious health and safety threats to the local communities. The presence of these areas has also fragmented the existing urban fabric, which restricts the process of social infill and integration. Whilst it is the responsibility of the state to rehabilitate these mines, it is unlikely that the funds would be available for rehabilitation, at least in the foreseeable future.

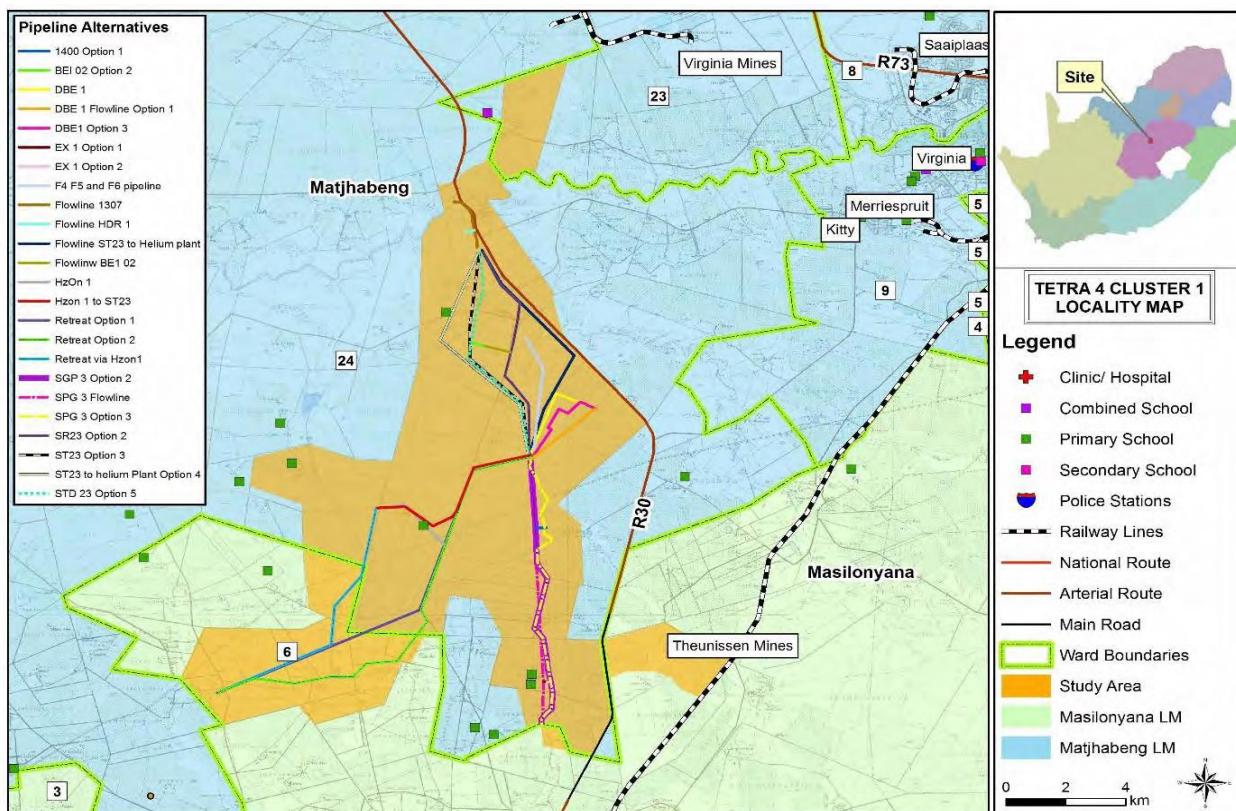
These abandoned mines are also characterized by informal mining activities, the workers most commonly referred to as 'zama-zamas', and who are either operating as illegal miners in redundant shafts or being

involved in the "stripping" of the abandoned mining infrastructure, or both. Although the aforementioned activities are generating an income to many people, the activities are dangerous as unsafe environments are created and criminal practices are taking place. As these activities are well organised, law enforcement actions to curb the activities are difficult to sustain.

Future mining-linked economic activities

In his 2017 paper: Matjhabeng Local Municipality: From Gold to the Unknown, Denoon-Stevens reports that Harmony Gold has plans for some projects in some of its former mines within the municipality. It should be noted that although these plans were captured in a presentation given by Harmony at the 27 May 2016 General Meeting of the Association of Mine Managers of South Africa, these plans have not yet been captured in any of the mines' social and labour plans, nor the municipality's IDP. These projects include a bioenergy facility and associated crop production for energy purposes; establishing a film studio; establishing vegetable and olive farms, and repurposing former hostels to serve as community residential units. Whilst these are noteworthy plans, caution is necessary as to the sustainability of these projects. Harmony has in the past created alternative projects, such as several attempts to create a gold jewellery factory in the early 2000s, as well as a gold refinery which also ultimately was not sustainable. Similarly, the municipality built the Phakisa Raceway, a world-class racing venue less than 20km from Welkom, which was completed in 1999 at a cost of R97-million, but despite hosting the South African Motor GP on several occasions, remains largely unutilised.

Operations to mine helium and methane have started on a very limited scale in the area near Virginia, and there is currently an EIA process underway for a much larger-scale natural gas mining operation. Should this go-ahead, it will be the first onshore petroleum and natural gas mining and processing in the country. Whilst the scoping report for this project indicates that in terms of GVA, this project will contribute approximately 2.3% directly and via indirect value creation, the impact on job creation is minimal, with only



172 direct and indirect job opportunities expected.

Figure 40: Proposed gas mining near Virginia (Environmental Impact Management Services, 2016)

Table 4-7: Electricity and water use at mining operations (Harmony and Goldfields, 2013)

• Phakisa	Nyala	109 MWH	4 167 000m ³
• Target	1 Shaft	328 MWH	1 093 000m ³
• Tshepong	1 Shaft	298 MWH	9 199 000m ³
• Masimong	1 Shaft	208 MWH	1 577 000m ³
• Bambanani	Bambanani		
	Steyn 2	253 MWH	1 794 000m ³
	West		
• Joel	North		
	South	103 MWH	1 007 000m ³
• Phoenix	Saaiplaas		
Surface Operations	Plant	-	-
• Waste Rock Dumps Surface			
• Beatrix	4 Shafts	-	-
Total			

(The waste rock dumps surface operations involves the plant clean –up of Virginia, St Helena and Steyn Plants).

Mining-linked environmental factors

Environmental pollution linked to mining are usually linked to dust and water pollution, and linked to the latter, soil contamination. In South African gold mines, the issue of dust is generally linked to dust from mine dumps as most mining takes place deep underground. The risk underground lies with the fine silicate dust which results most commonly in silicosis and other respiratory diseases in mine workers, which can in turn be a drain on the state medical facilities.

Unlike its Gauteng counterpart, the Free State goldfields have fewer mine dumps, and health risks are generally linked to tailings that contain toxic chemicals. Mining companies are legally obligated to reduce the risk of excessive dust affecting the local communities.

Water plays an essential role in most mining and extractive processes and the industry's use of, and impacts on, water can result in a range of environmental, social and economic risks. Associated with rising concerns about the impact of global climate change and biodiversity loss, the focus on water as a key natural resource has sharpened, and this is particularly important for international stock exchange listed mining companies, such as Harmony Gold and Sibanye-Stillwater, that are expected to report on their use, conservation and water balance.

In mining operations, the most important use of water is typically in mineral processing, such as in hydrometallurgical processes, for example: to recover gold and copper from a solution of chemicals. Although less so in gold mining than in other types of mining, water is also required in pyrometallurgical processes for cooling and other parts of the process. Significant amounts of water may also be needed for dust control on haul roads and waste dumps, particularly if mining is above ground, as would be the case in the projects to reclaim gold from mine dumps and tailings which Harmony is currently undertaking. The water used for this can be lower-quality industrial water or mine water, provided there are no contamination risks. In contrast, high-quality potable water is required for domestic purposes in the office and administration buildings.

Most compliant mines (and all evidence indicates that the Harmony mines and Beatrix are currently compliant) now use water accounting as a reporting mechanism that quantifies the mine's water supply,

consumption and discharge; and in doing so develop a water balance to manage water and to achieve a sustainable balance between water supply, consumption, and environmental and operational risks. Planned water discharges from mines into the receiving environment are normally carefully monitored and controlled to ensure compliance with regulations and to minimize impact to receiving waters. Discharge of treated process water is routinely monitored and must meet certain quality standards and requirements in terms of temperature, pH and conductivity. Other discharges occur due to normal run-off, extreme storm events and discharge from surplus dewatering where water may be contained and discharged appropriately. In addition to planned discharges, there can sometimes be undesired but anticipated discharges into the receiving environment: e.g. seepage or leakage from storage lagoons, tailings dams and waste dumps; spillage of chemicals and fuels; and other loss of containment due to natural events such as high rainfall.

In the South African goldfields, acid mine drainage (AMD) is a legitimate concern, arguably one of the most serious environmental concerns in South Africa. It is also an inherited problem. The current AMD problems is a result of historical mining practices and some of the ongoing challenges include the fact that some of the proprietors of the mines that originally caused the AMD problem sold their mines or just abandoned them. It is a legacy left behind by hundreds of abandoned, derelict and defunct mines, and is a continuing by-product of existing mining activities. In addition to its environmental impacts, AMD also impacts ecological, social and economic concerns. It is also often a misunderstood phenomenon.

[The following section heavily relies on McCarthy TS. 2011. The impact of acid mine drainage in South Africa. S Afr J Sci. 107(5/6), Art.] The overall impact of AMD is very much dependent on local conditions and varies widely, depending on the geomorphology, the climate and the extent and distribution of the AMD-generating deposits. AMD arises primarily when the mineral pyrite comes into contact with oxygenated water. The pyrite undergoes oxidation in a two-stage process, the first producing sulphuric acid and ferrous sulphate and the second orange-red ferric hydroxide and more sulphuric acid. Pyrite is a common minor constituent in many mineral deposits and is associated with coal and gold deposits of the Witwatersrand Basin. During normal weathering of these mineral deposits, acid is produced but at a very slow rate, so slow that natural neutralisation processes readily remove the acidity. However, during mining and mineral extraction, the rock mass is extensively fragmented, thereby dramatically increasing the surface area and consequently the rate of acid production. Certain host rocks, particularly those containing large amounts of calcite or dolomite, can neutralise the acid. But this is not the case for South African coal and gold deposits and in these the natural neutralising processes are overwhelmed and large quantities of acidic water are released into the environment by mining activities, initially into the groundwater and ultimately into streams and rivers. The process of gold mining involves extracting the gold-bearing conglomerate layer and transporting it to the surface where it is crushed, and the gold is extracted. Some conglomerate is left unmined to provide support for the workers underground and because gold concentrations may be insufficient to justify extraction. After extraction of the gold, the crushed rock is deposited on waste heaps known as tailings dumps (or slimes dams). The conglomerates typically contain about 3% pyrite, which ends up on the dumps. Rainwater falling on the dumps oxidises the pyrite, forming sulphuric acid which percolates through the dump, dissolving heavy metals, including uranium in transit, and emerges from the base of the dump to join the local groundwater as a pollution plume. This polluted water ultimately emerges on surface in the streams draining the areas around the dumps. Streams draining the tailings dumps are therefore typically acidic and have high sulphate and heavy metal concentrations. Ultimately, the water becomes neutralised by a combination of dilution and reaction with river sediment or various minerals in soils, but certain constituents have relatively high solubility and remain in the water, particularly sulphate.

To understand the impact of AMD in the Free State goldfields, it is necessary to consider other factors, apart from mining, geology and topography, which play a role. Climate is an important variable in determining the impact of AMD. South Africa has a very pronounced east to west climatic gradient – rainfall decreases from over 1000 mm per annum in the east to less than 100 mm per annum in the west, and potential evapotranspiration increases from about 1500 mm per annum in the east to 3000 mm per annum in the west. Most of the country therefore experiences a negative water balance with

evapotranspiration being more than the rainfall received. Less rainfall indicates less severe occurrence than AMD than in areas further east. The higher rainfall region in the eastern and central Highveld is also the major source of water for the Vaal River system, with very limited additions in the drier west. In terms of the Free State goldfields, the Vaal is by far the most important river, and a large proportion of the coal deposits and all the gold deposits lie within the Vaal River catchment. The upper catchments, thus the highest rainfall area, of the Vaal are extensively underlain by coal deposits, and on its way to the Free State goldfields it receives decanted water from mines along the way, as well as from run-off from mine dumps.

Water is continually seeping into mine workings from surrounding groundwater and this must be pumped out to prevent flooding. Some of the water is used in the mining operations and the rest is discharged into streams after basic treatment if necessary. However, once mining operations cease, pumping also ceases and the void created by mining slowly fills with water. This water originates as rain and contains dissolved oxygen. In its slow passage through the old workings it becomes acidic and enriched in heavy metals. Once the mine void fills completely, decant of this polluted water commences, generally from the lowest lying opening in the old workings.

The December 2010 report on ‘Mine water management in the Witwatersrand Gold Fields with special emphasis on acid mine drainage’ prepared by the expert panel of the inter-ministerial committee on acid mine drainage, found that most operating gold mines in the Free State are still actively pumping and that thus there is less of a concern than upstream. The report further states in Section 4.2.6: ‘Studies conducted by the mines suggest that there is no immediate serious threat of decant, even if mining were to cease because of the geological features of the area, including the topography. However, several challenges result from the closure of some shafts and the need to increase pumping capacity at the remaining shafts. It is also necessary to isolate the remaining mining areas by installing plugs between them and the closed areas. In the latter case, seismicity and the rate of the water level rise will have to be monitored.’

Although it was not the case for several decades, current water and mining legislation legally compels mine owners to pump water, stating that every person in control of a mine or mining activity must take all reasonable measures *inter alia* to:

- prevent water containing waste or any substance which causes or is likely to cause pollution of a water resource from entering any water resource;
- design, modify, locate, construct and maintain all water systems including residue deposits in any area to prevent the pollution of any water resource through the operation or use thereof and to restrict the possibility of damage to the riparian or in-stream habitat;
- cause effective measures to be taken to minimise the flow of any surface water or floodwater into mine workings, opencast workings, other workings or subterranean caverns;
- prevent the erosion or leaching of materials from any residue deposit or stockpile from any area; and
- ensure that water used in any process at a mine or activity is recycled as far as practicable, and any facility, sump, pumping installation, catchment dam or other impoundment used for recycling water, is of adequate design and capacity to prevent the spillage, seepage or release of water containing waste at any time.

These provisions, to a greater or lesser extent, all relate to AMD and specifically the protection of water resources in the context of pollution because of AMD. They clearly set out comprehensive and far-reaching obligations on mines as far as their water resource protection activities are concerned, and add to and further expand the wide liability net covering mines with respect to pollution as a result of AMD. In the last decade, the courts have been tough on mining companies trying to shirk this responsibility, as

demonstrated in the case of Harmony Gold, which was ordered by the High Court in 2005 to comply with a directive issued by the Department of Water Affairs (DWA) to pump underground water containing AMD to avoid water pollution.

Again, in 2006 in *Harmony Gold Mining Co Ltd v Regional Director: Free State, Department of Water Affairs and Forestry*, the Supreme Court of Appeal upheld a directive issued by the Department of Water Affairs in terms of section 19(3) of the National Water Act to take reasonable measures, including measures on land belonging to another, to prevent pollution from contaminating water resources. More recently, in 2012, the High Court held Harmony Gold to its obligation to pump and treat acidic mine water, notwithstanding that it had severed all legal connections to the land on which the mining activities that generated the pollution had taken place. In the words of the Court: "if a member of the class of persons had, while still a landholder, failed to comply with the duty, his failure does not become erased by him merely 'walking away' from the affected land without fulfilling the outstanding obligations". (*Harmony Gold Mining Company Ltd v Regional Director: Free State Department of Water Affairs*, 2012, paragraph 39).

Thus, both the municipality, the local communities and other interested parties can approach the courts in case of dereliction of duties by mining companies.

The government recently announced that it has set aside funds to deal with the looming problem of decanting of water from the Witwatersrand gold mines. This will involve the reestablishment of pumping and basic treatment operations, such as the addition of lime and removal of iron, in the three goldfields currently affected by the problem. The measures will stop the uncontrolled decanting in the Western Basin and prevent similar decanting from occurring in the Central and Eastern basins. Whilst this intervention will greatly improve the situation in the Western Basin, it will have no impact on water quality in the Vaal River system, but will merely return the situation to what it was when the mines were still pumping, treating and releasing water from the mine void.

The December 2010 report on 'Mine water management in the Witwatersrand Gold Fields with special emphasis on acid mine drainage' prepared by the expert panel of the inter-ministerial committee on acid mine drainage, found that: 'The current main concern pertains to the large number of evaporation and return-water dams in which the partially treated mine water has a high concentration of heavy metals and salts, impacting surface water bodies in the area.'

It is thus important for the municipality to monitor these to ensure that surface water bodies, including the already compromised Vaal River is not further compromised.

4.2.3 Economic sector contributions

In 2010, Matjhabeng's economy was the 17th largest in the country contributing to 0.76% of the national GDP. Its GVA was estimated at R12 481 829 billion, not much more than that of Madibeng and Sol Plaatje (Kimberley). Matjhabeng also features as the only city in the top 30 of the country that has experienced a decline in population in the past decade, but that still has a reasonably sized economy. Although its economy remains a reasonable size, economic growth has slowed down dramatically since 2000 (0.5% between 2005 and 2010). Thus, the question "*do South Africa's mining towns need more robust policy responses?*" was posed by John (John, 2012).

Matjhabeng's economy is dominated by mining in the belt extending from Allanridge, to Virginia and including Welkom, and Odendaalsrus. The share of mining economy has declined steadily over the last two decades. According to Ledger, the mining economy declined from 70.6% in 1996 to 24.9% in 2013, (Ledger, 2015), while IHS Global Insight Regional eXplorer indicated that the share of mining in 2014 was almost double at 56.0% (IHS Global Insight Regional explorer (2015) as cited in Matjhabeng Local Municipality, 2017-2022). Nevertheless, mining remains the strongest sector in the local economy, and it is a dominant sector in the district economy having a location quotient of 5.05 in 2014. The only other sector with location quotient of more than 1 is agriculture (2.31), which shows its uniqueness compared to

the national economy¹⁰, and this has increased since 2005 (1.54). It is the economies of Hennenman and Ventersburg that are dominated by agriculture, and manufacturing.

Between 2005 and 2014, the average economic growth rate in Matjhabeng was -2.4%, and in Lejweleputswa - 1.8% (Matjhabeng Local Municipality, 2017-2022). This shrinking economy was largely due to the poor performance of the mining sector. Similarly, real GDP per capita in Lejweleputswa, declined by -17.5% between 2005 and 2014. This contrasts to the relatively stronger performance of the Free State where there was an increase in real GDP indicating an increase standard of living in the province overall, which was not applicable to the district of Lejweleputswa.

Figure 41: Sectoral contribution in Matjhabeng's economy 2014 (IHS Global Insight Regional explorer (2015) as cited in Matjhabeng Local Municipality, 2017-2022)

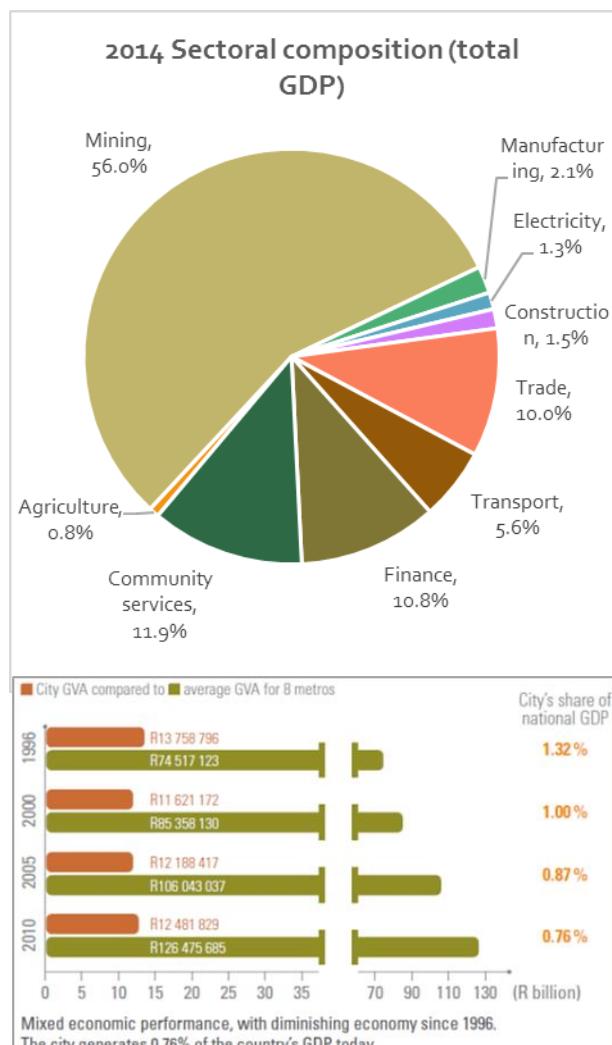
Consistent decline in the economic growth of Matjhabeng since 1998, affects consumer spending by the local inhabitants which is discernible in Virginia for example where shopping centres have high vacancy rates, and are "somewhat derelict" (Environmental Impact Management Services, 2016).

(Environmental Impact Management Services, 2016)

Figure 42: Matjhabeng's economic strength compared to 8 metros 1996 to 2010 (John, 2012).

The decline of Matjhabeng' economy is prominently illustrated in the adjacent figure of Matjhabeng's GVA compared to the average of eight metros. In 1996 Matjhabeng's contribution to the national GDP was 1.32% and by 2010 it declined to 0.76% (John, 2012).

More recently, GDP data indicates that after two consecutive quarters of decline, the South African economy gained significantly in the second quarter of 2017. Positive contributions to higher economic activity across most industries, and agriculture, finance and mining, raised the gross domestic product (GDP) by 2.5% quarter-on-quarter (seasonally adjusted and annualised). According to StatsSA, agriculture continued to show strong recovery from the recent drought, increasing production by 33.6%. This upsurge was mostly driven by an increase in the production of field crops, maize and wheat, as well as increased production of horticulture products such as vegetables (Stats SA, 2017b). The finance industry was the second largest contributor to GDP growth in the second quarter of 2017, growing by 2.5%. The mining industry expanded by 3.9% because of increased production of coal, gold and 'other' metal ores such as iron ore and manganese ore. Nonetheless, production was more reserved than the 13.1% growth recorded for the first quarter of 2017. Growth in manufacturing (1.5%) occurred after three consecutive quarters of decline, and a strong recovery in electricity, gas and water (8.8%) was noted (Stats SA, 2017b).



The 2.5% rise in GDP during 2017, brought an end South Africa's second recession since 1994. However, it is cautioned that quarterly growth rates can be volatile, and the headline figure of 2.5% is the growth rate after annualization (Stats SA, 2017b).

4.2.4 Economic growth

Population density and economic growth

Density of population and economic activity does not necessarily influence the rate of local economic development in South Africa. A study of 237 local municipalities revealed that there is no evidence that municipalities with higher densities of population and economic activity in 1996 grew any faster than municipalities with lower densities over the subsequent 15-year period. However, a relationship between skills and economic growth was found, and a 1% increase in the proportion of population with skills is associated with a 0.2% increase in employment and GVA growth. Skills are strongly linked with economic growth.

Thus, it was concluded that spatial proximity does not contribute to local economic growth, and there is no connection between the density of activity within the area and its rate of economic growth. Possible reasons why the relationship between density and growth is non-existent may include the remnant of apartheid spatial policies, and forced removals that resulted in high population densities in the former Bantustans. The impact of racial segregation within cities and towns may have resulted in more spatially fragmented and inefficient urban areas which undermines the economic performance. Another reason is that the equitable sharing of government tax revenues in fiscal transfers to municipalities masks the impact of density and lifts the performance of weak local economies (Msulwa, 2012).

The adjacent map shows that Matjhabeng's population density. The rural/farms areas have a very low population density with under 2 persons per ha, whilst the highest densities are in the historically disadvantaged areas where the densities higher than 30 persons per ha are recorded.

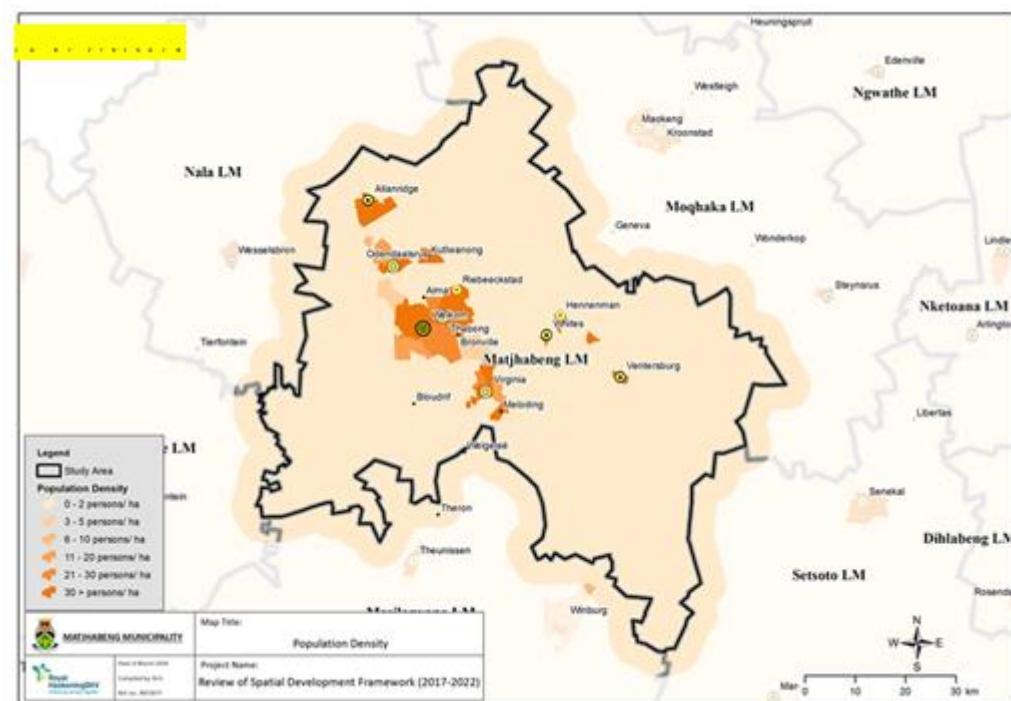


Figure 43: Population density map (map to be replaced)

Skills and education

The proportion of Matjhabeng persons older than 20 years with matric increased from 18% in 2001 to 28% in 2011. By 2016, 41.2% had a matric or higher, and 73.0% completed Grade 9 or higher. Yet, this is no higher than at the average level in the province (39.7% and 68.6% respectively).

The figure shows that there is little difference between the education levels of males and females older than 20 years in Matjhabeng.

Figure 44: Highest level of education of those aged 20 years and older in Matjhabeng by gender in 2016 (Stats SA, 2016a)

In 2016, 96.4% of school-age children (5 to 17 years old are in school), about the same as the rate in the Free State (95.96%).

In 2016, 31.3% of the Matjhabeng population were attending an educational institution; lower than the Free State average of 34.6% and the national average of 34.9%. Most enrolled persons attended a primary school, followed by a secondary school (Stats SA, 2016a).

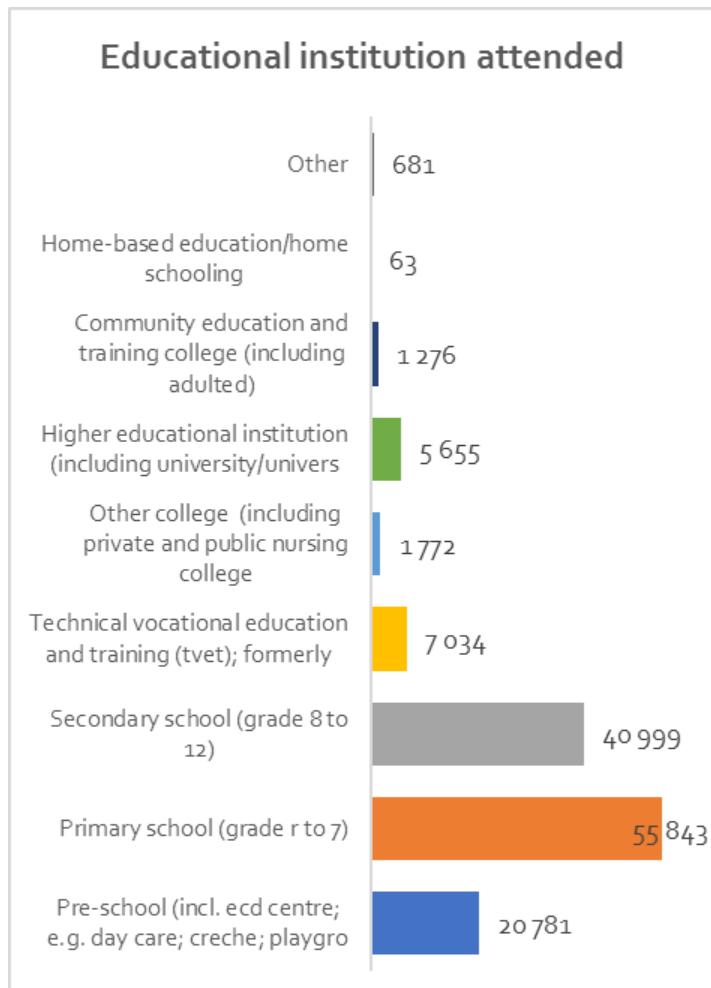
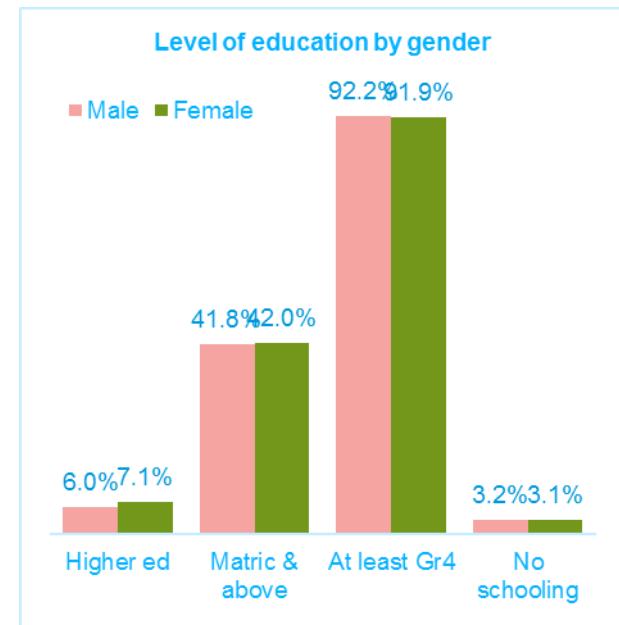
Of the Matjhabeng persons attending an educational institution, 86.3 were attending a public/government institution, and 13.7% were attending a private institution. Attendance of private institutions is higher than in the Free State (9.9%), and the national average (11.4%) (Stats SA, 2016a).

Of those in higher education 56.4% (15 065) were attending a university/university of technology, while 43.6% (11 637) were attending a TVET (formerly FET)/private colleges). Attendance at a TVET in Matjhabeng is slightly higher than the Free State (40.5%), and the national average (34.7%) (Stats SA, 2016a).

Figure 45: Educational institution attended by Matjhabeng persons in 2016 (Stats SA, 2016a)

The table below illustrates that education is the main field of study at higher education institutions, followed by business sciences and health professions and related clinical sciences, and engineering. This pattern is not too dissimilar from that noted in the Free State, and in South Africa.

Table 4-8: Field of study at higher education institution in 2016 (Stats SA, 2016a)



Field of higher educational institution	Matjhabeng	Free State	SA
Agriculture	180	4 097	65 017
Architecture and the built environment	165	1 556	44 468
Arts (Visual and performing arts)	76	1 229	32 480
Business	2 034	16 699	457 782
Communication	120	2 071	59 980
Computer and information sciences	624	3 554	120 301
Education	5 157	28 186	532 901
Engineering	1 202	8 104	241 938
Health professions and related clinical sciences	1 470	9 190	233 472
Family ecology and consumer sciences	26	464	13 198
Languages	123	858	21 662
Law	793	5 040	110 538
Life sciences	119	1 308	23 345
Physical sciences	164	1 057	28 143
Mathematics and statistics	28	619	19 052
Military sciences	0	185	7 570
Philosophy	194	1 468	24 065
Psychology	123	1 950	54 049
Public management and services	329	3 401	89 179
Social sciences	186	2 049	57 528
Other	1 853	15 334	368 981

In 2016, management and engineering with the main fields of study at a TVET.

Table 4-9: Field of study at higher education institution in 2016 (Stats SA, 2016a)

Field of TVET	Matjhabeng	Free State	SA
Management	2 742	14 055	171 781
Marketing	436	4 786	76 518
Information technology and computer science	597	4 351	88 666
Finance	342	3 084	79 051
Office administration	840	5 356	102 805
Electrical infrastructure construction	405	2 801	70 310
Civil engineering and building construction	204	2 056	49 514
Engineering	2 626	10 153	219 795
Primary agriculture	22	653	10 989
Hospitality	337	1 904	51 585
Tourism	93	955	26 302
Safety in society	133	1 644	36 200
Mechatronics	102	575	15 065
Education and development	628	7 869	99 316
Other	2 069	13 555	286 180

The map below illustrates that the coverage of schools is adequate in Matjhabeng since most high schools are located within a 2.25 km walking distance within urban areas, and primary schools within 1.5 km.

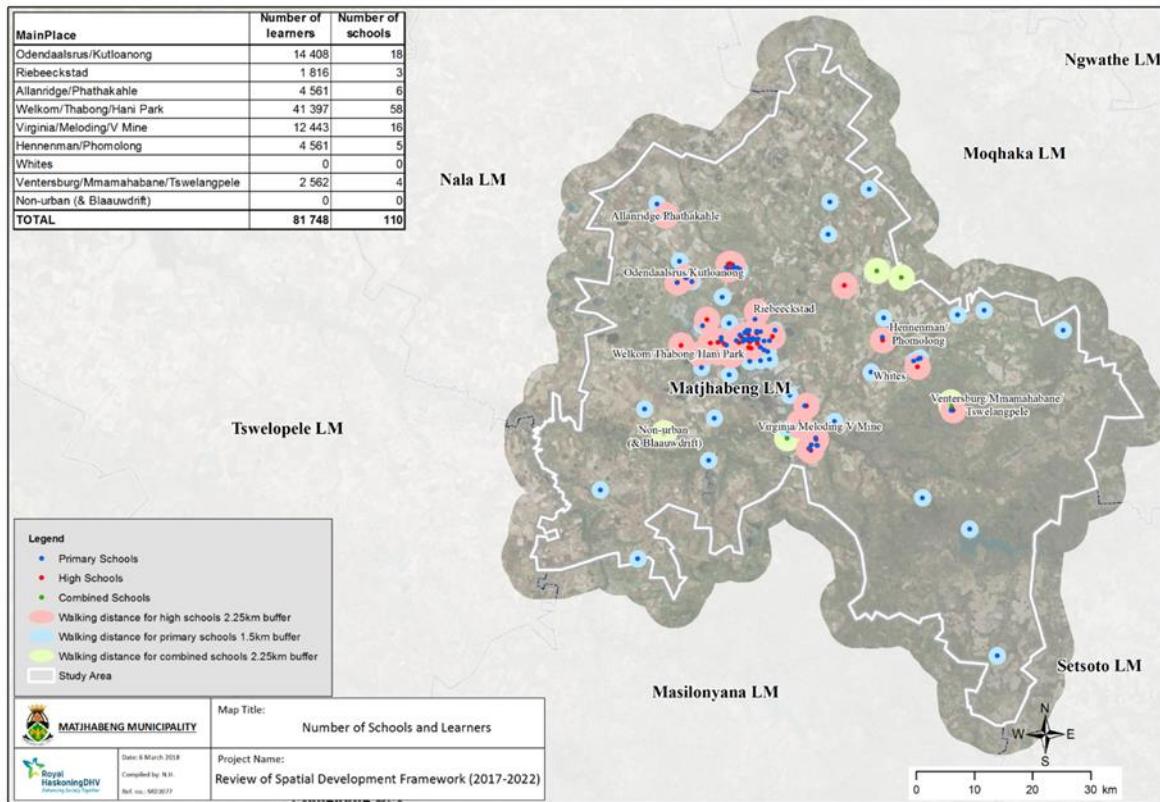


Figure 46: Schools and catchment areas map (Stats SA, 2016a) [map to be replaced]

Employment

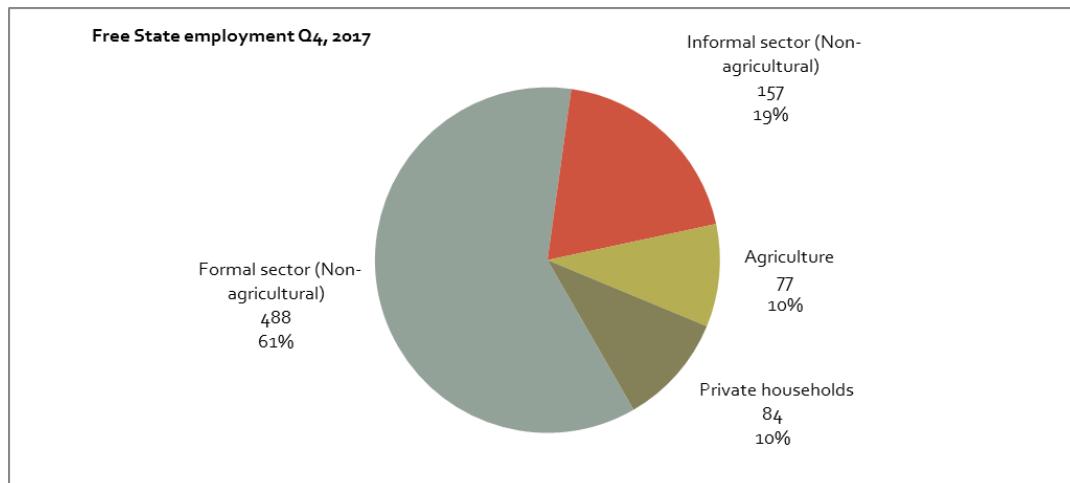
Declining employment levels in the mining industry impacts on overall unemployment levels in Matjhabeng. Although unemployment rates and levels in 2011 have improved since 2000, more recent data for Matjhabeng is unavailable. But according to StatsSA employment in the gold mining industry decreased by 68.7% between 1995 and 2014 (380 086 employees and 118 939 respectively) (Stats SA, 2016a).

Unemployment, which refers to people within the economically active (15-65 years) population who did not work during the seven days prior to the interview, who want to work and are available to start work within a week of the interview, and have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview accounted for 41.9% of the economically active in 2011. This is an increase from 25.3% in 1996, but a decreased from the peak in 2001. These unemployment trends in Matjhabeng mirrored that of the Free State over the three census periods.

Table 4-10: Employed and unemployed 1996, 2001, 2011 (Stats SA, 2011a).

Employment status	Matjhabeng			Free State		
	1996	2001	2011	1996	2001	2011
Employed	178 100	95 687	99 650	714 787	591 002	649 661
Unemployed	60 333	83 181	58 524	303 538	446 272	313 793
Discouraged work-seeker	0	0	13 290	0	0	99 949
Not economically active	106 380	100 352	105 159	741 828	715 420	732 517
Unspecified	1 206	0	0	5 208	0	0
Not applicable	130 745	128 950	129 836	868 144	954 081	949 670
Total	476 763	408 170	406 461	2 633 504	2 706 775	2 745 590
Expanded definition						
Employed	178 100	95 687	99 650	714 787	591 002	649 661
Unemployed	60 333	83 181	71 815	303 538	446 272	413 742
Total economically active	238 433	178 868	171 465	1 018 325	1 037 274	1 063 403
% unemployed	25.3%	46.5%	41.9%	29.8%	43.0%	38.9%

Using the official definition for ‘unemployment’, South Africa’s unemployment patterns to Quarter 4 of 2017 showed that the Free State’s unemployment rate was 39.0%; unchanged from 2011. The province ranks the fifth lowest nationally in respect of unemployment in Q4 2017 (Stats SA, 2017c). It is unlikely that Matjhabeng’s unemployment rate would have improved since 2011 given the long-term reduction in mining jobs. Please refer to mining closures and job losses in a section on mining below.

**Figure 47: Free State employment Q4 in thousands and percentage, 2017 (Stats SA, 2017c)**

Employment in the informal sector increased from 2011 to 2016 in the Free State from 15% to 19%. Employment in this informal sector in Matjhabeng was lower than that of the Free State in 2011, and one assumes that it holds true today, then even in Matjhabeng its share has increased. In 2011, employment in private households in Matjhabeng stood at 13%, slightly lower than that of the province (15%), but it is noted that this segment of employment in the province had declined to 10% in 2017.

Table 4-11: Sector of employment in Matjhabeng and Free State in 2011 (Stats SA, 2011a).

Type of sector	N		%	
	Matjhabeng	Free State	Matjhabeng	Free State
In the formal sector	75 625	455 366	76%	70%
In the informal sector	10 971	93 651	11%	14%
Private household	12 685	96 971	13%	15%
Do not know	2 242	16 171		
Unspecified	0	0		
Not applicable	305 496	2 083 430		
Total	407 020	2 745 590		
Total ex DK, NA & U	99 281	645 989	100%	100%

Hunter and Posel have documented a nationally observed trend of informal dwellers that employment shifts including moves from permanent to causal, and from formal to informal who “live where they do for reasons vital to their everyday survival.” This highlights the limitations of relocating to the peripheries of towns and cities and to other parts of the town, whilst emphasizing the importance of upgrading informal settlements through in-situ development (Hunter, 2012).

Job opportunities, and urban centres tend to attract new immigrants, but the capacity to absorb labour means that the place will expand demographically, but it is not a guarantee that the economy will grow as a result. Only if each new citizen costs the city less than they need to spend in return, will economic growth result. The resulting cost benefit depends on the nature of the prominent employment sectors i.e. unskilled work versus higher paid jobs, infrastructure capacity, and the state of municipal finances. Employment profiles need to be detailed by number of workers employed in the service sector, especially professions that tend to generate the most wealth in a city (John, 2012).

According to Quantec data, mining remains the most significant sector of employment, although it is also the sector that has experienced the greatest loss (-2.9% p.a. 2005-2015). Electricity, gas and water experienced the greatest increase, but its share is the smallest.

Table 4-12: Employment by sector in Matjhabeng¹¹

Employment by sector	2005	2015	Growth p.a.
Transport, storage and communication	1 864	1 614	-1.43%
Wholesale and/or retail, catering and accommodation	8 647	8 050	-0.71%
Construction	2 533	2 461	-0.29%
Electricity, gas and water	204	256	2.30%
Manufacturing	3 914	3 789	-0.32%
Mining and quarrying	23 110	17 199	-2.91%
Agriculture	2 868	2 280	-2.27%
Total	45 145	37 664	-1.80%

4.2.5 Alternative energy

Solar farms

There are five solar farms established in MT LM, namely: Grootspruit (Enviro Works, 2013), Grootkop (Metro GIS, 2013), Everest (Barbour, 2013), Lebone (Enviro Works, 2014), and Thabong (Enviro Works, 2013). These five farms will produce 375 MW of power.

Table 4-13: Details of the solar farms in MT

	Name of solar farm				
	Lebone	Thabong	Grootkop	Everest	Grootspruit
Capacity in MW	75	75	75	75	75
Surface area covered - footprint	194	240		180	180
Broader area	630	840		393	690
Construction jobs	30	30	300		204
Permanent jobs	Few	Few	80		59
Cost	R1.7-1.8 bn	R1.7-1.8 bn	R1.25 bn		R1.35 bn (?)
Owner/operator	Lebone Solar Farm Pty (Ltd)	Thabong Solar Farm (Pty) Ltd	FRV Energy South Africa	FRV Energy South Africa	Solairedirect Southern Africa (Pty) Ltd
Located	18 km SE of Welkom	15 km NE of Welkom	9 km SE of Allanridge	4 km W of Hennenman	16 km from Allanridge

¹¹ Data source: Quantec 2015 cited in G. Vengadajellum report.

Gas field

Besides the solar farms there is also the Tetra4 gas plant (Environmental Impact Management Services, 2016), which is also discussed in the mining section. Tetra4 has plans to extend natural gas operations in the Matjhabeng and Masilonyana LMs, near the town of Virginia. The area covers 59 farms over approximately 14 316 ha, and is referred to as Cluster 1. Activities involve the drilling of new wells as well as drilling of historic wells, connecting old and new ones to develop a producing gas field mainly for helium and compressed natural gas (CNG). The gases will be sent via pipeline to a plant for processing where the final product is temporary stored in tankers for trucking away by a trailer to end users. State-owned Industrial Development Corporation (IDC) approved R218-million in loan finance to support the project (Creamer, 2017).

The first operating well is producing about 200 gigajoules of gas a day. At full production from all 13 wells, the field will be producing about 1,300-1,500GJ/day (Mathews, 2017). Employment is estimated at 15 permanent jobs, and 80 during construction.¹²

An unchallenged environmental impact assessment has been completed, and Renergen is waiting for final approvals from the Petroleum Agency SA and the Department of Mineral Resources before it starts construction of the pipeline. It will only connect the wells and there are no plans at this stage to build a pip

4.2.6 Tourism

MLM has several tourism attractions ranging from the Phakisa race track to a small police museum in Ventersburg.

Heritage

There are several sites and buildings which have been registered at the South African Heritage Resource Agency to be preserved for the future. The importance of these buildings together with other tourism activities creates the ideal opportunity to establish and market a potentially vibrant tourism economy. Some of the heritage attractions include:

- Aandenk Monument - located in Allanridge. It marks the place where the first gold prospecting borehole in this area was drilled. It has the shape of a keyhole, symbolising the opening of the Free State Goldfields.
- Skanskraal - located in Ventersburg. It was built in 1856 with the help of Moshoeshoe and his troops to protect the inhabitants from attack. The site also contains Voortrekker graves.
- Sand River Convention Monument - 15km from the Ventersburg, on route to Winburg. By signing the Convention, Britain renounced all claims to authority beyond the Vaal River and this paved the way for the founding of the Zuid-Afrikaansche Republiek that was to be established later in 1852. The signing of the Sand River Convention took place on Venter's Farm at the Sand River in the Orange Free State, the leading representative of the Boers was Andries Pretorius, who led his group with the approval of the Boer War Council, and conducted talks with Commissioners W.S Hogge and C.M Owen.
- King Moshoeshoe's Kraal - situated outside Virginia on the road to Ventersburg.
- Police Museum - a small police museum was opened in Ventersburg on 29 October 1983. It consists of the original police station, built between 1902 and 1910. There is also a prison near the police station that was built from rock and consisted of four cells. There is evidence that the jail was already in existence at the end of the 19th century. The museum was declared a national monument in 1987.

¹² <https://www.pressreader.com/south-africa/business-day/20170912/282205126049119>

- Linabo Farm - in Virginia has an interesting past. It contains a historic post office building and the foundations of a railway bridge that was blown-up during the Anglo-Boer War. The remains of the railway bridge can also be viewed from the farm. In addition, there is a possibility that a concentration camp for blacks could have been located on this farm. In this regard, there are plans to establish a museum on the farm, focusing on the history of concentration camps for black.
- Virginia Farm - Several hundred animal fossils between 3.5 million and 4 million years old have been discovered on Virginia Farm, which is owned by the Matjhabeng LM. The site was discovered in 1955 by railway workers working on the train tacks for the gold mines. The workers discovered several mammoth fossils, including a near-complete tusk. The fossils are from the Pliocene epoch, which lasted from about 5.3 million years ago to about 2.6 million years ago. A paleontological education centre, along the lines of Maropeng in Gauteng, could be established on the Virginia farm.
- Leghoya Ruins -The remains of a Leghoya settlement can be found in the Willem Pretorius Game Reserve. Max du Preez, in his book Pale Native - Memories of a Renegade Reporter describes the Leghoya as follows: "Around the end of the Jgh century, a community that was part of the civilization of Great Zimbabwe decided to leave and move south under the chief Ghoya. These people, called the Leghoya, eventually came to rest in the northern and eastern Free State, where they built their stone villages on hilltops bordering the Vais, Renoster; Wilge and Sand Rivers."

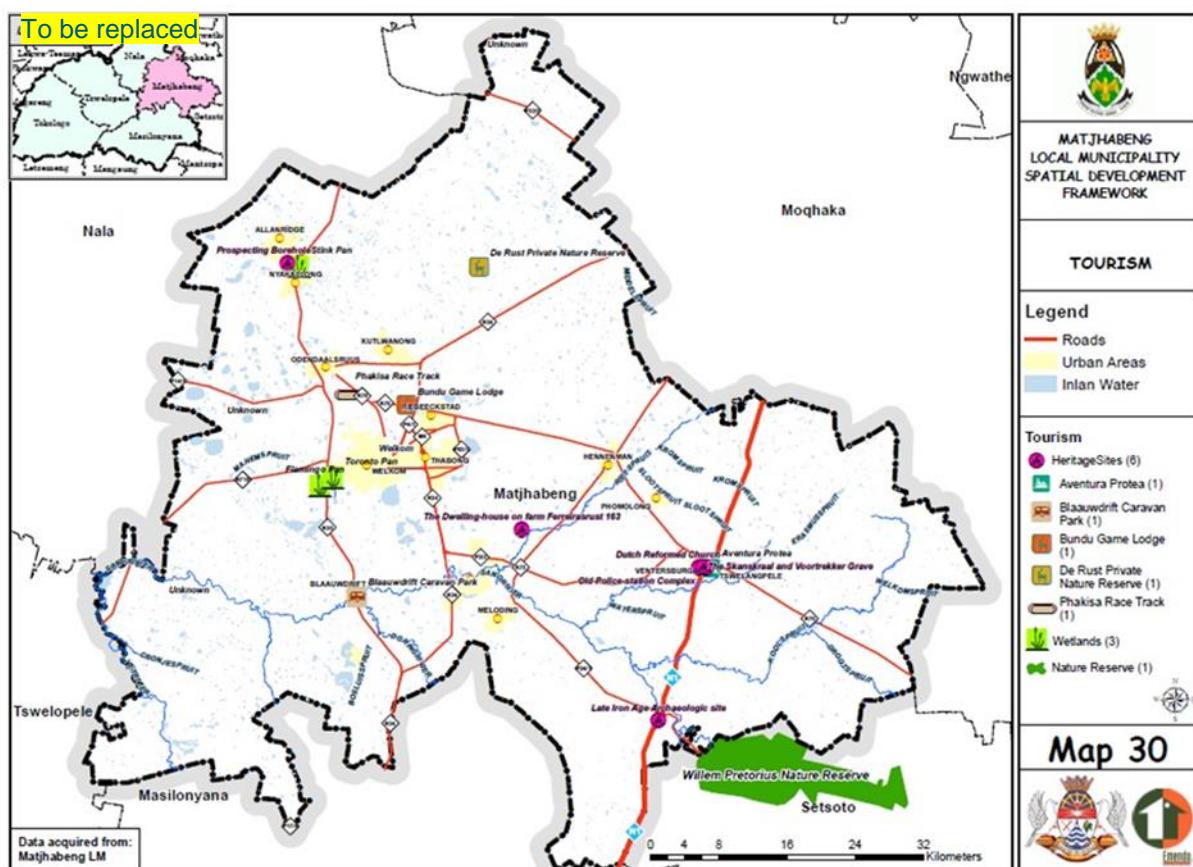


Figure 48: Tourism map (to be replaced)

Other monuments include:

- Afrikaans Language Monument
- Joanne Pim Monument

- World War II Monument
- Voortrekker Memorial
- Dog Monument
- Old Indaba Bluegum Tree
- Moth Memorial
- Museum of Welkom - The public library houses a display of the discovery of gold in Welkom, the town's history, and bird and animal life indigenous to this region
- Local Liberation Memorial - Commemorating local citizen's contribution to the Struggle in the apartheid years
- Activities/sites listed by the South African Heritage Resource Agency as heritage sites are:
 - Late Iron Age Archaeological Site
 - The Skanskraal and Voortrekker Grave
 - Dutch Reformed Church, and prospecting borehole.

Events tourism

- Events tourism are associated with the following facilities:
- Phakisa race track which hosts many motorsport events such as the annual "Beach on the Track" that attracts approximately 15 000 visitors
- Several golf courses
- 10 000-seater North West Rugby Stadium, which is home to the Griffons Rugby Team
- Klippan and Flamingo Lake used to host boating competitions
- The annual NAMPO Show at Bothaville which attracts thousands of people. Although it is not located within the municipal area, it is near to Matjhabeng

Mining tourism

With the decline of the mining sector, several mines have ceased operating which has created the opportunity to the use these redundant facilities for tourism purposes including:

- The potential availability of Harmony's Resident Steyn No 2 Shaft
- Linkages with the SAPS Museum at Ventersburg
- Tour itineraries developed by Dumelang
- The Aandenk Monument in Allanridge, marking the spot where Allan Robertys discovered the presence of gold
- Virginia jewellery school

Agri-tourism

Agri-tourism is a broad term used to define any agricultural based operation or activity that brings visitors to a farm. It can include farm stays, buying agricultural produce directly from a farm stand, picking fruit, feeding animals working on a farm during a holiday, or staying at bed and breakfast (B&B) on a farm. Opportunities in Matjhabeng include the municipal owned farm in Virginia, which is 650 ha in extent and contains two houses, two river houses, two chalets and ablution facilities.

Eco-tourism

Eco-tourism refers to nature based tourism, and it is intended to be a low-impact and environmentally conscious tourism activity, and includes bird watching, hiking, canoeing, safaris, and wildlife experiences.

The following eco-tourism attractions can be found in the Matjhabeng LM:

- Sand River Route incorporates an eco-tourism offering especially birding.
- Flamingo Lake - home to the lesser flamingo, which is considered a near endangered species. Harmony wishes to bring stakeholders, including Birdlife SA together to consider measures to protect these birds. A key measure would be to develop an island on the lake, on which to house the birds. Tsogo Sun, the operators of the Goldfields Casino, has expressed interest in supporting this initiative.
- Willem Pretorius Game Reserve is situated approximately 30km from Ventersburg, and the Allemanskraal Dam is a key feature. The reserve covers 1200 ha and has a great variety of bird, as well as game species. The Aldam Estate is located adjacent to the reserve. The Estate has different accommodation offerings, including a caravan park, chalets, and group accommodation.
- Other attractions include game lodges such as Tikwe lodge, school eco-tourism, Klippan, and Toronto Pan.
- Supporting tourism infrastructure
- Small airport for charter flights.
- Small hotels, and approximately 200 non-hotel beds.
- Gaps in tourism market
- Gaps in tourism infrastructure were identified in the 2013 SDF, which include:
 - No tourism development strategy, or tourism marketing strategy
 - A tourism brand does not exist
 - Under-resourced municipal tourism function, in respect of human resources and financial capacity
 - Lack of an organised private sector tourism representation structure
 - No municipal tourist information service
 - Weak linkages between public and private sectors.
 - Absence of qualified tour operators and tour guides
 - Limited tourism SMME support
 - Inadequate tourism signage

Yet, Matjhabeng has opportunities that can be exploited which include:

- Proximity to Gauteng
- Gautenger's looking for an easily accessible day trip/holiday/weekend getaway experience.
- Tour operators seeking new and value for money domestic tourism destinations.
- Leveraging of events at Phakisa, and other events to create wider awareness of Matjhabeng's tourism offerings.
- Joint packaging and cross-selling with other municipalities e.g. Mangaung.
- Tourist self-drives to the Cape and passing through Matjhabeng.

4.2.7 Crime

Reducing crime rates is particularly important for improving the business environment, creating jobs, and supporting sustainable economic growth. A recent study by Mahofa et al. (2016), examined the effect of crime on business registration across local municipalities in South Africa, and the results showed that increased crime rates reduce business entry. Property crimes matter most for business registration. Findings from business climate surveys and other related literature concur, and it highlights the inhibiting effect of crime on business. Furthermore, the study suggests that any industrial policy aimed at improving local economic growth, and job creation should consider strategies for improving policing and security. The importance of the ‘hidden’ cost associated with crime that hinders business growth and expansion plans must not be underestimated (Mahofa, 2016).

The maps below show that Matjhabeng was among LMs with the highest firm entry between 2003 and 2011 (>903), and that its crime rate was average (31.8-40.4).

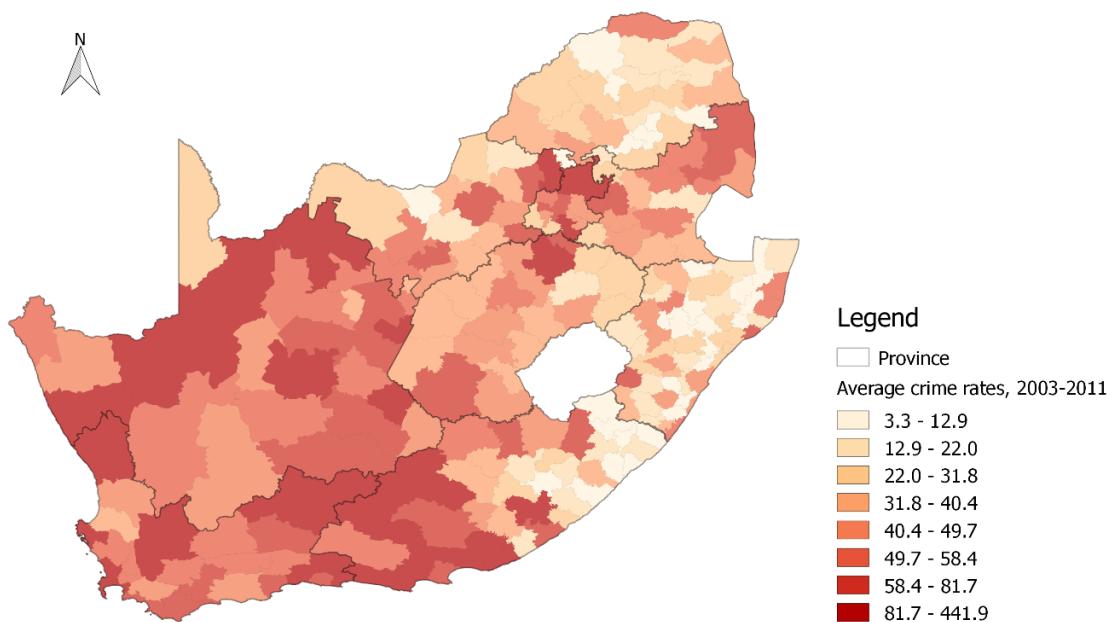


Figure 49: Distribution of average (2003-2011) total crime rates (Mahofa, 2016).

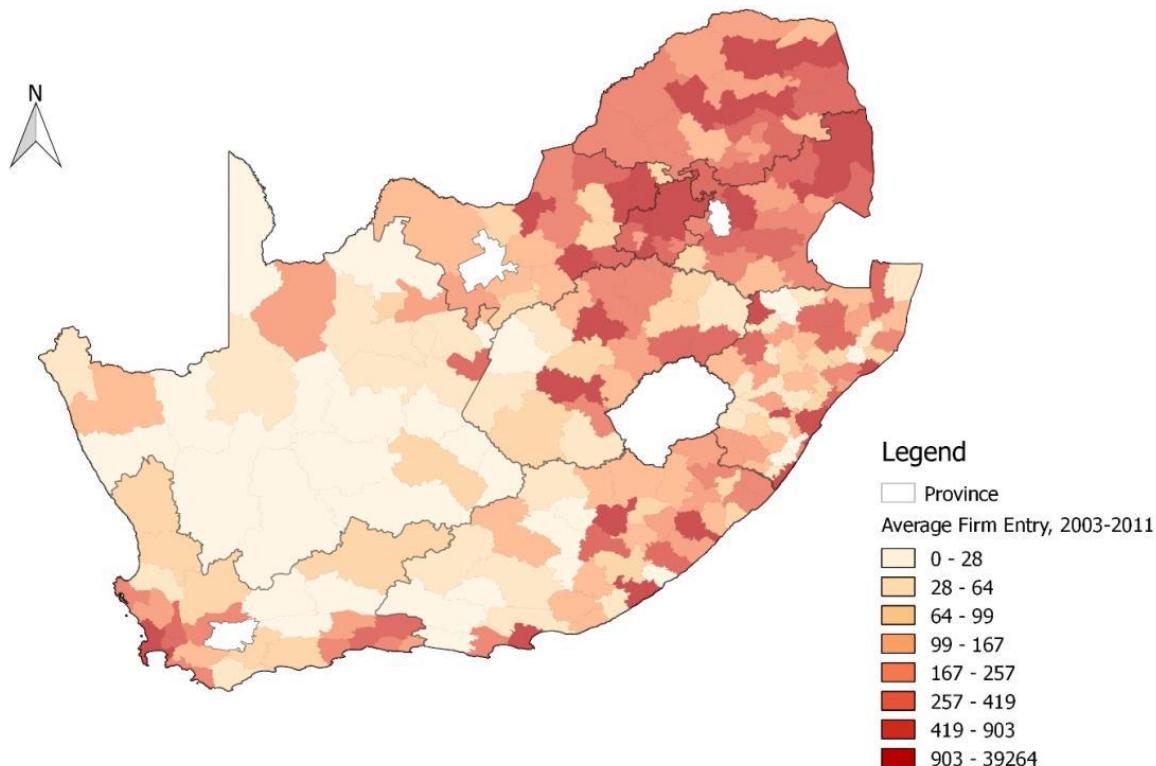


Figure 50: Spatial distribution of firm entry (average over the period)

Crime reported to SAPS

Crimes reported to police stations located at Ventersburg, Hennenman, Virginia, Meloding, Welkom, Thabong, Bronville, Odendaalsrus, and Allanridge,¹³ between 2007/2008 (Mar-Apr) and 2016/2017 are indicated that:

- Crime rates decreased at 13.4% overall
- Greatest decrease was in number of bank robberies from 4 to 0 (-100%), followed by arson 50 to 28 (-44.0%)
- Murder rate increased by 38% from 116 to 229 over the 10-year period, peaking at 255 in 2012/2013

Figure 51: Contact crimes in Matjhabeng 2008-2017

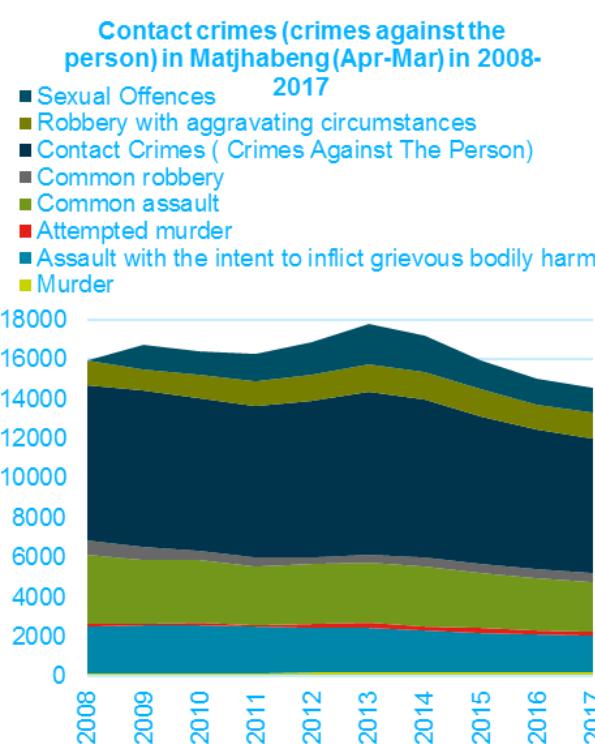
¹⁴

In the 2016/17 year the following is noted:

- The largest number of crimes was in the category '17 community reported serious crimes' (16 662 or 29.9%), followed by contact crimes against the person (6 807 or 12.2%)

¹³ Data source: SAPS [Online]. Available from: link https://www.saps.gov.za/services/boundaryget_d.php?1

¹⁴ Data source: SAPS, Crime statistics 2007/08 to 2016/17 from: <https://www.saps.gov.za/services/crimestats.php>



- Murder represents 2.6% (111) of the total
- Of the 55 717 crimes committed in Matjhabeng in 2016/2017, most were reported at the Welkom station (31.5%), and the least at Ventersburg (2.8%). However, the catchment population needs to be determined so that it can be expressed as a number of crimes per 100 000 population.
- Overall, the crime rate of Matjhabeng (12 992 per 100 000 persons) was higher than that of the Free State (11 865 per 100 000 persons).

Figure 52: Property related crimes in Matjhabeng 2008-2017¹⁵

Cost of crime

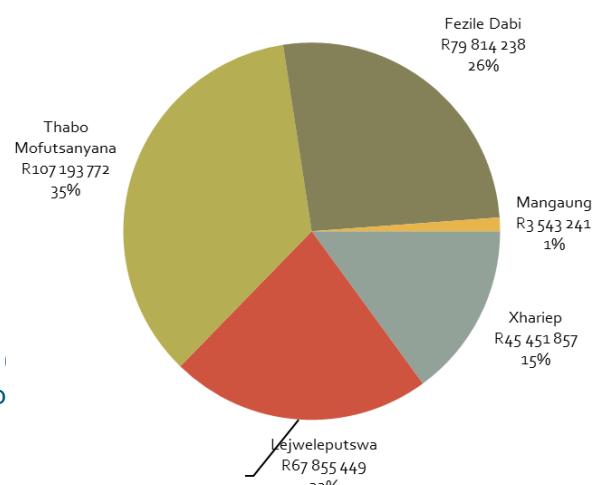
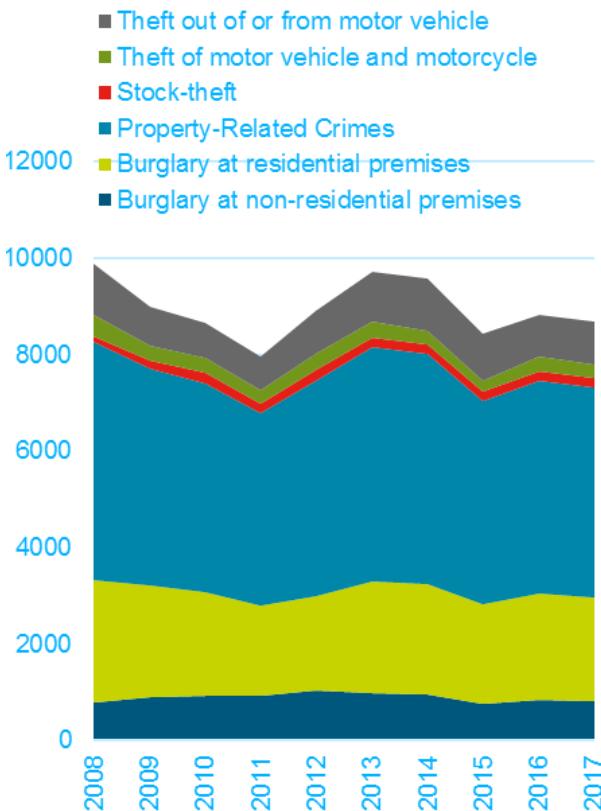
This section demonstrates the cost of crime to in two import sectors of the Matjhabeng economy, namely: stock theft and illegal mining.

Research conducted about stock theft in the Free State indicated that stock theft is higher than that reported by the official statistics. Over the three-year period, 2011 to 2013, livestock to the value of about R247 million was lost each year on average. In Lejweleputswa district, 14 996 sheep were lost out of a total of 250 770 (5.98% loss per annum). This was the highest rate recorded in the in the province, and the lowest rate was 0.96% in Xhariep district. The annual cost of this loss for the Lejweleputswa district was estimated at R25.5 million. The district with the largest direct annual loss was Thabo Mofutsanyane (R43.0 million, and Mangaung the lowest (R 2.4 million). Although Lejweleputswa district had the highest loss rate, the small number of sheep in the district led to a relatively low direct annual loss. Overall, losses in Thabo Mofutsanyane were almost double that of Lejweleputswa (Lombard, 2016).

Actions taken to control stock these include corralling of livestock (47%), last of guards (13%), guard dogs (13%), stock theft collars (10%, and cameras (8%). Active patrolling (48%, patrolling during problematic times (15%, and implementing access control (20% actively, 13% strategically) or other actions taken. The costs associated with these methods and actions are the indirect cost of stock theft. Districts that experienced larger losses spend more money on actions and methods. Variables that if the stock is that have a spatial dimension include (Lombard, 2016):

- sheep are farmed further away from towns
- farms near informal settlements experience stock theft more frequently
- farmers near the Lesotho border experience theft more regularly but not at levels higher than the rest of the province

Property-related crime in Matjhabeng



15 Data source: SAPS, Crime statistics 2007/08 to 2016/17, available from: <https://www.saps.gov.za/services/crimestats.php>

- larger farms tend to experience higher levels of theft

Figure 53: Stock theft cost by district (Lombard, 2016)

Table 4-14: Stock theft rate and cost in Lejweleputswa district (Lombard, 2016)

Stock theft	Annual loss rate	Annual cost
Sheep	5.98%	R25 493 200
Cattle	0.57%	R26 696 800
Goat	0.01%	R17 550
Direct cost subtotal		R52 207 550
Indirect cost		R15 647 899
Total cost		R67 855 449

The Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA) specifically prohibits mining without the required statutory authorisation (section 5(4)). This means that illegal mining is a criminal activity, which involving at least trespassing and theft. In South Africa, it is illegal to be in possession of unwrought precious metal ore, platinum group metals (PGMs), gold-bearing material and rough diamonds without the required statutory authorisation (Chamber of Mines, 2017).

Illegal mining, and organised crime are inter-related. Illegal mining is on the rise in South Africa presenting multidimensional challenges that need to be addressed. According to the Chamber of Mines “zama-zamas, as illegal miners are known in South Africa, are often heavily armed, have explosives and when trespassing on operating mines, set ambushes and booby traps for employees, security personnel and rival groups of illegal miners. Following the severe drought in 2016, the excessive use of water by zama-zamas to process the gold bearing material became apparent which directly impacts on local communities (Chamber of Mines, 2017).”

Furthermore, illegal mining has a range of negative social and financial impacts on the state, employees, companies, the mining sector, and the country because of loss of revenue, taxes, employment opportunities, capital expenditure, exports, foreign exchange earnings, procurement, etc. It also presents a serious risk to the sustainability of the industry and its ability to contribute to a meaningful future for all South Africans (Chamber of Mines, 2017).

According to Sibanye Gold’s security head illegal mining costs the country about R20bn a year in lost sales, taxes and royalties. Sibanye recently had 461 illegal miners arrested at its four Cooke mines near Johannesburg. Sibanye found 90% of those arrested for illegal mining at its operations were foreign, with many having mining experience as retrenched or out-of-work miners making up the underground teams. Gold and diamond mines were the most targeted by the illegal miners. Sibanye ‘guesstimates’ it is losing 3% to 4% of its gold production to illegal miners, and Moneyweb reports that according to its calculations, in the 12 months to March 2017, Sibanye produced 41 203 kilograms of gold from underground operations - 3.5% of this would translate to lost revenue of R756m based on spot prices and exchange rates.¹⁶



Figure 54: Quick facts about illegal mining (Chamber of Mines, 2017)

¹⁶ Legal brief (2018) your legal news hub, Thursday 15 March 2018. [Online]. Available from: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=5&ved=0ahUKEwir7Nyz_e3ZAhXLtqQKHC1cC4wQFghRMAQ&url=http%3A%2F%2Flegalbrief.co.za%2Fdiary%2Flegalbrief

To deal with illegal mining, a focus on both the supply and the demand side is needed, which includes local police and mine security to deal with issues on mining property, while additional players such as the Department of Mineral Resources and the National Coordinating Strategic Management must deal with the national and international buyers' market.

4.2.8 Summary of key challenges and opportunities

[SWOT analysis as summary]

4.3 Socio-economic analysis

4.3.1 Population trends and future estimates

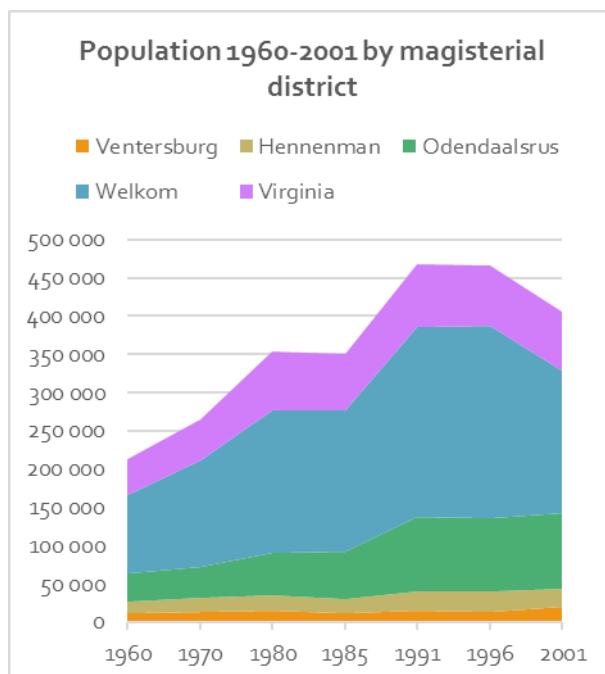
Determining future demographics is a major task for long-term plans. Besides general population growth, other influences include household splitting, single-parent households, urbanisation, migration, diseases, natural disasters, immigration policies, conditions in neighbouring states and global trends. Further splitting between various household income levels, and a growing middle-class affects the level of service demanded, which impacts on infrastructure capacities, financial resources, and sustainability.

Historical population trends

Figure 55 indicates that the population of the five magisterial districts (MD) that comprise Matjhabeng increased rapidly between 1960 and 1980, and again between 1985 and 1991 where it peaked. The magisterial districts of Ventersburg and Hennenman maintained a relatively even increase from 1960 to 2001 in contrast to Welkom and Virginia. Overall, the five MD's populations increased by 1.59% per annum between 1960 and 2001, with Odendaalsrus having the greatest increase, and Hennenman the least.

Figure 55: Population of magisterial district 1970 to 2001 (Stats SA, 2016a; Stats SA, 2016b)

Table 4-15: Population and annual growth 1970 to 2001 by magisterial district (Stats SA, 2016b)



POPULATION	N							Growth per annum			
	1960	1970	1980	1985	1991	1996	2001	1960-1980	1985-1991	1996-2001	1960-2001
Ventersburg	12 192	12 992	14 688	11 466	14 534	13 594	20 447	0.94%	4.03%	7.04%	1.27%
Hennenman	14 585	18 701	20 532	17 998	25 165	26 856	23 358	1.72%	5.75%	-2.30%	1.16%
Odendaalsrus	36 012	40 482	55 568	62 015	97 603	94 655	98 148	2.19%	7.85%	0.61%	2.48%
Welkom	102 633	139 631	185 243	184 603	248 186	251 690	186 528	3.00%	5.06%	-4.87%	1.47%
Virginia	47 019	53 712	77 426	73 701	81 780	79 090	77 286	2.53%	1.75%	-0.38%	1.22%
Total MD	212 441	265 518	353 457	349 783	467 268	465 885	405 767	2.58%	4.94%	-2.28%	1.59%

Data from the 2016 Community Survey indicates that Matjhabeng had a population of 429 113 reflecting a growth of 1.08% p.a. since 2011. The farm/rural populations show a negative growth of -8.30% (2011-2016), and -12.51% over the 20-year period (1996-2016). The rural population declined by 15-fold since 1996. In 1996, the farm/rural population contributed to 20% of the Matjhabeng population, and 20 years later to less than 2%. An inspection of the data from the three most recent population censuses shows that over the 15-year period Hennenman recorded the highest annual growth rate (0.69%) and Riebeeckstad the lowest (-0.36%). Over the 20-year period from 1996 to 2016, the urban areas of Matjhabeng experienced an average growth of 0.49% p.a. Please see 0 and

0. It is further noted that of the 22 secondary cities in South Africa, Matjhabeng is the only one to have experienced an overall population decline (John, 2012).

A Google Earth inspection of aerial photography in 2011 and 2016, reveals that the growth during this period mainly took place in Virginia (Melodring), and Welkom (Thabong and Bronville).

Table 4-16: Urban and rural population trends 1996 to 2016 in Matjhabeng LM (Stats SA, 2016a)

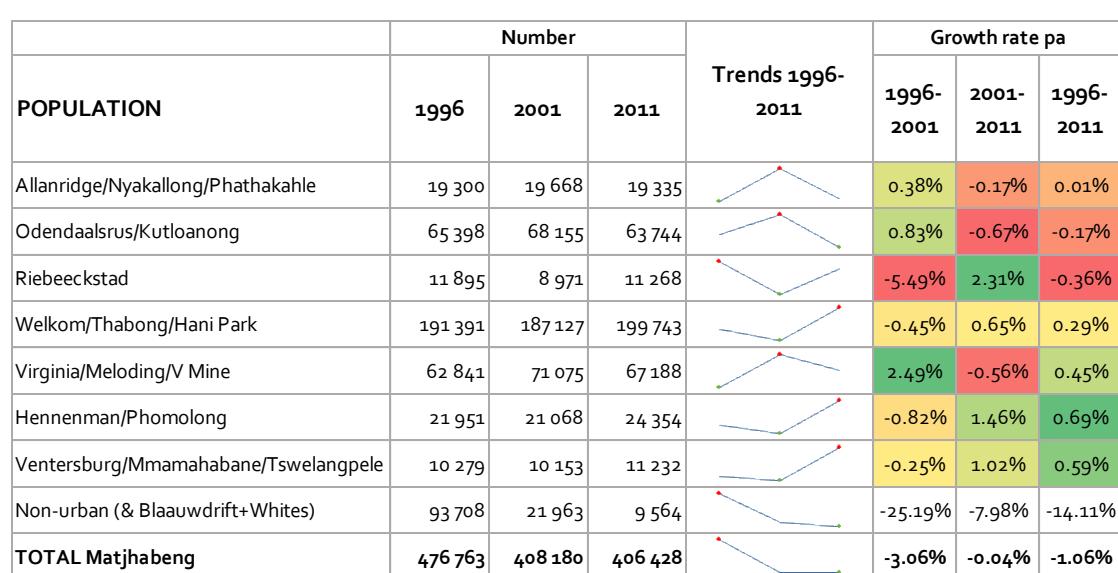
POPULATION	Number				Growth per annum			
	1996	2001	2011	2016	1996-2001	2001-2011	2011-2016	1996-2016
Urban	383 055	386 207	396 864	422 640	0.16%	0.27%	1.27%	0.49%
Farm/rural	93 708	21 963	9 564	6 202	-25.19%	-7.98%	-8.30%	-12.70%
Total	476 763	408 170	406 428	428 8423	-3.06%	-0.04%	1.08%	-0.53%

Table 4-17: Sesoto areas included in Matjhabeng in 2015 based on 2011 data

Population	2011
Sesoto	183
Sesoto NU	1 252
Total included into Matjhabeng	1 435

In 2015, an area of the Setsoto LM in the Thabo Mofutsanyane DM, located to the south of Matjhabeng was incorporated into Matjhabeng. It includes the Allemanskraal dam, a small resort settlement (Aldam Estate), and approximately a tenth of the Sesoto non-urban area. Based on the 2011 enumeration areas, it would imply an addition of about 1 500 persons, or 1.2% to Matjhabeng's 2011 population. Please note that **Error! Reference source not found.** below does not include this population from Sesoto.

Table 4-18: Population and annual growth 1996, 2001 and 2011 (Stats SA, 2016a)





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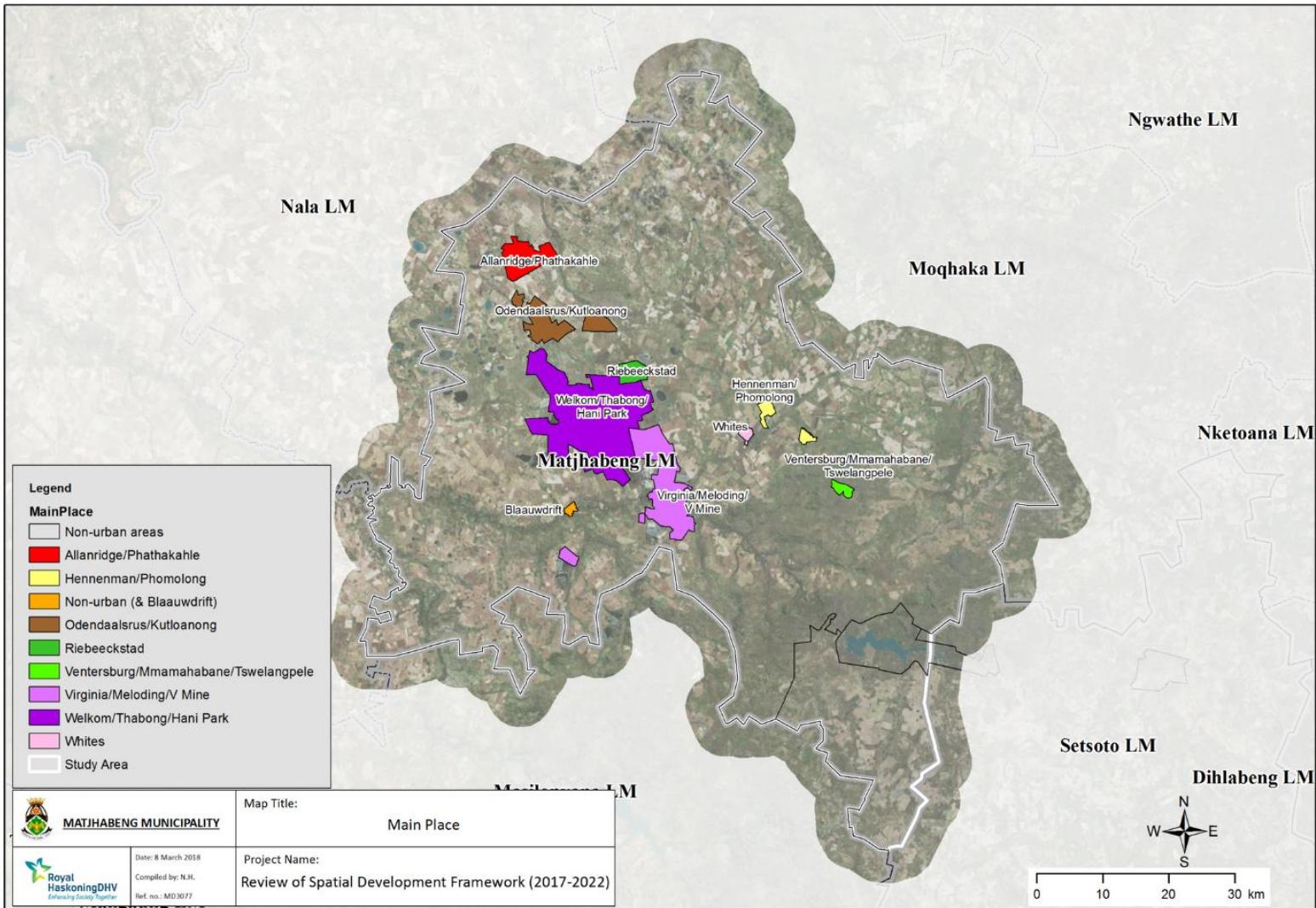


Figure 56: Main place map – map to be updated

Population growth trends

Trends in fertility, mortality, and net migration are analysed, and together with assumptions about the future, Matjhabeng's population is projected for the period 2016 to 2035.

Fertility and mortality

The population pyramid of Matjhabeng shows that it is constricting at the bottom with the youngest age category (0 to 4 years) no longer the broadest in 2016. The recorded live births data in 0, and learner numbers in 0 support the decline in fertility seen in the pyramid. The 2016 pyramid shows a bulge in the 15 to 39-year categories, and from age 60 years onwards there are more persons in 2016 than 2011 (29 697 and 34 147 persons respectively). This reflects rising life expectancy.

In 2016, the median age was 27, a little higher than the Free State (26).

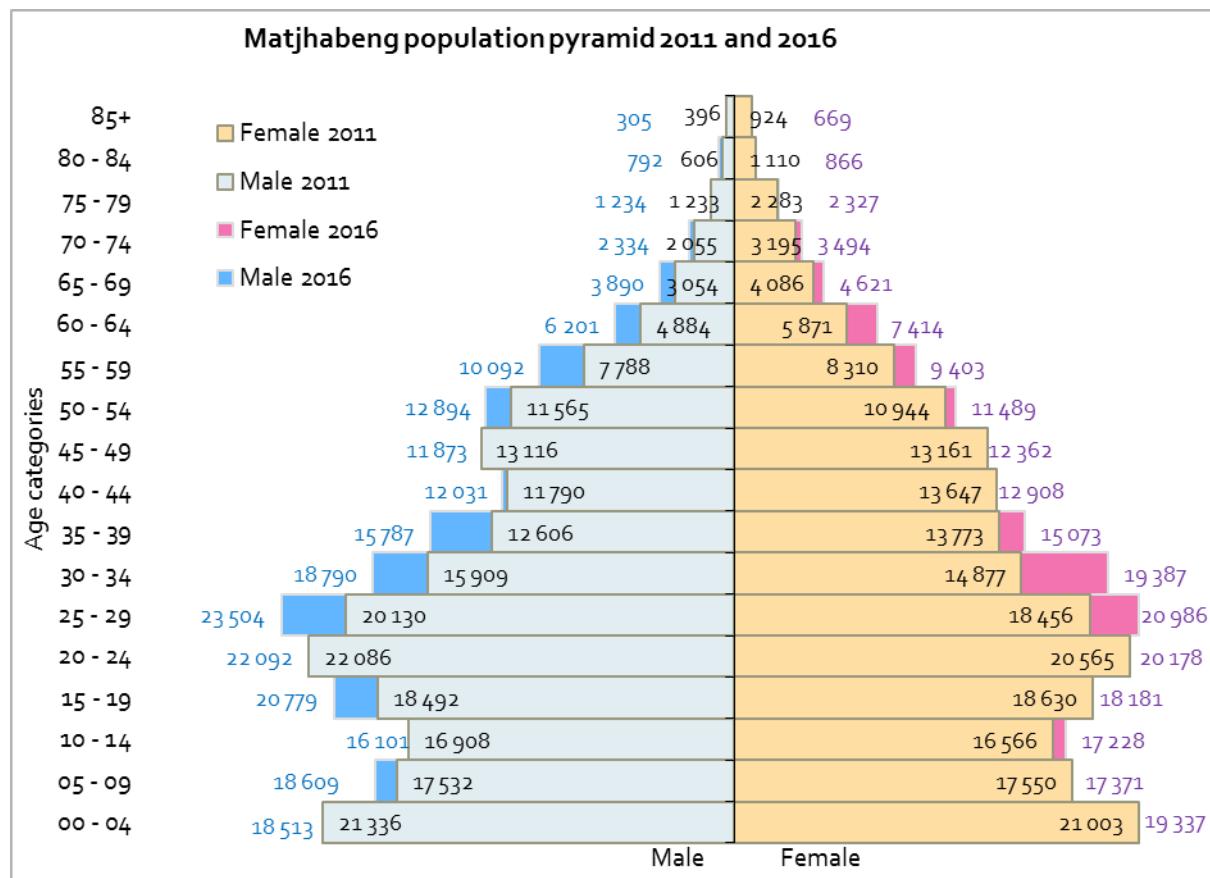


Figure 57: Matjhabeng population pyramid 2011 and 2016 (Stats SA, 2016a)

In 2016 Matjhabeng, males predominate at 101:100 females, while in 2011 the ratio was 98 males per 100 females. This is higher than the South Africa ratio which is predominantly female (95:100 females in 2011).

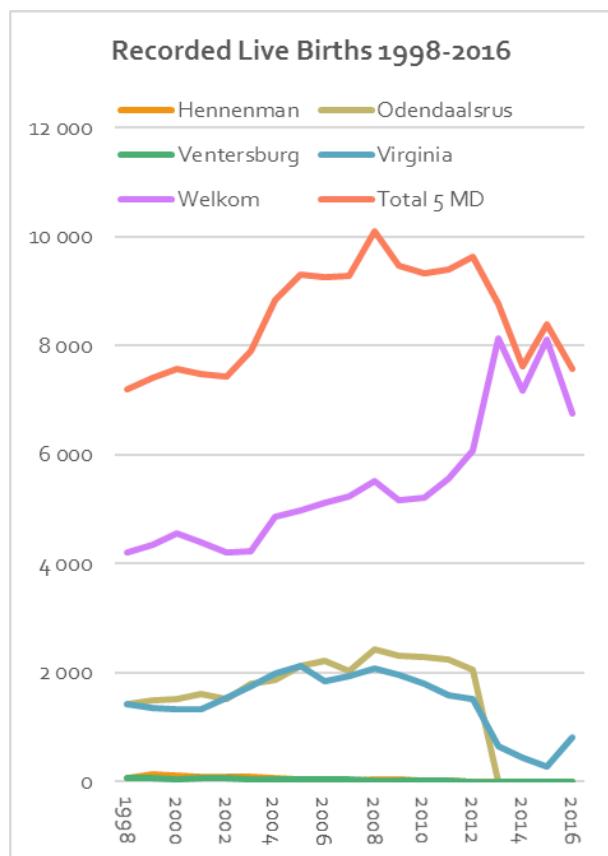
Recorded live births in the five magisterial districts that cover the Matjhabeng LM, indicate that births increased from 7 195 in 1998 to a peak of 10 897 in 2008, and then declined again to 7 568 in 2016.

Figure 58: Recorded live births by magisterial district 1998 to 2016

Declining school populations, and live births, support the narrowing of the population pyramid's base.

Table 4-19: Learner numbers and growth, 2007 and 2017¹⁷

Place ¹⁸	2007	2017	Growth 2007-2017 p.a.
Odendaalsrus	15 683	14 408	-0.84%
Riebeeckstad	1 873	1 816	-0.31%
Allanridge	4 763	4 561	-0.43%
Welkom	41 743	41 397	-0.08%
Virginia	13 129	12 443	-0.54%
Hennenman	4 763	4 561	-0.43%
Ventersburg	2 488	2 562	0.29%
TOTAL	84 442	81 748	-0.32%



In the 10-year period (2007-2017) learner numbers in Matjhabeng declined from 84 442 to 81 748 respectively, although the lowest number recorded was in 2013. Over this period an annual growth rate of -0.32% is recorded. Only Ventersburg had a positive growth rate of 0.29% p.a., and the lowest rate was recorded in Odendaalsrus (-0.84%).

Migration

The people of the Free State are less mobile than the average South African. Most tend to stay in the same place for their lifetime i.e. at the last 2011 census 86% of the Free State population had been living in the same place since 2001 or were born later and had not moved (Stats SA, 2011a). The Matjhabeng populations are slightly more mobile (84% not moved). The most mobile population within Matjhabeng was Riebeeckstad (23%), followed by non-urban populations (20%) and Odendaalsrus (18%). The least mobile were those from Ventersburg (7%), Hennenman (10%), and Allanridge (11%).

Figure 60 below also shows the extent of in-migration into Matjhabeng (Yes Media, 2018) since 2001; out-migration information is unavailable. Overall, 61 581 people moved into Matjhabeng since 2001 or were born after 2001 and had moved there, and Welkom received the most number of immigrants.

¹⁷ Data source: EMIS 2007-2017.

¹⁸ Includes the township areas.

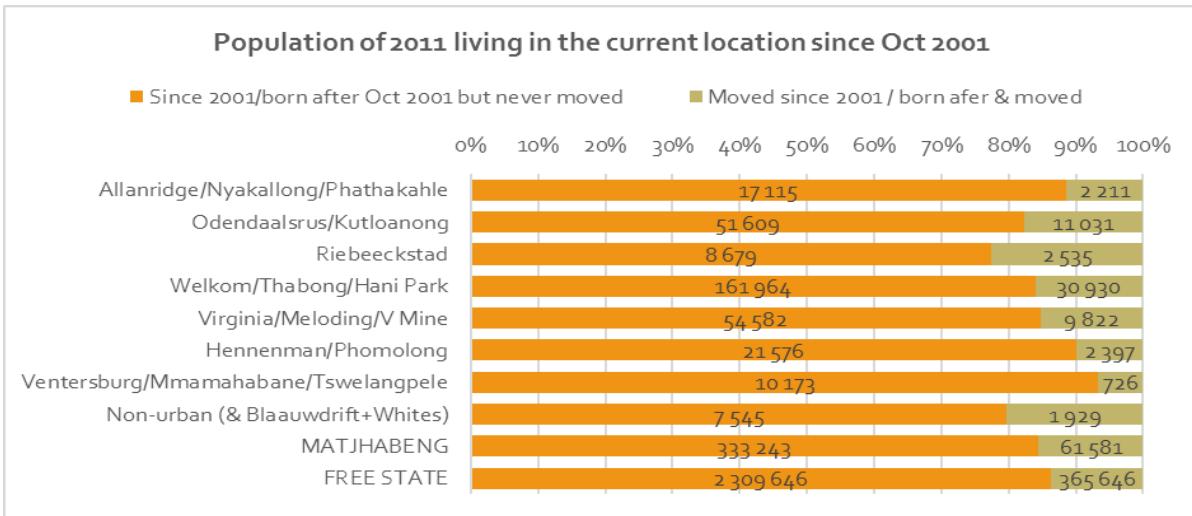
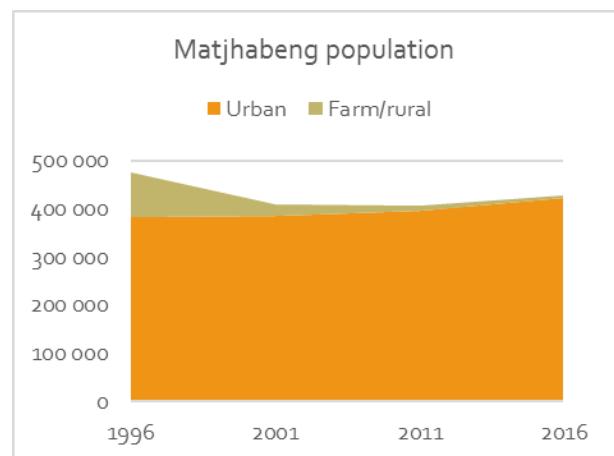


Figure 59: Population living in the current location since October 2001 (Stats SA, 2011a).

It is probable that the out-migration from farms to settlements has largely ended, with the main out-migration having taken place during the 1990s and early 2000s (Stats SA, 2011a). Furthermore, a rapid decline of migration into the province is predicted. The estimated provincial migration streams 2011-2016 indicated a net out-migration of -20 913 persons from the Free State, and this is expected to reduce to a net out-migration of -12 860 for the 2016-2021 period (Stats SA, 2017a). Matjhabeng, with its declining mining industry, may be unlikely to attract immigrants from other parts of the Free State and beyond.

Figure 60: Matjhabeng urban and rural population 1996-2016 (Stats SA, 2016a).



Population forecasting and caveats

Population estimates are based on historical and anticipated trends regarding migration, fertility and mortality discussed above. There is a risk of extrapolating population based on historical trends, and thus these factors are considered in combination with possible future developments, and economic growth in the area.

Understanding demographic trends is a key aspect of planning for the provision of appropriate services and infrastructure. Unlike the volatility of economic growth, macro demographic trends are relatively stable over time allowing projections with a reasonable level of certainty for the medium-term. However, forecasts for an area such as Matjhabeng, which is highly dependent on a mining economy, are therefore made with less confidence.

Future population growth expectations and assumptions

In a paper of projections to 2021, Udjo set out the following assumptions for the Free State (Udjo, 2015):

- Fertility rates remain higher than the replacement rate of 2.2, decreasing from 2.5 in 2011 to 2.33 in 2021. This is lower than the Free State's 2.57 total fertility rate projected by StatsSA for 2016-2021 (Stats SA, 2017a) .
- Life expectancy at birth increases from 53.6 in 2011 to 55.6 in 2021. This is also lower than StatsSA's projection for 2016-2021 of Free State males is 55.7 and females is 61.8 (Stats SA, 2017a).
- Free State's net migration (internal and international) changes from -1 814 in 2011 to 33 196 in 2021. This contrasts with StatsSA's projection of a net out-migration of -12 860 (Stats SA, 2017a).
- Lower than average annual growth of the population aged 15 years and older during the period 2011-2021 (1.41% compared to 1.56% SA). Between 2016 and 2021 the growth rate averages 1.17% but as seen in the figure the growth rate applied in 2016-2017 is 1.36%, which increases to 2.10% in 2020-2021. See 0.

Two additional entities made crude projections about the Free State population, namely (Go, 2013):

- 2.7 million in 2011 to 3.1 million in 2030 i.e. growth of 0.71% p.a. (NDP forecast)
- 3.1 million in 2030 and 3.4 million by 2050, implying a growth rate of 0.73% p.a. (2011-2030) and 0.46% p.a. (2030-2050) (International Futures – base case)

Figure 61: Projected population aged 15 years and over for Free State (Udjo, 2015).

The Department of Health made population projections to aid infrastructure planning, and their data shows that the Lejweleputswa district population would reach an estimated 670 290 in 2025. Growth rates applied were 0.64% p.a. 2011 to 2020, and 0.16% p.a. for 2020 to 2025 (Department of Health, 2015). These are more conservative than that proposed by Udjo for the district.

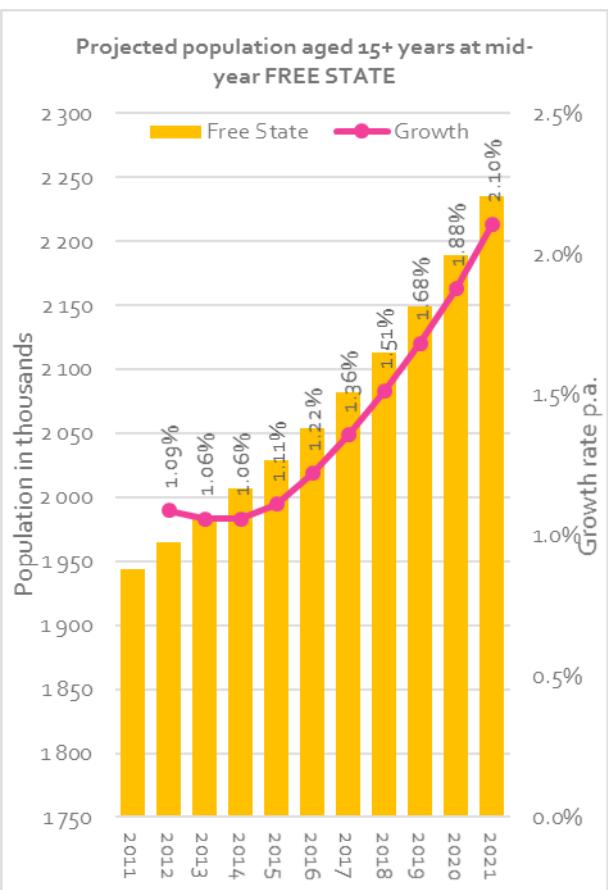


Figure 62: Population estimates by Udjo and DoH (Department of Health, 2015; Udjo, 2015)

Table 4-20 illustrates the wide range of growth rates applied to estimate future populations for the district and the province.

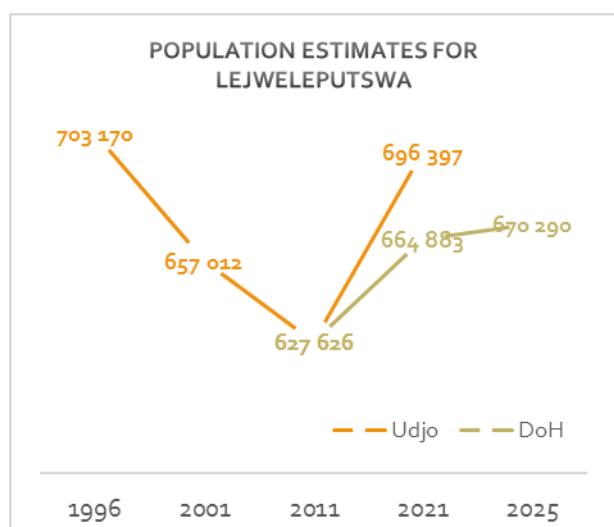


Table 4-20: Population estimates for Lejweleputswa and FS by source (Department of Health, 2015; Go, 2013; Udjo, 2015)

Municipal Boundary		Source	2011-2020	2020-2025	2030-2050
District	Lejweleputswa	Dept of Health	0.64%	0.16%	
	Lejweleputswa	Udjo (2021)	(2011-2021) 1.05%		
Province	Free State	Go et al.	(2011-30) 0.73%		0.46%

While the main cause of future population growth in Matjhabeng is likely to be natural increase rather than migration, a portion of the Matjhabeng's growth will be attributed to in-migration. Depending on the mining industry, and given that most of the urbanization has already taken place, it is expected that immigration will slow.

An unknown factor that further confounds expected growth is the migratory nature of the population, and their ties retained with labor sending areas. Thus, several questions need to be addressed: 'Is continued settlement in Matjhabeng contingent on continued employment in the area?' Given international experience, major shifts in employment are likely to promote large-scale departures which is expected in remote mining towns where the mine is the only large-scale employer, and where the town was originally established to serve its employer. With few ties experienced beyond the relationship with the employer there is little reason to remain (Cloete, 2009). Given this potential for high mobility, the risk associated with large-scale resettlement should not be disregarded.

Thus, natural growth will be the dominant growth factor due to the large number of women in their reproductive ages of 15-50 years, increasing life expectancy, and declining mortality rates. It is unlikely that Matjhabeng's population growth will be greater than the Free State average since its mines are in decline, and no other extraordinary pull factors to attract immigrants are identified.

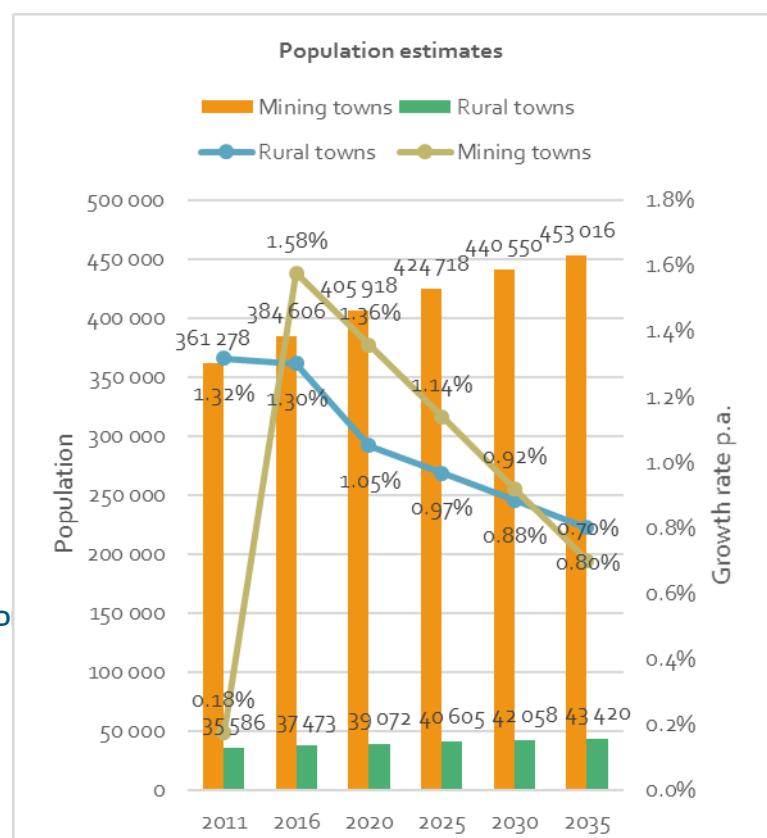
Applying Udjo's analysis to the Matjhabeng population, and assuming that Matjhabeng will become more typical of the Free State in general with the decline of the mining industry, estimates to 2035 are made.

Population estimates to 2035

Founded on the information detailed above, and the use of the 2011 population census data as the base, population estimates are made as follows:

- Mining towns: Allanridge, Odendaalsrus, Welkom, Virginia, and Riebeeckstad - As the main urban area with its economy tied to the mining industry, there will be a limited outmigration as mines shed jobs. However, it is likely that most retrenched mine workers will continue to live in the area, and this may stimulate the expansion of informal areas. For the 2016-2035 period the population is estimated to grow at an average of 0.87% p.a.

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- Rural towns: Ventersburg, and Hennenman - Maintain a long-term population growth of 0.78% p.a. given the relative lack of factors to attract and retain economically active persons, and these towns continue to function as local service centres as in the past.
- Rural area and farms: Rural to urban migration stagnates, since the past rapid decline implies that most farm outmigration has already taken place, and a zero-growth rate is applied.

Figure 63: Population estimates for mining and rural towns of Matjhabeng 2011-2035

Table 4-21: Annual growth rates applied for population estimates

Growth rate p.a.	2011	2016	2020	2025	2030	2035	2016-2035
Mining towns	0.18%	1.58%	1.36%	1.14%	0.92%	0.70%	0.87%
Rural towns	1.32%	1.30%	1.05%	0.97%	0.88%	0.80%	0.78%
Farms	-7.98%	-8.30%	0.00%	0.00%	0.00%	0.00%	0.00%
Average	-0.04%	1.08%	1.31%	0.88%	0.72%	0.56%	0.85%

Table 4-22: Population estimates for Matjhabeng 2011 to 2035

Population	2011	2016	2020	2025	2030	2035
Mining towns	361 278	384 606	405 918	424 718	440 550	453 016
Rural towns	35 586	37 473	39 072	40 605	42 058	43 420
Farms	9 564	6 763	6 763	6 763	6 763	6 763
TOTAL	406 428	428 842	451 753	472 086	489 372	503 199

The Matjhabeng population is estimated to reach about 451 753 by 2020, and 503 199 by 2035. It should be noted that projections and forecasts are typically based on several simplifying assumptions and are, in part at least, only as reliable as the data on which they are based. These facts should not be understated when considering the population projections for Matjhabeng, which attempt to inform long-term planning.

Households, dwellings and services

Profile and number of households

In 2016, Matjhabeng had almost 150 000 households, which contributed to 68% of the Lejweleputswa district's households. Overall households increased by 1.52% per annum during the 20-year period between 1996 and 2016. Although total households increased during this period, unlike the population, households living on farms reduced significantly, and by 2016 were estimated to be about 3 000.

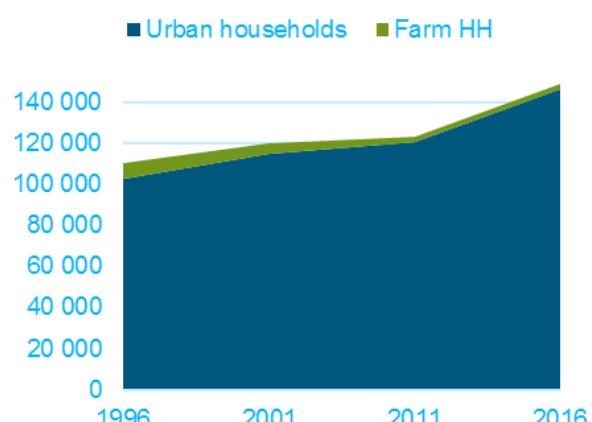
Matjhabeng households

Figure 64: Urban and rural households in Matjhabeng 1996 – 2016

By contrast, the urban households grew in the 20-year period, with the greatest rate of increase seen

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in the latter 5-year period (3.94% p.a.), while the population increased by less than half that rate (1.27%).

Figure 65: Matjhabeng urban population and household growth 1996-2016 (Stats SA, 2016a)

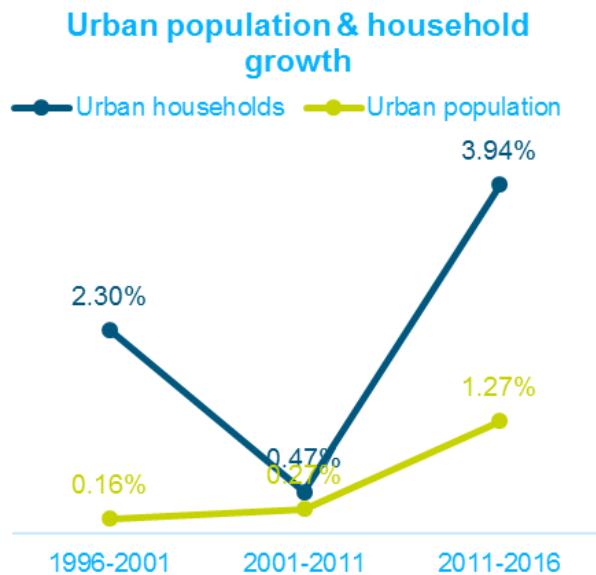
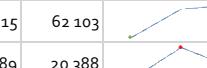


Table 4-23: Population and households and annual growth rate by urban and rural 1996 to 2016 in Matjhabeng (Stats SA, 2016a)

	N				Growth p.a.			
	1996	2001	2011	2016	1996-2001	2001-2011	2011-2016	1996-2016
POPULATION								
Urban	383 055	386 207	396 864	422 640	0.16%	0.27%	1.27%	0.49%
Farm/rural	93 708	21 963	9 564	6 473	-25.19%	-7.98%	-7.51%	-12.51%
Total	476 763	408 170	406 428	429 113	-3.06%	-0.04%	1.09%	-0.53%
HOUSEHOLDS								
Urban area HH	102 566	114 905	120 408	146 067	2.30%	0.47%	3.94%	1.78%
Farm HH	7 655	5 384	2 721	2 954	-6.80%	-6.60%	1.66%	-4.65%
Total	110 221	120 289	123 129	149 021	1.76%	0.23%	3.89%	1.52%

The trend lines illustrating household numbers between 1996 and 2011 in Matjhabeng spike in 2001, in the urban areas that are tied to mining economies i.e. Allanridge, Odendaalsrus, Welkom, and Virginia, whilst Hennenman and Ventersburg have the highest household numbers in 2011.

Table 4-24: Household numbers, trends and average household size 1996 to 2011 (Stats SA, 2016a)

	Number			Trends 1996-2011	Growth rate pa			Average HH size			
	1996	2001	2011		1996-2001	2001-2011	1996-2011	1996	2001	2011	
Allanridge/Nyakallong/Phathakahle	4 867	5 778	4 857		3.49%	-1.72%	-0.01%	3.97	3.40	3.98	
Odendaalsrus/Kutoanong	16 902	20 381	18 711		3.81%	-0.85%	0.68%	3.87	3.34	3.41	
Riebeeckstad	3 822	2 844	3 774		-5.74%	2.87%	-0.08%	3.11	3.15	2.99	
Welkom/Thabong/Hani Park	52 844	60 915	62 103		2.88%	0.19%	1.08%	3.62	3.07	3.22	
Virginia/Melodoring/V Mine	17 150	25 189	20 388		7.99%	-2.09%	1.16%	3.66	2.82	3.30	
Hennenman/Phomolong	5 032	5 452	7 164		1.62%	2.77%	2.38%	4.36	3.86	3.40	
Ventersburg/Mmamahabane/Tswelangpele	2 446	2 737	3 411		2.27%	2.23%	2.24%	4.20	3.71	3.29	
Non-urban (& Blaauwdrift+Whites)	7 655	5 384	2 721		-6.80%	-6.60%	-6.66%	12.24	4.08	3.51	
Matjhabeng	110 718	128 680	123 129		3.05%	-0.44%	0.71%	4.31	3.17	3.30	

Note: Sesoto areas included in Matjhabeng in 2015 based on 2011 data

Table 4-25: Households in Sesoto as of 2011

Households	2011
Sesoto (SP)	75
Sesoto NU	356
Total included into Matjhabeng	431

Based on the 2011 enumeration areas, the inclusion of Sesoto and about a tenth of Sesoto's non-urban households adds about 431 households, or an addition of 0.3% to Matjhabeng's 2011 households. Table 4-24 above does not include these additional households.

The size of urban households decreased from 3.73 in 1996 to 2.89 persons in 2016 i.e. at an average annual rate of -1.27%.

Table 4-26: Average household size 1996 to 2016 (Stats SA, 2016a)

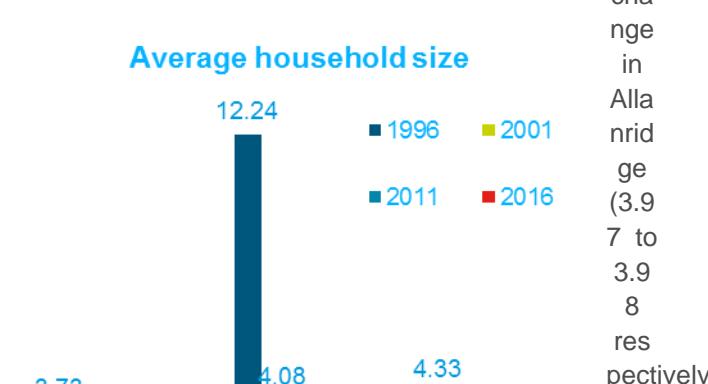
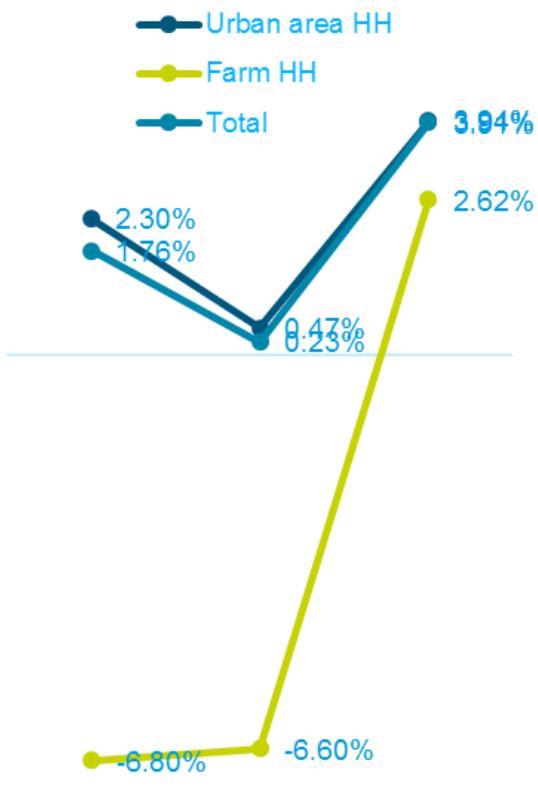
Ave HH size	1996	2001	2011	2016	Change1996-2016 p.a.
Urban	3.73	3.36	3.30	2.89	-1.27%
Farm/rural	12.24	4.08	3.51	2.10	-8.44%
Total	4.33	3.39	3.30	2.88	-2.02%

Figure 66: Annual household growth 1996 to 2016 by urban and farm (Stats SA, 2016a)

Overall in Matjhabeng, 39.8% of households were headed by females and 0.4% by children. This is slightly lower than the Free State average (41.7% and 0.5% respectively). In 2016, an estimated 454 households had heads who were under 18 years old i.e. child headed households of which 17.4% were occupying informal dwellings.

Whilst the average household size in Matjhabeng was 3.30 in 2011, it ranged between 2.99 in Riebeeckstad to 3.98 in Allanridge. The greatest change in urban household size is recorded in Hennenman (4.36 to 3.40 in 1996 and 2011 respectively) and the lowest

Matjhabeng annual household growth 1996-2016

**Figure 67: Average household size in urban and rural areas 1996 to 2016 (Stats SA, 2016a)**

The figure below illustrates the household sizes which shows that in all places, except Riebeeckstad, 20% of households consisted on only one person in 2011.

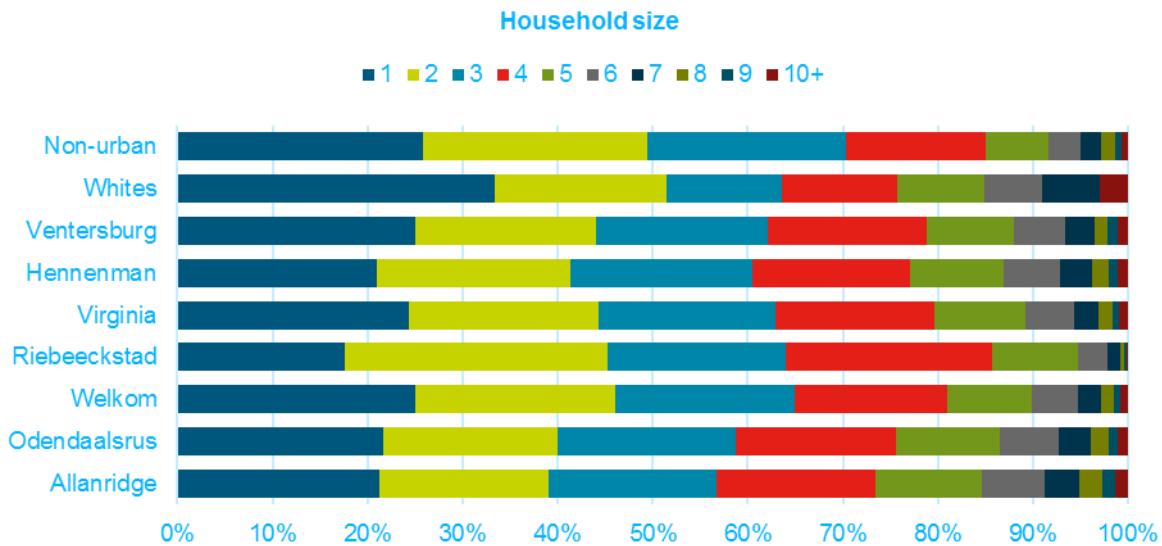


Figure 68: Household size by place, as of 2011 (Stats SA, 2016a)

The figure below shows that households with only one person more commonly occupy a room/flatlet on a property or larger dwelling/servant's quarters, or a cluster house in a complex. The pattern amongst informal dwellers is similar whether they are in backyards or not. Larger households typically occupy formal dwellings, or townhouses.

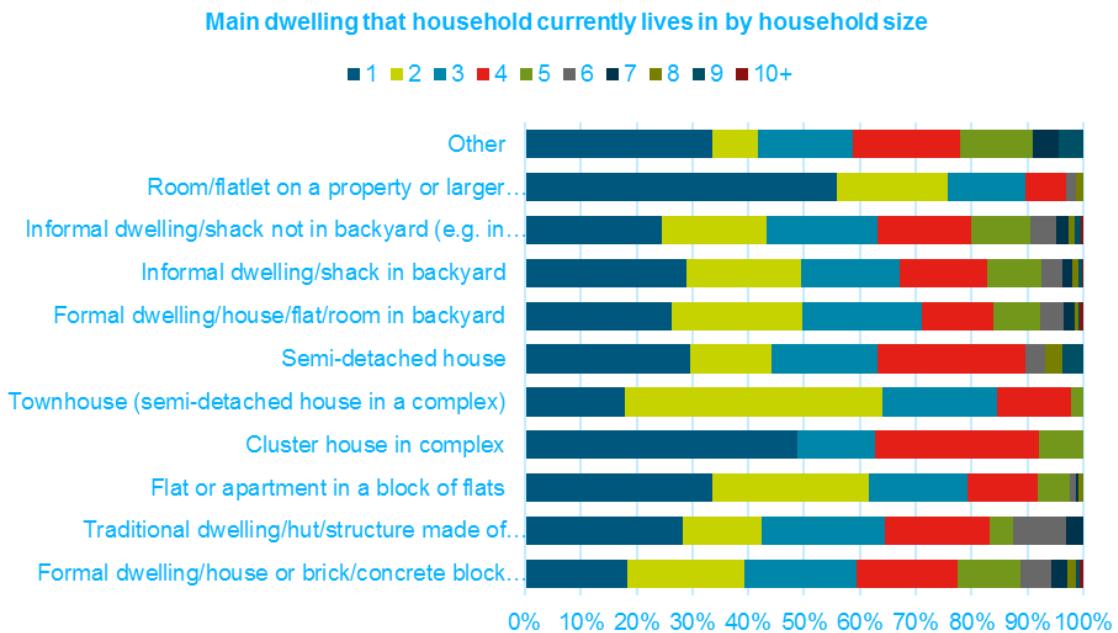


Figure 69: Household size by main dwelling in Matjhabeng 2016 (Stats SA, 2016a)

Household projections

Household growth is particularly important because it is at this level the basic services are demanded. The general trend in South Africa has been that households increased more rapidly than the overall population reflecting a decline in the number of persons per household.

District household projections were prepared by Udjo. Household head ratios were computed for all district municipalities from 1996, 2001 and 2011 census data, and this was linearly extrapolated to 2021. Estimates of the number of households for Lejweleputswa are 244 868 in 2021. In a similar manner, dwelling unit projections were made assuming the trend in the ratio of total number of dwelling units to household units in 2012-2021 will be like those of 2001-2011. The projected number of dwelling units in Lejweleputswa for 2021 is 237 983. Taking this a step further, and assuming that the same ratio applies to the local municipalities, then for every 100 households there will be 97 dwellings in Matjhabeng. In the Free State the ratio is 102 dwellings per 100 households, and an average annual growth rate in the number of dwelling is estimated at 3.0% between 2011 and 2021; the same as the national projected growth rate.

Household and dwelling estimates are undertaken as part of the Integrated Human Settlement Plan (Housing Sector Plan) currently being undertaken for Matjhabeng.

Poverty and income

Income per capita

Matjhabeng along with Steve Tshwete, and the Western Cape towns, had high capita earnings in 2010. In Matjhabeng's case the strong per capita levels may have resulted from the declining population levels over the past decade (John, 2012), because salaries and wages have not declined as dramatically as employment (Environmental Impact Management Services, 2016). This could be attributed to increased productivity with fewer employees producing the output, accompanied by a decline in unemployment of semi-skilled and unskilled workers. This leads to structured unemployment, which increases the burden on the national fiscus, and results in the public sector employing the most workers across many municipalities in South Africa (Environmental Impact Management Services, 2016).

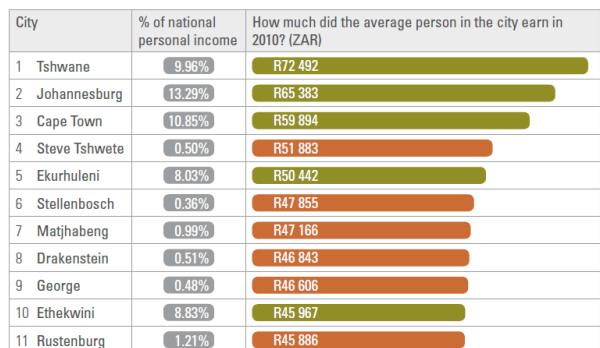


Figure 70: Income levels in top 10 cities in 2010 (Environmental Impact Management Services, 2016)

Along with the 22 secondary cities in South Africa, Matjhabeng's personal income levels have risen since 2000, although it is warned that the picture could be skewed because these figures must be corrected for inflation (Environmental Impact Management Services, 2016).

Indigent households

According to Matjhabeng's Indigent Policy (Matjhabeng Local Municipality, 2017/2018), the municipality may apply the following targeting methods outlined in the table below.

Table 4-27: Indigent households' targeting approach¹⁹

Targeting approach	Application
1. Service levels	Lowest service levels normally in informal settlements and rural areas.
2. Property value	Applicable only to registered indigents in respect of subsidised or RDP housing to a value determined in addition to the R15 000 in terms of the Property Rates Act, 2004.
3. Household income	Threshold shall be determined in terms of socio-economic analysis equalling three state pension grants per Indigent household or an amount determined by the Council from time to time.
4. Geographical (Zonal) Targeting	Specific areas (rural or urban) where households are regarded as poor irrespective of service level.

In the 2017/2018 financial year, the municipality used household income as the targeting approach for the registration and verification of indigent customers (Matjhabeng Local Municipality, 2017/2018). At three old age grants (OAG) this amounts to a monthly income of R5 070 per month, and R60 840 p.a. In 2011 prices, it amounted to R41 040 p.a.

Household income and proportion of indigent households

Several sources measure the number of indigent households including the municipality's indigent household register, and data from Statistics South Africa, which is used by National Treasury to determine equitable share amounts (Water Resource Commission, 2005; Treasury, 2018). It is widely recognised that there is an under registration of indigent households by municipalities, and many municipal indigent registers record lower proportions than that determined by National Treasury. A reason for this is that often there is no incentive to be registered especially in situations where households receive free basic services regardless of their status at the municipality. Furthermore, the number of registered indigent households can vary considerably from year to year, often depending on whether a registration campaign has been undertaken.

According to National Treasury, 89 337 (59.9%) households in Matjhabeng are indigent. This is far more than the 19 536 households receiving FBS according to Matjhabeng's 2016/17 records. It is 66% less than the proportion of indigent households that should be registered if the 2011 Census household income data is still relevant (and still used by National Treasury). According to the Matjhabeng annual report of 2014/15 FBS were provided to 25 186 indigent households, more than the number served in 2016/17 (see page 82), and a decrease since from 20 677 in 2011/12 as well (Yes Media, 2018).

Table 4-28: Indigent households in Matjhabeng according to the equitable share calculation by National Treasury

	2014/15	2018/19
Households	124 420	149 163
Indigent HH	74 506	89 337
% indigent	59.9%	59.9%

Whilst National Treasury uses a two OAG threshold, a three-pension model is practiced at Matjhabeng. In 2011, the value of three old-age pensions was R41 040 per annum. Assuming an even distribution in the R 38 400-76 400 category, then 66% of households in Matjhabeng would have had incomes of ≤R 41 040 p.a. and could, therefore, be regarded as indigent households. The reason why this is higher than the calculation by National Treasury is because Treasury uses only two old age grants as the criteria.

Cumulative annual household income in indigent and non-indigent categories 2011 (Stats SA, 2016a).

¹⁹ Ibid, P 5.

Income categories		Allanridge	Odendaalsrus	Welkom	Riebeekstad	Virginia	Hennenman	Ventersburg	Whites	Non-urban	TOTAL
Indigent	No income	15%	15%	18%	8%	18%	12%	17%	17%	5%	16%
	R 1 - R 4 800	21%	21%	23%	9%	24%	18%	24%	22%	8%	22%
	R 4 801 - R 9 600	29%	28%	31%	11%	31%	26%	34%	25%	13%	29%
	R 9 601 - R 19 600	49%	47%	47%	17%	47%	51%	59%	53%	49%	47%
	R 19 201 - R 38 400	72%	67%	65%	23%	62%	73%	80%	83%	77%	65%
	R 38 201 - R 41 040	73%	68%	66%	24%	64%	74%	80%	84%	78%	66%
Non-indigent	R 41 040 - R 76 400	87%	84%	80%	32%	79%	86%	91%	94%	88%	81%
	R 76 401 - R 153 800	95%	93%	90%	50%	90%	93%	96%	97%	92%	90%
	R 153 801 - R 307 600	99%	98%	97%	74%	96%	98%	99%	97%	96%	97%
	R 307 601 - R 614 400	100%	100%	100%	93%	99%	100%	100%	100%	99%	100%
	R 614 001 - R 1 228 800	100%	100%	100%	98%	100%	100%	100%	100%	99%	100%
	R 1 228 801 - R 2 457 600	100%	100%	100%	99%	100%	100%	100%	100%	100%	100%
R 2 457 601 or more		100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Mobiles and money

The mobile phone is a ‘life-changing tool’ and the UN called it a potential accelerator towards reaching the Millennium Development Goals (Gossmann, 2012). Customers everywhere use it and in South Africa, the proportion of households owning cell phones increased from 31.9% in 2001, to 88.9% in 2011, to 92.1% in 2016. However, the proportion of Free State households with cell phones is slightly lower (91.3%), and in Matjhabeng, 92.9% of households owned at least one device in 2016 (Stats SA, 2016a).

Mobile money needs a mobile device to transfer, deposit or withdraw funds. It has made an enormous impact as a “financial inclusion gadget”, particularly in Sub-Saharan Africa, especially for informal urban dwellers who do not easily qualify to open a bank account. E- money enables them to “obviate the bank altogether without having to hide cash under their mattresses or travel long distances to transfer money. It has been so good at including marginalized populations into the financial system in fact that philanthropic funds and multi- lateral organizations hastened to open up their generous funds to them (Gossmann, 2012). M-PESA’s winning concept from Kenya has spread all over the world, and in South Africa the equivalent is Wizzit.

Income poverty of households

According to the upper-bound poverty line (R992 per person per month in 2015 prices), 40.0% of households in South Africa were poor in 2015, and in the Free State 43.1% were poor. This means that about 1 214 515 Free State households were living in poverty in 2015 i.e. these households could not purchase both adequate food and non-food items (Stats SA, 2017a).

In 2015, Limpopo (55.4%), and the Eastern Cape (54.3%) were the worst off (highlighted in red in the table below), while Gauteng (26.0%) and Western Cape (25.3%) were the best off (highlighted in dark green). The Free State ranked third best off out of the nine provinces (Stats SA, 2017a).

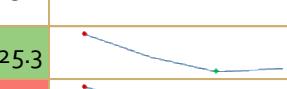
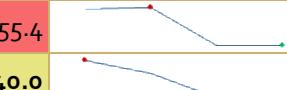
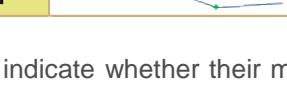
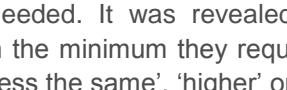
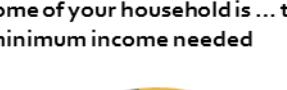
Between 2006 and 2011 there was a general decline poverty, but after 2011 poverty levels rose, see trend lines in the Table 4-29. The Free State experienced an increase from 48.6% in 2006 to 54.3% in 2009, thereafter dipping to 41.7% in 2011, only to increase again to 43.1% in 2015. Despite this recent increase, households are still better off compared to the situation in 2006, where most households in six

out of the nine provinces in South Africa were living below the upper-bound poverty level (Stats SA, 2017a).

The trend lines in the table below show that by 2011, the situation improved across all but two provinces, where poverty peaked higher in 2009 than 2006 (Free State and Limpopo). By 2015, gains made up to 2011 were eroded in all, but Limpopo and Mpumalanga. The North West province recorded the highest increase (Stats SA, 2017a).

Household income poverty (upper bound) by province in 2006-2015

Table 4-29: The upper-bound poverty line was R431 per person per month in 2006, R577 in 2009, R620 in 2011, and R992 in 2015 (Stats SA, 2017a).

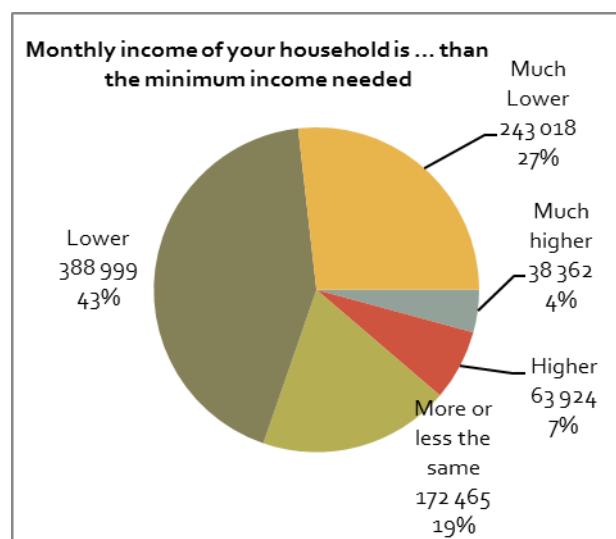
Upper-bound poverty level	2006	2009	2011	2015	Trend line 2006-2015
Western Cape	38.3	29.8	23.9	25.3	
Eastern Cape	64.9	60.5	52.1	54.3	
Northern Cape	58.3	54.8	45.2	45.6	
Free State	48.6	54.3	41.7	43.1	
KwaZulu-Natal	59.7	54.4	47.0	48.4	
North West	55.6	54.7	43.9	49.0	
Gauteng	33.2	30.1	23.0	26.0	
Mpumalanga	63.1	59.1	48.2	46.0	
Limpopo	70.2	71.2	55.8	55.4	
Total - South Africa	52.1	47.2	38.3	40.0	

In the 2016 general household survey (GHS) households could indicate whether their monthly income was higher or lower than the minimum that they felt they needed. It was revealed that 27% of households had a monthly income which was 'much lower' than the minimum they required, and 43% 'lower' totalling 70%. Another 30% indicated that it was 'more or less the same', 'higher' or 'much higher' than what was needed.

Figure 71: Monthly income of the household is higher or lower than the minimum needed, Free State 2016 (Stats SA, 2016b).

Multidimensional poverty

Poverty is not just about money; it is multidimensional. It can be about being hungry, being ill, not having a toilet or a house, no schooling, or lack of decent work. These are factors that can quantify a poor person's experience of deprivation. Thus, it includes many dimensions of wellbeing, and complements



income poverty because it goes beyond the monetary aspect of people's lives.

Eleven (11) indicators across four dimensions, illustrated in the figure below, are used in South Africa to compile an index of multidimensional poverty.²⁰



Figure 72: Dimensions and indicators of multidimensional poverty (StatsSA, 2014)

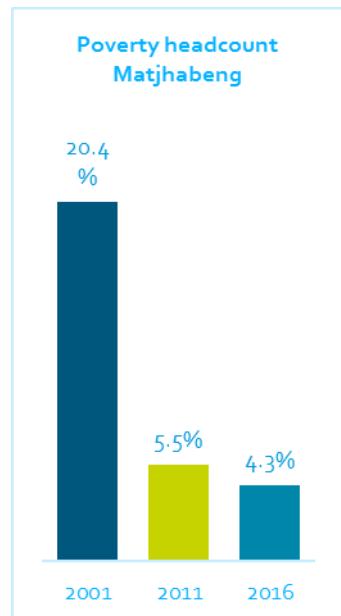
The table below shows the proportion of households that are "multidimensional poor". An improvement is noted between 2001 and 2016 for Matjhabeng households, as well as the Lejweleputswa district, and in the province. Headcount poverty in the Free State ranged from 2.9% in Moqhaka to 8.7% in Phumelela, whilst the Free State average was 5.5% in 2016.

Figure 73: Household poverty (MPI) 2001-2016 (StatsSA, 2014; Stats SA, 2016a).

Table 4-30: Poverty headcount Matjhabeng 2001 to 2016 (Stats SA, 2016a).

	Poverty headcount		
	2001	2011	2016
Matjhabeng	20.4%	5.5%	4.3%
Lejweleputswa		5.6%	4.8%
Free State	17.4%	5.5%	5.5%

In 2001, the Free State had the fourth



20 Indicators and cut-offs are: Child mortality (If any child under the age of 5 has died in the past 12 months); Years of schooling (If no household member aged 15 or older has completed 5 years of schooling); School attendance (If any school-aged child (aged 7 to 15) is out of school); Fuel for lighting/heating/Fuel for cooking (If household is using paraffin/wood/coal/dung/other/none); Water access (If no piped water in dwelling or on stand); Sanitation type (If not a flush toilet); Dwelling type (If an informal shack/traditional dwelling/caravan/tent/other); Asset ownership (If household does not own more than one of radio, television, telephone or refrigerator and does not own a car); and Unemployment (If all adults (aged 15 to 64) in the household are unemployed)

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lowest level of multidimensional poverty (17.4%), and ranked behind the Northern Cape. While the rate decreased to 5.5% in 2011, the Free State did not experience a gain between 2011 and 2016 as most other provinces did. Nevertheless, the Free State moved into third best position in 2016.

Table 4-31: Multidimensional poverty by province 2001, 2011 and 2016 (Stats SA, 2017a)

MPI	2001	2011	2016	Trendline 2001-2016
Western Cape	6.7	3.6	2.7	
Eastern Cape	30.2	14.4	12.7	
Northern Cape	11.3	7.1	6.6	
Free State	17.4	5.5	5.5	
KwaZulu-Natal	22.3	10.9	7.7	
North West	18.8	9.2	8.8	
Gauteng	10.5	4.8	4.6	
Mpumalanga	18.8	7.9	7.8	
Limpopo	21.8	10.1	11.5	
Total - South Africa	17.9	8.0	7.0	

Social assistance is targeted at the elderly, children and the disabled, and grants play an important role in overall poverty reduction within communities. However, the proportion of grant beneficiaries in Matjhabeng is unknown as this data is only available at provincial level.

Food security and adequacy

Overall, 77.7% of South African households experienced adequate access to food, and households in Limpopo experienced the best access (91.7%), followed by Gauteng (82.6%). The smallest percentage of households with adequate access were found in the North West (63.4%), and the Northern Cape (66.4%) provinces. The Free State ranked fourth overall with 76.3% of households with adequate food access (Stats SA, 2017e).

The 2016 Community Survey reported on two questions about food access. A total of 20 809 Matjhabeng households replied yes to both these questions “Did your household run out of money to buy food during the past 12 months? If yes, has it happened five or more days in the past 30 days?” which represents 14.0% of Matjhabeng households, while the South African average is 6.8%. An additional question used to compile the food access score showed that 9.6% of Matjhabeng households skipped meals five or more days in the past 30 days, compared to the provincial average of 8.4%.

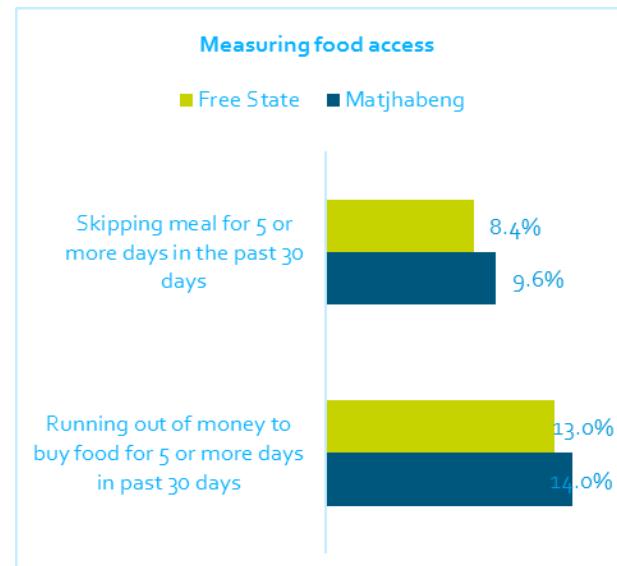


Figure 74: Matjhabeng and Free State households' score on the household food insecurity scale (Stats SA, 2016a).

Dwelling type, ownership and rental

The types of dwellings found in a settlement, and the number of informal dwellings can point to the number of quality housing units, or serviced sites required. However, the number of units required may depend on many factors such as the current number of informal structures, accommodation needed for extended family, lodgers, overcrowding in separate dwellings, affordability, and choices about dwelling type.

In 1996, there were 40 901 informal dwellings, which accounted for 37.1% of the total housing in the Matjhabeng. In 2001, the number and proportion increased to 40.6%. By 2011, the number had halved to 24 300 informal units or 19.7% of total dwellings. In 2016, this decreased again to 21 949 (14.7%), of which 43.2% (9 451) were in backyards. In 2016, the proportion of informal dwellings in Matjhabeng (14.7%) was slightly higher than in the Free State (13.99%).

Notably, the growth in informal dwelling occurred between 1996 and 2001 (3.59% p.a.), which outstripped the overall growth of households (1.76% p.a.). Although the increase in households coincided with the fall in household size, other aspects such as in-migration would have contributed too. Informal settlements are usually a response to the housing 'backlog'. Between 2001 and 2011 the number of informal dwellings halved, and in the period 2011-2016 it decreased by 10% overall.

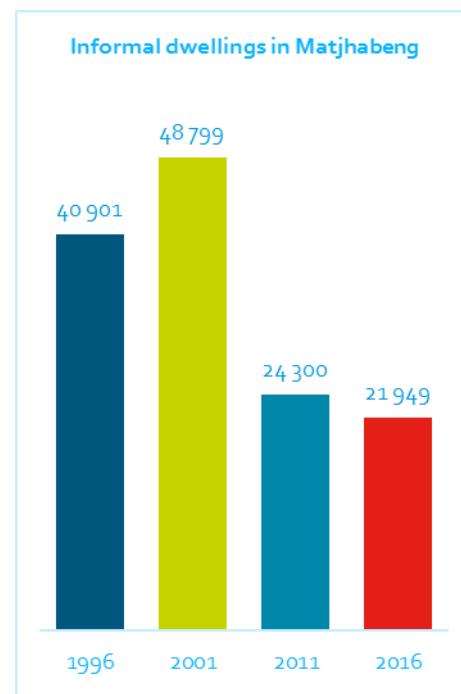
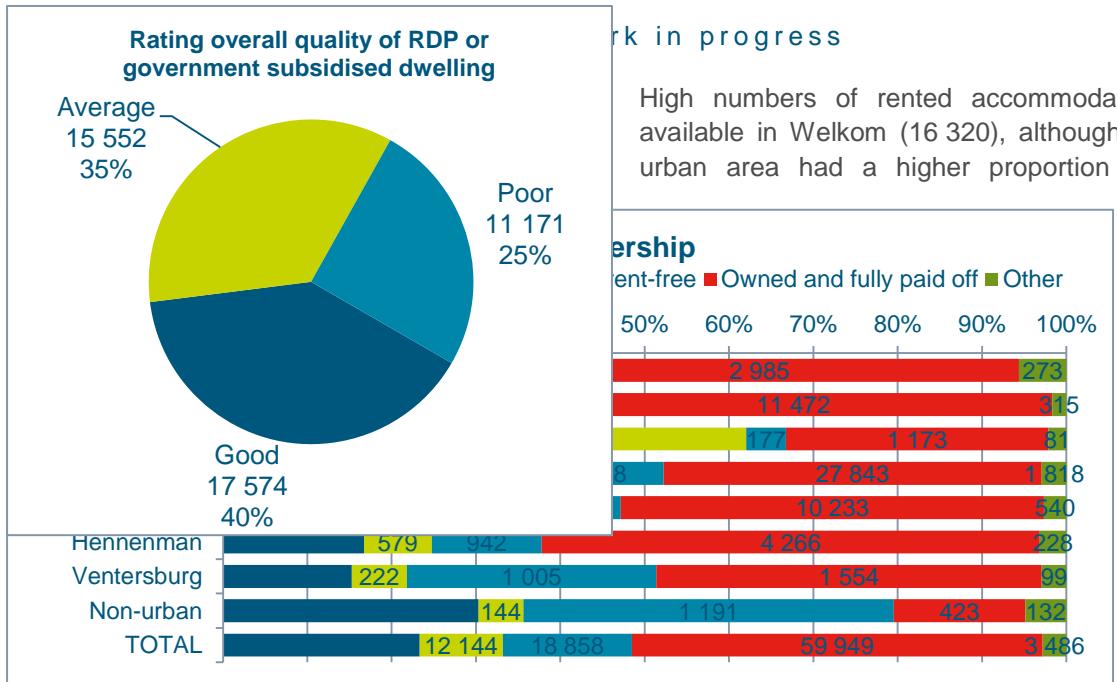


Figure 75: Informal dwellings in Matjhabeng (Stats SA, 2011a; Stats SA, 2016a).

Table 4-32: Dwellings on formal and informal sites in urban and rural in 2016 (Stats SA, 2016a).

	N			%		
	Urban	Farms	Total	Urban	Farms	Total
Formal dwelling on formal site	123 092	2 837	125 928	84.3%	96.0%	84.5%
Informal backyard dwelling	9 451	0	9 451	6.5%	0.0%	6.3%
Informal dwelling not in backyard	12 402	96	12 498	8.5%	3.2%	8.4%
Other	1 122	22	1 144	0.8%	0.7%	0.8%
Total	146 067	2 954	149 021	100.0%	100.0%	100.0%

In 2011, 61.3% of Free State households owned their own homes fully paid off, while another 6.1% still needed to pay off. Rented accommodation averaged 18.9%. In Matjhabeng, the percentage houses owned and fully paid off was lower at 48.7%, while another 9.9% were still paying off. Rentals (23.3%) were higher than the provincial average (19.9%), but not as high as that found in Gamagara (46%), a Northern Cape municipality dominated by mining.



accommodation (30.2%). The figure below illustrates the mix of ownership types across the main places in 2011.

Figure 77: Dwelling ownership in MLM by place in 2011

Figure 76: Proportion of a title deed in Matjhabeng in 2016

In 2016, rented accommodation decreased to 15.5%, whilst the proportion of dwellings owned but not yet paid off increased to 9.8%. Rent-free occupations amounted to 8.2%, which was less than the Free State average (9.5%).

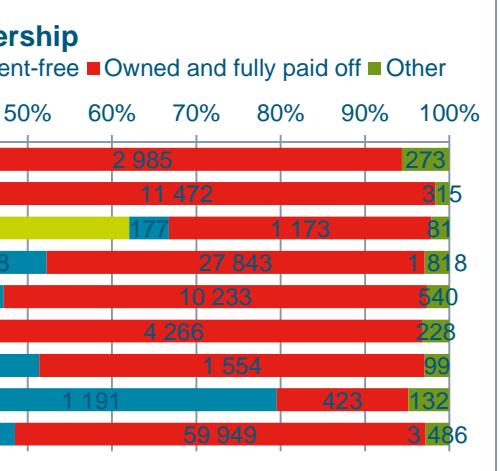
Overall 39.8% of households indicated that they possessed a title deed in 2016; lower than the 43.3% recorded in the Free State, and 44.2% recorded nationally.

Figure 78: Rating overall quality of RDP or government subsidised dwelling in Matjhabeng in 2016 (Stats SA, 2016a).

Occupying a RDP or government subsidised dwelling was higher in Matjhabeng (29.9% and 44 509) than the average nationally (23.1%) in 2016. Of those that occupied a RDP or government subsidised dwelling 40% rated it good.

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High numbers of rented accommodation were available in Welkom (16 320), although the non-urban area had a higher proportion of rental



Of the 23 042 Matjhabeng households that paid for rented accommodation in 2016, 53.4% paid R500 or less p.m. About a quarter (26.1%) paid R250 or less, like the average proportion of households in the province (26.7%), but more than the national proportion (18.3%). In addition, for 44.1% (15 518) households that paid for rental accommodation, the rental included water and electricity (Stats SA, 2016a).

Table 4-33: Total rental amount in the past month in 2016 (Stats SA, 2016a).

Rental in rand	N			% Matjhabeng			Cumulative %		
	Matjhabeng	FS	SA	Matjhabeng	FS	SA	Matjhabeng	FS	SA
1-50	146	2 907	55 375	0.6%	2.1%	1.8%	0.6%	2.1%	1.8%
51-100	841	8 397	113 977	3.7%	6.0%	3.8%	4.3%	8.1%	5.6%
101-150	1 623	9 087	116 025	7.0%	6.5%	3.9%	11.3%	14.5%	9.5%
151-200	2 209	10 434	157 003	9.6%	7.4%	5.2%	20.9%	22.0%	14.7%
201-250	1 204	6 672	107 830	5.2%	4.8%	3.6%	26.1%	26.7%	18.3%
251-300	1 667	10 929	189 210	7.2%	7.8%	6.3%	33.4%	34.5%	24.6%
301-350	859	3 826	112 950	3.7%	2.7%	3.8%	37.1%	37.2%	28.3%
351-400	1 541	7 545	161 155	6.7%	5.4%	5.4%	43.8%	42.6%	33.7%
401-450	435	2 167	73 588	1.9%	1.5%	2.4%	45.7%	44.2%	36.1%
451-500	1 777	10 545	220 253	7.7%	7.5%	7.3%	53.4%	51.7%	43.4%
501-550	276	1 029	32 719	1.2%	0.7%	1.1%	54.6%	52.4%	44.5%
551-1000	4 038	22 553	588 983	17.5%	16.1%	19.6%	72.1%	68.5%	64.1%
1001-1200	613	3 031	72 997	2.7%	2.2%	2.4%	74.8%	70.6%	66.5%
1201-1300	129	953	22 400	0.6%	0.7%	0.7%	75.3%	71.3%	67.3%
1301-1500	1 334	5 828	103 379	5.8%	4.2%	3.4%	81.1%	75.5%	70.7%
1501-2000	1 134	7 113	120 406	4.9%	5.1%	4.0%	86.0%	80.5%	74.7%
2001-3000	1 684	10 852	181 748	7.3%	7.7%	6.0%	93.4%	88.3%	80.7%
>3000	1 532	16 452	579 842	6.6%	11.7%	19.3%	100.0%	100.0%	100.0%
Total	23 042	140 320	3 009 839	100.0%	100.0%	100.0%			

The figure below illustrates that the main types of rental accommodation /flatlet on a property, and the least likely is in informal dwelling not in backyard. Rent-free accommodation is more likely to be a semi-detached house than a formal dwelling. Formal dwellings, and informal dwellings not in backyard are said to be owned and fully paid off.

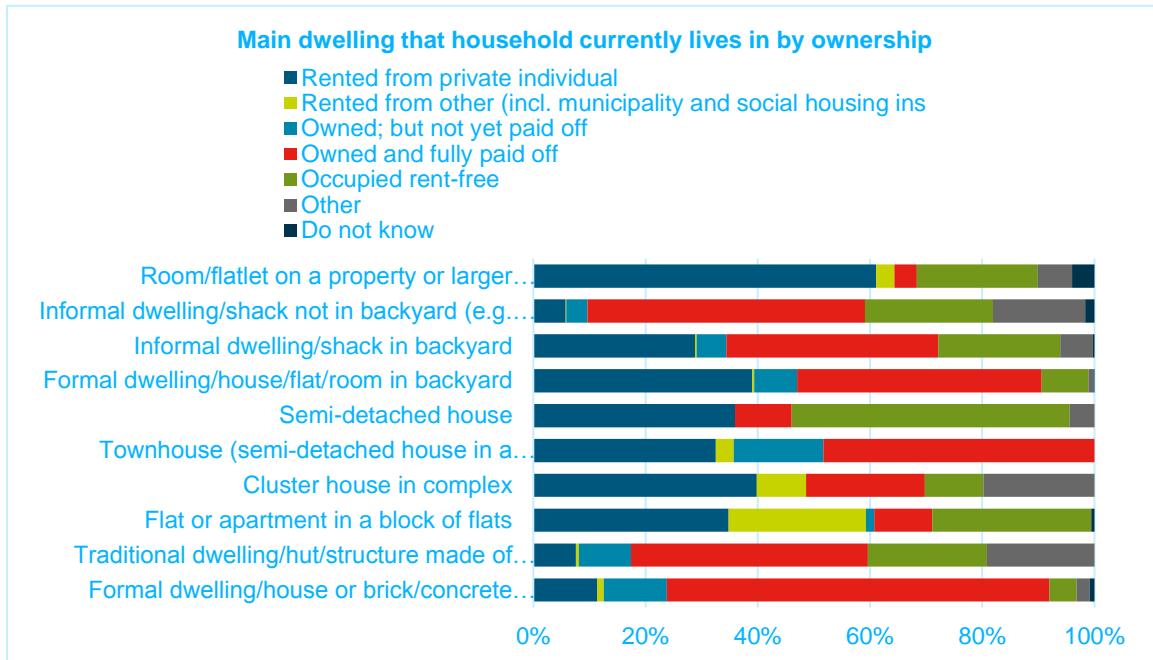


Figure 79: Main dwelling of household by ownership type in Matjhabeng 2016

4.3.2 Household levels of service

Increasing numbers of population, households and dwelling units imply that there will be a future demand for water, sanitation, electricity, houses as well as education, health and other services. Not only do these additional increases need to be taken into consideration in these sector plans, the current backlogs are part of the future demand.

Level of service data is not available at town/place level; only at LM level. This is a gap that needs to be addressed. Detailed planning cannot take place without data at this level.

Water

Access to piped water inside the dwelling or yard (85.9%) has increased since 1996. By 2011 90.7% of households had such access, and by 2016 93.7% of households. Another 1.6% had access to water on a community stand, 1.3% used communal tap, and 1.5% used the neighbour's tap (Stats SA, 2011a; Stats SA, 2016a). Yet only 84.7% of households stated that they had access to a safe drinking water supply in 2016 (Stats SA, 2016a).

According to municipal data, there were over 100 000 household and nondomestic consumers in Matjhabeng in 2015/16, of which households represented 97.1% of all consumers. Recorded backlogs amounted to 2 503 units (2.6% of households).

Table 4-34: Level of water services in 2011/2012 and 2015/2016 (Yes Media, 2018)

Water	2011/2012	2015/16	2015/16 in %	Growth p.a.
Number of households and non-domestic customers	96 925	100 379		0.88%
Domestic customers	93 355	97 421	97.1%	1.07%
Inside the yard	84 855	90 985	93.4%	1.76%
Less than 200m from yard	7 000	3 933	4.0%	-13.42%
More than 200m from yard	1 500	2 503	2.6%	13.66%
Households with FBS	20 677	19 537	20.1%	-1.41%

The municipality was the main supplier of water to households (97.3%), and few relied on their own boreholes or sources (1.1%), a water vendor (0.6%), and flowing river or stream (more than 3%) other water scheme (0.2%). Few households (642 or 0.4%) did not know who the supplier of the main source of drinking water was (Stats SA, 2016a)

Figure 80: Matjhabeng households' rating of overall quality of water services (Stats SA, 2016a).

In 2016, 15 333 (10.3%) of households had experienced a municipal water interruption in the three months prior to the Community Survey. Most of these households (88.9%) indicated that the interruption lasted less than two days over the three-month period. However, 537 households experienced a water interruption that lasted more than 14 days in total over the three-month period. Most households (64%) rated the overall quality of water services as good.

Since the 2016 Community Survey does not break down the data to main place level, 2011 data illustrates that the majority of household with a water supply that was below basic level lived in Welkom (3063), and the non-urban areas had the highest proportion of households without a basic water supply.

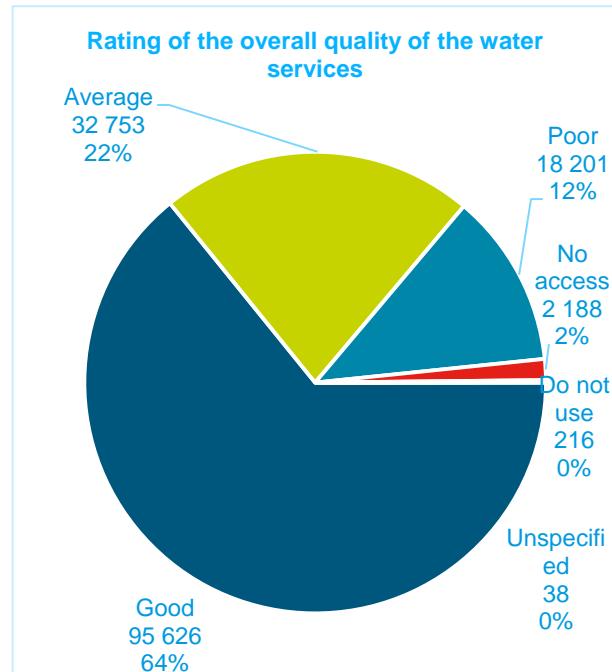


Table 4-35: Water supply in 2011 (Stats SA, 2016b)

	Piped (tap) water inside dwelling/institution	Piped (tap) water inside yard	Piped (tap) water on community stand: distance less than 200m	Piped (tap) water on community stand: distance between 200m and 500m	Piped (tap) water on community stand: distance between 500m and greater than 500m	No access to piped (tap) water	Unspecified	Not applicable	Total	Below basic	
Allanridge	3 240	1 548	18	6	6	0	36	0	0	4 857	48
Odendaalsrus	8 829	7 794	1 236	204	93	312	237	0	0	18 711	846
Riebeeckstad	3 492	243	12	6	3	0	18	0	0	3 771	27
Welkom	36 468	19 713	2 859	1 272	546	147	1 098	0	0	62 109	3 063
Virginia	10 479	8 571	459	141	54	18	666	0	0	20 391	879
Hennenman	3 072	3 609	198	24	21	171	129	0	0	7 224	345
Ventersburg	1 125	1 833	330	63	6	6	42	0	0	3 408	117
Non-urban	798	984	465	141	39	42	249	0	0	2 718	471
TOTAL	67 503	44 295	5 577	1 857	768	696	2 475	0	0	123 189	5 796
Allanridge	66.7%	31.9%	0.4%	0.1%	0.1%	0.0%	0.7%	0.0%	0.0%	100.0%	1.0%
Odendaalsrus	47.2%	41.7%	6.6%	1.1%	0.5%	1.7%	1.3%	0.0%	0.0%	100.0%	4.5%
Riebeeckstad	92.6%	6.4%	0.3%	0.2%	0.1%	0.0%	0.5%	0.0%	0.0%	100.0%	0.7%
Welkom	58.7%	31.7%	4.6%	2.0%	0.9%	0.2%	1.8%	0.0%	0.0%	100.0%	4.9%
Virginia	51.4%	42.0%	2.3%	0.7%	0.3%	0.1%	3.3%	0.0%	0.0%	100.0%	4.3%
Hennenman	42.5%	50.0%	2.7%	0.3%	0.3%	2.4%	1.8%	0.0%	0.0%	100.0%	4.8%
Ventersburg	33.0%	53.8%	9.7%	1.8%	0.2%	0.2%	1.2%	0.0%	0.0%	100.0%	3.4%
Non-urban	29.4%	36.2%	17.1%	5.2%	1.4%	1.5%	9.2%	0.0%	0.0%	100.0%	17.3%
TOTAL	54.8%	36.0%	4.5%	1.5%	0.6%	0.6%	2.0%	0.0%	0.0%	100.0%	4.7%

Sanitation

Access to basic and higher levels of sanitation increased in the 20 years from 1996 to 2016. In 1996, the 32.4% of households used pits or bucket toilets, or had no facility. By 2016, it had halved to 15.0% (Stats SA, 2016a).

Figure 81: Matjhabeng households' rating of overall quality of sanitation services (Stats SA, 2016a)

In 2016, over 10 000 households had a pit toilet without a ventilation pipe, another 5 141 buckets existed, half of which were emptied by the households themselves, and 1 886 had no toilets. About half of the households with toilets had toilets in the dwelling. More than a quarter of households (27.8%) shared toilets with other households. Although most households indicated that they were responsible maintaining their toilet (73.4%), another 22.1% (32 868) households indicated that it was the task of the municipality.

Overall 63% of households rated the quality of toilet/sanitation services as good.

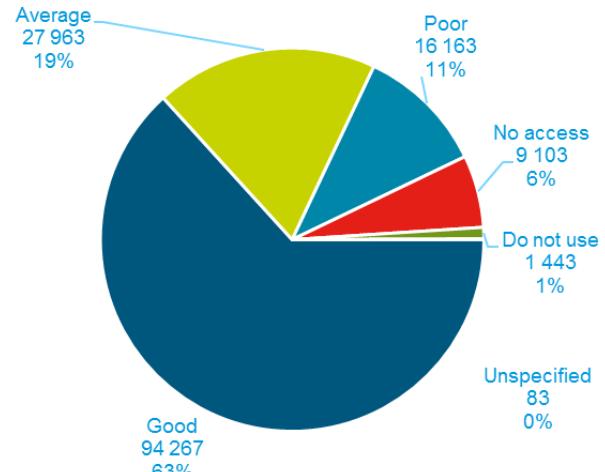


Table 4-36: Type of sanitation supply to Matjhabeng households in 2016 (Stats SA, 2016a)

Quality of the sanitation facilities	N	%
The main type of toilet facility used		
Flush toilet connected to a public sewerage system	126 135	84.6%
Flush toilet connected to a septic tank or conservancy tank	383	0.3%
Chemical toilet	191	0.1%
Pit latrine/toilet with ventilation pipe	413	0.3%
Pit latrine/toilet without ventilation pipe	10 712	7.2%
Ecological toilet (e.g. urine diversion; enviroloo; etc.)	20	0.0%
Bucket toilet (collected by municipality)	2 420	1.6%
Bucket toilet (emptied by household)	2 720	1.8%
Other	4 141	2.8%
None	1 886	1.3%
Total	149 021	100.0%
The main toilet facility in the dwelling/yard/outside the yard	N	%
In the dwelling/house	73 478	49.3%
In the yard	70 561	47.3%
Outside the yard	3 045	2.0%
Not applicable	0	0.0%
Unspecified	1 938	1.3%
Total	149 021	100.0%
Is the toilet facility shared	N	%
Yes	41 393	27.8%
Maintenance of the toilet facility	N	%
The household or households (in the case of multiple household)	109 362	73.4%
The community	3 061	2.1%
The municipality	32 868	22.1%
Do not know	1 782	1.2%
Not applicable	0	0.0%
Unspecified	1 949	1.3%
Total	149 021	100.0%

According to municipal data, there were 84 142 household sanitation consumers in Matjhabeng in 2015/16; fewer than the number of domestic water consumers (97 421). Backlogs amounted to 2 750 buckets, approximately half of what was recorded in the 2016 Community Survey, see 0.

Table 4-37: Level of service in 2011/12 and 2015/16 (Yes Media, 2018).

Sewerage and sanitation	2011/2012	2015/16	2015/16 in %	Growth p.a.
Number of households and non-domestic customers	85 703	87 100		0.41%
Number of households using:	82 133	84 142		
Flush toilet connected to WWTW	80 101	81 360	96.7%	0.39%
Flush toilet septic tank	32	32	0.0%	0.00%
VIP	0	0	0.0%	
Bucket	2 000	2 750	3.3%	8.29%
Other	0	0	0.0%	
Households with FBS	20 677	19 537	23.2%	-1.41%

In 2011, most of the bucket toilets were in Virginia, followed by Hennenman and Welkom. Households without toilets occurred mostly in Welkom, as well as toilets without ventilation.

Table 4-38: Toilet facilities in 2011 (Stats SA, 2011a).

	None	Flush toilet (connected to sewerage system)	Flush toilet (with septic tank)	Chemical toilet	Pit toilet with ventilation (VIP)	Pit toilet without ventilation	Bucket toilet	Other	Unspecified	Not applicable	Total
Allanridge	27	4 743	48	0	3	9	6	27	0	0	4 854
Odendaalsrus	336	16 845	63	9	33	378	714	333	0	0	18 711
Riebeeckstad	12	3 714	9	0	6	15	6	6	0	0	3 771
Welkom	1 398	48 675	372	48	351	8 709	960	1 593	0	0	62 106
Virginia	450	17 460	237	3	18	42	2 076	102	0	0	20 388
Hennenman	162	5 091	57	6	33	231	1 554	87	0	0	7 227
Ventersburg	393	2 847	42	6	6	15	54	45	0	0	3 408
Non-urban	291	537	168	45	81	990	69	531	0	0	2 718
TOTAL	3 069	99 912	996	117	531	10 389	5 439	2 724	0	0	123 183
Allanridge	0.6%	97.7%	1.0%	0.0%	0.1%	0.2%	0.1%	0.6%	0.0%	0.0%	99.9%
Odendaalsrus	1.8%	90.0%	0.3%	0.0%	0.2%	2.0%	3.8%	1.8%	0.0%	0.0%	100.0%
Riebeeckstad	0.3%	98.5%	0.2%	0.0%	0.2%	0.4%	0.2%	0.2%	0.0%	0.0%	100.0%
Welkom	2.3%	78.4%	0.6%	0.1%	0.6%	14.0%	1.5%	2.6%	0.0%	0.0%	100.0%
Virginia	2.2%	85.6%	1.2%	0.0%	0.1%	0.2%	10.2%	0.5%	0.0%	0.0%	100.0%
Hennenman	2.2%	70.5%	0.8%	0.1%	0.5%	3.2%	21.5%	1.2%	0.0%	0.0%	100.0%
Ventersburg	11.5%	83.5%	1.2%	0.2%	0.2%	0.4%	1.6%	1.3%	0.0%	0.0%	100.0%
Non-urban	10.7%	19.8%	6.2%	1.7%	3.0%	36.4%	2.5%	19.5%	0.0%	0.0%	100.0%
TOTAL	2.5%	81.1%	0.8%	0.1%	0.4%	8.4%	4.4%	2.2%	0.0%	0.0%	100.0%

Solid waste

In 2011, solid waste removal was mostly undertaken by the local authority at least once a week (86.3%), while 6.7% of households had their own refuse dump, 4.0% had no rubbish disposal and 1.2% used a communal refuse dump. Most households without municipal refuse services lived in Welkom.

Table 4-39: Refuse removal in 2011 (Stats SA, 2011a).

	Removed by local authority /private company at least once a week	Removed by local authority /private company less often	Communal refuse dump	Own refuse dump	No rubbish disposal	Other	Unspecified	Not applicable	Total
Allanridge	4 641	66	6	129	3	6	0	0	4 854
Odendaalsrus	16 539	360	99	1 020	435	249	0	0	18 711
Riebeeckstad	3 705	24	21	15	0	6	0	0	3 771
Welkom	52 233	477	1 020	4 689	3 294	381	0	0	62 106
Virginia	19 578	147	54	210	255	153	0	0	20 391
Hennenman	6 429	180	72	282	243	12	0	0	7 224
Ventersburg	3 000	15	153	183	45	12	0	0	3 411
Non-urban	156	48	24	1 746	633	111	0	0	2 718
TOTAL	106 281	1 317	1 449	8 274	4 908	930	0	0	123 186
Allanridge	95.6%	1.4%	0.1%	2.7%	0.1%	0.1%	0.0%	0.0%	99.9%
Odendaalsrus	88.4%	1.9%	0.5%	5.5%	2.3%	1.3%	0.0%	0.0%	100.0%
Riebeeckstad	98.2%	0.6%	0.6%	0.4%	0.0%	0.2%	0.0%	0.0%	100.0%
Welkom	84.1%	0.8%	1.6%	7.5%	5.3%	0.6%	0.0%	0.0%	100.0%
Virginia	96.0%	0.7%	0.3%	1.0%	1.3%	0.8%	0.0%	0.0%	100.0%
Hennenman	89.0%	2.5%	1.0%	3.9%	3.4%	0.2%	0.0%	0.0%	100.0%
Ventersburg	88.0%	0.4%	4.5%	5.4%	1.3%	0.4%	0.0%	0.0%	100.1%

	Removed by local authority /private company at least once a week	Removed by local authority /private company less often	Communal refuse dump	Own refuse dump	No rubbish disposal	Other	Unspecified	Not applicable	Total
Non-urban	5.7%	1.8%	0.9%	64.2%	23.3%	4.1%	0.0%	0.0%	100.0%
TOTAL	86.3%	1.1%	1.2%	6.7%	4.0%	0.8%	0.0%	0.0%	100.0%

According to the data, the refuse removal service by the municipality has declined since 2011 when 83.6% had a service at least once per week. In 2016, only 72.8% of households indicated that they had this service, and 8.1% had a service that was less than once per week. Use of their own refuse dumps has increased from 8 274 to 13 797 households.

Table 4-40: Type of sanitation supply to Matjhabeng households in 2016 (Stats SA, 2016a).

Refuse removal	N	%
Removed by local authority/private company/community members at least once a week	108 414	72.8%
Removed by local authority/private company/community members less often than once a week	12 049	8.1%
Communal refuse dump	7 021	4.7%
Communal container/central collection point	1 577	1.1%
Own refuse dump	13 797	9.3%
Dump or leave rubbish anywhere (no rubbish disposal)	5 414	3.6%
Other	749	0.5%
Total	149 021	100.0%

According to municipal data in the table below, there were 112 480 solid waste consumers in Matjhabeng in 2015/16; more than the number of domestic water consumers (97 421). Backlogs were not recorded.

Table 4-41: Solid waste service in 2011/12 and 2015/16 (Stats SA, 2016a).

Solid waste	2011/2012	2015/16	2015/16 in %	Growth p.a.
Number of households and non-domestic customers	88 714	112 480		6.11%
Households with FBS	20 677	19 537		-1.41%

The municipality has four licensed landfill sites, while the mines operate landfill sites as well which are not regulated by the municipality (Matjhabeng Local Municipality, 2017-2022).

Inadequate refuse/waste removal was a key concern of Matjhabeng households in 2016, and 11.1% cited it as a difficulty facing the municipality. It ranked second after the lack of employment opportunities (12.7%). In adequate roads (11.1%) shared the second place with inadequate refuse removal (Stats SA, 2016a).

Energy

Matjhabeng households are well served with electricity. About 5 000 urban households had no access to electricity or used another source of energy in 2016. If the 10 941 households using sources other than electricity for lighting in 2011 were not connected, access to electricity has improved since 2011. Few households use alternative sources of energy.

Table 4-42: Households access to electricity in Matjhabeng 2016

Household access to electricity	N			%		
	Urban	Farms	Total	Urban	Farms	Total
In-house conventional meter	24 750	825	25 575	16.9%	27.9%	17.2%
In-house prepaid meter	113 324	1 157	114 481	77.6%	39.2%	76.8%
Connected to other source which household pays for	2 333	88	2 421	1.6%	3.0%	1.6%
Connected to other source which household is not paying for	136	99	235	0.1%	3.3%	0.2%
Generator	0	30	30	0.0%	1.0%	0.0%
Solar home system	46	41	87	0.0%	1.4%	0.1%
Battery	80	0	80	0.1%	0.0%	0.1%
Other	335	53	388	0.2%	1.8%	0.3%
No access to electricity	5 064	662	5 726	3.5%	22.4%	3.8%
Total	146 067	2 954	149 021	100.0%	100.0%	100.0%

Table 4-43: Energy source used for lighting in 2011 (Stats SA, 2011a).

	Electricity	Gas	Paraffin	Candles	Solar	None	Unspecified	Not applicable	Total
Allanridge	98.1%	0.1%	0.2%	1.2%	0.1%	0.1%	0.0%	0.0%	99.9%
Odendaalsrus	89.8%	0.1%	2.4%	7.3%	0.3%	0.1%	0.0%	0.0%	100.0%
Riebeeckstad	98.5%	0.1%	0.3%	0.6%	0.1%	0.3%	0.0%	0.0%	100.0%
Welkom	90.5%	0.1%	3.3%	5.7%	0.2%	0.2%	0.0%	0.0%	100.0%
Virginia	95.1%	0.2%	1.0%	3.5%	0.1%	0.1%	0.0%	0.0%	100.0%
Hennenman	89.8%	0.1%	3.0%	6.8%	0.2%	0.1%	0.0%	0.0%	100.0%
Ventersburg	81.9%	0.3%	3.2%	14.2%	0.3%	0.1%	0.0%	0.0%	100.1%
Non-urban	76.5%	0.2%	0.7%	21.1%	1.0%	0.4%	0.0%	0.0%	100.0%
TOTAL	91.1%	0.1%	2.5%	5.9%	0.2%	0.2%	0.0%	0.0%	100.0%

According to municipal data, there were 91 247 electricity consumers in Matjhabeng in 2015/16; fewer than the number of domestic water consumers (97 421). Backlogs were not recorded.

Table 4-44: Level of service in 2011/12 and 2015/16 (Yes Media, 2018).

Electricity	2011/2012	2015/16	2015/16 in %	Growth p.a.
Number of households and non-domestic customers	90 068	91 247		0.33%
Households with FBS	20 677	19 537		-1.41%

Free basic services

Free basic services were delivered to an estimated 19 537 households in 2015/16 slightly fewer than in the 2011/12 year. Approximately 20% of household consumers received free basic water in 2015/16. The same number of households received free basic electricity, basic sanitation, and solid waste services.

Table 4-45: Free basic services in 2011/12 and 2015/16 (Yes Media, 2018).

	2011/2012	2015/16	% 2015/16	Growth p.a.
Water				
Domestic customers	93 355	97 421		1.07%
Households with FBS	20 677	19 537	20.1%	-1.41%
Electricity				
Number of households and non-domestic customers	90 068	91 247		0.33%
Households with FBS	20 677	19 537		-1.41%
Sewerage and sanitation				
Number of households	82 133	84 142		
Households with FBS	20 677	19 537	23.2%	-1.41%
Solid waste				
Number of households and non-domestic customers	88 714	112 480		6.11%
Households with FBS	20 677	19 537		-1.41%

According to Matjhabeng's tariffs indigent households qualify for 6 kℓ of water free per month (Matjhabeng Local Municipality, 2015). This is the standard amount provided in most municipalities. It is also noted that Section 12.5.1 of Matjhabeng's Indigent Policy states, "Upon registration as an indigent household, the arrears on the account of the applicant will be written off", which impacts on the financial sustainability of the municipality.

Community perceptions about difficulties faced by the municipality

The 2016 Community Survey asked households what main difficulty is faced by the municipality. Lack of employment opportunities was the priority cited by 12.7% of households. Tied in second place was inadequate refuse removal (11.1%), and inadequate roads (11.1%). Inadequate sanitation/sewerage/toilet services ranked third (10.8%), and this was followed by inadequate housing (9.4%). Whilst it is not the role of the municipality to create employment, the other top priorities are all municipal responsibilities and functions. Improving service delivery should thus be addressed by Matjhabeng LM.

Table 4-46: Difficulties facing the municipality presently according to Matjhabeng households 2016 (Stats SA, 2016a).

Difficulties facing the municipality presently	N	%
Lack of/inadequate employment opportunities	18 862	12.7%
Inadequate roads	16 589	11.1%
Inadequate refuse/waste removal	16 509	11.1%
Inadequate sanitation/sewerage/toilet services	16 154	10.8%
Inadequate housing	13 961	9.4%
None	10 068	6.8%
Cost of electricity	10 042	6.7%
Lack of safe and reliable water supply	9 714	6.5%
Violence and crime	7 443	5.0%
Cost of water	6 948	4.7%
Inadequate street lights	5 835	3.9%
Gangsterism	5 263	3.5%
Lack of reliable electricity supply	4 114	2.8%
Corruption	3 332	2.2%
Lack of/inadequate healthcare services	791	0.5%
Other	790	0.5%
Alcohol abuse	718	0.5%
Lack of/inadequate educational facilities	692	0.5%
Lack of/inadequate parks and recreational area	543	0.4%
Drug abuse	514	0.3%
Lack of/inadequate public transport	138	0.1%
Unspecified	0	0.0%
Total	149 021	100.0%

Matjhabeng households also expressed their agreement to the extent to which the municipality is trying to resolve the problems it faces. Corruption was the issue that the greatest proportion of households disagreed or strongly disagreed that the municipality was trying to resolve i.e. 87% of households who cited corruption as a difficulty faced by the municipality disagreed or strongly disagreed that the municipality was trying to resolve the problem. Another issue that had a high rate of disagreement was the lack of/inadequate parks and recreational areas (82%). This was followed by inadequate street lights (79%), gangsterism (79%), inadequate refuse removal (78%), inadequate health care services (76%, and the lack of educational facilities (76%).

The highest-ranking concerns namely inadequate refuse removal, and inadequate sanitation also elicited high rates of disagreement that the municipality was trying to solve the problem (78% and 72% respectively).

Table 4-47: The extent to which the municipality is trying to resolve problem (Stats SA, 2016a)

Difficulties facing the municipality presently	Extent to which the municipality is trying to resolve the problem							Strongly & Disagree
	Strongly disagree	Disagree	Neither agree or disagree	Agree	Strongly agree	Unspecified	Total	
Corruption	2 287	622	128	229	66	0	3 332	87%
Lack of/inadequate parks and recreational area	263	184	57	39	0	0	543	82%
Inadequate street lights	3 001	1 623	243	716	252	0	5 835	79%
Gangsterism	2 143	1 990	215	596	318	0	5 263	79%
Inadequate refuse/waste removal	8 949	3 966	1 415	1 471	696	13	16 509	78%
Lack of/inadequate healthcare services	335	269	68	68	50	0	791	76%
Lack of/inadequate educational facilities	362	165	56	61	49	0	692	76%
Inadequate roads	7 519	4 861	1 277	1 438	1 494	0	16 589	75%
Lack of/inadequate employment opportunities	9 088	4 814	1 242	2 010	1 693	15	18 862	74%
Inadequate sanitation/sewerage/toilet services	7 512	4 100	1 556	2 362	624	0	16 154	72%
Alcohol abuse	304	212	17	173	13	0	718	72%
Inadequate housing	6 803	2 964	1 271	2 071	813	40	13 961	70%
Lack of reliable electricity supply	1 403	1 387	429	725	170	0	4 114	68%
Cost of water	2 281	2 406	359	1 705	197	0	6 948	67%
Lack of safe and reliable water supply	3 911	2 486	1 359	1 750	172	36	9 714	66%
Violence and crime	3 059	1 798	459	1 944	184	0	7 443	65%
Cost of electricity	3 120	3 000	919	2 883	93	27	10 042	61%
Drug abuse	146	79	21	269	0	0	514	44%
Lack of/inadequate public transport	13	44	0	40	41	0	138	41%
Other	0	0	0	0	0	790	790	0%
None	0	0	0	0	0	0	10 068	0%
Total	62 499	36 970	11 090	20 549	6 923	922	149 021	67%

4.3.3 Summary of key challenges and opportunities

[to be completed in the next version of this document]

4.4 Built environment

The Municipality consists predominantly of intensive agricultural production areas, with the bulk of the urban development and mining activities being concentrated in the central part of the Municipality.

It is clear from the spatial concentration of the urban and mining areas that settlement was in the past, and still is largely driven by mining operations within the Municipality.

4.4.1 Settlement structure

Based on its central position to the Municipal area, size, economic role and concentration of higher-order social and administrative infrastructure, Welkom has established itself as the primary urban node in the Municipal area.

The bulk of the urban developments in Matjhabeng are concentrated around Welkom, along a north-south axis, with Allanridge and Odendaalsrus to the north and Virginia to the south. If the mining activities that effectively join these urban areas together can be viewed as being part of the “urban” environment, this can be viewed as a “large city”.

Hennenman and Ventersburg and slightly removed from the main concentration, being situated further to the west.

In terms of the "CSIR Guidelines for the Provision of Social Facilities in South African Settlements, 2012", which uses population figures as main criteria, the individual urban concentrations / centres are categorised as follows:

Table 4-48: Classification of the settlements in Matjhabeng Local Municipality according to the CSIR guidelines for the provision of social facilities

Urban Area	Classification
Allanridge/Nyakkallong	Village
Odendaalsrus/Kutlwanaong	Small to Medium Town
Welkom/Thabong	Large Town
Virginia/Meloding	Small to Medium Town
Ventersburg/Mmamahabane	Village
Hennenman/Phomolong	Small Town
Total	

The settlement structure of the respective towns reflects the typical scenario still visible in many South African towns and cities, this being where higher income areas are situated in the “town” (which also accommodates many of the higher order social and economic infrastructure) and lower income areas being spatially separated (often completely removed) from the town. Although the townships are often provided with its own business erven or areas, these are often vacant or underdeveloped due to the limited spending power that exists in these areas.

When considering the detailed land use records of Matjhabeng (as presented in the next section of this report), this is further confirmed.

The existence of developed and planned (but vacant) residential settlements (Whites, Flamingo Lake and Blaauwdrift) outside of existing urban nodes further contributes to the fragmented settlement structure in Matjhabeng.

4.4.2 Urban land use trends

Based on a high-level overview of land use and development in the urban areas, using cadastral data and aerial imagery, the following was observed.

Welkom (comprising Welkom and Thabong)

- Well-defined Central Business District, characterised by higher order facilities and supported by social, recreational and service orientated activities.
- Lack of business infrastructure in peripheral residential areas (Riebeeckstad, Thabong, Bronville)

- Significant stretches of mining impacted land
- The presence of planned, and in cases also serviced erven that are vacant. These include:
 - Industrial land (reported as 99 erven in 2013 SDF) in Welkom, Riebeeckstad and Thabong / Bronville – owned by the Municipality.
 - Business erven (reported as 215 erven in 2013 SDF) within Welkom, Riebeeckstad and Thabong / Bronville – owned by the Municipality.
 - Erven zoned for Municipal purposes (reported as 315 erven in 2013 SDF) – owned by the Municipality.

Allanridge (comprising Allanridge and Nyakallong)

- Predominantly residential character with associated social infrastructure.
- Informal settlement on periphery.
- Large mining operation represents the only Industrial use in the town.
- The presence of planned, and in cases also serviced erven that are vacant. These include:
 - Business erven (reported as 26 erven in 2013 SDF) – owned by the Municipality.
 - Erven zoned for Municipal purposes (reported as 12 erven in 2013 SDF) – owned by the Municipality.
 - Large residential extensions planned but undeveloped.

Odendaalsrus (comprising Odendaalsrus and Kutloanong)

- Predominantly residential character with associated social infrastructure.
- Limited business infrastructure in Odendaalsrus, but limited in Kutloanong
- Serviced by rail / station.
- Large mining operation and some industrial erven.
- The presence of planned, and in cases also serviced erven that are vacant. These include:
 - Business erven (reported as 39 erven in 2013 SDF) – owned by the Municipality.
 - Erven zoned for Municipal purposes (reported as 24 erven in 2013 SDF) – owned by the Municipality.
 - Number of vacant residential erven (Hestersrus).

Virginia (comprising Virginia and Meloding)

- Well-defined central business district, characterised by higher order facilities and supported by social, recreational and service orientated activities.
- Meloding mainly reflect a residential character (limited business and not Industrial)
- Informal settlement visible in Meloding.
- Significant stretches of mining impacted land within and around the urban area
- The presence of planned, and in cases also serviced erven that are vacant. These include:
 - Industrial land (reported as 71 erven in 2013 SDF) predominantly in Virginia – owned by the Municipality.
 - Business erven (reported as 37 erven in 2013 SDF) predominantly in Virginia – mostly owned by the Municipality.
 - Erven zoned for Municipal purposes (reported as 315 erven in 2013 SDF) – owned by the Municipality.

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- In addition to the Virginia and Meloding urban concentration, a 600 erf Township was planned and surveyed 14km West of Virginia. This township was however never developed.

Ventersburg (comprising Ventersburg, Tswelangpele and Mmamahabane)

- The N1 runs through the middle of the town. It, together with Hennenman / Phomolong are the only town that is not closely linked to mining, but rather as a rural / agricultural service centre and nodal point along the N1 route.
- The Central Business District accommodates most of the industrial and business facilities. Educational and recreational infrastructure is in the eastern part of the town, made up of predominantly residential properties.
- Several informal structures are visible on the periphery of the Tswelangpele and Mmamahabane residential suburbs.
- The Caltex truck-stop and petrol filling station are directly linked to the N1.
- It appears as if growth and development has been fairly steady over the years, with far less oversupply / vacant properties than in the rest of the urban areas of Matjhabeng. This is further evidence that the town's growth is less dependent on (and impacted by) the mining sector.
 - There is good take-up of the Industrial properties, with only 4 of the 40 properties being vacant.
 - Good take-up of business erven, with most of the vacant (oversupply) of business erven in the Eastern residential neighbourhoods.
 - Of the erven designated for Municipal purposes, only one is vacant.
 - There are a limited number of vacant (middle income) residential erven.

Hennenman (comprising Phomolong, Whites and Hennenman)

- As with Ventersburg / Tswelangpele and Mmamahabane, the town is not closely linked to mining, but rather as a rural / agricultural service centre.
- Whites was however directly established for a cement mine that has since shut down.
- The urban concentrations are very disjointed and more or less exist as separate entities (Whites and Phomolong situated 5km and 7km away from the centre of Hennenman) with no and limited business infrastructure each. There are also no industrial erven in Phomolong, confirming its predominantly residential character.
- Whites is entirely only a residential area.
- A significant number of informal structures are visible on the periphery of Phomolong.
- Hennenman has 3 separate small-holding areas on its periphery.
- The town is also serviced by rail and a surfaced airstrip.
- More than half of the total of 147 industrial erven (located only in Hennenman) is vacant.
- Very few vacant business erven.
- Roughly half of the erven designated for Municipal purposes are vacant. Only one of the vacant erven is in Phomolong and 14 are in Hennenman.
- Almost half the erven in Whites are vacant.
- Most of the vacant erven are Municipal owned.

Important considerations

- There is a clear over-supply of planned middle-income residential extensions in the Municipality and in particular in the urban areas that are concentrated around the mines.
- Depending on the legislation used, where no township registers have been opened within 5 years of approval, approvals may likely have lapsed.
- Ventersburg and Hennenman, not being mining dependant towns, have developed in line with their agricultural service centre function. There is however still a clear shortage of affordable residential accommodation / housing.
- The presence of a significant number of vacant business, industrial, educational and municipal erven are likely because of the following:
 - That economic growth and development has been far lower than what was expected (and planned for during peak growth periods).
 - That planning of (especially lower income) residential areas was based on a concept of inward-orientated townships (as independent functioning areas), whilst the reality is that residents continue to access social and commercial services in the CBD / nodal parts of the urban concentrations.
- The presence of informal settlements on the periphery of a number of the low income residential areas confirms the lack of affordable residential accommodation and/or housing.

4.4.3 Tenure and land ownership

All land within the Municipal boundary have been surveyed and registered in the Deeds Office as either erven or farms owned by full title. There are no Communal Land areas or other forms of tenure linked to former trust and homeland areas such as Quitrents Titles or Permission to Occupy (PTO's) certificates. In terms of the rural component of the Municipality, most of the land is in private ownership, with a significant area of approximately 16 362ha within the central-western extent being owned by Mining companies.

Ownership in Urban Areas

Based on the current ownership records of land in the urban areas (as presented in the plans and Table below), the following is noted:

Welkom (comprising Welkom and Thabong)

- Most of the developed residential erven in Welkom are in private ownership.
- Number of undeveloped residential (Flamingo Park and Riebeeckstad) and Industrial properties are still owned by the Municipality.
- Roughly 17% of developed and occupied erven in Thabong are still owned by Municipality. There are many residential properties in Hani Park that are not yet transferred to owners / occupants (these remain in Municipal ownership).
- In addition to the above, the available Municipal commonage measures 3 352ha in extent.
- There is a further estimated 364ha of oversupply of open space in Welkom that is Municipal owned

Allanridge (comprising Allanridge and Nyakallong)

- Most of the developed erven in Allanridge are privately owned. Large number of planned / undeveloped erven remains in municipal ownership.
- Significant number of developed and occupied residential erven in Nyakallong not yet transferred (roughly a third of the total of 4 116 erven)

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- There is a further estimated 31ha of oversupply of open space in Allanridge that is Municipal owned

Odendaalsrus (comprising Odendaalsrus and Kutloanong)

- Roughly 23% of erven in Odendaalsrus and 34% of erven in Kutloanong remain in ownership of Municipality.
- Hestersrus is only partly developed
- There is a further estimated 271ha of oversupply of open space in Odendaalsrus that is Municipal owned

Virginia (comprising Virginia and Meloding)

- Roughly 20% of erven in Virginia and only 4% of erven in Meloding remain in ownership of Municipality.
- The Municipal commonage measures 998ha in extent.
- Kitty is only partly developed and transferred
- There is a further estimated 172ha of oversupply of open space in Virginia that is Municipal owned

Ventersburg (comprising Ventersburg, Tswelangpele and Mmamahabane)

- Most of the developed erven in Ventersburg are privately owned, with only a few erven in the western extent being planned / undeveloped and in municipal ownership.
- Significant number of developed and occupied residential erven in Tswelangpele (55%) and Mmamahabane (32%) not yet transferred.
- The Municipal commonage measures 1 706ha in extent

Hennenman (comprising Phomolong, Whites and Hennenman)

- Most of the developed erven in Hennenman are privately owned, with only a few erven in the north-eastern extent being planned / undeveloped and in municipal ownership.
- More than half the industrial area remains only partly developed and in Municipal ownership.
- In Whites, most of the developed erven are privately owned.
- Most of the erven on Phomolong have been transferred to owners / occupants.
- The commonages of Hennenman and Phomolong measure 447ha and 219ha respectively.
- There is a further estimated 20ha of oversupply of open space in Hennenman that is Municipal owned.

Table 4-49: Land ownership per region

Urban Areas	Total No of Stands	Matjhabeng LM	Matjhabeng LM (ha)	State / Parastatals	State / Parastatals (ha)	Not Connected	Not Connected (ha)	Mining	Mining (ha)	Private	Private (ha)	Total No ha
Ventersburg	656	81	15	22	15	7	1	0	0	546	83	115
Mmamahabane	1772	563	42	5	13	2	0	0	0	1202	30	85
Tswelangpele	628	351	19	2	0	1	0	0	0	274	11	31
Sub-Total	3056	995	77	29	28	10	2	0	0	2022	125	231
Odendaalsrus	3526	814	42	37	48	30	7	22	2	2623	297	779
Kutloanong	12257	4196	342	9	22	64	6	25	1	7963	314	684
Sub-Total	15783	5010	767	46	69	94	13	47	3	10586	610	1462
Hennenman	1744	434	123	40	41	81	12	0	0	1189	228	404
Whites	138	1	3	0	0	43	5	0	0	94	19	27
Phomolong	4982	66	51	2	5	3	0	0	0	4911	164	221
Sub-Total	6864	501	178	42	46	127	18	0	0	6194	410	652
Allanridge	1626	846	142	22	32	1	0	0	0	757	116	290
Nyakallong	4116	1399	98	1	1	1	0	0	0	2715	88	187
Sub-Total	5742	2245	240	23	33	2	0	0	0	3472	204	477
Welkom	13496	1488	779	182	252	413	158	1203	166	10210	1668	3022
Riebeeckstad	5614	2151	392	33	84	4	1	8	1	3418	445	923
Thabong	30134	4991	630	26	46	88	29	10	8	25019	869	1583
Bronville	2360	293	68	6	16	9	1	5	0	2047	84	169
Sub-Total	51604	8923	1868	247	398	514	189	1226	175	40694	3066	5697
Virginia	6450	1317	451	64	110	23	67	611	103	4435	858	1588
Meloding	11144	487	83	4	6	15	1	0	0	10638	404	495
Sub-Total	17594	1804	535	68	116	38	68	611	102	15073	1262	2083
Blaauwdrift	600	0	0	0	0	600	130	0	0	0	0	130
Sub-Total	600	0	0	0	0	600	130	0	0	0	0	130
Total (Urban)	101243	19478	3664	455	691	1385	420	1884	280	78041	5678	10732

Mining Licenses and Prospecting Rights

The fact that (as reported in 2013) 12 mining licenses and 38 prospecting permits were already issued by DMR (reflected in tables below) some measure of reassurance exists that, although subject to factors such as local and international demand for commodities, mining companies are committed to continue to conduct business within the municipal area.

The table below provides a summary of the licenses issued and the period of validity.

Table 4-50: Mining rights (DMR, 2013)

Holder	Commodity	Magisterial District	Date Issued	Duration	Expiry Date
Anglo Allied Brick Products Ltd	Clay	Odendaalsrus	23/11/2006	20 years	22/11/2026
Harmony Freegold JV Company (Pty) Ltd	Gold ore	Odendaalsrus	30/11/2007	18 years	29/11/2025
GFI Mining SA (Pty) Ltd	Gold ore & Associated Minerals	Virginia & Theunissen	2007/07/02	12 years	02/06/2019
Harmony Gold Mining Co Ltd	Gold ore	Welkom & Virginia	2007/11/12	22 years	12/10/2029
Armgold/Harmony Freegold JV Co (Pty) Ltd	Gold ore	Welkom & Virginia	2007/11/12	22 years	12/10/2029
Armgold/Harmony Freegold JV Co (Pty) Ltd	Gold ore	Welkom & Odendaalsrus	2007/11/12	22 years	12/10/2029
Armgold/Harmony Freegold JV Co (Pty) Ltd	Gold ore	Welkom & Odendaalsrus	11/12/2007	22 years	12/10/2029
Armgold/Harmony Freegold JV Co (Pty) Ltd	Gold ore	Welkom	7/12/2007	22 years	6/12/2029
Hendrik Sand van Heerden (Pty) Ltd	Sand	Virginia	19/5/2010	6 years	18/5/2016
Pamodzi Gold FS (Pty) Ltd	Gold, Silver, Copper, Uranium, etc	Welkom	2010/04/02	30 years	02/03/2040
Pamodzi Gold FS (Pty) Ltd	Gold, Silver, Copper, Uranium, etc	Welkom	2010/04/02	18 years	02/03/2028
Coromining (Pty) Ltd	Clay (general)	Welkom	4/5/2011	20 years	03/05/2031

Important considerations

Of the total number of urban erven vs. urban area the following rounded off summary can be considered:

- Municipality owns 19% of erven and 34% of area
- Mining companies owns 1,9% of erven and 2,6% of area
- Private entities own 77% of erven and 52% of area

There is generally more than enough municipal land available to accommodate any need for further residential development. This includes both planned and undeveloped land within, and commonage land surrounding the urban centres.

The significant number of developed and occupied residential properties that has not yet been transferred to qualifying beneficiaries or purchasers / occupiers is of serious concern due to loss of revenue to the Municipality.

The significant over-supply of planned middle-income residential erven remains in the ownership of the Municipality.

Mining companies continue to own large tracts of land, both developed and vacant.

Although mining accommodation are in many instances forming part of the urban centres, these are mostly not proclaimed townships and does not appear to be considered as part of the functional urban environment.

No formal data has been obtained on the numbers of hostel dwellers or mining residential structures;

4.4.4 Land reform projects

As indicated in the plan below, four types of land reform programs have to date been implemented in Matjhabeng Municipality. The programs include:

Commonage Acquisition

Municipal commonage land is normally acquired to make provision for future growth and expansion of a town and, whilst not needed for expansion, for use as grazing by local residents. When commonage land is granted (or acquired by the State for a Municipality) for any other purpose, the grant will be made conditional to that purpose. Such condition(s) will be specified in the Deed of Grant and will normally be endorsed on the Title Deed of the property.

Land Redistribution for Agricultural Development (LRAD)

LRAD's key emphasis is to assist black South Africans to use rights to, or ownership of agricultural land. This has been the main emphasis of land reform initiatives in Matjhabeng, with the total 57 projects covering roughly 10 495ha of agricultural land.

Proactive Land Acquisition Strategy (PLAS)

PLAS' key emphasis is to speed land redistribution. It also seeks to ensure maximum productive use of acquired land, improve the identification and selection of beneficiaries, to increase economic growth and development of rural towns and to access land in places with high agricultural potential. The program is also aligned to programmes aiming to fast track housing delivery. A total of 17 projects covering a total area of 7 618ha have been implemented.

Settlement Land Acquisition Grant (SLAG)

SLAG consists of a R16 000 cash grant for landless black South Africans that can be pooled to buy and develop agricultural land.

A total of 7 projects totalling 4 692ha of land have been implemented in the Municipality.

Over and above the above four programs, two additional projects totalling 2 357ha have been implemented in the Municipality. These focussed mainly on tenure upgrade. The fact that there are large numbers of subsidised houses that have not yet been transferred to the rightful beneficiaries provides a huge opportunity to the Municipality to contribute to land redistribution and tenure security.

4.4.5 Social facilities and services

The provision of Social Facilities and Services in the Matjhabeng Municipal SDF is evaluated against the CSIR Guidelines for the Provision of Social Facilities in South African Settlements (2012).

Educational Facilities

As reflected in the plan below, there are presently a total of 275 educational facilities in Matjhabeng Local Municipality. These are made up of the following:

- 1 Adult Basic Education and Training Facilities (ABET);
- 7 Early Childhood Development Facilities (ECD);
- 3 Further Education and Training (FET) Facilities;
- 129 Rural / Farm Schools;
- 5 Independent Schools;
- 1 Private School;
- 129 Public Schools.

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In terms of the existing provision of educational facilities measured against the proposed standards, the anticipated need is indicated in the table below.

Table 4-51: Backlog of educational facilities per area

Urban Area	Pop.	Schools Required CSIR Guideline		Schools Provided		Vacant School Sites	
		1 per 7000 People	1 per 12 500 People	Primary	Secondary		
		Primary	Secondary				
Allanridge / Nyakallong	19337	3	2	4	2	8	
Odendaalsrus / Kutloanong	63743	9	5	10	7	22	
Welkom / Thabong	211011	28	17	31	11	37	
Virginia / Meloding	66208	9	5	15	6	21	
Hennenman /Phomolong	24167	3	2	4	2	12	
Ventersburg / Mmamahabane	11260	2	1	3	1	5	

Important considerations

Except for Welkom / Thabong where the actual number of secondary schools provided is less than required in terms of the CSIR guidelines, the existing provision of educational facilities in Matjhabeng is adequate.

The assessment does however not reflect on the staffing and quality of service at schools.

The 2013 SDF assessment indicated that there are 105 vacant educational sites in Matjhabeng.

Safety and Security

There is presently a total of nine (9) police stations in Matjhabeng, one in each of the following areas:

- Allanridge
- Bronville
- Hennenman
- Meloding
- Odendaalsrus
- Thabong
- Ventersburg
- Virginia
- Welkom

The above excludes satellite and mobile police stations.

Important considerations

Measured against the CSIR standard of 1 station per 60 000 people (in urban areas), the current provision of police stations is deemed to be adequate.

Notwithstanding the above, the following areas require special measures to be taken:

The reported challenges with illegal mining activities needs special provisions to be made in high risk areas.

Rural parts of the Municipality not accessible from urban centres (roughly beyond 24km or reasonable response time) need special provisions to be made.

Health facilities

The plan below reflects the locality and type of health care facilities that are available in Matjhabeng Municipality.

The table below provides a summary of the healthcare facilities and services, compared to the CSIR guideline standards.

DRAFT – Work in progress

Table 4-52: Available health care facilities and the backlog

CATEGORY	TYPE	Required i.t.o. CSIR Guideline	Welkom/ Thabong	Ventersburg/ Mmamahabane	Allanridge/ Nyakallong	Virginia/ Melodring	Odendaalsrus/ Kutloanoeng	Hennenman/ Phomolong	Total Available
Community health	HIV/Aids Support Centre	3	1	-	-	-	-	-	3 + 6 Additional Facilities / Services
	Blood transfusion Service		1	-	-	-	-	-	
	Community Health Centre		2	1	-	-	-	-	
	School Health Service		2	-	-	-	-	-	
	Support Centre		2	-	-	-	-	-	
Clinics	Clinics	10	13	3	3	7	7	3	39
	Private Clinics		3	-	-	-	-	-	
District hospital	District Hospitals	1	-	-	-	1	1	-	10
	Private Hospitals		4	-	-	2	-	-	
	Specialized Hospital		1	-	1	-	-	-	
Regional hospital	Regional Hospital	0	1	-	-	-	-	-	1
Mobile	Mobile Facilities	?	3	1	-	1	3	1	9
Other	Laboratories	?	2	-	-	-	-	-	2

Important considerations

It is clear that Matjhabeng Local Municipality is well services in terms of healthcare facilities and services. Apart from facilities developed by Government, the mining houses made a significant contribution to the development of additional healthcare facilities and services.

Cemeteries

The table below provides a summary of the cemetery facilities and services, compared to the CSIR guideline standards:

Table 4-53: Summary of the cemetery facilities and services available per area, and the shortfall thereof

Urban Area	Pop	CSIR Guideline	COMMENT	
Allanridge Nyakallong	19 337	4.4ha	Nyakallong full. Allanridge adequate capacity	Adequate ±20 years
Odendaalsrus Kutloanong	63 743	±10ha	Kutloanong full / new cemetery planned. Odendaalsrus still adequate	Adequate
Welkom Thabong	211 011	2x17ha	Welkom – limited lifespan (need new) Bronville – adequate Thabong (Pumbani) - Adequate	Adequate
Virginia Meloding	66208	±10ha	Virginia – Adequate Meloding – Needs new cemetery	Require space
Hennenman Phomolong	24167	4,4ha	Hennenman – Adequate Phomolong - Adequate (new)	Adequate
Ventersburg Mmamahabane	11260	±2x1ha	Currently space – need planning	Require space

It is however unclear what the current situation is regarding crematoria. According to CSIR standards, the Matjhabeng Municipality require at least 2 crematoria.

Libraries and community facilities

There are currently a total of 17 libraries situated mainly in the urban areas of the municipal area.

Based on the CSIR Guidelines, there should be at least 2 regional libraries and ±50 local libraries. It is clear that there is a large backlog in the provision of libraries in the Municipality. There is however also an opportunity to look at improving access to internet services (possibly free Wi-Fi for research / educational purposes).

Although no clear information is available on the exact number and condition of Community Halls in the Municipality, it is important to consider the CSIR guidelines that prescribes a distance of between 10km and 15km and various sizes of facilities based on the number of people that it will service in its catchment area (starting from 10 000 people).

Based on the above, it is reasonable to expect the following:

- Ventersburg / Mmamahabane – at least one central facility
- Hennenman / Phomolong – at least one facility in each area (total 2)
- Virginia / Meloding – at least two facilities (one in each locality) or alternatively three smaller facilities spread to better service the neighbourhoods.
- Allanridge / Nyakallong - at least one facility in each area (total 2)
- Odendaalsrus / Kutloanong - at least one facility in each area (total 2)
- Welkom / Thabong - at least three facilities accessible to the broader Welkom / Thabong area, or alternatively four or five smaller facilities spread to better service the neighbourhoods.
- It needs to be considered to integrate the provision of libraries with these community halls, to serve as community resource centres.

Parks and open spaces

The 2013 SDF included a very detailed assessment of the Open Space provision in each of the towns / residential areas in Matjhabeng. The detailed plans of each area are attached to this report as **Annexure X**. The Table below provides a breakdown of the existing demand and supply of recreational facilities and spaces in the Municipality. The standards applied to determine the demand are based on the following CSIR Guidelines for the provision of Parks and Recreational Facilities, being:

- 0.5ha / 1000 persons for Parks (passive recreational space)
- 0.56ha of 1000 persons for Recreation Area (active recreational space)
- 0.3ha / 1000 persons for Regional Facilities

The extent of the Municipal owned open spaces / parks in the table below excludes those areas that cannot be considered for development of active recreational spaces. These are:

- Areas (or parts of open space areas) specifically reserved to accommodate infrastructure alignments.
- Areas considered as being environmentally sensitive and not suitable for development (such as wetlands).

Table 4-54: Available public open spaces, per area

Urban Area	Required (Ha)	Available (ha)		
		Municipal	Private	Over / Under Provisions
Allanridge	2.4	14.65	19.23	31.48
Nyakallong	17.8	11.96	3.99	1.85
Odendaalsrus	9.8	27.0	254.13	271.33
Kutloanong	57.5	32.64	-	24.86
Welkom	79.7	223.24	220.79	364.33
Thabong/Bronville	143.7	129.75	17.9	3.95
Virginia	23.1	36.61	158.04	171.55
Meloding	46.9	26.15	-	20.75
Ventersburg	1.3	-	3.61	2.31
Mmamahabane	10.4	14.68	-	4.28
Hennenman	3.8	18.05	6.14	20.39
Phomolong	21.6	17.64	-	3.96
Regional	63.3	-	-	-
Total	481.3ha	552.37	683.83	754.90ha surplus

From the data in the above table, the following conclusions can be drawn:

Important considerations

There is generally a large over-supply of open spaces in the towns in Matjhabeng, the only exclusion here is Ventersburg.

There is generally an under-provision of open spaces in the Townships / lower income residential areas in Matjhabeng. The exclusions here include Mmamahabane and Thabong / Bronville.

Although there is a net overprovision of roughly 755ha of open space, the fact that these are mostly in the main towns and not in the residential townships does not solve the undersupply.

The Municipality should consider the possible better use of access open space areas.

Sport & recreation

The 2013 Spatial Development Framework included very detailed summary on the availability and condition of Sport and Recreation facilities in the Municipality (refer to table below).

Based on the information contained in the table, it appears as if most of the sport facilities in the Municipality are in reasonable condition.

There are however the following needs for upgrade / maintenance:

- Fencing of several the facilities.
- Refurbishment of the Riebeeckstad swimming pool.
- Thabong stadium and rugby / soccer ground requiring significant upgrade

Table 4-55: Summary of available facilities, and the condition thereof

Area / Facilities	Status	Recommendation
ALLANRIDGE/NYAKALLONG		
Nyakallong Stadium	FAIR	Needs fence installation
ODENDAALSRUS/KUTLWANONG		
Kutlwongan Stadium	GOOD	Provincial Project – Sport complex
Kutlwongan Tennis Courts	FAIR	
Mimosa Swimming Pool	FAIR	Fencing of the swimming pool area
Mimosa Caravan Centre		Fencing of the Mimosa caravan area
Mimosa Recreation Hall		
WELKOM		
Welkom Swimming Pool		Reconstruction of ablution facilities / Fencing of the yard.
Toronto Recreation Centre	FAIR	
Rovers Sport Ground	FAIR	
Welkom Club Sport Ground	FAIR	Fencing of the sport ground
Welkom Club Recreation Centre		
North West Stadium	FAIR	Pavilion to be repaired
RIEBEECKSTAD		
Riebeeckstad Sport Ground	FAIR	Fence installation needed
Riebeeckstad Recreation Centre	FAIR	
Riebeeckstad Club House		
Riebeeckstad Swimming Pool	VANDALISED	Reconstruction of a new swimming pool needed
Riebeeckstad Tennis Courts	FAIR	
THABONG		
Kopano Indoor Centre		
Hall	FAIR	
Soccer/Rugby Ground	POOR	Fencing of the entire Indoor centre and repair of the ablution block.
Swimming Pool		Reconstruction of a new swimming pool fencing needed.
Zuka Baloyi Stadium	FAIR	Fencing of the area. / Tartan track needed.
Thabong Stadium	POOR	Reconstruction of the stadium. / Fencing of the stadium.
BRONVILLE		
Bronville Stadium	FAIR	Upgrading of the pavilion. / Fencing of the Stadium. / Repair of flood lights. / Installation of lights.

Area / Facilities	Status	Recommendation
Bronville Tennis Courts	FAIR	
Facilities	Status	Recommendation
Bronville Swimming Pool	FAIR	Care takers house and ablution facilities needed.
VIRGINIA		
Meloding Stadium	FAIR	Fencing of the stadium. / Construction of the care takers house. / Tartan track.
MELODING		Construction of the new sport complex, caretaker's house.
Harvinia Sport Ground	FAIR	Fencing of the area.
VENTERSBURG/MMAMAHABANE		
Mmamahabane Stadium	FAIR	Fencing of the stadium. / Caretakers house to be constructed.
Ventersburg Stadium	Sold to SANRAL	
Ventersburg Tennis Courts	Sold to SANRAL	
HENNENMAN/PHOMOLONG		
Phomolong Stadium	FAIR	Fencing of the stadium. / Caretaker's house.
Hennenman Stadium	FAIR	
Hennenman Recreation Centre	FAIR	
Whites Golf Course	FAIR	
Whites Bowling Club	FAIR	

4.4.6 Water infrastructure

The locality and capacity of the reservoirs within Matjhabeng Local Municipality is as follows:

- Allanridge/Nyakallong: Sedibeng Water has one (1) reservoir in Allanridge with a capacity of 29 MI and a tower of 1 MI. There are no capacity problems. Water supply to Nyakallong town is provided by the municipality.
- Welkom/Thabong: This urban concentration is supplied by the Sedibeng Water reservoirs of which there are seven (7) in total. The capacity of the reservoirs is 1 x 120 MI, 1 x 90 MI and 5 x 35 MI. Water capacities is available for new developments.
- Hennenman/Phomolong: The reservoirs are provided and serviced by Sedibeng Water with capacities of 2.2 MI and 0.68 MI respectively. No capacity problems are experienced.
- Virginia/Meloding: This area is supplied by Sedibeng Water and comprise of one (1) 90 MI reservoir (Dirksburg). No capacity problems are experienced.
 - There is also a water works at Virginia which is managed by Sedibeng Water. This works obtains a quota from the Allemanskraal dam for a period of 3 months after which the water is then channelled from the Dirksburg reservoir to the water works. At this water works there is also a storage facility of 10 MI.
 - Ventersburg/Mmamahabane: This reservoir is managed by Sedibeng Water and has a capacity of 5 MI which is sufficient for the provision of water.
 - Upgrading is required at some of the networks to increase capacity to the urban areas. This process is currently being dealt with by Sedibeng Water.
- Mines: Sedibeng Water has also 2 x 20ml reservoirs which is located at Leeubult. These reservoirs provide water to Beatrix, Oryx and Joel Mines.

- Rural Areas: There is no potable water to the rural areas. Water extraction is conducted by way of boreholes. From the above assessment it is evident that there are no capacity problems about the provision of water to proposed development areas.

4.4.7 Water treatment services

As explained previously in this chapter, the Sedibeng Water Authority is the supplier of the water to Matjhabeng Local Municipality. The provision of water to the respective urban areas is supported by both Sedibeng Water Authority and Matjhabeng Local Municipality through a well-established internal and external reticulation system.

The Blue Drop certification process, is a monitoring and evaluation programme development by the Department of Water and Sanitation, to determine the performance of municipalities in treating water to acceptable standards. In recent years, MLM has achieved a performance log position of number one within the Free State province. Also, the (Matjhabeng Local Municipality, 2014/2015) states that over the years the quality of water provided to consumers of MLM has greatly improved. The Blue Drop score results show this improvement of the MLM as increased from 47.30 in 2010 to 93.60% in 2014. The overall Blue Drop score is notably 94.72 % for 2014 (Department of Water Affairs, 2013a) – which suggests that excellent quality of drinking water is being produced in the municipality (see Figure 82).

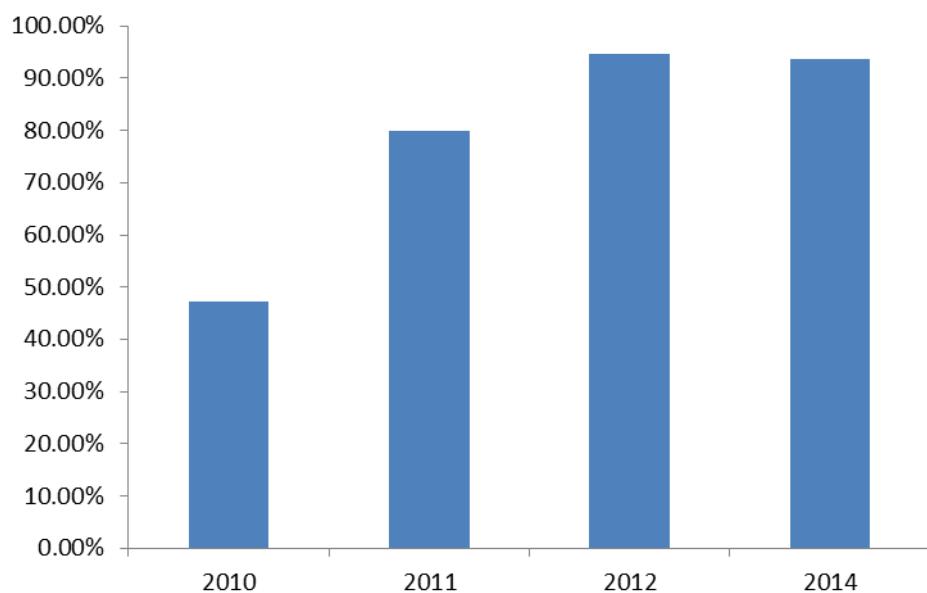


Figure 82: Blue Drop scores from 2010-2014, as a percentage achieved

However, no further Blue Drop reports have been made available post 2014. Because of capacity constraints the Department of Water and Sanitation has reduced monitoring at a national level, to those treatment facilities which are non-compliant. Furthermore, the performance of these non-compliant treatment facilities has not been made publicly available. It is therefore not possible to understand the status of quality of water treatment in the municipality.

4.4.8 Wastewater infrastructure

A summary of the sewer outfall works within the Matjhabeng Local Municipality is as follows:

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- **Allanridge/Nyakallong:** These urban areas share an outfall works which need to be upgraded to improve capacity.
- **Odendaalsrus/Kutloanong:** The outfall works at Kutloanong needs to be refurbished to improve capacity. A new outfall works was completed at Odendaalsrus which has ±2.5 MI spare capacity available.
- **Welkom/Thabong:** Within this urban concentration, there are three (3) outfall works which is in operation, namely: - Thabong, Witpan, and Corona

At present the status of the above works is as follows:

- Thabong/Witpan: Is interlinked with respective capacities of ±2 MI and 27 MI. the intention is to upgrade the Thabong outfall works to ±40 MI upon which the Witpan works will then be closed;
- Corona outfall works has a capacity of ± 12-14 MI. The plant is only 20% functional and needs to be refurbished.
- Hennenman/Phomolong: Both the Hennenman and Phomolong outfall works needs to be refurbished.
- Ventersburg/Mmamahabane: The Ventersburg urban concentration is serviced by oxidation ponds, whereas the Mmamahabane outfall works is dysfunctional.
- There is a need to integrate the 2 (two) systems into 1 (one) properly constructed outfall works. This will be very important in view of the abattoir within the area which dispatches hazardous effluent into the works.
- Virginia/Meloding: There is currently a 24 MI outfall works which service both the areas. The current capacity is at 17 MI, although only 50% of the plant is in operation. This plant need to be refurbished.

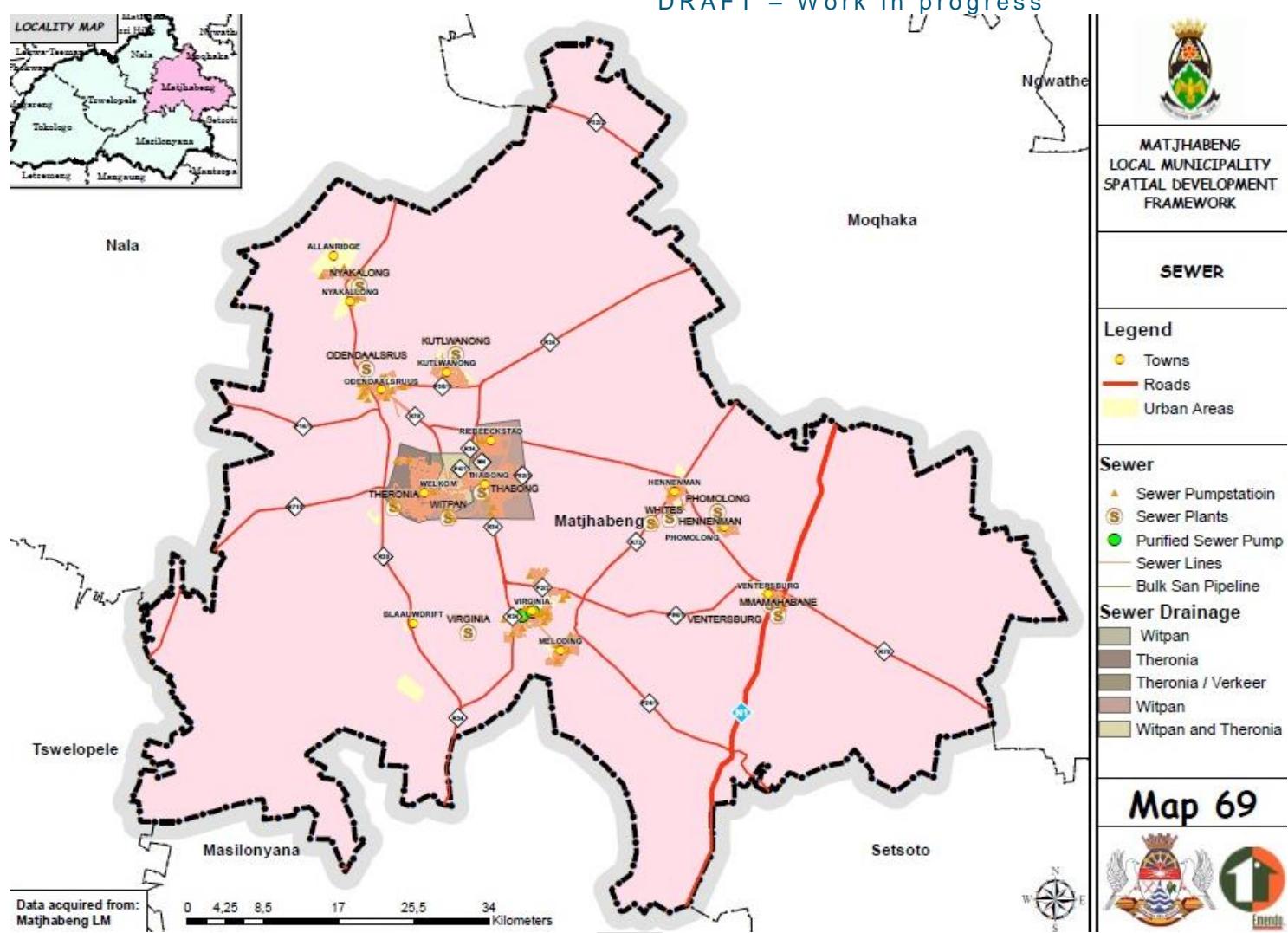


Figure 83: Municipal water related infrastructure

4.4.9 Wastewater treatment services

The Virginia and Thabong wastewater treatment plants are the only two operational plants in MLM currently. The Department of Water and Sanitation has reported that Odendaalsrust and Witpan were flooded and are under rehabilitation.

Like the Blue Drop certification, the Green Drop performance assessment tool is used to monitor wastewater systems. Over the period 2010 to 2014 the Green Drop certification indicated that the MLM was progressively improving. Between 2011 and 2013, there was a significant shift in compliance from 14.2% to 58.06% (Department of Water Affairs, 2013b). However, this score is still very low, and suggests that the wastewater treatment plants were not consistently treating raw sewerage adequately, resulting in the contamination of river systems. Without recent reports on the performance of wastewater treatment plants, it is unclear if these plants have improved their performance; or if they have continued to contaminate river systems, at the risk of both the natural environment and local communities.

4.4.10 Waste management facilities

At present there are a total of four (4) landfill sites in the Matjhabeng Local Municipality, which is located at Odendaalsrus, south of Thabong, Hennenman and Allanridge. A transfer station is located at Virginia. Refuse from Ventersburg is being moved by trucks to the Hennenman landfill site.

No capacity problems are experienced at the respective landfill sites. Although all the sites have licence numbers, documents are only available for the Welkom/Thabong site.

The respective mining houses have established their own landfill sites which are located at:

- Oryx Mine
- Beatrix Mine
- Free Gold Mine
- Joel Gold Mine
- St Helena
- Unisel Gold Mine

No information could be obtained whether these sites are still operational or whether it is licensed.

4.4.11 Energy related infrastructure

From Table 41, the following conclusions can be made:

- Except for Hennenman which exceeds its allocation, all the other areas are well below the electrical allocation from Eskom.
- The Matjhabeng Local Municipality has a complex system of high and medium voltage networks which is in the area.
- In short, the network comprises of 870 sub-stations (up to mini-subs) and 93 switching stations which deals with incoming lines.

Although capacity is available the Municipality is faced with the following problems:

- The existing electrical infrastructure is outdated, and urgent maintenance is required; and
- Cable theft is on the increase. In a few months since the start of the 2012/13 financial year, a total of 137 incidents occurred. This is almost one incident every two days.

Table 4-56: Available electricity capacity (Majhabeng Local Municipality, 2013)

Area	Allocation (NMD)	Usage (April 2013)
Flamingo	3500	2212
Hennenman	6000	6297
Odendaalsrus	9000	5717
Riebeeckstad	14000	8502
Ventersburg	1200	989
Virginia North	8000	3699
Virginia Town Bulk	14000	8155
Welkom Bulk	30000	25631
Welkom Park	20000	12671
Welkom Town	15000	10223
Allanridge	2000	1083
Whites	315	0

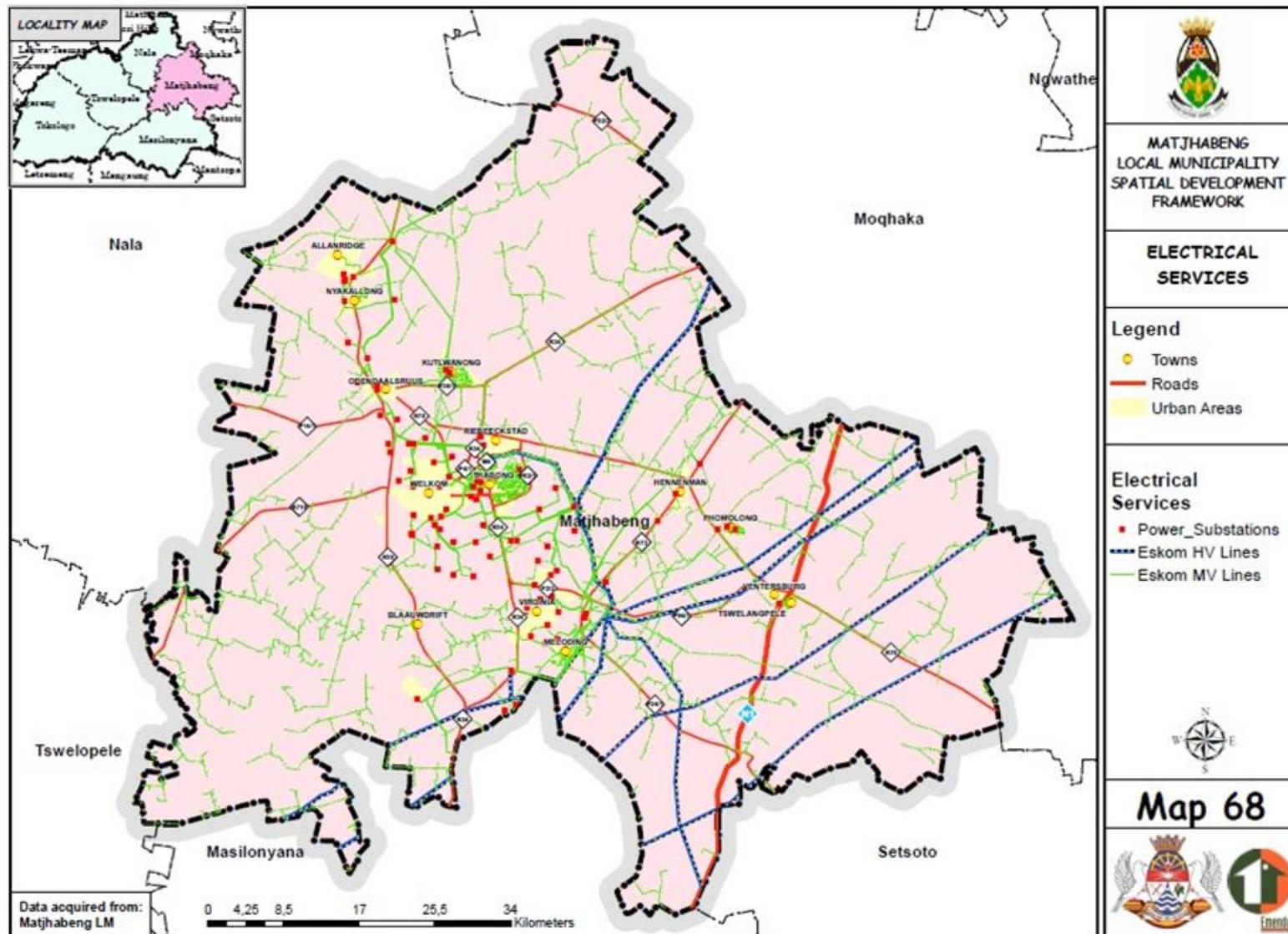


Figure 84: Electrical services infrastructure network (Matjhabeng Local Municipality, 2013)

4.4.12 Transport infrastructure

Matjhabeng Local Municipality has a comprehensive Road network comprising of Municipal, provincial and national roads. The network has a well-structured hierarchy, the challenge however, is to ensure maximum accessibility of goods, services and destination points to all residents of the Municipality largely by linking land use and transport. This is to enable people and goods to be moved more efficiently and promote greater integration and accessibility. The elements of the transport system are described below:

Matjhabeng Local Municipality has a good National and Provincial Road Network enabling accessibility from the neighbouring Local Municipalities and mobility between its urban areas /towns

National Road Network Connectivity

National level connectivity is facilitated through the N1 route which traverses the Municipality in a south westerly direction being the Primary distributor between Johannesburg and Mangaung, the route further Provides accessibility to the urban areas and other Regions through the Provincial Arterials

The Rail Network passing the Municipality provides a link to the Western Cape, KwaZulu- Natal and Eastern Cape Provinces

Matjhabeng Local Municipality does not have a commercial airport connecting it with other provinces; the closest airport is approximately 170 Km from Matjhabeng, the Bram Fisher International Airport Bloemfontein Airport providing accessibility to Western Cape, Kwazulu-Natal, Gauteng and the Eastern Cape.

Regional Connectivity

The regional level connectivity within Matjhabeng Local Municipality is solely through road connectivity, with a spinal network feeding of the N1 corridor as has been mentioned above.

There are key regional routes providing connectivity from the N1 and mobility between the towns, these key linkages include:

- The R70, is a primary and regional distributor connecting with the N1 running in a south easterly direction passing through Ventersburg, Heinemann and Riebeeckstad providing mobility to these towns
- The R34 provides an alternative route between Bloemhof, Hoopstad nd Wesselsbron, through Odendaalsrus/Welkom to link to R30
- The R73 provides a link to R70 and R34 connecting to various towns namely (Riebeeckstad, Welkom, which R30 also connect M4)
- The R30 is an effective north/south link between Klerksdorp through Bothaville, Allanridge, Odendaalsrus, Welkom, Theunissen, Brandfort to Mangaung these movements are listed from North to South
- The R710 links Bultfontein which is to the south west of the local municipality linking R700 and the M4

This is evidence that Matjhabeng Local Municipality is well connected by National and Provincial Roads and provides a high accessibility of the municipal area.

The regional linkages provide effective mobility and accessibility to Matjhabeng with its neighbouring local municipalities and the national road network.

Internal Roads

The municipality consists of on estimated road network of -----km, unpaved roads amounting to a total of 517 km and paved roads

[IRRAMS Data Breakdown – data required]

Road Safety - Due to the high number of potholes on the provincial road network it is evident that the safety of the motorists is greatly compromised. Generally, the International Roughness Index (IRI) on the network is in the range of 3m/km which increases the vehicle operating costs on our roads. Majority of our roads have been patched to an extent that the drivability of the roads as well as the comfort of the motorists has been negatively affected.

Accessibility - Trips to and from rural communities depends mainly on the road network in order to gain access to the amenities, services and facilities, but with the current condition of the network these trips seem somewhat impossible. Once again this has a negative impact on the economy of the Province as the people cannot access the amenities and facilities.

Mobility – Furthermore, most pupils from the rural areas cannot make it to school especially during rainy seasons as most of the unpaved roads are impassable on rainy days.

Public Transport

The main Mode of travel by the residents of Matjhabeng Local Municipality is Public transport specifically Taxis, the road network enables commuters to travel across the municipality providing mobility between the towns however it is recommended that other modes of public transport for example buses are incorporated to move towards the goal of intermodal transportation which will create alternative transportation, addressing efficiency , effectiveness and convince among some fundamental issues .

Road infrastructure needs also to be addressed to cater for public Transport this includes bus bays and sidewalks improving the safety of commuters and of the public transport routes.

Rail Network

The railway traversing the Municipality pass through Hennenman and Virginia link Gauteng with the Western Cape through to KwaZulu-Natal and Eastern Cape. These trains carry a high volume of passengers through the area.

Within Matjhabeng Local Municipality there is no commuter rail network system between urban areas.

According to Prasa the Free State is among provinces that present numerous challenges due to the existing public transport coverage being low, bus services are often infrequent and dispersed settlement patterns make it hard to build the volumes to support heavy rail services.

A rejuvenation of the existing long-distance passenger rail corridors has been recommended to make them more attractive and which will influence and promote economic activity at specific locations along routes

Spatial Opportunities

The key spatial imperatives and opportunities that support a more connected municipality include:

- promoting global connectivity of the road network hierarchy
- address connectivity challenges in certain corridors which will also unlock economic potential
- ensures that future development contributes to connectivity rather than reducing connectivity by ensuring that future growth and needs are forecasted and addressed
- unlock economic potential areas

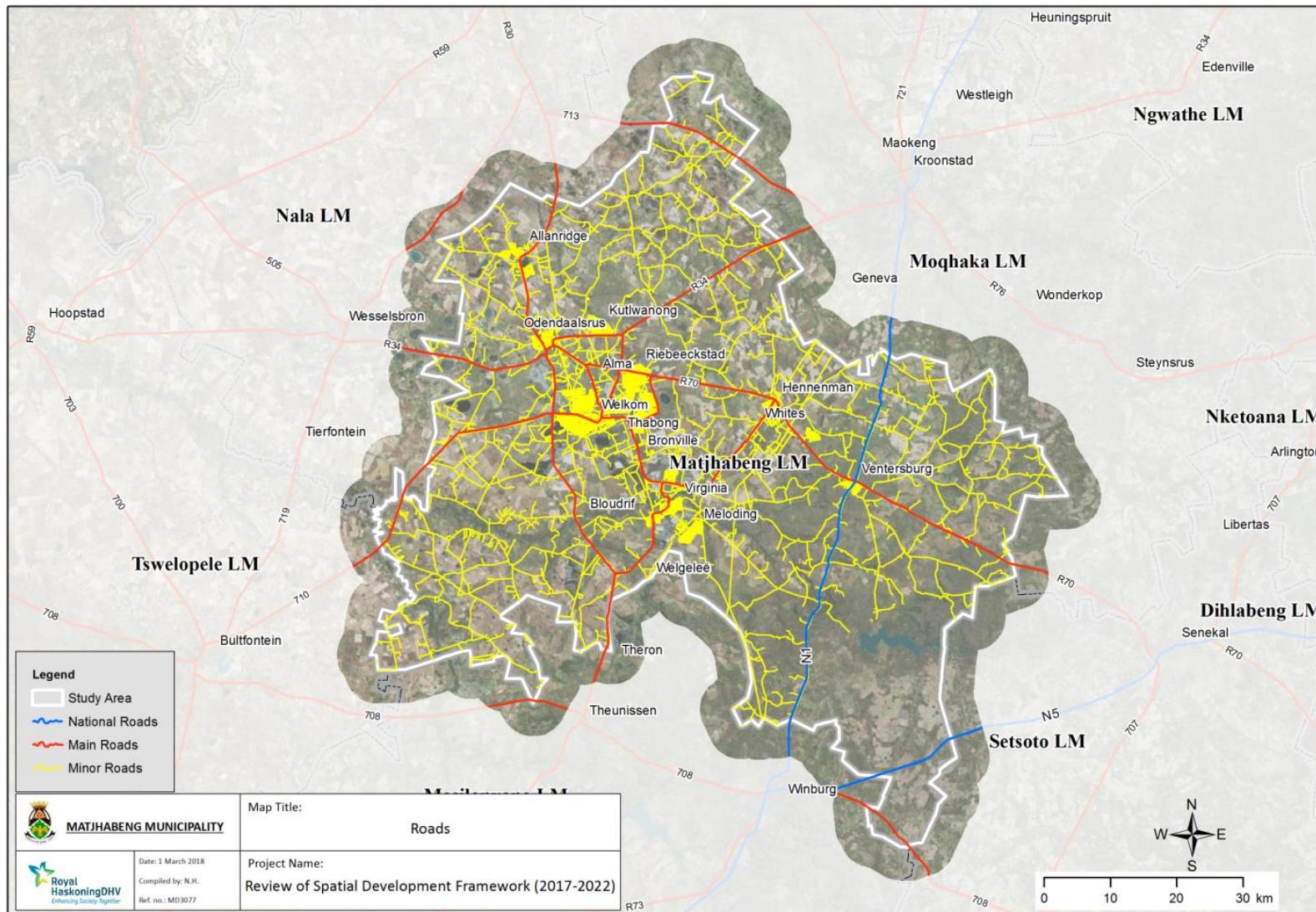


Figure 85: National and regional road connectivity

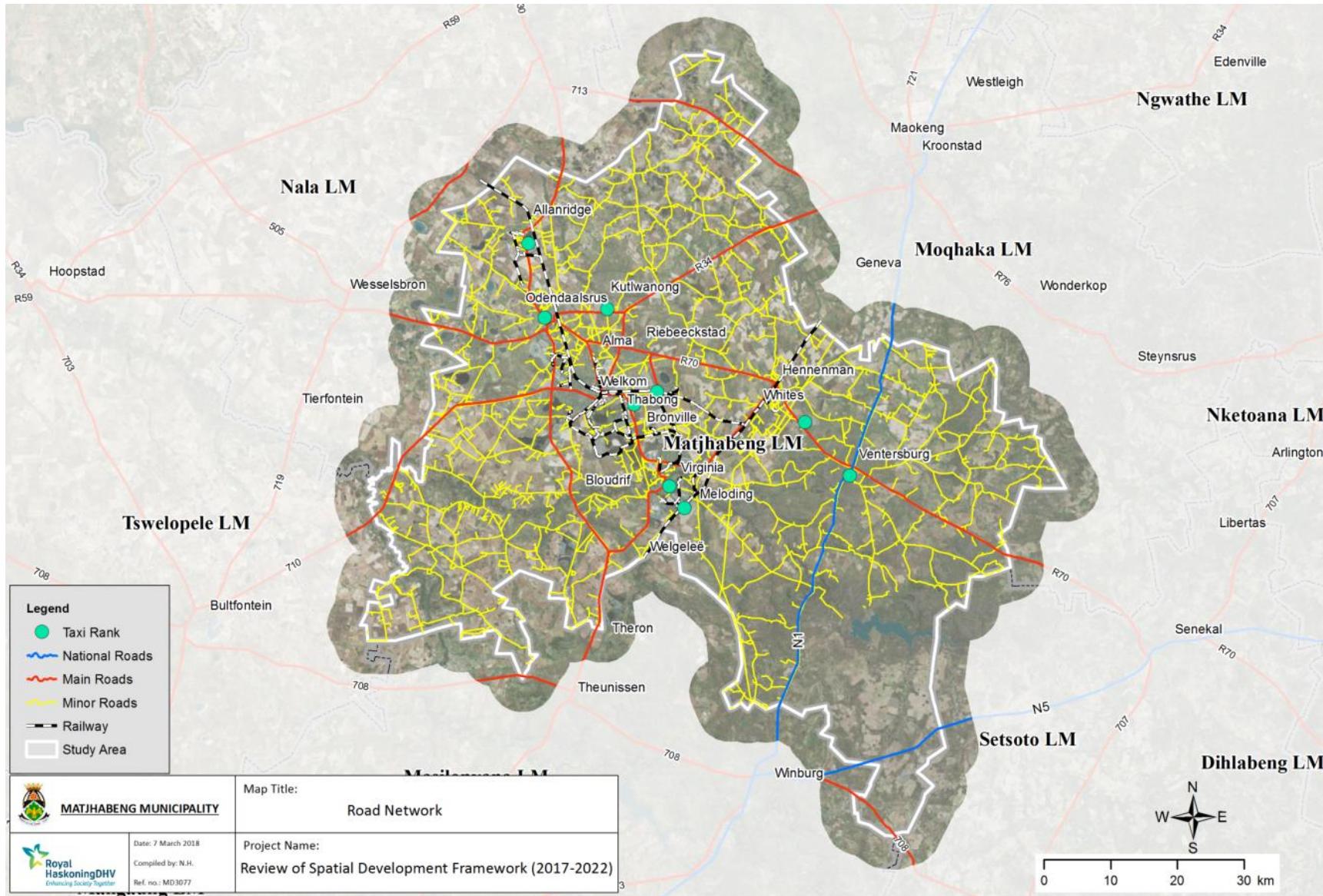


Figure 86: Road Network

4.4.13 Summary of key challenges and opportunities

[to be completed in the next version]

4.5 Synthesis

This chapter provides a summary of the development opportunities and constraints as derived from the Situation Analysis. The importance of this section is as follows:

- It will give direction to the approach to be taken in addressing the spatial structuring of the Matjhabeng Local Municipality;
- It will inform the IDP in terms of development priorities and spatial interventions to be taken;
- It will address the issues as identified by the stakeholders; and
- It will address areas of investment.

4.5.1 Development opportunities

Biophysical environment

- The Municipal area is not affected by dolomitic conditions;
- The respective soil types create the opportunity for a diversity of agricultural activities;
- The vegetation types promote the use of different agricultural practices;
- There is an opportunity to establish supporting activities (producing, packaging and distribution) to the primary agricultural sector;
- The Matjhabeng Local Municipality comprise of several natural (rivers, pans, wetlands) attributes which could be valuable to the tourist sector;
- Most of the Municipal area is suitable for development from a topographical perspective;
- The water quality from underground water sources is good;
- The Municipality has received a Blue Drop Status, which indicates that the drinking water quality is good; and
- The establishment of new mines will create job opportunities.

Socio-Economic Environment

- The population has is no longer growing at the rapid rate seen up the mid-90s. By 2035 the population is estimated to reach over 500 000.
- The average household size continues to decrease, and in 2011 20% of households consisted of only one person. This decline in has housing and service impacts.
- Although the level of education has improved, level of education are no higher than the average level in the province.
- There are several land reform projects within the rural area (6%), which is ongoing.
- Along with the 22 secondary cities, personal income has increased since 2000, although the picture could be skewed because no adjustments for inflation were made.

According to National Treasury, 59.9% of households are indigent (89 337 households). Far more than the approximately 20 000 registered as indigents, and whom receive free basic services. The mining industry is in decline, and challenges in the gold sector impact on the municipality.

- The Jeannette project, gas mining, and Harmony Gold's plans for projects in the area may present new job opportunities.

- The Matjhabeng Local Municipality have several historical, environmental and events attributes which creates the opportunity for a diverse tourism potential.

Built environment

- The provision of health facilities is sufficient.
- There is an over provision of ±861ha of open spaces in the historically advantaged areas.
- The provision of schools is sufficient. There are many vacant zoned educational erven which can be used for other activities.
- There are several higher order sports and recreational facilities within the municipal area.
- There is a clear over-supply of planned middle-income residential extensions in the Municipality and in particular in the urban areas that are concentrated around the mines.
- There is a significant number of vacant business, industrial, educational and municipal erven
- The presence of informal settlements on the periphery of a number of the low income residential areas confirms the lack of affordable residential accommodation and/or housing
- The Municipality owns a large number of erven and extensive tracts of land in and around the urban areas (19% of erven and 34% of area making up the urban settlement areas)
- The significant number of developed and occupied residential properties that has not yet been transferred to qualifying beneficiaries or purchasers / occupiers is of serious concern due to loss of revenue to the Municipality.
- Although mining accommodation are in many instances forming part of the urban centres, these are mostly not proclaimed townships and does not appear to be considered as part of the functional urban environment.
- The total shortfall in dwelling / accommodation units is estimated to be around 33 981 units.
- Based on the magnitude of the shortfall, it is necessary for the Municipality to consider new innovative ways of dealing with deliver.
- The current value of rental accommodation in backyards, although in many of the cases being ‘illegal’, must be considered and options considered managing this (as opposed to try and stop it).
- It cannot simply be assumed that each shack or backyard structure represents a need for a subsidised dwelling. Whether occupants qualify for subsidies or whether they in fact rather need affordable rental accommodation must be taken into consideration.
- The existing provision of educational facilities in Matjhabeng is adequate.
- The current provision of police stations is deemed to be adequate.
- The Municipality is well services in terms of healthcare facilities and services.
- There is generally an under-provision of open spaces in the Townships / lower income residential areas in Matjhabeng.

4.5.2 Development constraints

Biophysical Environment

- In areas where the clay content is high, precautionary foundation measures must be taken.
- Large areas of the natural grasslands have been transferred for cultivation which can result in dust pollution and erosion.
- Crops to be planted need to be frost sensitive during the winter months.
- The extraction of water from boreholes needs to be carefully monitored.

- The subdivision of agricultural land should not be encouraged as it affects the viability of agricultural producing units.
- The prevailing wind direction (north) has a negative impact on dust pollution on existing settlements (mining dumps).
- Land use activities adjacent to rivers and water systems used to be carefully managed to prevent pollution.
- The existing mining activities have contributed to the fragmentation of urban settlements, as it is near the urban areas. The tailings deposits, together with the mining operations are not suitable for urban development.
- The nature of mining operations has a negative impact on the environment and geology which affects the adjacent communities from a health and safety perspective.
- Many mines have closed without providing detail environmental impact assessments and rehabilitation plans on each of the areas. The closed mines have created several problems such as uncontrolled dust pollution (Virginia, Allanridge) and security risks.
- The mining areas is located on 'agriculturally' zoned land and not incorporated into the Matjhabeng Local Municipality Town Planning Scheme as an 'alternative' use. The rates of the Municipality are levied according to zoning.
- Several residential 'mining' villages have not been proclaimed as formal townships; which has the implication that no rates and taxes are being levied by the Municipality on individual erven.
- Areas with high biodiversity should not be considered for urban development.

Socio-Economic Environment

- Dependence upon the mining sector has severe implication since gold mining is in decline.
- Crime levels are higher than in the provincial average, and reducing crime is particularly important for the business environment, creating jobs, and supporting sustainable economic growth.
- Employment is high at 37%, with a decrease of GDP contribution of Matjhabeng local municipality to the district and province.

Built environment

- The provision of open spaces needs to be addressed in some historically disadvantaged areas.
- Although the number of police stations provided is within the prescribed norm, the spatial distribution to higher density residential areas (historically disadvantaged areas) need to be improved.
- The provision of social facilities needs to be more balanced to address the needs of the historically disadvantaged community.
- The on-going maintenance of sport and social activities/venues is required.
- There is a shortage of libraries.
- New cemetery sites need to be identified at Mmamahabane and Meloding.
- Except for Thabong, very few industrial sites have been provided in historically disadvantaged areas.
- The provision of higher order social and economic within the historically disadvantaged areas are lacking.
- Many business zoned erven in towns such as Virginia, Odendaalsrus, Allanridge is vacant. Many existing business activities closed with the decline of the mining sector.

- There are no municipal owned industrial sites in Ventersburg/Mmamahabane.
- The urban concentrations of Virginia/Meloding, Allanridge/Nyakallong and Odendaalsrus/Kutlwanong have been negatively affected by the closure of mines (social and economic).
- Many the Matjhabeng Local Municipality owned erven is located within the historically disadvantaged areas and need to be transferred to land occupiers.
- The housing backlog (subsidized) is 12401 after the approval of the newly planned erven.
- There are a total of 1168 houses for sale within the municipal area.
- The usage of computers and internet is still low within the municipal area.
- The upgrading of engineering infrastructure needs urgent attention (electricity and sanitation).
- The theft of electrical infrastructure is high.
- Formalized taxi facilities in historically disadvantaged area need to be provided.
- There are many roads which needs to be tarred in historically disadvantaged areas. Apart from the on-going maintenance on existing tarred roads is required.

4.5.3 Summary of community issues in 2013

A detail assessment of the issues experienced by the community is presented in the Phase 2 ‘Stakeholders Consultation’ report, a summary of the main issues and vision is presented here:

- The impact of the N1 National road at Ventersburg need to be assessed;
- Engineering infrastructure need to be upgraded and maintained;
- Existing open space systems need to be protected and utilized for tourism and agriculture;
- Derelict and under-utilized business areas need to be revitalized;
- The impact of mining operations from an environmental, safety and health perspective is of concern;
- High electricity tariffs for investors;
- Provision of social and recreational facilities to be upgraded; and
- High unemployment and the loss of businesses from the Municipal area.
- Defunct or undeveloped mining areas
- Detail studies concerning the feasibility to convert hostel buildings to high density units, education facilities, community facilities or commercial hives at ground level with residential development on the top level should, be carried out before any decision regarding the utilisation of land is taken.
- Existing mining villages and open areas around these villages should be planned to form balanced township extensions.
- Defunct shaft areas should be utilised for non-noxious industrial and commercial land uses and should be planned as an integrated development unit into the surrounding neighbourhoods.
- Rock and refuse dumps in the area should be rehabilitated and township development can only proceed when dumps are removed and rehabilitated.
- Existing industrial areas should be incorporated into any future detail town planning as industrial areas.
- Defunct explosive magazines should be rehabilitated when development is considered. Note must be taken regarding the limitations for residential development when explosive magazines are still in operation.
- Concession stores should be incorporated as local business areas in proposed development areas.

- Mining offices should be used as office/park - commercial/park facilities and the high quality of gardening should be continued to enhance the tranquillity of the area.
- Existing security training areas should be used as community facilities for example a school, orphanage, old age home, etc.
- Existing mining sport facilities should be re-utilised in future urban developments as sport zones. Adjacent hostels to these facilities should be converted for indoor sport such as karate, wrestling, boxing, etc.
- Mine water canals still in operation when township development proceeds in earmarked mining areas should be incorporated and safeguarded in respect to pollution and health within the guidelines of the National Department of Health, Department of Water Affairs and Forestry and Department of Environmental Affairs.
- Excavation areas need to be rehabilitated before or during urban development processes.
- Existing Mining Road Networks are assets and should be incorporated in future development plans as internal/external linkages.
- Railway Network Systems - if development in a mining area proceeds, investigations should be done to establish the feasibility of re-using existing railway lines for alternative uses such as industrial, commercial or rail based transportation systems.
- Due to radiation levels no slimes dams can be re-used for urban development purposes. Slimes dam footprints can only be reused once all contamination has been satisfactorily addressed.
- Existing plantations should be incorporated into any development plans.
- Future development teams should liaise closely with mining officials to determine which mining services can be removed or should be accommodated in development plan proposals.
- Before development can proceed on undeveloped/defunct mining land the following investigations must be done:
 - the capacities and condition of bulk services supply to development areas
 - should be determined and evaluated for compliance with municipal requirements.
 - existing sewerage and water reticulation networks, which may be utilised in developments, should be evaluated for compliance with municipal requirements.
 - the general conditions of existing roads should be verified to determine whether these roads comply with geometric standards and municipal requirements.
- It is important that mining houses clarify environmental restrictions such as radiation, acid mine drainage, subterranean water quality, general contamination and geotechnical restrictions before land is to be developed for urban land usage.
- It is further important to realise that mining land is to be released in terms of the Mineral and Petroleum Resources Development Act of 2002, MPRDA no: 28 of 2002 as amended, before mining land could be used for urban purposes.
- Existing infrastructure at defunct mining areas caused by changes in the economic base of the Goldfields offers development opportunities that must not be overlooked by developers and local authorities. It is proposed, therefore, that certain areas in the Matjhabeng be earmarked as mixed land use nodes to encourage developers to make investments in these areas that in turn will create work opportunities that are greatly needed to the Matjhabeng area.

4.5.4 Key challenges and opportunities

Table 4-57: Summary of key challenges and opportunities

	Challenges	Opportunities
Biophysical environment	<p>Climate: Predicted increase in the impacts of climate change and the associated risk:</p> <ul style="list-style-type: none"> • Increasing variability of rainfall and a warming climate, increasing the potential for drought and soil erosion, and associated disasters • Agricultural production dependent on ‘natural climate’ (no-irrigation or tunnels) at higher risk being impacted. • Increasing risk of disease will impact on crops, humans and livestock (as well as other animals) • Extreme summer and winter temperatures impact on energy demand for heating and cooling of dwellings / buildings. • The prevailing wind direction (north) has a negative impact on dust pollution on existing settlements (mining dumps). 	<p>Warm wet summers and milder winters may benefit some agricultural practices. Potential for increased solar energy production.</p>
	<p>Land Cover: ±35% of municipal area is under cultivation Increasing risk of soil degradation, as a result of wind and water erosion Impact on areas of biodiversity importance Impacts on water quality as a result of poor wastewater management and mining</p>	<p>56% of Municipal area consists of grassland – although it is not certain how much of this is transformed grassland, in need of rehabilitation Reduces run-off - Prevents erosion / Promotes water absorption Biodiversity offers opportunities for eco-tourism, and contributions to the GDP Healthy ecosystems improve resilience to the impacts of climate change</p>
	<p>Rivers / Water: Quality of rivers is deteriorating fast due to AMD associated with mining activities, runoff from cultivated areas, (and to a lesser degree, run off from urban areas and industries); as well as poor wastewater management processes by the municipality. High salinity and nutrient content Some pollution from upstream – not within jurisdiction or direct control of Municipality Surface water and groundwater is under threat of AMD and poor wastewater management, and agricultural practices</p>	<p>The number of rivers, pans and wetlands in fair to good state – however, the last reported assessment is from 2014, and the condition may have deteriorated since this time. Environment conducive for recreational use and tourism; Number of rivers and wetlands have been declared national freshwater ecosystem protected areas Creates opportunity for eco-tourism Groundwater quality appears to be good, however this resource is poorly managed, and under threat of AMD, which could threaten the health of local communities.</p>
	<p>Land Potential: Agricultural production potential (soil potential and rainfall) require large land areas for economically viable units.</p>	<p>Although majority of the area is considered to be ‘less favourable’, it is still conducive to agricultural production. The respective soil types creates the opportunity for a diversity of agricultural activities;</p>
	<p>Geology: Reported localised instability as a result of mining operations</p>	<p>The municipal area is not affected by dolomitic conditions.</p>
	<p>Topography: Potential for significant soil degradation if various activates are not managed appropriately, including rehabilitation of</p>	<p>Topography generally suitable for development and better water absorption</p>

Socio-economic	Challenges	Opportunities
	areas that have been mined.	
	Environmental linked to mining: AMD risks due to tailings that contain toxic chemicals Significant amounts of water used for dust control on haul roads and waste dumps Risk of seepage or leakage from storage lagoons, tailings dams and waste dumps	The municipality, local communities and other interested parties can approach the courts in case of dereliction of duties by mining companies. Can use lower-quality industrial water or mine water
	Population: Forecasts for an area such as Matjhabeng, which is highly dependent on a mining economy, are made with less confidence Municipal population trends to large extent dependant on trends in mining sector. Mines attract large numbers of migrant labour. Fluctuations in the mining sector have led to significant changes in population. Difficult to project and plan effectively due to uncertain economic and associated growth expectations Loss in buying power	Retail, service and accommodation sectors benefit from migrant mine employees. Population growth trends in areas where the economy is predominantly based on agriculture is more stable and easier to do medium-to-long-term planning.
	Social: Crime levels are high, and are likely to increase with the increase of job losses associated with a slowing mining economy In 2016, an estimated 454 households had heads that were under 18 years old i.e. child headed households of which 17.4% were occupying informal dwellings. According to National Treasury, 89 337 (59.9%) households in Matjhabeng are indigent. This is far more than the 19 536 households receiving free basic services according to Matjhabeng's 2016/17 records. Municipality under-funded for providing FBS. Households not benefitting as they should Unemployment is high at 41.9% 4.3% of Households in MLM considered to be "multi-dimensionally poor" Malnourishment -20 809 households in 2016 survey reported to "run out of money to buy food during the past 12 months" and "skipped meals five or more days in the past 30 days"	Crime rate has decreased although murder rate not. The level of education has improved but no better than the provincial average. Percentage of "multi-dimensionally poor" households have reduced from 20.4% in 2001 to 4.3% in 2016.
	Economic Sector: Mining is a significant contributor Decline in the GDP (role of MM in the District and Province). Just over two in every three gold mining jobs in 1995 no longer exist It is reported that lack of education among workers can be a significant barrier to productivity in mines Low levels of education in MM becomes especially pertinent now as mines are in decline and workers might need to be reskilled for future jobs in alternative industries. Forces mines to seek employees from further afield. With implementation of modern	Mining remains the strongest sector in the local economy and continue to play important role as employer (45.6% of formal jobs) and potential for new mines continue to hold potential for jobs and investment. Potential alternative production activities considered by some mines include: Bioenergy facility and associated crop production for energy purposes. Establishing a film studio. Vegetable and olive farms Repurposing former hostels to serve as community residential units. Operations to mine helium and methane

	Challenges	Opportunities
Built environment	technologies, first employees out the door will be lowest skilled workers.	
	Tourism: Ecotourism could be threatened by the ecosystem degradation, as a result of reduced water and soil quality	Tourism potential Existing annual events that attract visitors Environmental assets (rivers, lakes, birdlife, natural beauty, reserves) Heritage features Infrastructure such as golf courses and race track
	Agriculture: Agriculture could be threatened by the ecosystem degradation, as a result of reduced water and soil quality; and, even the impacts of climate change.	Currently agriculture in MM mainly made up of irrigated agriculture, dry land cropping and extensive livestock farming Availability of Sand Vlei Irrigation Scheme Ventersburg and Hennenman have a more diverse economic base (mainly agriculture) and are less dependent upon mining activities. Agriculture contribute to 6% of formal jobs in MM (after mining, retail / catering / accommodation, Potential for value-add to raw produce Milling is an opportunity
	Other:	Renewable energy developments Solar Farms Gas (linked to mining)
	Social and economic facilities and services: The provision of higher order social and economic facilities and services within the historically disadvantaged areas is lacking. Provision of some social facilities in lower-income areas remain inadequate Police Stations / Libraries Lack of maintenance to facilities Most of sport and recreational facilities in need of maintenance and upgrade.	Overall provision of social facilities meeting targets The coverage of schools is adequate in Matjhabeng since most high schools are located within a 2.25 km walking distance within urban areas, and primary schools within 1.5 km. The provision of health facilities is more than sufficient within the Municipal area. The availability of a number of higher order sports and recreational facilities within the Municipal area.
	Industrial land: With the exception of Thabong, very few industrial sites have been provided in historically disadvantaged areas.	Large number of vacant industrial sites, many of which have access to rail infrastructure
	Land and ownership: A large number of residential erven occupied by beneficiaries that are not yet transferred into their names Impact on land redistribution / ownership Loss of rates income to municipality Housing market appears to be stagnant – lots of properties for sale	Large number of municipal owned erven within existing urban areas that are vacant – providing opportunity for replanning / integration / infill Oversupply of open spaces Vacant business erven Vacant industrial erven Vacant school sites Middle – high income residential Municipality owns large areas of commonage Additional commonage acquisition project in the pipeline Progress with a number of Land Reform projects within the rural area (6%). With the assistance from other Provincial Sector Departments and the private sector, this programme could establish viable farming practices.
	Infrastructure: The upgrading of engineering infrastructure needs urgent attention (electricity and sanitation). The theft of electrical infrastructure is high. Formalized taxi facilities in historically disadvantaged area need to be provided. There are a large number of roads which needs to be tarred in historically disadvantaged areas. Apart from the aforementioned, on-going maintenance on	There has been a significant increase in the use of electrified household goods. Landfill sites are operating effectively. Water and electricity capacity is available. Accessibility by road, rail and air is good to the area. The Municipality has received a Blue Drop Status, which indicates that the drinking water quality is good

Challenges	Opportunities
<p>existing tarred roads is required.</p> <p>Cemetery facilities needed in Mmamahabane and Meloding</p> <p>Housing:</p> <p>In 2016 - 40 901 informal dwellings (account for 37.1% of the total housing in the Matjhabeng)</p> <p>43.2% of these (9 451) were in backyards</p> <p>Mining:</p> <p>Large clusters of abandoned and derelict mines.</p> <p>Massive dilapidated and vandalised structures</p> <p>Pose serious health and safety threats</p> <p>Fragmenting the existing urban fabric</p> <p>Restricts social infill and integration.</p> <p>Rehabilitation extremely expensive (lack of funds) – State is responsible</p> <p>Informal mining activities</p> <p>Illegal</p> <p>Dangerous as unsafe environments</p> <p>Criminal practices are taking place</p>	

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5 Spatial proposals

5.1 Spatial concept

5.1.1 Final vision statement

According to the Matjhabeng Local Municipality Integrated Development Plan (IDP) for 2017 - 2022, the vision of the Municipality is:

“By being a benchmark developmental municipality in service delivery excellence.”

The Municipality's associated Mission Statement reads as follows:

- By being a united, non-racial, non-sexist, transparent, responsible municipality.
- By providing municipal services in an economic, efficient and effective way.
- By promoting a self-reliant community through the promotion of a culture of entrepreneurship.
- By creating an environment that is conducive for growth and development.

The Municipality's vision and mission are translated into the following five municipal key performance areas:

- KPA1: Good governance
- KPA 2: Basic Service delivery
- KPA 3: Inclusive economic development and job creation
- KPA 4: Institutional Transformation
- KPA 5: Financial sustainability and viability

The following strategic objectives have been set to deliver on the above stated key performance areas:

- Ensuring access to basic services for all residents;
- Developing and sustaining spatial, natural and built environments;
- Providing integrated and sustainable human settlements;
- Addressing the challenges of poverty, unemployment and social inequality;
- Fostering a safe, secure and healthy environment for employees and communities;
- Developing a prosperous and diverse economy;
- Accelerating service delivery through the acquisition and retention of competent and efficient human capital;
- Ensuring sound financial management and viability.

Table 5-1: Summary of the key aspects associated with the SDF vision

KPI	Objectives	Key findings (Opportunities and Constraints)	SDF Strategies
Good governance	Fostering a safe, secure and healthy environment for employees and communities (residents); Addressing the challenges of poverty, unemployment and social inequality;	Predicted increase in carbon dioxide concentrations increasing risk of climate change in the region. Increasing variability of rainfall and a warming climate Higher risk of associated disaster occurrences. Health risks due to tailings that contain toxic chemicals Dust pollution on existing settlements (mining dumps) Crime levels are high Needs of 454 child headed households 4.3% of Households “multi-dimensionally poor”	Enforcement of sound planning standards (pre-feasibility, flood line studies, geotechnical assessments). Building design and construction standards (especially green standard insolution) Clear strategy to confirm health-risk associated with abandoned mines and tailing areas and plan to deal with rehabilitation (clear costs, responsibility and timeframes) Based on the above, create spatial strategy for mitigation, protection and integration Revision of indigent calculations and indigent strategy and plan for meeting basic needs of the poor / worst off
Basic Service Delivery	Ensuring access to basic services for all residents; Providing integrated and sustainable human settlements;	93.7% of households have access to piped water inside the dwelling or yard Interruptions in water availability due to breakages, result in service quality decline Sanitation backlogs still high 15.0% households used pits or bucket toilets in 2016. 10 000 pit toilets without a ventilation pipe Of the 5 141 bucket toilets, about half are emptied by the households	Necessary for the Municipality to consider new innovative ways of dealing with delivery of Housing / Accommodation. Zoning Scheme Bylaws (second dwelling, shelter, “informal settlement”, urban reception areas...) Cannot assume each shack or backyard structure = need for a subsidised RDP dwelling. Categorise in terms of all Human Settlement Delivery tools Short term basic infrastructure plan (interim services solution) with long term delivery strategy and plan. Recycling and buy-back centres, waste transfer

KPI	Objectives	Key findings (Opportunities and Constraints)	SDF Strategies
		<p>themselves</p> <p>1 886 had no toilets</p> <p>Refuse removal service has declined with 11% from 2011 to 2016</p> <p>Only 72.8% of households serviced in 2016</p> <p>8.1% serviced less than once per week</p> <p>Use of their own refuse dumps has increased from 8 274 to 13 797.</p> <p>The provision of higher order social and economic facilities and services within the historically disadvantaged areas is lacking.</p> <p>Provision of some social facilities in lower-income areas remain inadequate</p> <p>Police Stations / Libraries</p> <p>Open spaces</p> <p>Lack of maintenance to facilities</p> <p>Most of sport and recreational facilities in need of maintenance and upgrade.</p> <p>The existing provision of educational facilities, police stations, healthcare facilities appear to be adequate.</p> <p>Total shortfall in dwelling / accommodation units is reported to be around 33 981 units.</p> <p>In 2016 - 40 901 informal dwellings (account for 37.1% of the total housing in the Matjhabeng)</p>	<p>stations and disposal network.</p> <p>Clear strategy for “infill before expansion”.</p> <p>In-fill planning / integration strategy to first attempt to meet backlog / demand with most suitable vacant / underutilised area.</p> <p>Where improving accessibility to the existing can meet demand rather than duplication.</p> <p>Policy that no plan without clear implementation strategy, responsibility and timeframe - “Stop planning for the sake of planning”</p> <p>Comprehensive urban development strategy</p>

KPI	Objectives	Key findings (Opportunities and Constraints)	SDF Strategies
		<p>43.2% of these (9 451) were in backyards</p> <p>Over-supply of middle-income residential erven</p> <p>Municipality owns large tracts of land in and around the urban areas, including vacant business, industrial, educational and municipal purpose erven</p>	
Inclusive economic development and job creation	Developing a prosperous and diverse economy;	<p>Value of rental accommodation in backyards is an important source of revenue to property owners.</p> <p>Unemployment rate at 41.9%</p> <p>Decline in roll of mining in local economy</p> <p>Just over two in every three gold mining jobs in 1995 no longer exist</p> <p>Lack of education among workers - barrier to productivity in mines (and local economy)</p> <p>Mining remains the strongest sector in the local economy and continue to play important role as employer (45.6% of formal jobs) and potential for new mines continue to hold potential for jobs and investment.</p> <p>Tourism potential</p> <p>Existing annual events that attract visitors</p> <p>Environmental assets (rivers, lakes, birdlife, natural beauty, reserves)</p>	<p>Avoid replacing existing entrepreneurial response, linked to livelihood strategies with government interventions.</p> <p>Focus on interventions and policy / management tools to enable / support existing private initiative.</p> <p>Create an enabling environment.</p> <p>Clear strategy for diversification of the local economy</p> <p>Marketing as manufacturing / industrial area</p> <p>Bioenergy facility and associated crop production for energy purposes.</p> <p>Re-use of redundant mining industry (film studio, intensive agriculture, repurposing former hostels and harvesting helium and methane)</p> <p>Branding, packaging and marketing of tourism</p>

KPI	Objectives	Key findings (Opportunities and Constraints)	SDF Strategies
		<p>Heritage features</p> <p>Infrastructure such as golf courses and race track</p> <p>Potential for renewable energy developments</p>	
Institutional Transformation	Accelerating service delivery through the acquisition and retention of competent and efficient human capital;	<p>Capacity assessment of line departments (outstanding)</p> <p>Agency and cooperation agreements details required (outstanding)</p>	Partnerships SLAs Agency agreements
Financial sustainability and viability	Ensuring sound financial management and viability.	<p>Significant number of developed residential properties not yet transferred to qualifying beneficiaries = loss of revenue.</p> <p>Mining accommodation appear as if not considered as part of the functional urban environment.</p> <p>Need to confirm status of ownership, zoning and valuation roll – pairing with rates details</p>	Registration of un-registered RDP units. Real-time, on-line web-based system to integrate zoning, land use, building, services, valuation and billing systems

5.1.2 Concept diagram

The purpose of the SDF is to include both a written and spatial representation of a five-year spatial development plan of the spatial form of the municipality.

Based on the DRDLR “SDF Guidelines” (Final Version – September 2014), a number of spatial structuring elements or tools were identified to be incorporated into the formulation of a Spatial Development Framework.

These “structuring elements” are concepts or “planning tools” that, in line with the identified spatial objectives and associated strategies, should enable the Municipality to identify areas where different types of land uses should be permitted and/or discouraged and thus form the building blocks that guide future spatial planning in the MLM.

The MLM Spatial Development Framework proposes to make use of six spatial structuring elements, as follows: -

The concept of Development Nodes (Primary, Secondary and Rural): development nodes are categorised as those towns or places where a significant number of functions, commonly deemed to be urban, are found. These functions would include public administration facilities/institutions, business activities, social and recreational facilities and other existing or potential economic enterprises (including tourism-related enterprises). Such nodes are often located on main transport routes to provide maximum access and act as catalysts for new growth and development. As such, these are areas where the following should be prioritised: -

- Appropriate levels of development investment in infrastructure.
- Appropriate land use management to promote preferred development outcomes.

The concept of an Urban Edge: The Spatial Development Framework proposes that an **Urban Edge** be defined for urban settlement / nodal areas, in an effort to consolidate the urban area, direct infrastructure development priorities and achieve a more compact settlement pattern. The areas beyond the urban edge are defined as rural, which implies limitations for settlement development, infrastructure provision and social facilities.

The concept of Mobility Corridors: An efficient and accessible transportation network is vital for successful spatial and economic development. It also improves access to higher-order facilities and services from lower order nodes within a wider hinterland. Mobility corridors are those routes that have particular importance for moving people and goods at Regional and Municipal level.

The concept of Activity Corridors or Streets: Due to high accessibility and visibility of land along main transport (mobility) routes within an urban environment, such areas are ideal for locating higher order business, commercial and services developments. Provided that the impact of the activity focus is adequately managed by way of direct access restrictions to the mobility route and introduction of dedicated service lanes, such corridors can ensure improved access to residents.

The concept of Priority Environmental Management and Intervention Areas: The environmental conservation and management areas comprise nature reserves, river / flood plains, wetlands, steep slopes and fragile or vulnerable ecosystems. On the other hand, priority intervention areas are those where undesirable activities occur, and conditions exist that has potential to negatively impact on long term environmental sustainability or human health and welfare.

The concept of Strategic Development Areas: These can be separated in terms of strategic priority needs and strategic priority assets / opportunities. The aim is to identify areas of:

- Development need (i.e. areas where settlement, infrastructure or tenure backlogs persist)
- Development potential, where the allocation of resources and spending will result in optimising inherent potential and returns.
- This supports the phased approach to development by first targeting areas of greatest potential or need, as promoted in the National Spatial Development Perspective.

When considering the key findings from the analysis and applying the various spatial structuring elements to the Municipal Area, the resulting development concept can be illustrated as follows: -

Insert Spatial Concept Sketch

5.2 Spatial strategies

5.2.1 Future demand approach statement

5.2.2 Composite MSDF (protect, change, new)

5.2.3 Proposals per focus area (Settlement SDFs)

The Municipality needs to identify nodes in order to allocate appropriate levels of investment in infrastructure and services that can be associated with the expected roles and functions of each node. This will also guide the Municipality on appropriate land use management strategies compatible with each node.

Statement of intent To clearly identify and designate a hierarchy of nodes based on spatial and functional norms and standards.
Criteria Criteria for guiding and influencing decisions for locating corresponding hierarchy of facilities and services at a regional, sub-regional and local level include: <ul style="list-style-type: none">• Size of the node (population / GVA contribution)• Current distribution (location and availability) of higher order facilities and services• Extent of catchment area of the node• Accessibility in terms of transport networks (local, regional and national)- including air, rail and road
PRIMARY DEVELOPMENT NODE
Welkom/Thabong
Role Primary Retail and Administrative Service Centre to both the Matjhabeng Municipality and areas within its geographic service catchment area. It further has been identified as the main target area for industrial development. The Urban Complex caters for permanent and temporary residents and commuters from the wider

hinterland. It is also central to the Free State goldfields area.

Spatial Structuring and Land Use Management Guidelines

- Prioritise managed urban infill and densification.
- There-after, limited expansion.
- Focus on delivery of social and infrastructure services and creating economic opportunities
- Priority for Public-funded Housing development and rental accommodation.
- Infrastructure development to cater for increased densities and expansion
- Business Centre Management and focus on Safety, Land Use Management and Urban Aesthetics.
- Improved internal pedestrian and vehicular linkages.
- Environmental management (protection) and rehabilitation

SECONDARY DEVELOPMENT NODE

Virginia/Meloding - Odendaalsrus/Kutloanong

Role

Secondary Retail and Administrative Service Centres to urban residents and commercial farming hinterland. The urban area continues to fulfil the role as administrative centre for certain local functions, but competes with Welkom when it comes to bigger retail outlets and social services.

Virginia has an added role as mining town and centre for tourism.

Odendaalsrus has an added role as sport node and mining town.

Spatial Structuring and Land Use Management Guidelines

- Urban infill and consolidation as opposed to expansion.
- Public-funded Housing development.
- Infrastructure maintenance and upgrade.
- Business Centre Management and focus on Safety, Land Use Management and Urban Aesthetics.
- Improved internal linkages.
- Social facilities
- Environmental management

RURAL MIXED PURPOSE SERVICE CENTRES

Allanridge/Nyakallong - Ventersburg/Mmamahabane - Hennenman/Phomolong

Role

Commercial and Administrative nodes, with residential support node function (social and business facilities serving residents and surrounding commercial farming hinterland).

Ventersburg has an added role as service node to the N1 national route.

Spatial Structuring and Land Use Management Guidelines

- Maintenance and Upgrade of infrastructure
- Focus on quality social services and local economic development opportunities to improve livelihoods.
- Local planning to respond to underutilised land areas, informal settlements and sustainable

human settlement development needs.

- Registration / transfer of RDP units.

Urban areas and associated edges

Statement of intent

To identify the outer limits of areas where the Municipality would prefer to see an urban level of development. It defines the proposed boundary line where the transition from the urban area to peri-urban and rural development is seen to be desirable, involving differing land use characteristics and density of development.

Criteria

The zone within which the municipality will endeavour to upgrade levels of infrastructure over a period and according to available resources, to allow for expansion of urban-type development and to support higher densities of residential, industrial, and commercial development.

Outside of the Urban Edge, land is generally earmarked for use as agricultural and conservation purposes.

URBAN AREAS

**Welkom/Thabong - Virginia/Meloding - Odendaalsrus/Kutloanong - Allanridge/Nyakallong -
Ventersburg/Mmamahabane - Hennenman/Phomolong**

Role

Concentrations of complementary land uses such as Residential, Economic (Services, Retail and Manufacturing), Social and Administrative Services within a geographic service catchment area. The scale and level of Economic, Social and Administrative services, combined with level of accessibility (local, regional, national and inter-national) in term of transport modes, to a large extent determines the service catchment of an urban area.

Spatial Structuring and Land Use Management Guidelines

- Inclusive Urban Development
- Increased intensity of residential use and mix in high access localities
- Provision of urban settlement reception areas to direct or guide influx.
- Increasing ability and opportunity for providing accommodation (infrastructure capacity and appropriate land use management mechanisms)
- Incorporation of functional urban spaces around urban centres such as mining developments (to ensure integrated spatial, transport, infrastructure and social infrastructure planning).
- Improved access (transport networks, public transport infrastructure and associated spatial structuring).
- Appropriate land administration arrangements and tenure forms.
- Land use categories structured along a range of levels of intensity and mix (as opposed to strictly use-category based) to encourage mixed use development.
- Apply guidelines and parameters for land-use categories to ensure that urban spaces will promote the health, amenity and general well-being of residents.

Note: Detailed Local Spatial Development Proposals are covered under the theme of Strategic Development Areas

Transport and mobility routes of importance

Statement of intent

Transport and mobility routes of significance at national, regional, municipal or local level that: -

- Facilitate movement of good and people to, from and within an area
- Linkages to places of significance (i.e. markets, places of work or social / economic opportunity)
- Create focus for activities associated with Transport and Mobility Routes

Criteria

Categorisation in line with the primary function of each mode or category.

MODES

Air - Welkom airport and Virginia airstrip

Role

Local and Regional air linkages

Spatial Structuring and Land Use Management Guidelines

- Noise Interference Zones and associated land development restrictions.
- Civil Aviation regulations related to commercial airfields / airports

Rail

Role

Includes part of national rail network (Gauteng – Bloemfontein) with a well-developed and integral rail system that also provides siding facilities to various industrial areas.

Spatial Structuring and Land Use Management Guidelines

- Ensure continued servicing of existing industries, including mining.
- Integration with planning of future urban expansion and transport networks.
- Focus on development of modal interchange localities

Road

Role

Connectivity and linkages as one of main criteria in the structuring of urban and regional environments, determining factors in efficiency of integration and measure of accessibility to facilities and services.

Spatial Structuring and Land Use Management Guidelines

The function of each category needs to be optimised / supported / secured by appropriate spatial design and management criteria, including:

- Alignment and spatial design principles to be applied (spacing and configuration of intersections, direct access restrictions), informed by the road status.
 - Sight distances
 - Limiting number of intersections / spacing
 - Intersection alignments
- Set-back and building lines around infrastructure and along routes
- Promoting a well-functioning road transport network - higher order networks to be supported by lower order secondary networks and access roads – to avoid conflict in functions of each road category which is one of main causes of serious accidents.
- Appropriate public transport collection and transfer points
- Clear provision for pedestrian / non-motorised modes

Land Use Management Guidelines:

ROAD RESERVES AND BUILDING LINES			
		Recommended	
Road Level	Road Type	Road Reserve	Building Line
National	SANRAL roads**	50 m	10 m – residential 20 m – business, industrial
Provincial	Trunk road	30 m	5 m
	Main road	25 m	5 m
	District road	20 m	5 m
Municipal	Bus routes – arterial (four lanes with median island)	32 m	5 m
	Bus route – collector (two lanes)	20 m	5 m
	Taxi routes	16 m	5 m

TYPE	AREA/DESCRIPTION OF LOCALITY	FUNCTION
Main Mobility Routes	1. N1 2. R70 (Senekal – Ventersburg – Welkom) 3. R34 (Mangaung – Welkom – Kroonstad and Welkom – Wesselsbron/Hoopstad) 4. R30 (Klerksdorp – Bothaville – Allanridge - Welkom) 5. R73 (link from R70 to R34 via Virginia) 6. R710 (links R30 – westwrds, Welkom – Hertzogville)	<input type="checkbox"/> Regional / National north-south link <input type="checkbox"/> Regional / National east-west link <input type="checkbox"/> Regional / National north-south and east-west link <input type="checkbox"/> Regional north-south link <input type="checkbox"/> Local north-south link <input type="checkbox"/> Regional / Local east-west link

Environmental structuring elements

Statement of intent

The Environment is a dynamic system and therefore cannot be approached in a “one size fits all” manner. Environmental Guidelines and Principles must be outlined to facilitate responsible and environmentally sustainable development and highlight potential high-risk areas where further investigation (in the form of an EIA or Scoping report / SEA) is required. The merit and desirability of each development needs to be individually assessed.

Criteria

Areas where development should be preceded by (scoping) investigations to gather more accurate information to:

- Inform appropriate type and scale of development.
- Inform appropriate measures to mitigate long term negative impact.

Areas impacted and degraded by activity that has potential to negatively impact on sustainability, the surrounding environment and health and safety of residents.

PRIORITY AREAS

- Rivers / Dams / Aquifers: Development within the 1:100-year flood line, Riparian Zone or close proximity of water bodies / abstraction points.
- Wetland Areas
- Habitat of endangers animals and birds
- Municipal Public Open Space systems
- Priority / pristine and vulnerable areas: Plants and vegetation of conservation Importance
- Degraded land areas
- MRAs
 - Impact on dust pollution and water contamination
- Erosion
- Degraded land cover (overgrazing)

Role

Ensuring long-term sustainability in use of non-renewable natural resources.

One of main determining factors in quality of living / settlement spaces (aesthetics and pollution / human health).

Spatial Structuring and Land Use Management Guidelines

- Verification and refinement of indicative demarcation coverages of environmental sensitivity categories, buffer zones and impacted areas.
- Clear demarcation of all areas considered as environmentally sensitive (such as steep slopes, drainage features, areas containing concentrations sensitive of threatened vegetation), conservation zones such as reserves or heritage sites or impacted / contamination risk areas.
- Identification and demarcation of ecological corridors (linking conservation areas) to be maintained.
- Permission for land development should be considered based on compatibility, whilst the primary intent should remain the protection of the natural environment.

- Integration of appropriate spatial design criteria aimed at limiting negative impact on sensitive environments, including:
- Restricted areas / activities
- Set-back lines / development restriction or buffer areas
- Limitations on expansion of existing activities
- Minimum levels of Infrastructure
- Appropriate design requirements to mitigate potential impact
- “Overlay Zone” to clearly reflect priority biodiversity / protected areas (national freshwater ecosystem protected areas) and special management areas (rehabilitation areas) with associated land use and development guidelines.

5.2.4 Strategic development areas

Introduction

Strategic Development Areas (SDAs) are geographical areas where, in order to achieve both the objectives of the Municipal Integrated Development Plan and the related objectives of the Spatial Development Framework, the MLM Municipality would need to prioritise its development efforts and capital expenditure.

Target sectors for economic development

Statement of intent

Recognition, clear demarcation and protection of areas with high potential for economic development (in line with the main sectors of opportunity).

Through appropriate investment, land use and resource management, such areas need to be prioritised for optimal development – to generate economic production, job creation and income in the municipal area.

Criteria

Highest-potential areas based on:

- Locational advantages
- Natural potential
- Infrastructure capacity

PRIMARY SECTORS OF OPPORTUNITY

Agriculture

Role

Agriculture is one of the main sectors contributing to the GDP of Matjhabeng. In terms of surface area, it is by far the dominant land use. Its contribution to the GDP of the Municipality was reported as 0.8% (2014) and it is providing employment to 6% of the total employed in the Municipality.

Spatial Structuring and Land Use Management Guidelines

- Identification and protection of all high potential and/ or unique agricultural land.

- Water resource management and optimisation of irrigation land.
- Infrastructure development required to achieve primary resource development and associated value-add industries.
- Water catchment and holding – dams/weirs
- Systems of transfer (canals, rivers / drainage courses)
- Pipe and pump infrastructure
- Storage and transport (rail and road)
- Identification and clear spatial focus and support for urban agriculture, emerging farmers and high-value / niche market crops.
- Complementary activities can assist in ensuring the viability of enterprises, and to this end, value addition and compatible uses should be encouraged, provided these do not detract from the core productive / development potential or function of such area.

Tourism

Role

Tourism is one of the sectors with potential for growth, to service the local, national and international market. The variety of experiences offered includes heritage/cultural tourism, nature tourism, agricultural and mining tourism and recreational / sport tourism.

Spatial Structuring and Land Use Management Guidelines

- Building on sustainable exploitation of Biodiversity and Natural assets
- Agri- and mining tourism
- Liberation route / Heritage assets
- Recreational and sport (dams & lakes, golf courses, race track, sport facilities)
- Accommodation / Hospitality (urban and farm-stays)
- Establishment and marketing of routes / packages.

Mining

Role

Responsible for roughly 56% of the GDP of the Municipality (2014), 45.6% of the employment. Apart from gold, it also supplies a substantial portion of the total silver produced in the country, and large concentrations of uranium occurring in the gold-bearing conglomerates. It has been the main catalyst for urban development in the Municipality.

Spatial Structuring and Land Use Management Guidelines

- Adhering to existing set-backs and spatial design implications of existing infrastructure and features.
- Compatibility considerations for use to protect future potential mining opportunities
- Pro-active spatial structuring in anticipation of impact and limitations
- Promoting integration of non-mining elements (accommodation, settlement and social infrastructure) to limit spatial fragmentation (development of separate private towns).
- Transport planning to support the needs of the industry
- Infrastructure planning to support the needs of the industry
- Long-term contingency plans for mitigating knock-on effect of fluctuations (or phasing out) of the mining industry in the local area

- Spatial restructuring and rehabilitation plans of defunct mining areas

Target areas based on levels of hardship (worst off areas)

Statement of intent

To ensure basic human needs are met in terms of access to minimum levels infrastructure, shelter, healthcare, education and safety, especially in those areas regarded as worst off.

Criteria

- Level of hardship
- Poverty / Multi-dimensional poverty
- Lowest levels of access to basic services (shelter, social services and infrastructure)

Spatial Structuring and Land Use Management Guidelines

- Identification and prioritisation of intervention areas to be based on lowest levels of:
 - Economic wellbeing
 - Access to economic opportunities
 - Access to shelter / Housing
 - Infrastructure
 - Social services.
- Spatial guidelines are contained in government policy (minimum standards for human settlement development and delivery of social services).

Nodal target areas (hierarchy of nodes)

To be completed

6 Implementation framework

6.1 Policies

6.2 Guidelines

6.3 Capital investment framework

6.3.1 Spatial priorities and required precinct plans

6.3.2 Institutional arrangements

6.3.3 Public and private sector role

6.3.4 Possible partnerships

6.3.5 Implementation requirements

Timeframes moving forward

Inputs into IDP

Inputs into Sector Plans

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8 Annexure 1: Land Cover 2013/2014 Accuracy Assessment

Accuracy assessment is an essential component of the mapping process, particularly when using satellite imagery. Landsat 8 satellite imagery with a 30x30m resolution was used to create the national land-cover dataset for South Africa. Accuracy assessment simply aims to illustrate the difference between the verified and the automated modelled data and therefore evaluates model “correctness”.

To calculate the accuracy South African National Landcover datasets, 6,415 sample points within 33 classes were selected across the country.

The overall map accuracy for the 2013-14 South African National Land-Cover dataset is 81.73%, with a mean land-cover / land use class accuracy of 91.27%. The Kappa Index value of 80.31 indicates that these results are very unlikely to be the result of chance occurrence.

OVERALL SUMMARY		
Overall Map Accuracy	81.73	%
Mean Class Accuracy	91.27	%
90% confidence limits	81.10	82.36
	low	high
Kappa Index	80.31	
Number of classes present	33	
Number of sample sites	6415	

Figure 87: Map accuracy results for the 2013/14 South African National Land-Cover dataset

With the results being presented in a confusion matrix, producer, user and overall accuracies were used to evaluate the efficiency of the modelled data.

CLASS SUMMARY STATISTICS		User Acc %	Prod Acc %	30% C.L. low	30% C.L. high	Omm Error	Comm Error	
LAND-C	Water	1	98.77	97.58	95.89	99.27	0.02	0.01
CLASS	Wetland	2	88.07	91.18	88.30	94.05	0.09	0.12
	Indigenous Forest	3	72.60	94.64	91.78	97.50	0.05	0.27
	Dense Bush, Thicket	4	53.74	83.64	80.72	86.55	0.16	0.46
	Woodland, Open Bush	5	60.84	54.13	51.27	57.00	0.46	0.39
	Grassland	6	84.56	69.82	68.11	71.53	0.30	0.15
	Low Shrub: Fynbos	7	79.64	93.31	91.15	95.46	0.07	0.20
	Low Shrub: Other	8	70.59	61.82	59.37	64.27	0.38	0.29
	Cultivated Commercial Crop	9	95.87	91.42	90.03	92.81	0.09	0.04
	Cultivated Pivot Crop	10	91.71	99.40	98.36	100.00	0.01	0.08
	Cultivated Orchards	11	84.18	90.48	87.28	93.67	0.10	0.16
	Cultivated Vineyard	12	91.61	97.26	95.37	99.15	0.03	0.08
	Cultivated Pineapple	13	97.32	96.67	94.65	98.69	0.03	0.03
	Cultivated Subsistence	14	89.00	94.42	92.22	96.61	0.06	0.11
	Cultivated Sugarcane Pivot	15	100.00	100.00	98.72	100.00	0.00	0.00
	Cultivated Sugarcane	16	84.21	97.96	95.06	100.00	0.02	0.16
	Cultivated Emerg Sugarcane	17	91.84	100.00	98.65	100.00	0.00	0.08
	Forest Plantation	18	89.30	94.35	92.31	96.39	0.06	0.11
	Mines: Bare	19	86.36	87.69	82.35	93.04	0.12	0.14
	Mines: Water	20	90.20	100.00	98.66	100.00	0.00	0.10
	Mines: Buildings	21	90.00	95.74	91.75	99.74	0.04	0.10
	Erosion Dongas	22	78.98	94.66	92.02	97.30	0.05	0.21
	Bare Ground	23	73.54	77.44	74.57	80.31	0.23	0.26
	Built-up: Commercial	24	80.39	100.00	98.58	100.00	0.00	0.20
	Built-up: Industrial	25	94.23	92.45	87.64	97.27	0.08	0.06
	Built-up: Informal	26	96.00	94.12	89.71	98.53	0.06	0.04
	Built-up: Residential	27	96.97	90.14	85.48	94.80	0.10	0.03
	Built-up: Schools & Sports	28	96.00	97.96	95.06	100.00	0.02	0.04
	Built-up: Smallholdings	29	89.29	98.04	95.25	100.00	0.02	0.11
	Built-up: Sports & Golf	30	90.00	97.83	94.76	100.00	0.02	0.10
	Built-up: Township	31	96.30	96.30	92.78	99.81	0.04	0.04
	Built-up: Village	32	98.70	100.00	98.96	100.00	0.00	0.01
	Built-up (other)	33	60.78	81.58	73.38	89.77	0.18	0.39

Figure 88: Individual class accuracies for the 2013/14 South African National Land-Cover dataset

No accuracy assessment was undertaken on the historical 1990 South African National Land-Cover dataset, because no suitable historical reference data was available in the same format as that used for the verification of the 2013-14 dataset.

Reference

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9 Annexure 2: Policy overview and information

9.1 International policy directives

9.1.1 United Nations Framework Convention on Climate Change (1992)

As a signatory to the Convention on Climate Change, South Africa at the National level is obligated to limit atmospheric emissions of greenhouse gases and to mitigate against current pollution, and in so doing ensure relevant plans are in place to achieve this.

Matjhabeng Local Municipality SDF must in turn include in its objectives, intentions to develop a corridor which takes cognizance of commitments such as the Convention on Climate Change.

9.1.2 Sustainable Development Goals

The Sustainable Development Goals is an international policy which South Africa has committed to, as well as many other countries in Africa. It is aimed at ending poverty and inequality, through sustainable development and the protection of the environment. Therefore, the Matjhabeng Local Municipality must also align all its activities with the Sustainable Development Goals and ensure inclusiveness and coherence on transformation of the Municipality for the benefit of all its people (Stats SA, 2016a).

According to (Stats SA, 2016a) Sustainable Development Goals 2030 goals of which Matjhabeng Municipality needs to also implement include:

- End extreme poverty in all forms by 2030
- End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Ensure healthy lives and promote well-being for all at all ages
- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Achieve gender equality and empower all women and girls
- Ensure availability and sustainable management of water and sanitation for all
- Ensure access to affordable, reliable, sustainable and modern energy for all
- Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- Reduce inequality within and among countries
- Make cities and human settlements inclusive, safe, resilient and sustainable
- Ensure sustainable consumption and production patterns
- Take urgent action to combat climate change and its impacts
- Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

- Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Strengthen the means of implementation and revitalize the global partnership for sustainable development

9.2 National policy objectives

9.2.1 Constitution of South Africa

The Matjhabeng Local Municipality SDF must take cognizance of the Constitution of South Africa, ensuring that the environment is considered in each decision or recommendation made.

Furthermore, the principle of Sustainable Development has been established in the Constitution of the Republic of South Africa (Act No. 108 of 1996) and given effect by NEMA. Section 1(29) of NEMA states that sustainable development means the integration of social, economic and environmental factors into the planning, implementation and decision-making process to ensure that development serves present and future generations.

Therefore, Sustainable Development requires that:

- The disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- That pollution and degradation of the environment are avoided, or, where they cannot be altogether avoided, are minimised and remedied;
- The disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
- Waste is avoided, or where it cannot be altogether avoided, minimised and re-used or recycled where possible and otherwise disposed of in a responsible manner;
- A risk-averse and cautious approach is applied, which considers the limits of current knowledge about the consequences of decisions and actions; and
- Negative impacts on the environment and on people's environmental rights be anticipated and prevented, or, where they cannot altogether be prevented, are minimised and remedied.

9.2.2 National Development Plan 2030

The National Development Plan is the single overarching planning vision for South Africa. It is imperative that other planning policies take cognisance of the National Development Plan and contribute towards the achievement of the National Development Plan priorities and targets. In Matjhabeng Local Municipality the Provincial Growth and Development Strategy has been aligned with the National Development Plan.

The Matjhabeng Local Municipality SDF will need to reflect the priorities and objectives of the National Development Plan and to translate these down to a regional level appropriate to the context of the corridor, which include:

- Emphasis on inclusivity and job creation across all skills levels within the economy;
- Need for the identification of key sectors of influence;

- The creation of jobs through investment in key sectors;
- Inward and outward strategies to enhance inter-regional trade and investment;
- Beneficiation and agro-processing (developing on existing strengths);
- Transformation of rural and urban areas through LED interventions; and
- Building the capacity of Municipalities to implement LED plans and programmes.

Key objectives of relevance to the Matjhabeng Local Municipality SDF study area include: increased urban densities, improved public transport, increased jobs and investment where people live, upgrading informal settlements and fixing housing market gaps.

The spatial development proposals in the National Development Plan provide the overall national context for the municipality. These proposals highlight important cross-boundary issues for the study area, including important national corridors that the Matjhabeng Local Municipality will need to connect with, the broader spatial economy for the development of the study area and economic and social priorities within and surrounding the study area.

9.2.3 Spatial Planning & Land Use Management Act (2013)

SPLUMA applies to all areas of South Africa, and therefore the Matjhabeng Local Municipality. All development applications will need to be made in terms of the provisions of SPLUMA. As such, the spatial patterns of development promoted within the Matjhabeng Local Municipality SDF will need to adhere to the development principles outlined in SPLUMA.

9.2.4 National Environmental Management Act (No. 107 of 1998)

The National Environmental Management Act (NEMA) (Act No. 107 of 1998) can be the overarching Act, governing environmental management in South Africa, and is supported by a suite of specific environmental management acts (or SEMAs), such as those listed below (which are not further elaborated on for the purposes of this Matjhabeng Local Municipality (presented by date of enactment)).

- Mountain Catchment Areas Act, No. 63 of 1970;
- Conservation of Agricultural Resources Act, 1983;
- National Water Act, No. 36 of 1998;
- National Forests Act, No. 84 of 1998;
- National Heritage Resources Act, No. 25 of 1999;
- World Heritage Convention Act, No. 49 of 1999;
- National Environmental Management: Protected Areas Act, No. 57 of 2003;
- National Environmental Management: Biodiversity Act, No. 10 of 2004;
- National Environmental Management: Air Quality, Act No. 39 of 2004; and
- National Environmental Management: Waste Act, No. 59 of 2008.

The outcomes of the Matjhabeng Local Municipality SDF are expected to give effect to several projects which will aim to achieve the objectives of the SDF. Such projects will have to be compliant with the

NEMA and associated Acts (listed above) should the development thresholds meet the requirements for Environmental Authorisation. Environmental Authorisations will be obtained by conducting either a Basic Assessment (BA) or full Environmental Impact Assessment (EIA) processes which are governed by the EIA Regulations (2014), Government Notice Regulations (GNR) 982 to 985.

Furthermore, the Matjhabeng Local Municipality SDF must consider the principles of the Act as outlined above and ensure due diligence and alignment with the Act in all aspects.

9.2.5 Department of Environment's Strategic Plan (2012–2017)

The challenges identified in the DEA Strategic Plan are shared with Matjhabeng Local Municipality, and should therefore be addressed in this study. These challenges are as follows:

- Growing threat of climate change crisis
- Continuing plundering and pillaging of our natural resources
- Crime and corruption
- Poor capacity in addressing the current and future potential wildlife crimes in the country
- Resource availability gaps like waste services access where majority of the poor cannot afford to pay due to their economic conditions
- Challenges of pollution and waste management
- Negative impacts of significant development activities and development patterns
- Unsustainable utilization of natural resources which poses a threat to the functionality of ecosystems therefore undermines the social and economic development potential.
- Non-compliance with existing environmental policies and legislation

9.2.6 National Climate Change Response Strategy for South Africa

The Matjhabeng Local Municipality SDF must include in its objectives, intentions to develop a corridor which takes cognizance of commitments to mitigate the impacts of climate change.

9.2.7 Subdivision of Agricultural Land Act (1970)

There are significant agricultural lands within the Matjhabeng Local Municipality and the provisions of the Act will have a significant potential influence on the release of land for non-agricultural uses. Applications under this Act are slow to effect due to bottlenecks in the system and the average timeframe for simple applications is typically around two years.

9.2.8 National Transport Master Plan (NATMAP 2050)

The NATMAP identifies several major transport corridors and associated economic / settlement nodes in South Africa with relevance for cross boundary linkages for the Matjhabeng Local Municipality (refer to Error! Reference source not found.):

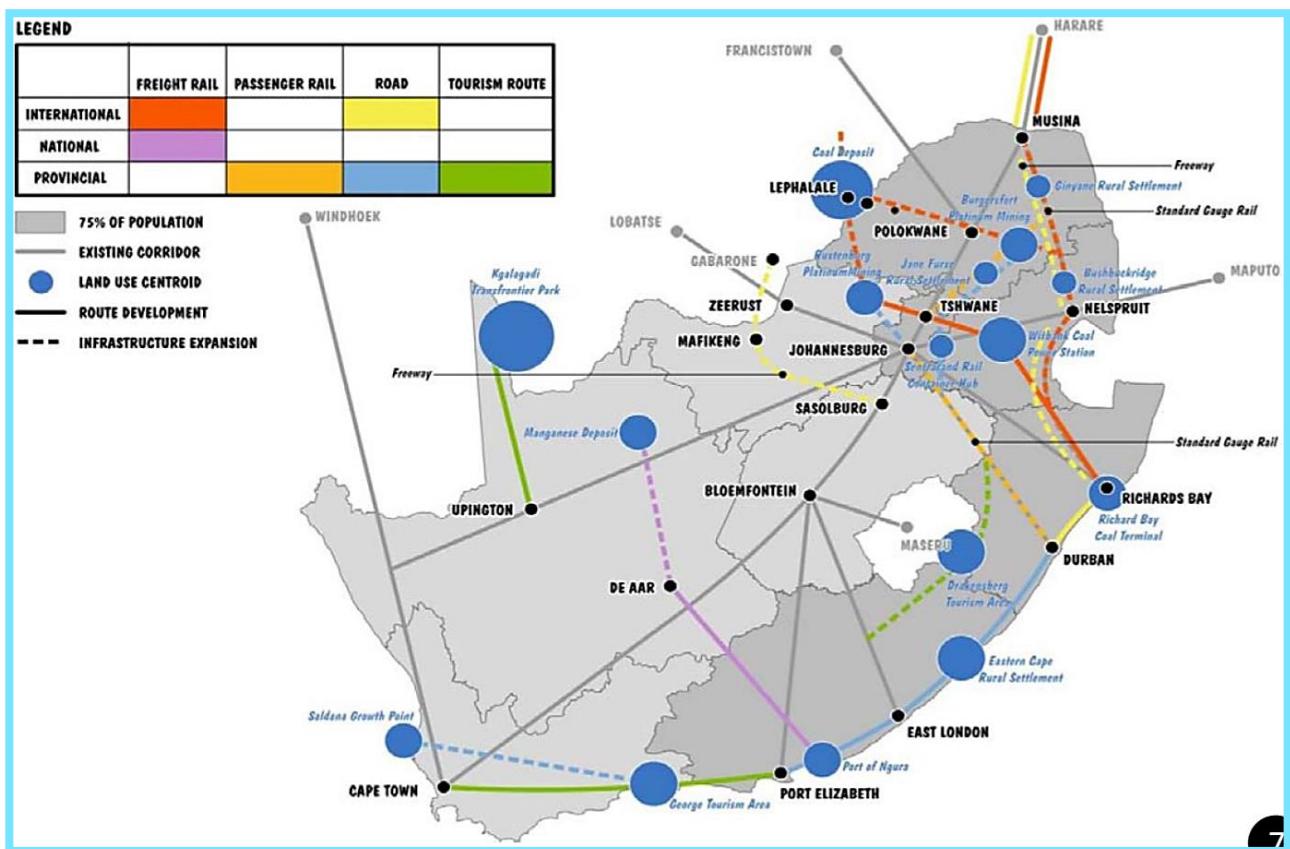


Figure 89: NATMAP Major Corridors (Nkangala District SDF, 2014)

Projects planned by NATMAP within the Local Municipality are described under Section 0.

9.2.9 Infrastructure Development Act (No. 23 of 2014)

Strategic Integrated Projects (SIPs) are projects which have been selected to address the spatial imbalances of the past by addressing the needs of the poorer provinces and enabling socio-economic development. The study area is impacted directly or indirectly by the following Strategic Integrated Projects:

SIP 2: Durban-Free State-Gauteng logistics and industrial corridor

Strengthen the logistics and transport corridor between SA's main industrial hubs. Also integrates Free State industrial strategy activities into the corridor

SIP 6: Integrated municipal infrastructure project:

- Develop national capacity to assist the 23 districts with the fewest resources (19 million people) to address all the maintenance backlogs and upgrades required in water, electricity and sanitation bulk infrastructure.
- The road maintenance programme will enhance service delivery capacity thereby impacting positively on the population.

SIP 11: Agra-logistics and rural infrastructure

Improve investment in agricultural and rural infrastructure that supports expansion of production and employment, small-scale farming and rural development, including:

- Facilities for storage (silos, fresh-produce facilities, packing houses);
- Transport links to main networks (rural roads, branch train-line, ports);
- Fencing of farms;
- Irrigation schemes to poor areas;
- Improved R&D on rural issues (including expansion of agricultural colleges);
- Processing facilities (abattoirs, dairy infrastructure);
- Aquaculture incubation schemes; and
- Rural tourism infrastructure.

SIP 18: Water and sanitation infrastructure

Projects will provide for new infrastructure, rehabilitation and upgrading of existing infrastructure, as well as improve management of water infrastructure.

9.2.10 Water Services Act (No. 108 of 1997)

Under the Water Services Act the access to quality water is monitored, and access granted. This is in line with our Constitution which stipulates that all communities have the right to basic services of water and sanitation. However, it is also in line with environmental rights, protection and management.

9.2.11 National Energy Act (2008)

The Matjhabeng Local Municipality SDF and associated sector plans, must ensure that electricity is available in sustainable quantities at affordable prices able to support economic growth and poverty alleviation while at the same time complying with relevant environmental legislative requirements. The National Energy Act (2008) provides guidance as to how this may be achieved.

9.2.12 National Land Transport Act (2009)

Transport planning must be integrated with land use planning and specifically with IDPs and Spatial Development Frameworks developed by municipalities. District and Local Integrated Transport Plans (ITP's) must be developed in line with the Provincial Land Transport and National Land Transport Frameworks.

Coordinating structures must be established to coordinate transport planning between neighbouring municipalities and with national and provincial planning authorities. The ITP is the legal instrument for a municipality to obtain support from national and provincial government, including financial support.

9.2.13 South African National Roads Agency Limited & National Roads Act (1998)

In terms of the SANRAL Act, SANRAL needs to produce a Strategic Plan for five years. Further details of SANRAL's Strategic Plan 2015/2016 – 2019/2020 are given below. Detailed implications are provided under 0.

9.2.14 National Land Transport Framework (2015)

Implications are given in terms of selected Key Performance Areas and are:

Integrated land use and transport planning

- District and Local Municipalities could consolidate networks by developing strategic models for the region, and subsequently share resources and professional expertise for planning, management and implementation;
- Reduce monthly household disposable income spend on transport; and
- Reduced journey times on all modes of transport.

Urban transport

- Measure mode share and mode shift trends towards sustainable transport modes;
- Improve access to main public transport nodes by improved walking links, cycle networks and full cycle implementation programmes and prioritising NMT; and
- Assess land use and transport integration by measuring average travel distance and balanced/bi-directional flows.

Rural transport

- Improve rural accessibility to improve population having access to some form of transport and determine the accessibility index of key rural communities.

Public transport

- Ensure improved Public Transport efficiencies in accordance with the objectives of the Public Transport Strategy through Integrated Rapid Public Transport Networks (IRPTN).
- Increase the proportion of households in rural areas within 1 km of an hourly (weekday) public transport service.

Non-motorised transport

- Increase NMT modal share (walking and cycling) for educational and commuting trips.

Learner transport

- Every rural based learner to access school within one hour.

Freight transport

- Increased investment in freight transport infrastructure;
- Promote a 24-hour economy as a mechanism to reduce cost and provide more robustness in delivery schedules;
- Reduction in the cost of freight logistics; and
- Optimise road / rail / pipeline freight balance.

Transport infrastructure

- All transport infrastructure funding for Provinces and Municipalities (and associated agencies) to be motivated through the asset management system.

Transport safety and security

- RTMC function and resources to take ownership of the Road Safety Strategy;
- Constant daily visibility of officers (DoT 365-day program in accordance with the Road Safety programs in schools, tertiary education institutions and businesses); and
- Improvement of the road environment through proactive Road Safety Audits on the strategic road network within each planning authority.

Institutional management

- Devolution of functions to a single planning authority to achieve integration, operational efficiency, economy of scale, etc.

Transport information system

- The three tiers of government will ensure a fully functional and updated GIS based Land Transport Information System.

Funding

- Life-cycle cost approach for management and preservation of assets, and proposed transport projects.

9.2.15 National Rail Policy – Green Paper (2015)-

The National Rail Policy gives guided performance of improvement in all aspects of rail service delivery for passengers and freight customers which include good quality, efficiency, high volumes and affordable price. It further encourages the reduction in the cost of freight services through encouragement of modal shift from road to rail. It drives the passenger mobility through higher quality services with increased intermodal connectivity. Therefore, the MLM should give the National Rail Policy high priority as its significant contribution will not only be limited to the rail sector but will go beyond making significant positive impact on municipalities socio-economic development through job creation, skills development and expertise increase exponentially.

9.2.16 White Paper on National Civil Aviation Policy (2017)

The white paper on National Civil Aviation Policy (NCAP) provides a primary framework for future actions of the Department of Transport in the area of civil aviation which aims to ensure that the transport industry is safe, cost-efficient, sustainable and globally comparative and includes environmentally friendly

operations which meet the needs of users by improving levels of services and social economic development. For MLM the detailed implications for aviation should be to promote and enhance civil aviation safety, security and environmental compliance in all spheres of civil aviation industry.

9.2.17 National Airports Development Plan (NADP) (2015)

The National Airports Development Plan (NADP) has been initiated by the NCAP as the plan to address the gaps between the current airport network and the future desired state. Airport transport is one of the world's most important service industries which plays a major role in world economic activity and opening markets to local business. Airport developments are not isolated but considered to be integrated into all national, provincial and municipal economic and spatial development initiatives including the MLM. This therefore addresses the social needs and objectives of MLM communities through positioning the municipality competitively in the country and continent.

9.2.18 Transnet Long-term Planning Framework (LTPF)

The Long-term Planning Framework (LTPF) provides a practical framework for a series of interventions to increase capacity in a closed system of rail, port and pipeline infrastructure to match the projected demand. It provides an unrestricted view to guide strategic infrastructure investment and offers a neutral way on capacity requirements not impacted by affordability, profitability or other business constraints. This framework ensures opportunities for communities to travel within Africa and beyond, encourage business development, increase economic growth through port and rail which in the case of MLM is the Durban-Free State-Gauteng logistics and industrial corridor. This is all through collaboration and cooperation.

9.2.19 PRASA Long Distance & Other Provinces Report (2012)

Can't find this document

9.2.20 SANRAL's Strategic Plan (2015/2016–2019/2020)

The South African National Roads Agency forms the backbone of the transportation system which makes it possible to access both personal and economic needs and to meet the mobility and socio-economic needs of the communities, regions and nation. SANRAL is committed to the efficient and sustainable transport infrastructure which is fundamental to the promotion of economic development, service delivery, good governance, social cohesion and improving the standard of living of all South Africans of which the MLM must also implement this principle to present the past socio-economic imbalances.

9.2.21 COTO's TRH 26 SA Road Classification & Access Management Manual (v1, 2012) Andiswa

The manual provides guidance to the national, provincial and municipal spheres of government on the functional classification and access management of roads. Therefore, the MLM must also classify the roads within its jurisdiction according to the TRH 26 SA Road Classification and Access Management Manual. This will provide means of managing the roads to ensure optimum functioning and effectively

serve the needs of MLM communities through assured levels of mobility and access. Lastly this manual provides broad guidance on issues of administrative jurisdiction and responsibilities which will assist the MLM on addressing the road numbering systems.

9.2.22 National Framework for Local Economic Development in South Africa (2014–2019) –Can't find this document online

- Multi-faceted and multi-dimensional LED Focus;
- A more aggressive focus to infrastructure development and basic service delivery;
- Importance of the informal / second economy in development;
- Inclusive rural economies;
- Skills development and training programmes;
- Diversification while building upon existing competitive advantages;
- Marketing of the corridor as an investment friendly region; and
- Building stronger partnerships with the private sector.

9.2.23 New Growth Path Framework (NGP)

The New Growth Path sets out key policy and planning priorities that, among others, would create workable urban transit solutions; redressing, maximising and prioritizing public transport issues. This framework is a response to severe economic turn down which therefore encourages accelerating technological challenges. The New Growth Path Framework results from the insufficient job growth, and responds to domestic developments, to emerging opportunities and risks while building on policies advanced since the achievement of democracy 20 years ago. Therefore, the goals of NGP that Matjhabeng Local Municipality should also align itself with include:

- Creation of decent work opportunities;
- Reducing inequality and poverty eradication;
- Transformation and equity combined with enhanced competitiveness;
- Importance of tourism and high-level services in job creation and economic growth; and
- Importance of agricultural value chain – increasing agro-processing.

9.2.24 Industrial Policy Action Plan 2015 (IPAP2)

The corridor does not have a strong manufacturing base and as such, there is a need to ensure that the following key focus areas are addressed and incorporated:

- Financing is made available for the expansion of real economic sectors;
- Leveraging of both public and private procurement; and
- Alignment of skills towards sectoral priorities and industry demand.

9.2.25 National Tourism Sector Strategy (2016-2026)

The National Tourism Sector Strategy (NTSS) focuses on inclusive growth, which must fundamentally be based on domestic and international tourist market growth and expenditure increases. NTSS further links the marketing plans to broader development imperatives, including addressing barriers to growth and the building of a transformed and inclusive tourism economy. This growth will, by the values that drive South Africa as a developmental state, be inclusive, responsible and sustainable. It will also be underpinned by an awareness of the imperative of the wise use of scarce resources of which MLM must include:

- A comprehensive tourism framework at the local level.
- Allocate appropriate budget to ensure that tourism features strongly in the IDPs.
- Identify key infrastructure projects that would have an impact on tourism.

9.2.26 National Spatial Economic Development Perspective (NSDP)

A framework for guiding infrastructure investment and development decisions; based on the spatial manifestations of the main social, economic and environmental trends that should form the basis for a shared understanding of the national space economy; and an interpretation of the spatial realities and the implications for government intervention.

Areas with economic potential identified to:

- Identify areas of significant economic significance;
- Enable comparison among areas;
- Highlight key characteristics of the space economy; and
- Identify requirements to capitalise on economic potential.

Areas of poverty and need identified to:

- Identify absolute numbers and spatial distribution of people in poverty / need;
- Enable comparison among areas; and
- Identify requirements to address poverty.

9.2.27 Special Economic Zones Act (No. 16 of 2014)

This policy aligns to IPAP and the New Growth Path and was formulated in response to the challenges faced by the Industrial Development Zones (IDZ) with the aim of addressing these deficiencies through an improved strategic framework drawing on lessons learnt from the attempted implementation of the IDZs. The objective of the policy is to support and accelerate industrial development in the targeted regions by the provision of special measures needed to develop targeted industrial capabilities and attract targeted foreign and domestic direct investment. The SEZ programme is a tool that is used by many economies to promote trade, economic growth and industrialisation.

Through this policy, the country aims to create and sustain economic opportunities in all its regions, especially the under-developed regions, develop much needed regional development platforms, create jobs for a growing population, and improve the general living standards of its citizens.

The policy indicates that strong coordination at all levels of government, adequate financial and technical resources and clearly targeted industrial capabilities and investments are needed for the success of the implementation of SEZs in South Africa.

9.2.28 Manufacturing Investment Programme (MIP)

The Manufacturing Investment Programme (MIP) is a reimbursable cash grant for local and foreign-owned manufacturers who wish to establish a new production facility; expand an existing production facility; or upgrade an existing facility. The MIP is aimed at

- Support investment project at the local level;
- Importance of agriculture and agro-processing;
- Small-scale, bottom-up development; and
- Self-sustainability at the micro-level.

9.2.29 Department of Energy's Strategic Plan (2015–2020)

The Department of Energy (DoE) is tasked with ensuring security of supply of energy resources and pursuing an energy variation that includes clean and renewable resources to meet the needs of the country's fast-growing economy without compromising sustainable development as assisted by the various spheres of government. For this reason, MLM must adhere in ensuring the following are implemented in its jurisdiction:

- Provision of the energy to support investment project at the local level; and
- Have efficient energy saving plan at the local level.

9.2.30 Department of Tourism's Strategic Plan (2015–2020)

Tourism is mainly people driven which implies that the strategic plan focuses at creating an environment for sustainable employment and economic growth as its mandate. This mandate is driven by the contribution that the department makes to the country's gross domestic product and job creation and inclusive economic growth. Tourism at a globally scale is improving and even though that is a good factor there are some opportunities that must be implemented always even at regional scales to ensure continued support to combating environmental challenges. Thus, it is important that MLM incorporates the following from the department of tourism's strategic plan:

- Have a comprehensive tourism framework at the local level;
- Allocate appropriate budget to ensure that tourism features strongly in the IDPs; and
- Identify key infrastructure projects that would have an impact on tourism.

9.2.31 Department of Trade and Industry Strategic Plan (2015–2020)

The Department of Trade and Industry operates within a global economic context through various programmes that contribute in ways to deepen industrialisation through increased growth in the manufacturing sector and strengthened capacity to deliver on improved conditions for consumers. The MLM must comply with the following programmes:

- Diversification of the manufacturing sector in the corridor,
- Promotion of industrial development in the corridor, and
- Support other programmes aimed at job creation, investment and exports.

9.2.32 Department of Social Development Strategy (2015-2020)

The strategy plan realises of addressing food security, inequality and unemployment, and protects and nurtures the most vulnerable societies by creating an enabling environment for sustainable development and peaceful communities. The strategic plan is formulated on several programmes that ensure that peoples livelihoods and capabilities are enhanced to pioneer their own development. The following are programmes that MLM must also adapt to:

- Ensuring the provision of comprehensive social services which protect the poor and vulnerable within the corridor;
- Framework of the South African Constitution and subsequent legislation;
- Promoting a conducive environment for sustainable development; and
- Delivering integrated, sustainable, and quality services in corridor.

9.2.33 Carbon Tax Policy Paper (2013)

Carbon Tax Policy Paper is a paper that aims at addressing the challenges of climate change by facilitating a viable and fair transition to low carbon economy which is essentially to ensure an environmentally sustainable economic development and growth path. Carbon tax is needed to solve environmental challenges such as climate change, air and water pollution. The economic impact of carbon tax largely depends on the current structure of the economy; way in which revenue is recycled, and the extent to which energy, transport, industrial and trade policies are coordinated with environmental policy. The paper allows for system that will:

- Promote the regulation of the carbon related investment in the corridor, and
- Assist developing strategies aiming to reduce carbon emission emissions and building resilience at local / regional level.

9.2.34 Green Economy framework (2012)

The mandate for a green economy in South Africa is derived from the country's constitution, which enshrines sustainable development in the Bill of Rights. It focuses on prioritizing job creation to overcome income disparities and contribute to green economic growth and thereby ensure that South Africans

benefit from it requires. There are nine key focus areas identified in the green economy programmes including these two for the interest of MLM:

- Promote investment related to green energy in the corridor; and
- Promote development of local strategies that enhance green economy opportunities.

9.2.35 Mining Beneficiation Strategy

The strategy is focused on improving the following milestones which MLM must associate its activities to:

- Promote beneficiation policies, legislation, incentives and strategies relevant to mining activities in the corridor; and
- Mitigate prevailing constraints to the effective implementation of beneficiation programmes in the corridor.

9.2.36 South Africa Trade Policy Framework

Trade Policy and Strategy Framework outlines how trade policy and strategy in South Africa can contribute to meeting the objectives of upgrading and diversifying the economic base to produce and export increasingly sophisticated, value added products that generate employment. MLM also needs to:

- Promote the implementation of trade policy in the corridor taking proximity to port and logistic and freight movements into consideration.

9.2.37 National Youth Economic Empowerment Strategy and Implementation Framework (2009-2019)

The National Youth Economic Empowerment Strategy is a policy that commits on the promotion and economic empowerment of young people in South Africa. The policy seeks to address the following:

- Local policy-makers, programme managers and practitioners as well as other officials in the corridor need to design specific programmes to support youth in the informal sector.
- Development programmes within the corridor need to recognise the resourcefulness and value of young people as the key future entrepreneurial resources and that they therefore need to be supported.

9.2.38 Integrated Urban Development Framework & Implementation Plan (2016) (IUDF)

The IUDF is designed to unlock the development synergy that comes from coordinated investments in people and places and builds on various chapters in the National Development Plan (NDP) and extends Chapter 8 of the NDP '*Transforming human settlements and the national space economy*', and its vision for urban South Africa.

The nine levers identified in the IUDF have strong implications for the KZN-N2 South Matjhabeng Local Municipality and should guide the formulation of the framework, particularly about the urban aspects.

9.2.39 Department of Human Settlements Strategic Plan (2015–2020)

The Department of Human Settlement (DoHS) Strategic Plan for the years 2014–2019 sets out the national vision, mission, analysis, goals and programmes for addressing housing needs and developing more integrated human settlements as part of spatial and economic transformation as envisaged in the National Development Plan (NDP) 2030.

The Plan lays the foundation for transforming the functioning of human settlements and the workings of the space economy by focusing on reforms aimed at achieving better spatial targeting by:

- Ensuring that poor households have decent housing in better living environments.
- Supporting the development of a functional and equitable residential property market and improving institutional capacity and coordination.
- Facilitating institutional capacity building programmes through the accreditation process.
- Ensuring the improved coordination environment for human settlements development.

9.2.40 Department of Rural Development & Land Reform Strategic Plan (2015–2020)

The Department of Rural Development and Land Reform (DRDLR) Strategic Plan 2015-2020 sets out the national vision, mission, analysis, goals and programmes for building vibrant, equitable and sustainable rural communities. The Plan promotes rural development and land reform and focuses on the need for agrarian and economic transformation.

Key priorities of the Plan to address the NDP 2030 vision for rural areas are:

- Improved land administration and spatial planning for integrated development, with a bias towards rural areas;
- Sustainable land reform (agrarian transformation);
- Improved food security;
- Smallholder farmer development and support (technical, financial, infrastructure) for agrarian transformation; and
- Increased access to quality basic infrastructure and services, particularly in education, healthcare and public transport in rural areas.

Growth of sustainable rural enterprises and industries, characterised by strong rural-urban linkages, increased investment in agro-processing are supported.

9.2.41 Local Government: Municipal Systems Act (2000)

The MSA provides the legislative framework for the preparation of IDPs and SDFs and governs the operation of municipalities in promoting social and economic development. The MSA accordingly provides a key legislative basis for municipal planning and service delivery that will be essential to the implementation of the Matjhabeng Local Municipality SDF.

9.2.42 Intergovernmental Relations Framework Act (2005)

The Act prescribes the co-ordination between the different spheres of government.