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EXTERNAL REPORT

ASSESSMENT OF THE ECONOMIC RATIONALE FOR ESTABLISHING THE ENERGY AND METALLURGICAL COMPLEX IN THE MUSINA-MAKHADO AREA

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EXECUTIVE Summary

Mintek's Mineral Economics and Strategy Unit (MESU) was contracted by the Musina - Makhado SEZ SOC Ltd, a subsidiary of the Limpopo Economic Development Agency (LEDA) to undertake a high-level study aimed at assessing the economic rationale for establishing the energy and metallurgical complex in Musina-Makhado area than other potential locations in Limpopo province.

The key findings of this study are follows:

- The Musina-Makhado site offers the best location and largest economic benefits for the establishment of the special economic zone (SEZ) than any other potential sites such as the Anton Villa farm, Tubatse and Lephalale in Limpopo province.
- The Musina-Makhado area's competitive advantage lies primarily on its geographic location on the NI north-south corridor and its close proximity (7.6kms from SEZ administration offices to Hunting Station) to the Johannesburg - Beit Bridge railway line. This provides excellent local, regional and international road and railway connectivity for transportation of both input materials and finished products to markets in the rest of South Africa and Southern African Development Community (SADC) countries.
- Comparatively, the Tubatse site lies off the country's major road and railway links which would make the transportation of bulk commodities to the markets expensive. The Lephalale site was not viewed favourably by both the Limpopo Provincial Government (LPG) and the Department of Trade and Industry (the dti) due to the construction of the Medupi power station which is poised to significantly contribute to the development of the area.
- Another potential site that was identified for the establishment of the SEZ complex was the Anton Villa farm that is located approximately 7kms from Musina town in Limpopo province. While the Anton Villa farm was the first site to be identified for the development of the SEZ, it was considered unsuitable due to the limited size of the land (3 500 hectares only when a minimum of 6 000 hectares were required for the development of the SEZ) and its close proximity to Limpopo River which could potentially be contaminated by the business activities of the metallurgical, energy complex and other ancillary business activities.
- The location of the Musina-Makhado SEZ is in line with national SEZ strategy which has witnessed a shift from the traditional approach of locating industrial zones in coastal cities and close to major airports (OR Tambo, Upington and Dube Trade Port) to other regions and potentially tackle the triple challenges of poverty, inequality and unemployment in those areas.
- The Musina-Makhado SEZ site's close proximity to minerals (coal, chrome) used in steel manufacturing together with its linkages with Limpopo province's existing road network (NI, NI I, R555, R521, R37) provide the metallurgical cluster of the SEZ with a cost competitive advantage for its products. This strengthens the investment case for the location of the SEZ in the Musina-Makhado area. The Tubatse site will be beneficial for mining input supplies and the beneficiation of platinum group metals (PGMs) mined in that area.
- A study that was done by Demacon (2019), a consulting company, estimated that the development of the R255 billion (at current R/\$ exchange) Musina-Makhado SEZ will create approximately 21 000 jobs in the first 5 years of its operation. This will increase to 51 000 jobs in the tenth year of the SEZ's operation thereby giving rise to a larger impact on Vhembe District Municipality, Limpopo and South African economies.
- The development of the Musina-Makhado SEZ will accelerate mineral beneficiation and industrialisation of the provincial and national economies as well as leading to

technology and skills transfer in the country. In addition, infrastructure upgrades, including road, rail and water, are likely to have positive spill over effects on local communities and thereby contributing to the creation of employment, eradication of poverty and inequality and poverty in the area.

- The Musina-Makhado SEZ's plans to develop a coal fired power plant are in line with the government's plans to create and enable power generating capacity outside the state owned power utility, Eskom, and ease the electricity shortages that South Africa has been experiencing since 2008. The electricity generated by the Musina-Makhado SEZ will meet the power needs of its metallurgical complex while the remainder will be fed into the grid and be used by other electricity consumers in the country.
- The Musina-Makhado SEZ has a total of 8 000 hectares of land available for development of the SEZ. It is an ideal location for the SEZ since it has enough land to cater for the construction of factory space, office and residential accommodation, development of bulk infrastructure (water, storm water and electricity) as well as catering for future expansion projects. In addition, the land available for development of the Musina Makhado SEZ compares favourably with China's average SEZ size of approximately 3 500 hectares.
- The establishment of an SEZ in the Musina-Makhado area provides an opportunity to enhance agro-processing activities in the Vhembe District Municipality and Limpopo province as a whole. Agricultural Business Chamber South Africa's statistics indicate that the Limpopo province accounts for a large portion (75% of mangoes, 65% of papayas, 60% of litchis, 60% of avocados and 60% of tomato) of South Africa's agricultural production. The bulk of the province's vegetables, fruits and nuts are produced in the Makhado and

Thohoyandou areas which are within 50kms radius from the Musina-Makhado SEZ. This provides opportunity for food manufacturers to process fruits, nuts, vegetables produced in the district into fruit juices, canned fruits and vegetables in the Musina-Makhado SEZ and sell to both domestic and export markets.

- The Musina-Makhado SEZ site is approximately 51.6kms from Beit Bridge border post that is South Africa's primary gateway into the SADC region and the African Continental Free Trade Area (ACFTA) markets. South Africa is both a member of SADC and the African Union which are both multilateral institutions created to advance peace and security, economic cooperation, trade integration and development in Africa. The country can potentially harness the geographic proximity of the Musina-Makhado SEZ to the Beit Bridge border post together with its Dar es Salaam rail and road corridor linkages to substantially increase steel and agro-processed products exports to the SADC and ACFTA markets. A wide range of South African manufactured products including vehicles, processed food, chemicals and capital equipment are exported to the SADC and ACFTA markets via the Beit Bridge border post every day
- The proximity of the Musina-Makhado SEZ to the border post of Beit Bridge offers opportunities for a number of trade, logistic and border related services and facilities, such as bonded warehouse, vehicle distribution centres, holding depots, container yards and truck shops. In addition, the Musina-Makhado SEZ can be used as an inland intermodal terminal directly connected by both the NI north-south corridor and Johannesburg-Beit Bridge railway for the trans-shipment of sea cargo to inland destinations and manufactured goods to SADC markets. Vehicles manufactured in Durban and Port Elizabeth can be railed to the Musina-

Makhado SEZ for storage before being transported to SADC and ACFTA markets.

- MESU recommends the Musina-Makhado SEZ SOC Ltd to undertake a detailed

study on the availability, cost and quality of critical raw materials (coking coal, ferrochrome, manganese and iron ore) for the metallurgical complex and the implications this will have on the overall business case for Musina-Makhado SEZ.

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ABBREVIATIONS & ACRONYMS

Acronym/Abbreviation	Description
\$	United States Dollar
ACFTA	African Continental Free Trade Area
AU	African Union
BC	Bushveld Complex
DRDLR	Department of Rural Development and Land Reform
DWAS	Department of Water Affairs and Sanitation
EIA	Environmental Impact Assessment
EPZ	Export Processing Zones
FDI	Foreign Direct Investment
FTA	Free Trade Area
FTZ	Free Trade Zone
GDP	Gross Domestic Product
GVA	Gross Value Added
GVC	Global Value Chain
ha	Hectares
ICT	Information and Communication Technology
IDPs	Integrated Development Plans
IDZ	Industrial Development Zones
IPAP	Industrial Policy Action Plan
Kms	Kilometres
kT	Kilo Tonnes
LDP	Limpopo Development Plan
LEDA	Limpopo Economic Development Agency
LEDET	Limpopo Department of Economic Development, Environment and Tourism
LEGDP	Limpopo Economic Growth and Development Plan
LPGDS	Limpopo Provincial Growth and Development Strategy
ml	Metric litres
MLM	Musina Local Municipality
MW	MegaWatt
NDP	National Development Plan
NIPF	National Industrial Policy Framework
PGMs	Platinum Group Metals
R	South African Rand
R&D	Research and Development
SADC	Southern African Development Community
SEZ	Special Economic Zone
SMMEs	Small, Medium and Micro-Enterprises
SWOT	Strengths-Weaknesses-Opportunities-Threats
the dti	Department of Trade and Industry
UNCTAD	United Nations Conference on Trade and Development
VDM	Vhembe District Municipality

I. INTRODUCTION

The South African Government, through the Department of Trade and Industry (the dti) is spearheading the establishment of Special Economic Zones (SEZs) across the country's nine provinces to attract foreign direct investment (FDI), accelerate the production and export of value added products and the creation of a favourable environment for job creation. The dti's Industrial Policy Action Plan (2018/2019 – 2020/2021) identified SEZs as one of the economic development engines that will enable the country to achieve its industrialisation, regional development and employment creation objectives. In addition the SEZs are expected to contribute towards strengthening South Africa's terms of trade through the production and export of value-added commodities, the creation of stronger value chains and provision of much-needed jobs in previously disadvantaged regions.

To this end, the dti is working closely with the provincial governments throughout the country to identify and attract investors, provide land and infrastructure upgrades necessary for the development of SEZs. The legal and administrative framework for the establishment of SEZs has been streamlined to expedite the process of operationalizing SEZs. To this end, the government enacted the SEZ Act Number 16 of 2014 to provide a clear framework for the development, management and operations of SEZs. In addition, the Act offers a number of financial and regulatory incentives to businesses and operators located in an SEZ to ensure their growth, enhance revenue generation, job creation, attraction of FDI and international competitiveness. These incentives include:

- **Preferential 15% corporate tax** – Section 24 (4) of the SEZ Act prescribes that businesses located in a SEZ be taxed at a preferential corporate rate of 15%. In addition to satisfying the requirements of the SEZ Act, further criteria for some of the available tax incentives are stipulated in the Income Tax Act, 1962 (Act No. 58 of 1962).
- **Building allowance** – Section 1 of the SEZ Act prescribes that businesses and operators in an SEZ are eligible for tax relief, including the building allowance, subject to requirements contained in the Income Tax Act.
- **Employment incentive** – Businesses and operators in an SEZ are eligible for tax relief, including the employment tax incentive subject to requirements contained in the Employment Tax Incentive Act, 2013 (Act No. 26 of 2013).
- **Customs controlled area** – Businesses and operators located within a customs controlled area of an SEZ are eligible for tax relief as per the Value-Added Tax Act, 1991 (Act No. 89 of 1991), the Customs and Excise Act, 1964 (Act No. 91 of 1964), the Customs Duty Act 2014 (Act No. 30 of 2014) and the Customs Control Act, 2014 (Act No.31 of 2014).
- **I2I tax allowance** – The I2I tax incentive is designed to support green-field investments that are mainly new industrial projects that will be utilising new and unused manufacturing assets as well as brown-field investments including expansions or upgrades of existing industrial projects. This new incentive offers support for both capital investment and training.

In Limpopo province, the South African government has designated the Musina-Makhado area as the preferred site for the location of the SEZ. Anchored on investment pledges of over \$15 billion (approximately R225 billion at current R/\$ exchange rate) from Chinese investors, the Musina-Makhado SEZ will accelerate industrial diversification of the province through the establishment of an energy and metallurgical processing complex.

The metallurgical cluster of the SEZ will focus on the beneficiation of minerals found in Limpopo province. Iron ore, coking coal and other minerals, which are key inputs into the steel and iron production process will be part of the downstream value addition process in line with the country's national industrialisation objectives and mineral beneficiation strategies. The energy cluster of the SEZ will result in the establishment of a coal fired power generation plant.

Other land uses envisaged to complement the energy and metallurgical complex include a logistics hub, agro-processing centre, light industries, business, retail centres, residential and community facilities. The Musina-

Makhado SEZ is estimated to cost between \$10 billion and \$15 billion to develop and it will take 15 years to complete its construction.

1.1. Aims and Objectives

Globally, the geographic location, the development of requisite infrastructure and management have a significant bearing on the operational and financial success of SEZs. The South African government's decision to designate the Musina-Makhado area as the ideal location of the SEZ in Limpopo province was based on its location on the N1 north-south corridor, the availability of land, existing infrastructure linkages, proximity to sources of raw materials and markets. Challenges in the area varies from water to electricity, skills shortages, etc. The Limpopo government is committed to work with national government, the private sector and all other significant stakeholders to resolve this issues. The purpose of this study is to assess and ascertain, at a high level, why the Musina-Makhado area offers the best location and the largest economic benefits for the establishment of the SEZ than other potential sites such as Anton Villa farm, Tubatse and Lephalale in Limpopo province.

Specifically, the objectives are four-fold:

1. Provide an overview and current state of the Limpopo provincial economy.
2. Identify, at a high level, the infrastructure and raw materials required for the operational and financial success of the proposed Anton Villa farm, Musina-Makhado and Tubatse sites.
3. Compare and contrast the envisaged business activities of the Musina-Makhado and Tubatse sites and their subsequent impacts on the local, provincial and national economies.
4. Assess the economic rationale and reasons of locating the SEZ in the Musina-Makhado area than other potential sites such as Anton Villa farm, Tubatse and Lephalale in Limpopo province.

1.2. Limitations of the Study

Globally SEZs, in their various forms, are a relatively recent industrialisation strategy many countries have adopted to industrialize their economies. Modern SEZs, adjacent to seaports, airports and along border corridors, first appeared in the 1960s but multiplied in the 1980s following the adoption of export oriented industrialisation strategies by many countries across the world. The acceleration of international production and rapid growth of global value chains (GVCs) between 1990 and 2000, particularly in Asia, generated a wave of SEZs development across all regions of the world. After 2000, the adoption of SEZs got a renewed impetus as many countries tried to replicate China's rapid industrialisation strategy which was centred on the development of SEZs across the country (UNCTAD, 2019).

While there is growing interest and acknowledgement of the economic benefits of SEZs, many of the SEZs in Sub-Saharan Africa still under construction or at various stages of implementation. Their fiscal and regulatory regimes as well as the resultant economic benefits are less understood than in Asia. Very little empirical research has been done to test the fiscal and financial viability of SEZs as well as quantifying the direct and indirect economic benefits that accrue to countries that implement SEZ policies to accelerate their industrialisation. South Africa has designated a total of ten SEZs but only five are operational. In addition, there has not been any detailed economic modelling studies to test various aspects of SEZs including their financial viability and impacts on provincial and national economies in South Africa.

The unavailability of data on the actual construction costs of the proposed Musina-Makhado SEZ and Tubatse SEZ, annual sales volumes, proportion of exports to total sales, pricing of products and the quantification of their financial, fiscal and employment benefits to provincial and national economies were some of the key limitations experienced in this study. The study was done over a four week period and with a limited number of interviews. The researchers did not have enough time and resources to investigate, quantify and compare the economic benefits of setting up an SEZ in the Musina-Makhado area against those for Tubatse in a scientific and objective manner.

1.3. Structure of the Report

This report commences with a brief overview of the role of SEZs in the South Africa government's industrialisation strategies and growth of the country's economy. Chapter 2 provides some background information on Limpopo province's economy. Chapter 3 and 4 discusses the economic rationale for locating the Musina-Makhado SEZ and Tubatse SEZ in their respective areas through presentation of findings from the site visits and primary data gathered in the study. Chapter 5 provides a discussions of the main conclusions and recommendations.

2. OVERVIEW AND CONTEXT OF THE LIMPOPO PROVINCIAL ECONOMY

2.1. Limpopo Development Plan (2015-2019)

The Limpopo Development Plan (LDP), 2015-2019 which builds on the foundations of the Limpopo Economic Growth and Development Plan (LEGDP) 2009-2014 and the Limpopo Provincial Growth and Development Strategy (PGDS) 2004-2008 outlines the contribution of the province to South Africa's National Development Plan (NDP). The LDP is a culmination of various discussions between the Limpopo Provincial Government and stakeholders from all sectors towards realising the dream of achieving integrated, inclusive and sustainable development in the province. The overarching objective of the LDP is to reduce poverty, improve the quality of life of the province's citizens and promote economic development. In addition the LDP provides a framework for the development of strategic plans of each provincial government department, their integrated development plans (IDPs), sector plans for local and district municipalities in Limpopo province which increases the institutional efficiency of government.

The LDP aims to leverage the province's competitive advantage in mining, agriculture and tourism to turn around the provincial economy. This will be achieved through the industrialisation (beneficiation of mining and agricultural products), taking advantage of mining supply opportunities, improved training and access to sector value chains for entrepreneurs, infrastructure development, agro-processing; small, medium and micro-enterprises (SMMEs) promotion and the creation of information and communication technology (ICT) and the knowledge economy. The horticulture, meat, forestry and tourism sectors are poised to play a pivotal role in the transformation of rural areas and growth points.

In line with the NDP, the LDP identified the following public sector investments as critical in eradicating poverty, enhancing economic growth and improving the quality of life in the province:

- The upgrading of informal settlements,
- Public transport infrastructure and systems,
- The construction of a new coal line to unlock coal deposits in the Waterberg,
- The development of a number of key new water schemes to supply urban and industrial centres,
- The procurement about 20 000 MW of renewable electricity by 2030 (LPD (2015-2019, 2015).

2.2. Provincial Economic Overview

According to the Limpopo Provincial Treasury (2019), the province's economy was the sixth largest economy in the country recording Gross Domestic Product (GDP) value of R224 billion surpassing North-West, Free State and Northern Cape provinces. The provincial economy is constituted by five districts of which Capricorn, Mopani and Waterberg are the largest economies. It is in these three districts where there is relatively higher human development due to the concentration of economic activities.

Data published by Statistics South Africa indicate that the Limpopo province had a population of 5.9 million people (10.2% of South Africa's population) in 2019 but contributed just 7% to the country's GDP during the same year. It is one of the country's poorest provinces and has by far the largest share of residents in the former so called 'homeland' areas. The local population face a lack of employment opportunities, poor incomes and relatively weak infrastructure when compared to other provinces. This has resulted in high outward migration to other provinces particularly to Gauteng, Mpumalanga and the North West that offer better employment opportunities (Limpopo Development Plan, 2015-2019)

The mining, agriculture and tourism sectors dominates Limpopo's provincial economy. The province's rich mineral deposits include platinum group metals (PGMs), iron ore, chromium, coking coal, diamonds, antimony, phosphate and copper. Industrial minerals such as black granite, corundum, and feldspar are also found. The Waterberg Coalfields that lies along the border with Botswana, are estimated to contain approximately 40% of South Africa's remaining coal reserves. According to the Limpopo Provincial Treasury, the mining sector accounted for approximately 25% of the provincial economy while manufacturing and agriculture accounted for

just 3% and 2% respectively in 2019. Existing manufacturing activities in Limpopo are focused on mining (smelting and refining), agro-processing (juices and concentrates manufacturing) and food processing (food and beverages). The agro-processing sector is strong, with Pioneer Foods Ltd, McCain Ltd, Granor Passi Ltd, Westfalia Fruit Ltd and Enterprise Foods Ltd represented in the province, but the sector has potential to grow even more (Limpopo Provincial Treasury, 2019).

The provincial economy has remained predominantly extractive despite the provincial government's best efforts to diversify and modernise it. A key development goal of the Limpopo Provincial Government is to increase the contribution of the manufacturing sector as well as tertiary industries over the short, medium and long-term to the provincial economy through the leveraging of value addition opportunities arising from primary activities, particularly the mining and agricultural sectors.

2.3. Municipal Structures in Limpopo Province

For administrative and local government purposes, the Limpopo province is divided into five district municipalities which are further divided into twenty-five local municipalities. Four (Waterberg, Mopani, Vhembe and Sekhukhune) of the five district municipalities are predominantly rural while Capricorn District Municipality, which accounts for approximately 12% of the provincial population is urbanized. The Capricorn District Municipality is the economic heartland of Limpopo, with the provincial capital Polokwane contributing approximately 13% of the provincial GDP (Limpopo Provincial Treasury, 2019).

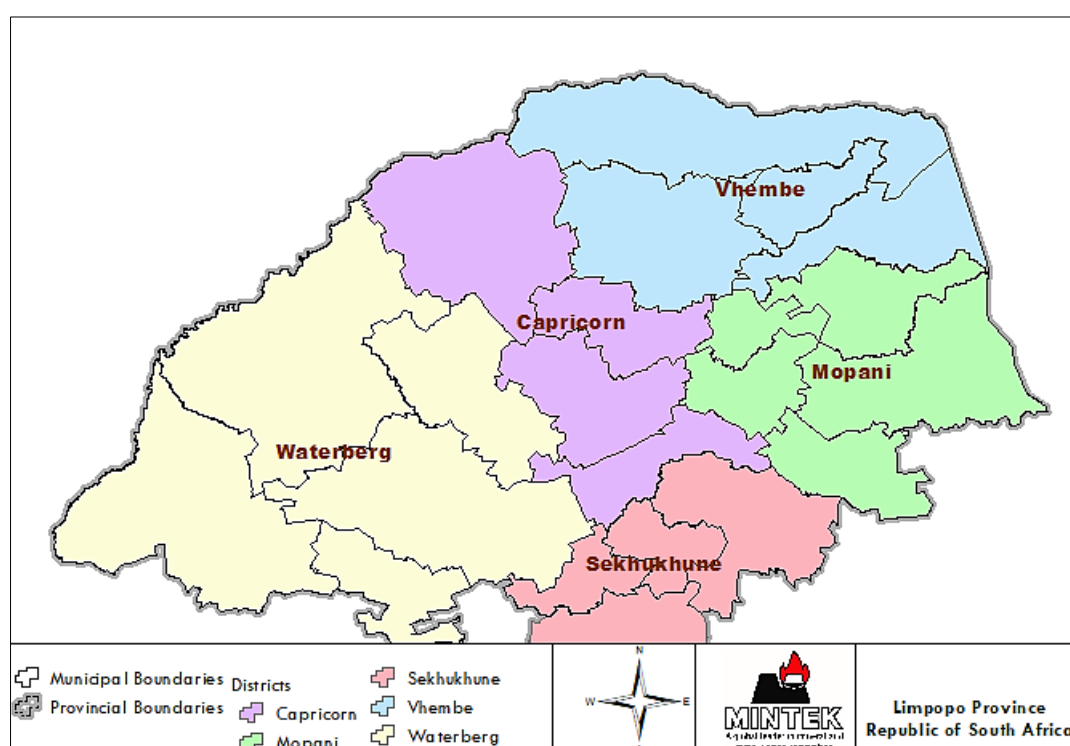


Figure 1: District Municipalities in Limpopo Province

2.4. Vhembe District Economic Overview

Vhembe District is ideally positioned for easy access to African markets, its proximity to Zimbabwe, Mozambique and Botswana provides the investor with a powerful platform from which to access the South African region and to contribute as well as benefit the New Partnership for Africa's Development. The Vhembe District Municipality economy has been underperforming or experiencing a negative growth trajectory since 1997, similar to the performance of the Limpopo region/province. The subdued economic growth can be associated with unfavourable commodity prices, increasing operating expenses for mines and the El Nino climate phenomenon

that farmers are still recovering from. Figure one below demonstrates that the Vhembe District is the lowest contributor to growth in the Limpopo Province

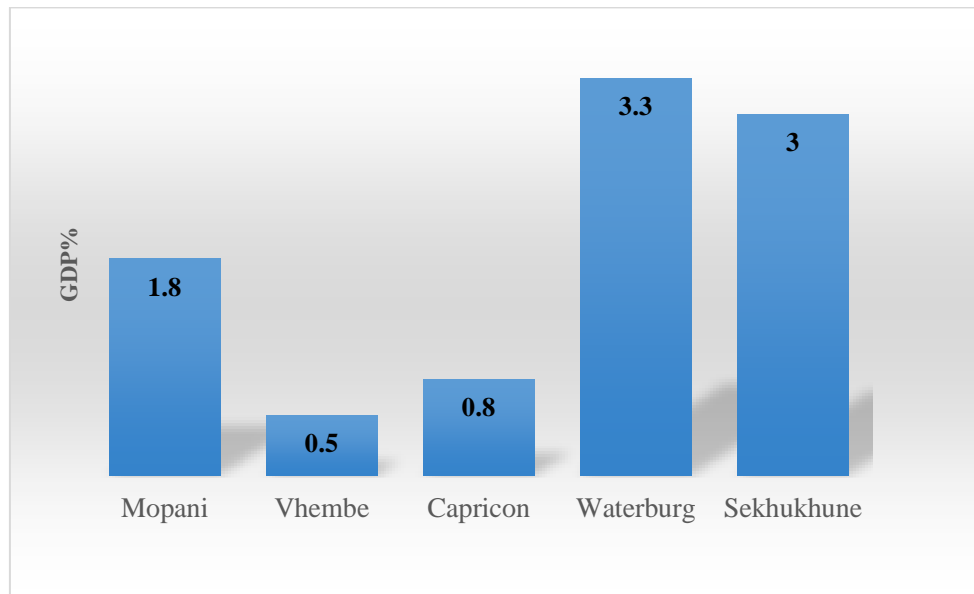


Figure 2: District Contribution to Province Production

The Vhembe District Municipality has a low economically active population of about 24%, with an employed economically active of 61.7%. Notable is the skills profile of 26.2% skilled occupations, 40.2% Semi-skilled occupations and 33.6% low-skilled occupations, all these have contributed to the high unemployment levels in the Vhembe District. The concern is that instead of the unemployment decreasing, it is increasing. Vhembe District is predominantly a young population with 74.99% of the population at 35 years of age and below. The people are at a good age to be trained and acquire the skills necessary for the development of the economy. The Vhembe district municipality is characterised and or dominated by mining, finance, trade, community services and with agriculture, construction, electricity and transport form the other parts of the economics activities.

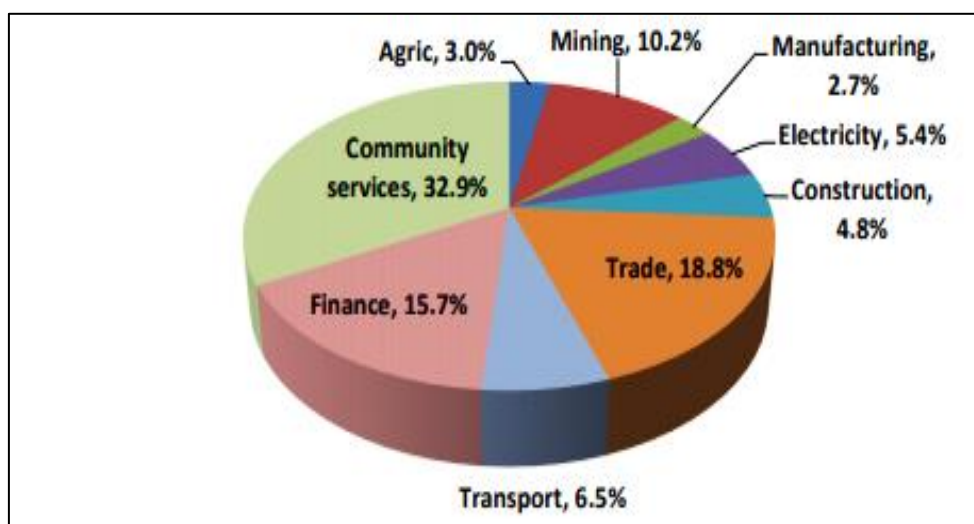


Figure 3: Economic Activities in Vhembe District

Vhembe is a prolific fresh produce grower, with largescale exports testifying to the quality of production and the efficiency of many farmers. Vhembe produces no less than 4.4% of South Africa's total agricultural output, including 8.4% of the country's sub-tropical fruit and 6.3% of its citrus.

There are a number of developments and continuing economic activities in the Vhembe district for example there is the De Beers' Venetia diamond mine which has invested some R4 billion to extend its open pit operations and is now considering spending another R6 billion to dig for diamonds underground. De Beers is keen to procure more goods and services from Vhembe suppliers in line with the Vhembe LED Programme and the Limpopo Provincial Growth and Development Strategy. Vhembe has an abundance of coal, but mining the deposits is a challenge which is only now being taken up. With some 2 billion tons of reserves, the expansive Soutpansberg coal field which stretches across central Vhembe has only one mine: Exxaro's Tshikondeni colliery which produces hard coking coal for the South African steel industry but has a remaining life of less than 10 years.

2.5. Industrial Policy Action Plan (IPAP)

Since 2007, the South African government has used the Industrial Policy Action Plan (IPAP) as a policy and action plan to rebuild South Africa's industrial base in critical sectors of production, accelerate value-added manufacturing and diversifying the economy. The IPAP contributes to the vision set out for South Africa's development provided by the National Development Plan (NDP) which identifies industrial development as one of the key pillars required to create inclusive growth based on value addition, labour intensive sectors and export growth. In addition, the dti maintains that IPAP is firmly entrenched in the government's overall policy and plans to address the key challenges of economic and industrial growth as well as reducing poverty, inequality and unemployment in the country. In addition, the South African government developed IPAP as a response to the declining contribution of the manufacturing sector to the country's GDP which now stands at less than 25%.

The first iteration of IPAP (IPAP, 2007/8) contained easy-to-do actions applicable to various sectors aimed at transforming and growing the manufacturing capabilities of the South African economy. This was followed by IPAP 2011/2012-2013/2014 which made employment creation the overarching aim of economic policy and industrial policy. IPAP 2011/2012-2013/2014 sought to expand production in value-added sectors of the economy with high employment and growth multipliers that compete in export markets. In so doing, the action plan also places emphasis on more labour absorbing production and services sectors, the increased participation of historically disadvantaged people and regions in the economy and will facilitate, in the medium term, South Africa's contribution to industrial development of the Sub African region.

The IPAP 2018/2019-2020/2021 identify SEZs, together with industrial financing, trade development policy, African integration and industrial development, public procurement and local content, innovation and technology as the transversal (cross cutting) focus areas that South Africa should focus on in order to grow the country's economy. These issues are transversal in nature, cutting across the functions of many government departments and critical to the overall success of the country's industrialisation strategy.

The IPAP 2018/2019-2020/2021 identify the automotive, clothing and textiles, metal fabrication, agro-processing, forestry and timber, plastics, pharmaceuticals and chemicals as Sectoral Focus Areas 1 while mineral beneficiation, green industries, business process services, marine manufacturing, aerospace and defence and electro-technical industries are grouped as Sectoral Focus Areas 2. Sectoral Focus Areas 1 seek to deepen the manufacturing of value added products activities within industries that currently exist in South Africa while Sectoral Focus Areas 2 seek to leverage the country's competitive advantage in areas such as South Africa's huge minerals deposits and its expansive coast line to develop new manufacturing capabilities.

2.6. Special Economic Zones (SEZs)

The United Nations Conference on Trade and Development (UNCTAD) define SEZs as geographically delimited areas within which governments facilitate industrial activity through fiscal and regulatory incentives and infrastructure support. SEZs are called by many names including industrial development zones, free trade zones and export processing zones across the world and exist in various sizes. Based on practices and standards across many countries in the world, UNCTAD highlight three important characteristics of SEZs globally:

- A clearly demarcated geographical area (through physical barrier such as fencing),

- A fiscal and regulatory regime distinct from the rest of the economy (most often through customs, fiscal, foreign ownership, access to land or employment rules),
- Provision of infrastructure support by host governments and municipalities.

The SEZ programme underpins most of China's industrialisation and manufacturing capabilities it developed in the past two decades. It has enabled it to be, amongst other things, a highly-competitive net exporter of value-added goods. Through its more than 200 SEZs, China has been able to sustain a positive trading account and large scale employment creation. Sub Saharan African countries including Ethiopia, Kenya, Zambia, Botswana and Nigeria have begun to develop and implement SEZ strategies to facilitate the development of their economies (UNCTAD, 2019).

Internationally, SEZs act as catalysts for decentralisation of manufacturing and economic activities in a country. They accelerate economic growth through the manufacturing of value-added products principally for exports markets and enjoy preferential taxation terms. In addition, they are supported by good infrastructure development as well as knowledge based and capacity building programs. Globally, an estimated 5 400 SEZs are operational in 120 countries and accounting for more than R5.2 trillion in exports and for 68 million direct jobs.

According to UNCTAD (2019), there are an estimated 237 SEZs in Africa, although many of these are still under prefeasibility study and construction phases. SEZs are found in 38 of the 55 economies on the African continent, with the highest number in Kenya with 61 SEZs. Nigeria and Ethiopia rank second and third with 38 and 18 SEZ respectively. Egypt and South Africa have 10 SEZ each. To date, SEZs have played an important role in the industrialisation and export promotion strategies of many African countries including Kenya, Ethiopia and Egypt. The objectives of most SEZs established in Sub-Saharan Africa is to enhance manufacturing and exports in low-skill, labour-intensive industries such as garments and textiles. Ethiopia has managed to successfully re-build its garments and textiles industry using SEZs. Other countries such as Morocco are using the SEZ concept to target the development of automotive industry and other high tech manufacturing activities (UNCTAD, 2019).

The figure below summarises how SEZs add value to local, provincial and national economies.

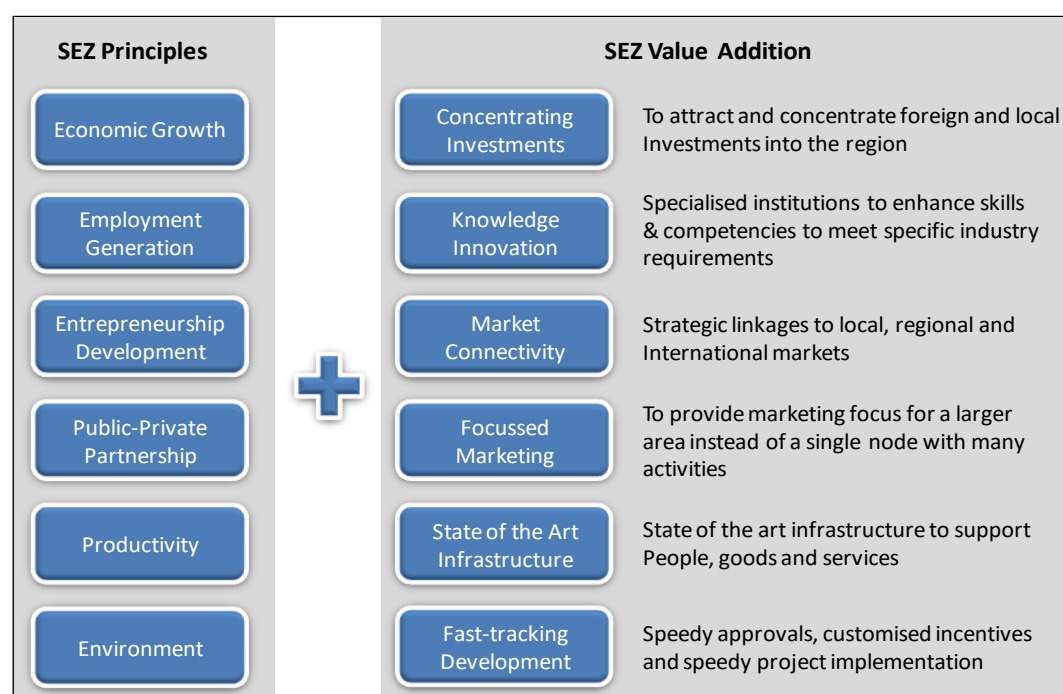


Figure 4: Economic Value Addition By Special Economic Zones

With an eye to international trends, the South African government has adopted the SEZ policy to accelerate the country's industrialisation, regional and economic development. The dti states that the SEZ programme is a

critical tool for the attraction of FDI, creation of decent jobs, establishment of new industrial centres, the development and improvement of existing infrastructure (IPAP 2017/2018-2019/2020).

Specifically, the South African government's objectives in establishing SEZs are five-fold:

- Promotion of targeted industrial capabilities within the framework of the IPAP and the NDP,
- Promotion of beneficiation and value-addition to the country's minerals and other natural resources,
- Development of the world-class infrastructure required to support the development of the targeted industrial activities,
- Attraction of foreign and domestic direct investment,
- Acceleration of economic growth and the creation of much needed jobs in previously marginalised regions of the country.

Businesses located in an SEZ are required to focus on the production of value added goods principally destined for export markets. Each SEZ is required to work along the value and supply chains to form strong linkages to ensure effective and competitive production. The SEZs are expected to contribute towards the creation of stronger value chains and provision of much-needed jobs in the regions where they operate.

To date, the South African government has designated 10 SEZs across the country from which 5 are operational. Two of these (Coega SEZ and East London Industrial Development Zone) are located in the Eastern Cape while KwaZulu-Natal (Dube Tradeport and Richards Bay Industrial Development Zone) and Gauteng (OR Tambo SEZ) hosts two SEZs and a single operational SEZ respectively.

The Coega Special Economic Zone, established in 1999 and located in Port Elizabeth is the foremost and largest SEZ in South Africa. It has managed to attract local and foreign direct investments in export-oriented industries through the development of 9 003 hectares of land into industrial parks for metals processing, automotive manufacturing, logistics and business processes outsourcing among others. To date, Coega SEZ has attracted investments in the agro-processing, automotive, aquaculture, energy, metals logistics and business process services sectors. Some of the international companies that have taken up industrial space in the Coega SEZ include Beijing Auto Industries Company (BAIC) SA Ltd, FAW Ltd and Isuzu Ltd.

The Musina-Makhado area was designated an SEZ by the South African government in December 2017 in order to accelerate the industrialisation and economic development of Limpopo province. Work on Phase I of the infrastructure development for the site is poised to begin once an environmental impact assessment is completed. The Limpopo Department of Economic Development, Environment and Tourism submitted another application to the dti for Tubatse to be designated an SEZ focusing on the beneficiation of PGMs in 2017. The outcome of this application is still pending.

2.7. Economic Benefits of SEZs

UNCTAD (2019) maintains that there is little systematic research on the impacts and economic benefits of SEZs throughout the world. A sustainable development impact assessment of SEZs should consider their direct and indirect economic contributions, fiscal and financial sustainability, technology and skills contributions, social and environmental impacts, support to regional integration and policy experimentation and learning opportunities. The direct economic benefits are important to developing countries as they are linked to industrialisation, exports growth and economic development of a country's economy. The indirect economic benefits include the supplier linkages and employment opportunities that are created outside the zone. The widely acknowledged economic benefits of SEZ include the following:

2.7.1. Manufacturing of Value-Added Products for Export Markets

Many countries in both developing and developed parts of the world established SEZs to produce value-added products primarily for export markets thereby creating employment and improving the terms of trade of the host country. In Latin America and the Caribbean, SEZs contribute more than 50% of total exports in Costa Rica, 31% for the Dominican Republic and 13% in Colombia. Kenya currently has 71 SEZs which account for 55

000 jobs and an annual sales turnover of about \$650 million from which more than 90% is through exports (UNCTAD, 2019).

2.7.2. Foreign Direct Investment

Special economic zones are widely used by governments across the world as a key investment promotion tool and can play an important role in attracting FDI. Through adequate infrastructure and best practice, zones can to a certain degree compensate for an adverse investment climate. UNCTAD indicate that SEZs accounted for over 80% of cumulative FDI in China between 1995 and 2005. Recent research using Chinese municipal datasets indicate that the SEZ program did not only manage to increase FDI but also led to the agglomeration of municipal economies and wage increases for workers. In the Philippines the share of FDI flows going into the country's SEZs increased from more than 30% in 1997 to over 81% in 2000. In Bangladesh, approximately \$190m out of the country's total FDI inflows of \$270m in 2016 were registered in SEZs. In Malaysia, almost 90% of total investment found in SEZs in 2010 originated from foreign investors. (UNCTAD, 2019).

2.7.3. Employment Creation

Empirical evidence indicate that SEZs play an important role in employment creation throughout the world. Globally an estimated 68 million people are employed by businesses firms located within SEZs. In addition, research has shown that the rate of job creation in a number of SEZ programs has been rapid due to fiscal and regulatory incentives that the firms located in these zones enjoy. Consequently, in many countries, the rate of job creation in SEZs has significantly outpaced employment growth in the broader economy as a whole. Job creation in the United States of America (USA)'s SEZs since 2013 has averaged over 7% per year, compared to less than 2% for the wider economy. Employment in Tunisia's SEZs grew from 8% of the total workforce in 2008 to 10% in 2017. Ethiopia was able to generate nearly 50,000 jobs within a few years through its SEZs programme (UNCTAD, 2019).

2.7.4. Technology Transfer and Industrial Upgrading

SEZs are an important instrument of industrial policy because of the opportunities they can provide for technology and skills development and upgrading in global value chains. Linkages with local firms, spill-overs, crowding in and demonstration effects are key to maximizing the industrial development impact of SEZs. However, evidence of SEZs successfully transferring knowledge and expertise is less clear in many parts of the world. International ICT companies operating in South Korea and China's technology parks patented the complex production methods and software programmes resulting in very little or no technology transfer to host countries (UNCTAD, 2019).

2.7.5. Government Revenues

Governments across the world derive significant revenues from rentals paid by investors (tenants) for factory space and administration buildings they occupy in an SEZ. In addition government earn revenues from infrastructure and facilities (roads, ports, rail, airports, waste management) that facilitate the transportation of goods to markets and utilities including water and electricity. Further revenues for the government come from personal income taxes on wages earned in the SEZ, import duties and charges on zone production sold in the domestic market. Corporate income taxes, by contrast, are usually only a marginal part of revenues given the tax holidays or discounted rates associated with most SEZs (UNCTAD, 2019).

3. ECONOMIC RATIONALE FOR ESTABLISHING THE ENERGY AND METALLURGICAL COMPLEX IN MUSINA-MAKHADO AREA

3.1. Overview of Musina-Makhado SEZ's Business Scope

The Musina-Makhado SEZ is a joint venture project between the Limpopo Provincial Government, through the Limpopo Economic Development Agency (LEDA) and a Chinese investor, Shenzhen Hoi Mor Resources Holding Company Ltd, that is aimed at diversifying and accelerating the industrialisation of Limpopo province. Anchored on investment pledges of over \$15 billion (approximately R225 billion), the Musina-Makhado SEZ will result in the establishment of a metallurgical and energy complex in the province.

Other land uses envisaged to complement the energy and metallurgical complex include a logistics hub, agro-processing centre, light industries, business, retail centres, residential and community facilities. The Minister of Trade and Industry issued the Musina-Makhado SEZ with an operator permit in December, 2017.

The figure below summarizes the Musina-Makhado SEZ's business scope.



Figure 5: Musina-Makhado Business Scope

3.1.1. Metallurgical Complex

The metallurgical cluster of the Musina-Makhado SEZ will focus on the beneficiation of ferrous minerals found in Limpopo province to produce steel, stainless steel, pig iron, ferromanganese and ferrochrome. Iron ore, coking coal and other minerals, which are key inputs into the steel and iron production process will be part of the downstream value addition process. The Musina-Makhado SEZ metallurgical complex is expected to produce 3 million tons of steel, 1 million tons of stainless steel, 2 million tons of pig iron and 600 000 tons of ferromanganese for export markets in SADC and other countries in Sub Saharan Africa. An estimated \$8 billion will be required for the development of the Musina-Makhado metallurgical complex.

3.1.2. Energy Complex

The energy cluster of the SEZ will result in the establishment of a coal fired power generation plant with capacity to produce approximately 3 000 MW of electricity. The electricity generated by the Musina-Makhado SEZ will meet the power needs of its metallurgical complex while the remainder will be fed into the grid and used by other electricity consumers in the province. The Musina-Makhado area hosts approximately 12 billion tonnes of coking coal. The high grade coking coal will be used in the steel manufacturing in the metallurgical complex while the low grade coal will be fed into the power plant for energy generation. An estimated \$1.7 billion will be required for the development of the Musina-Makhado energy complex. The power plant is estimated to generate

revenues of \$1.1 billion in its first year of trading. The development of the project is expected to be completed within 10 years.

3.1.3. Agro-processing Complex

Limpopo province is South Africa's leading producer of a wide variety of fruits (litchis, guavas, peaches and avocados), nuts and vegetables due to its climatic conditions. The Musina-Makhado SEZ's agro-processing activities will enable it to leverage the availability of a wide range of fruits and vegetables to produce processed food products such as fruit juices, beverages, canned meat and vegetables for both domestic and export markets.

3.1.4. Logistics Complex

The proximity of the Musina-Makhado SEZ to the Beit Bridge border post offers it opportunities for a number of trade, logistics, border and customs related services and facilities such as bonded warehouse, vehicle distribution centre/holding depots, container yards and truck shops. In addition, the Musina-Makhado SEZ can be used as an inland intermodal terminal directly connected by both the NI north-south corridor and Johannesburg - Musina railway for the trans-shipment of sea cargo to inland destinations and manufactured goods to SADC markets.

3.1.5. General Manufacturing Complex

The General Manufacturing Complex of the Musina-Makhado SEZ will provide engineering support to companies located in the SEZ, light industrial and plastics manufacturing, incubation projects for SMMEs, maintenance and supply parks for mining consumables. Mining companies located in the Musina-Makhado area and other parts of the province are expected to benefit from the wide range of engineering support services available in the SEZ.

3.2. Economic Rationale for Establishing the SEZ in the Musina-Makhado Area

Globally, the profitability and attractiveness of SEZs to investors is enhanced by their location, synergies with local economic activities, availability of raw materials, large potential markets, the availability of appropriate factory space and infrastructure (road and rail) and the potential to run vertically integrated operations (UNCTAD, 2019).

In line with international best practice, the location and business scope of the ten SEZs that have been designated by the South African government so far is in line with each province's competitive advantage in order to maximise synergies with the local economy and are close to the ports and airports to ensure rapid shipment of manufactured goods to the markets. To this end, the business scope of the Coega SEZ in the Eastern Cape includes automotive manufacturing and spare parts distribution since the province accounts for the largest number of vehicles assembled in South Africa. Figure 4 below summarizes the location and business scope of some of South Africa's SEZ.

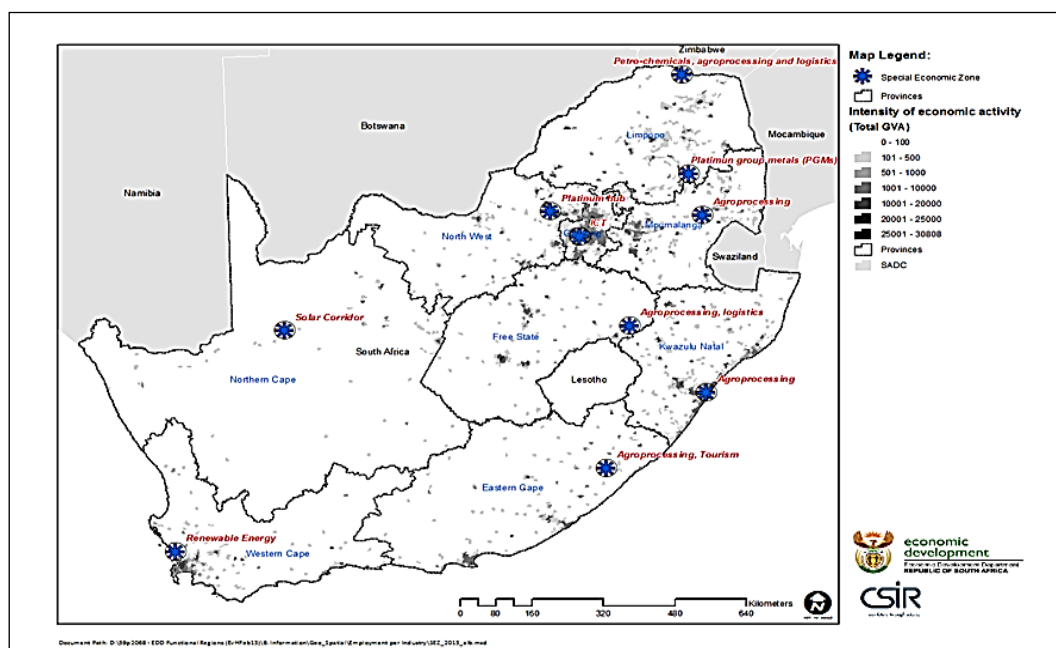


Figure 6: Special Economic Zones in South Africa

The Musina-Makhado areas offers the best location and provide the largest economic benefits than other potential sites in Limpopo province such as Tubatse and Lephalale due to the following:

3.2.1. Location of the Musina-Makhado Area

Musina, is the northern most town in South Africa and is in close proximity (18kms) with Beit Bridge, the main port of entry by road from SADC countries (Democratic Republic of Congo, Tanzania, Malawi, Botswana, Zambia, and Zimbabwe) into the country. In terms of local government, the Musina town falls under Musina Local Municipality (MLM) which in turn belongs to the Vhembe District Municipality (VDM). The Vhembe District Municipality (VDM) consists of four local municipalities, namely Musina, Makhado, Collins Chababe and Thulamela. Musina town was initially developed around the copper mining many years ago but this expanded to include diamond mining, cattle ranching and wildlife safaris. The town is 200kms from Polokwane and 522kms from Johannesburg respectively.

Makhado is a town on the foothills of the Soutspansberg mountain range in Limpopo province. The N1 national route runs through the Makhado town. It is 100kms away from the Zimbabwe border at Beit Bridge and is 437kms from Johannesburg. The Makhado area produces a wide range of fruits, nuts and vegetables due to its favourable climatic conditions. Its soil and climatic conditions enable it to produce fruits and vegetables the whole year round. Other important agricultural nodes in Limpopo include the Zebediela area, which produces citrus fruits and the Levubu Valley that produces potatoes, guavas, mangoes and macadamia nuts.

The Musina-Makhado SEZ site is located approximately 37kms south of Musina, 50kms north of Makhado and lies along the N1 toll route. Johannesburg and Polokwane are 487kms and 150kms away from the Musina-Makhado SEZ site respectively. The main SEZ land is bound by the Johannesburg-Beit Bridge railway line to the west, by the farms Jan Van Rensburg 525 MS, Emery 522 MS and Maseri Pan 520 MS to the north, by the N1 national route to the east and by the D1021 road to the south.

In addition, Musina-Makhado SEZ is in close proximity to Coal of Africa, Vele Coal and Universal Coal mining operations which further strengthens the investment case for the metallurgical and power generation clusters. Figure 5 below illustrates the location of the Musina-Makhado SEZ site.

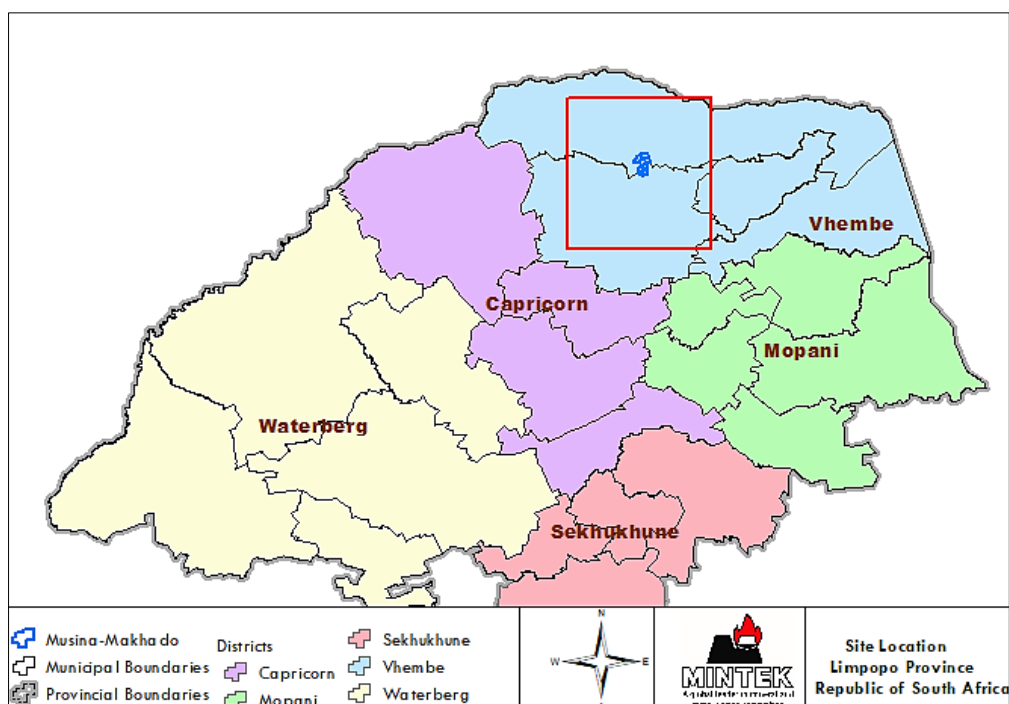


Figure 7: Location of Musina-Makhado SEZ

In summary, Musina-Makhado's competitive advantage as an ideal location for the SEZ in Limpopo lies primarily on:

- Its geographic location on the NI north-south corridor which enables market access for processed products in Gauteng and the rest of South Africa. In addition, Musina-Makhado's location will enhance the investment case of the envisaged logistics cluster,
- Its unique close proximity to mineral resources required to provide competitive pricing advantage to the metallurgical cluster (coal, iron, chrome) and power generation cluster,
- Close proximity to the border between South Africa and Zimbabwe will facilitate access to the SADC markets,
- Musina-Makhado has got strong future potential of a cross-border zone that will attract additional industries in the SEZ.

3.2.2. Availability of Land

The availability, size, cost and quality of land are critical factors in locating an SEZ. The land that has been designated for the Musina-Makhado SEZ site which is collectively known as Bokmakkerie consists of Dreyer, Joffe, Antrobus, Battle, Steenbok, Van der Bijl, Lekkerlag, and Somme farms. These farms overlap the border between the Makhado and Musina local municipalities which in turn belong to Vhembe District Municipality. This land is owned by the community but managed by the community property association (CPA) in conjunction with the Department of Rural Development and Land Reform (DRDLR). The CPA will lease the land to Musina-Makhado SEZ for a period of 120 years which provides certainty of tenure to the SEZ investors. The total area of the farms is approximately 8 000 hectares from which 6 000 hectares will be used for the development of the SEZ. During the visit to Musina-Makhado SEZ site, the Mintek team noted the following as presented in table below:

Table 1: Observations at the Musina-Makhado SEZ Site

Property	Description
Location	Musina-Makhado Municipalities
Access	N1 toll road, Johannesburg-Beit Bridge Railway
Land Use	Agricultural
Occupancy	None
Site Topography	Flat ground with three streams flowing through it
Ground Conditions	Bushes and Grass
Existing Developments	None

Preliminary engineering design indicates that the metallurgical complex, comprising the coking, stainless steel, ferrochromium, ferromanganese, pig iron, carbon steel and silicomanganese plants require a total of 3 100 hectares of land for its development. The power plant require approximately 300 hectares whilst general infrastructure including residential, office accommodation, hotels and social amenities will require 2 600 hectares of land respectively for its development. Table 2 below summarises the envisaged land allocations for the Musina-Makhado SEZ's metallurgical complex.

Table 2: Land Allocations for the Musina-Makhado Metallurgical Complex

Project	Capacity (Mtpa)	Land Allocation (Hectares)
Power Plant	3	300
Coke Plant	5	500
Ferrochromium Plant	3	500
Ferromanganese Plant	1	100
Pig Iron Plant	6	600
Carbon Steel Plant	2	200
Stainless Steel Plant	4	500
Lime Plant	8	500
Silico-Manganese Plant	0.5	100
Metal Silicon Plant	0.3	50
Calcium Carbide Plant	0.3	50
Infrastructure		2 600
Total		6 000

Table 3 below summarises the strengths, weaknesses, opportunities and threats (SWOT) of the designated Musina-Makhado SEZ site.

Table 3: SWOT Analysis for Musina-Makhado SEZ Site

Strength <ul style="list-style-type: none"> Adequate land (8 000 hectares) available for present development and further expansion of Musina-Makhado SEZ Adequate land for metallurgical, energy, logistics, industrial as well as social, human settlement and other developments Land is owned by the community through the Community Property Association (CPA) and comparatively cheaper than privately owned land. 	Weakness <ul style="list-style-type: none"> Not enough water exist for Phase 1 development of Musina-Makhado SEZ Sensitive bio mass (mostly Baobab tree) and three streams running through the site
Opportunities <ul style="list-style-type: none"> Site size can host heavy, medium and light industrial sectors as well as allow for human and social settlement with buffer zones Bigger portion of land translate into bigger investment and more economical opportunities, and higher revenue potential for the SEZ There are no mining rights or pending land claims on the land thereby eliminating land disputes which can potentially damage the investment case for the SEZ 	Threats <ul style="list-style-type: none"> Water requirements for Phase 1 development of the SEZ may not be met and thereby alienate potential investors for water intensive activities Leadership changes in the CPA maybe result in changes to the initial agreement between itself and the SEZ Deep pocketed Middle Eastern investors are offering the CPA higher amounts of money for land adjacent to the SEZ to establish game farms

In summary, the Musina-Makhado site is the ideal location for the SEZ in Limpopo province due to the following reasons:

- There is enough land (8 000 hectares) to cater for the construction of factory space, office, residential accommodation, community facilities, development of bulk infrastructure (water, storm water and electricity) and future expansion projects for the SEZ,
- The size of land available for development of the Musina Makhado SEZ compares favourably with China's average SEZ size of approximately 3 500 hectares,
- The SEZ land is owned by the community through the CPA and comparatively cheaper than privately owned land. The designated land is currently undeveloped and unoccupied,
- The absence of mining rights and pending land claims on the designated SEZ site eliminate land disputes which can potentially damage the investment case for Musina-Makhado SEZ.

3.2.3. Road Transportation Linkages

In 2015, the Musina-Makhado SEZ SOC Ltd commissioned Mott MacDonald Ltd, an engineering, procurement, construction management (EPCM) company with branches throughout South Africa, to develop a composite overall picture of the infrastructure available in the Makhado area and conduct an assessment the suitability of this infrastructure for the establishment of the SEZ. This report's conclusions on infrastructure complement and build on the findings of the Mott MacDonald study in 2015.

The Musina-Makhado SEZ lies on the N1 north-south corridor bisecting Limpopo in both directions, linking the ports and markets in South Africa with SADC countries in the north. Another national road found in Limpopo province is the N11 toll road which runs from Groblersbrug, located on the border with Botswana, through Mokopane, Ermelo to New Castle in KwaZulu-Natal. The two national roads are complimented by 9 provincial road corridors. The N4 which runs from the North-West to Mpumalanga provinces, provides the Limpopo

province with access to the port of Maputo in Mozambique. The figure below illustrates the linkages between Musina-Makhado SEZ with other transportation corridors in SADC.

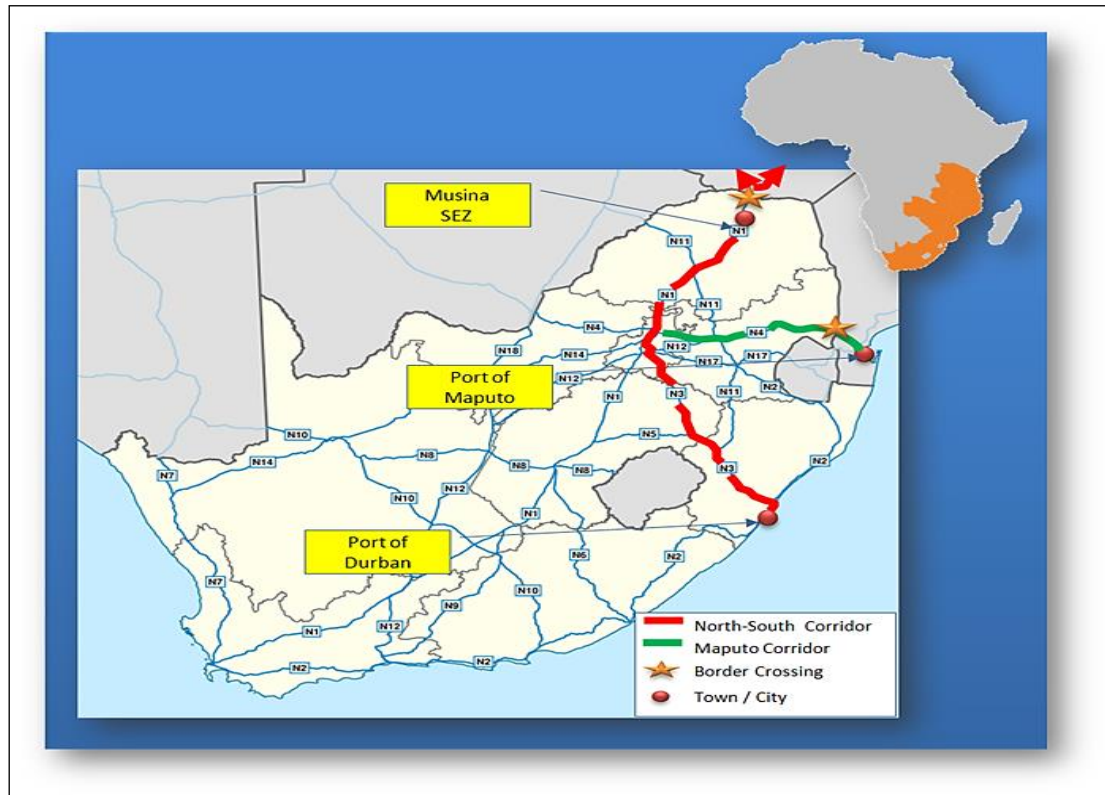


Figure 8: The NI North-South Corridor

These roads provide excellent connectivity to markets in the rest of South Africa and SADC, as well as ports and airports for shipment of processed products to international markets. The European Union is a key consumer of fruits, vegetables, juices and other products produced in the Limpopo. These products require to be transported expeditiously to Polokwane International Airport or O.R Tambo Airport for shipment to markets in Europe (Mott MacDonald, 2015).

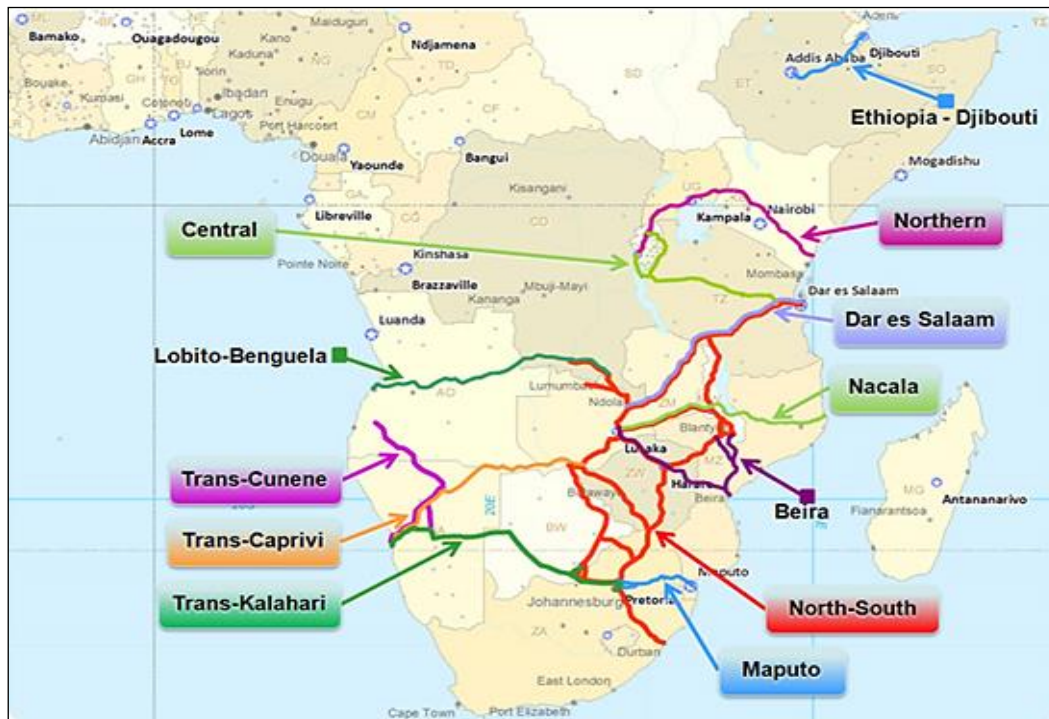


Figure 9: Musina-Makhado linkages with other transport corridors in SADC

In summary, the Musina-Makhado site is the ideal location for the SEZ in Limpopo province due to the following reasons

- It is located along the NI north-south corridor which provide access to markets in the rest of South Africa and Southern African Development Community (SADC) countries.
- The Limpopo province's existing road network (NI, N11, R37, R521, R555) provide the Musina-Makhado SEZ access to airports, ports and SADC transportation corridors for rapid shipment of processed goods to the markets.

3.2.4. Rail Transportation Linkages

Limpopo's rail network is a critical element of the South African transportation system since it is responsible for the movement of goods within the province and neighbouring SADC countries. The province has got three important railway lines: the Johannesburg - Beit Bridge railway line which connects with the Zimbabwean railway system and points north to Lusaka and Dar es Salaam, the Lephalale line which serves the coal, iron ore and chrome mines and the arterial line from Goudplaas on the Beitbridge line, running south-eastwards to the Maputo line which serves the Tzaneen, Letsitele agricultural area in the north and the Phalaborwa mining area in the south (Mott MacDonald, 2015).

An estimated 19 million tons of general freight cargo was transported by rail across Limpopo province in 2018 from which 2.52 million tons was transit cargo to Zimbabwe and other SADC countries in the north of South Africa. Transit cargo mainly comprised containers, petroleum and coal products. The mining sector accounted for approximately 85% of rail freight (coal, chrome) transported from Limpopo to other provinces such as Gauteng, Mpumalanga and KwaZulu-Natal. This is in line with the economic significance of mining to the province's economy. Manufacturing and agriculture ranked second (12%) and third (3%) largest generators of rail freight cargo respectively in 2018. Figure below summarizes the rail network in Limpopo province (Limpopo Provincial Treasury, 2019).

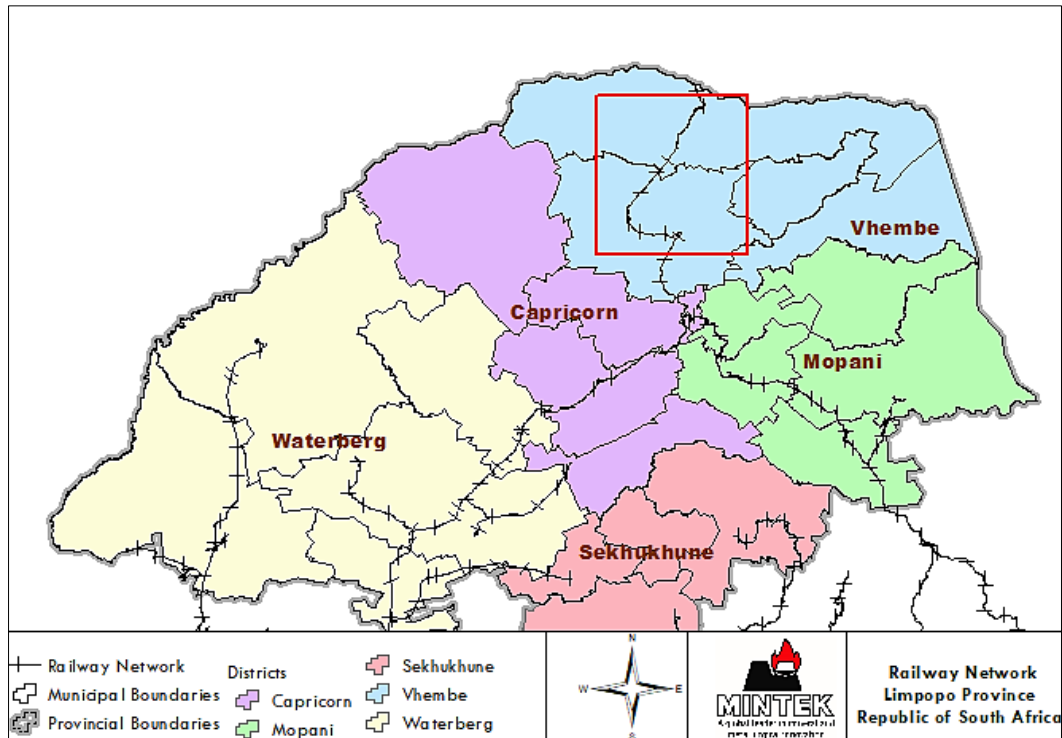


Figure 10: Railway Network in Limpopo

The Musina-Makhado area offers the best location for the SEZ in Limpopo because it lies directly on the Johannesburg - Beit Bridge railway line. Iron ore and manganese that will be used in steel manufacturing in Musina-Makhado SEZ's metallurgical cluster will be railed from the Northern Cape while chrome and limestone will be sourced from Burgersfort and Mokopane areas respectively. The availability of a direct railway link between the SEZ and source areas for raw materials for the SEZ translate into lower production costs and competitive pricing advantage for the SEZ's products. In addition steel, ferrochrome and ferromanganese are bulk commodities that are transported by rail to the markets. The Musina-Makhado SEZ's direct rail link with the Johannesburg - Beit Bridge line will ensure that products produced by the metallurgical complex are transported to the markets in the rest of South Africa and SADC in a cost-effective manner.

3.2.5. Access to Markets

The Musina-Makhado area's excellent road and railway connectivity provides access to markets for the SEZ's products in the rest of South Africa, Southern African Development Community (SADC) countries and internationally. In addition, the province's existing road network (N1, N11, R37, R521, R555) provide the Musina-Makhado SEZ access to airports (Polokwane, OR Tambo), Ports of Maputo and Durban and SADC transportation corridors to ensure rapid shipment of processed goods to the markets. This will deepen trade integration within SADC member states.

3.2.6. Availability of Mineral Resources in the Musina-Makhado Area

The Musina-Makhado SEZ's metallurgical complex require iron ore, manganese, chrome, coking coal and limestone for pig iron, ferrochrome, steel and stainless steel manufacturing. The SEZ is located in close proximity to the Soutpansberg coal-field which is estimated to be hosting over 12 billion tons of hard coking and thermal coal reserves. The Soutpansberg coal-field is comparatively undeveloped and underexploited than other coalfields in South Africa. MC Mining Ltd, and Universal Coal Ltd own various coal projects that are at different stages of development in the Soutpansberg coal-field. The figure below summarizes the mineral occurrences in Limpopo Province.

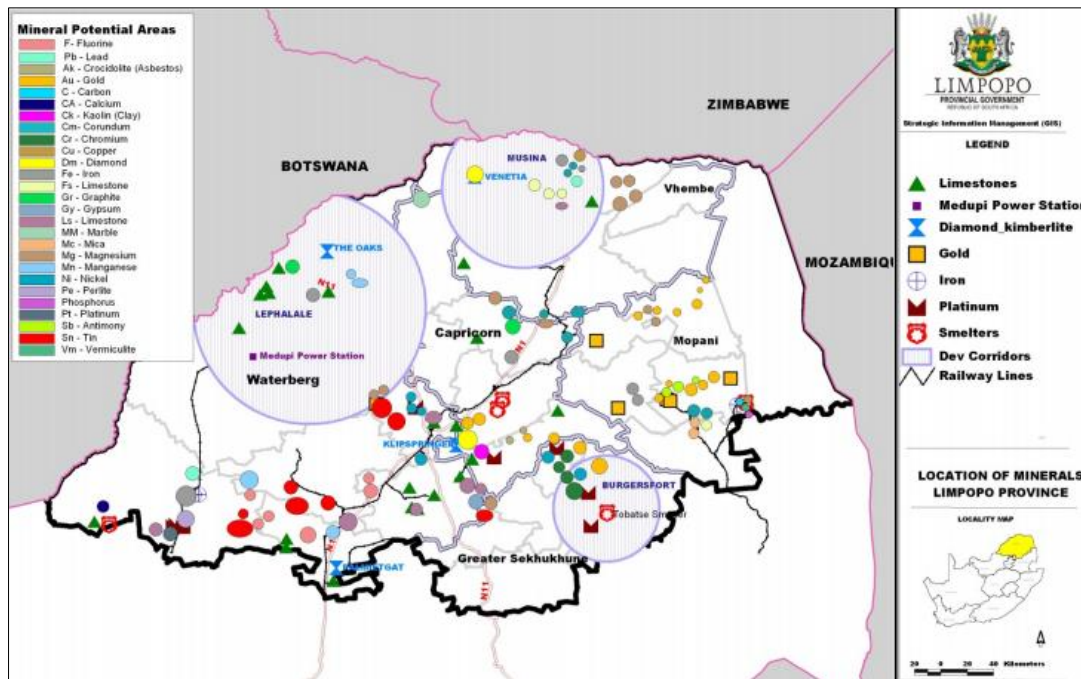


Figure 11: Mineral Resources in Limpopo Province

MC Mining's flagship Makhado hard coking and thermal coal project is located approximately 20kms while the Vele Colliery is located 80kms in the south westward direction from the Musina-Makhado SEZ. MC Mining Ltd has completed Phase 1 construction of the mine that will see an estimated 1.8 million tons of coal being produced. The construction of Phase 2 of the Makhado coal project is expected to start in 2022. Geological studies estimate that over 1 billion tons of coal can be extracted at Makhado coal mine over its useful life. When fully operational, the Makhado coal mine is expected to produce approximately 5 million tons of coal per annum. Universal Coal Ltd's Berenice/Cygnus coking coal project is located 90km southwest of Musina. Concept studies indicate that the mine can produce 10 million tons of both soft coking and thermal coal with a life of mine in excess of 25 years. Preliminary engineering estimates indicate that the Musina-Makhado SEZ power plant, with capacity to produce 3 000MW, will consume approximately 50 000 tons of coal per day.

While there is some prevalence of iron ore and manganese in Limpopo province, the deposits are either small or currently not being mined. The province no longer has operating iron ore mine after the closure of Thabazimbi mine. The Zandriverspruit iron ore development project in the Steelpoort area can potentially supply iron ore to the SEZ's metallurgical complex once commissioned into production. Iron ore and manganese will be sourced from the Northern Cape in the initial phases of the SEZ development while chrome and limestone will be sourced from Burgersfort and Mokopane areas respectively.

The availability of both coking and thermal coal within Musina-Makhado SEZ's vicinity will ensure the uninterrupted supply of input materials to the metallurgical and power generation complex. This will reduce coal transport costs for the metallurgical complex which will in turn translate into competitively priced products.

3.2.7. Enhancing Agro-Processing Activities in Limpopo Province

The Limpopo province accounts for approximately 10.2% of South Africa's total land area. The province is well endowed with agricultural resources making it one of key regions for the production of livestock, fruits, nuts, vegetables, cereals and tea. Agricultural Business Chamber South Africa statistics indicate that Limpopo province accounts for approximately 19% of South Africa's potato, 75% of mangoes, 65% of papayas, 36% of tea, 25% of citrus, 60% of litchis, 60% of its avocados and 60% of its tomato production per annum.

The Vhembe District Municipality contributes approximately 18% to Limpopo province's agricultural production. Thohoyandou, located in the south of Vhembe district and 40kms from the Musina-Makhado SEZ site, is the

centre of agricultural production in the district with banana plantations, nuts, subtropical fruits vegetables and maize. The Soutpansberg mountain range is an important forestation area, planted with soft and hard woods. The dry and wet parts of the Soutpansberg mountain range are suitable for the production of crops such as avocado, macadamia nuts, citrus fruits and flowers.

The establishment of an SEZ in the Musina-Makhado area provides an opportunity to enhance agro-processing activities in the Vhembe District Municipality and Limpopo province as a whole. This is because of the location of the Musina-Makhado SEZ on the NI north-south corridor which ensures connectivity to markets, its proximity to SADC food markets (Zimbabwe & Zambia) and the contribution agriculture makes in the provincial economy. Agricultural Business Chamber South Africa's statistics indicate that, at national level, the food processing division is the most dominant (42%) of the agro-processing sector, followed by the paper (14%) and beverages industries (12%) as shown in the figure below.

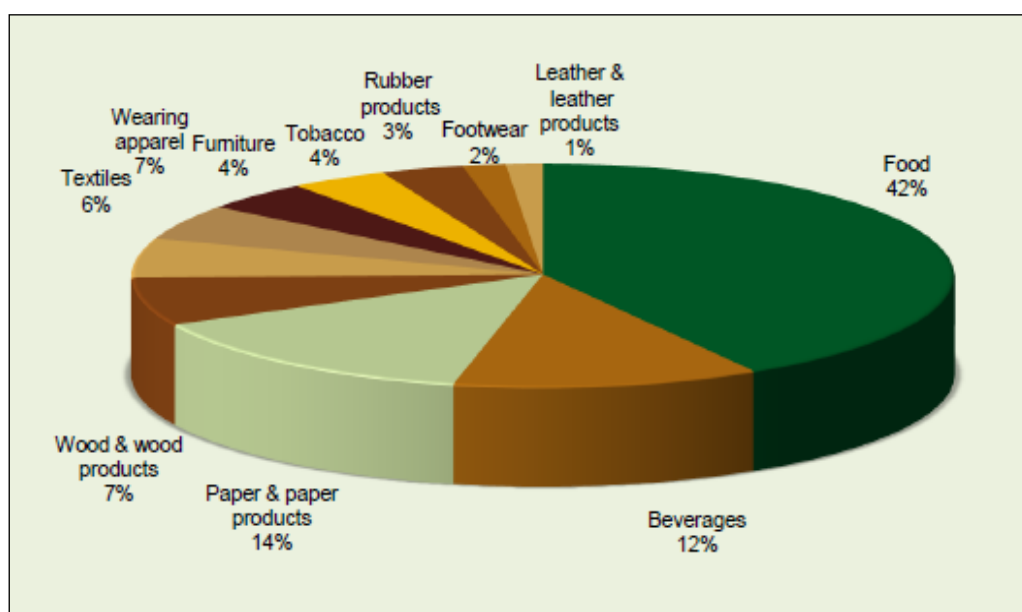


Figure 12: Sub-Sectors in Agro-Processing Industry

While the agro-processing sector in Limpopo province is already strong as evidenced by the presence of Pioneer Foods Ltd, McCain Ltd, Granor Passi Ltd, Westfalia Fruit Ltd and Enterprise Foods Ltd, these companies are largely based in Polokwane. The establishment of the SEZ in the Musina-Makhado area provides an opportunity for food, fruit and vegetable processing companies to locate their business activities in Vhembe District Municipality.

Fruits, nuts, vegetables produced in the district can be processed into intermediate or finished products including fruit juices, canned fruits and vegetables in the SEZ. The value addition process will increase the contribution of the district and province's agriculture sector to the country's GDP. The processed products can be sold in the domestic market in the rest of South Africa as well as in SADC markets. Currently, Zimbabwe and Zambia are net importers of processed foods from South Africa.

3.2.8. Potential to Create Transportation and Logistics Hub in Limpopo Province

The proximity of the Musina-Makhado SEZ to the Beit Bridge border post offers opportunities for a number of trade, logistic and border related services and facilities, such as bonded warehouse, vehicle distribution centre/holding depots, container yards and truck shops.

The development and growth of the SADC market is a key driver for logistics demand in South Africa. Approximately 60% of cargo volumes imported through South Africa to SADC is destined for Zambia, the Democratic Republic of Congo and Angola, while the remaining 40% is destined for Zimbabwe, Mozambique

and Malawi. It is estimated that 48% of these volumes are transported by road from the Port of Durban while 52% is transhipped via coastal shipping. An analysis of the logistic activity in the main corridors affecting South Africa (Trans Caprivi excluded), indicates that there is significant growth opportunities for road and rail logistics

In addition, the envisaged Musina SEZ Logistics hub is inland and this drives a different set of needs encapsulated in the “dry port logistics” concept. The Musina-Makhado SEZ can be used as an inland intermodal terminal directly connected by both the NI north-south corridor and Johannesburg - Musina railway for the trans-shipment of sea cargo to inland destinations.

3.2.9. Gateway to the SADC and ACFTA Markets

The Musina-Makhado SEZ is approximately 51.6kms from Beit Bridge border post that is South Africa’s primary gateway into the SADC region and the rest of the African continent. South Africa is both a member of SADC and the African Union which are both multilateral institutions created to advance trade integration and economic development in Africa. The country can potentially harness the geographic proximity of the Musina-Makhado SEZ to the Beit Bridge border post together with its rail and road links with neighbouring countries to substantially increase steel and agro-processed products exports to the SADC and African Continental Free Trade Area (ACFTA) markets.

A wide range of South African manufactured products including vehicles, processed food, chemicals, cement, building products, maize, intermediate goods and capital equipment are exported to the SADC markets and other African countries such as Uganda and Kenya via the Beit Bridge border post every day. According to the Limpopo Province Freight Databank, an average of 500 freight trucks crosses the Beit Bridge border post per day. These trucks transport an estimated 2.52 million tons of road freight cargo through this border post annually, with the tonnage split almost equally northbound and southbound. The road freight cargo is varied, with 40% of the vehicles being tarpaulin covered and only 10% carrying containers. An average of between 35 000 - 60 000 people cross the Beit Bridge border post in buses and privately owned cars en-route to mainly Zimbabwe, Zambia and Malawi.



Figure 13: SADC Market

The five SADC countries (**Zimbabwe, Zambia, Malawi, Tanzania and the Democratic Republic of Congo**) are important export markets for South African manufactured products. The five countries have a collective GDP of approximately \$140 billion and combined population of 191 million people. Zimbabwe is the most important trading partner for South Africa out of the 5 countries listed above. In 2017, South Africa exported vehicles, manufactured goods and capital equipment worth over R30 billion to Zimbabwe whilst its imports were a mere R6 billion. South Africa's main exports to Zambia and the DRC include amongst machinery and mechanical equipment, chemicals, plastics, vehicles, aircraft parts transport equipment. The establishment of the Musina-Makhado SEZ will deepen trade integration among SADC countries through the exports of steel, agro-processed products and contribute to the achievement of the objectives of the SADC Free Trade Area (FTA).

The objectives of the SADC FTA are to liberalise intra-regional trade in goods and services, ensure efficient production, contribute towards the improvement of the climate for domestic, cross-border and foreign investment, enhance economic development, diversification and industrialisation of the region. The enablement of freeing trade will create larger market which will in turn result in much greater potential for trade, economic growth and employment creation in the region.

With the domestic drivers of growth currently under strain, South Africa is increasingly turning to exports and increasing inter-continental trade the rest of Sub-Saharan Africa to turn around the country's economic performance. The 18th Ordinary Session of the Assembly of Heads of State and Government of the African Union, held in Addis Ababa, Ethiopia in January 2012, established the ACFTA, bringing together all 55 member states of the African Union into a single continental market of more than 1.2 billion people with a combined GDP of more than R54.5 trillion. The objective of the ACFTA is to deepen the African regional trade integration, increase exports and accelerate the continent's economic development. The establishment of the Musina-Makhado SEZ provides South Africa with an opportunity to increase its exports to ACFTA markets including Uganda and Kenya thereby accelerate intra-Africa trade. The ACFTA has the potential to become a game changer for the continent on all levels. It will act as a catalyst for economic growth of African countries and will benefit entrepreneurs, including medium-to-small businesses.

South Africa is the most industrialised and sophisticated economy on the African continent. The ACFTA offers the country an opportunity to increase the supply of South African manufactured goods to the inter-continental market. The manufactured goods produced by the Musina-Makhado SEZ can be exported to the ACFTA region. In addition, the demand for support services such as transportation, banking and insurance from South African companies to international trade will increase significantly.

3.2.10. Justification of Suitability through Policy and Regulatory Framework

The table below provides a detailed summary of all applicable policies and regulatory framework that were considered, how each policy/strategy aligns, and the direct influence each will have in the development and establishment of the Musina-Makhado energy and metallurgical complex.

Table 4: Summary of Justification of Suitability

THE POLICY AND REGULATORY FRAMEWORK

INDUSTRIAL POLICY ACTION PLAN (IPAP)

The Industrial Policy Action Plan 2018/19-2020/21 is the apex policy document of the Department of Trade and Industry (DTI). It is drawn from a range of visions set out by successive industrial policies such as the NDP, NGP, and National Industrial Policy Framework (NIPF). The IPAP sets out an industrial policy framework with overriding interventions that will prevent industrial decline and support growth, as well as diversifications of South Africa's manufacturing sectors. This policy suggests that long term economic success lies in the strengthening and expansion of the manufacturing industry which will potentially lead to increased production and exports. This will in turn lead

to job creation both directly and indirectly. Therefore, IPAP will ultimately lead to a restructured economy with more value-adding, labour intensive, and environmentally sustainable industrial activities.

Strategic Objective:

The dti maintains that IPAP is firmly entrenched in the government's overall policy and plans to address the key challenges of economic and industrial growth as well as reducing poverty, inequality and unemployment in the country.

Alignment to the Musina-Makhado SEZ development:

The IPAP identifies energy and metallurgical complex as a sector with potential to spur growth and create jobs primarily due to its value chain which represents an important source of labor-intensive growth. In addition, this value chain is central to the rural development. With infrastructure investment as one of the main components upon which all other proposed actions rest, the Musina-Makhado SEZ will be key in advancing the objectives of the IPAP as it will further promote an approach consisting of comprehensive spatial planning, and the appropriate categorisation of land to ensure sustained development, associated/targeted skills development, employment creation, poverty eradication and significant infrastructural expansion.

THE NATIONAL GROWTH PLAN (NGP)

Government adopted the New Growth Path (NGP) in 2010 as the driver of the country's job creation strategy. The NGP suggests that in order to achieve growth and transformation of economic imbalances, firm choices and shared determination are required from every structure within the South African society.

Strategic Objective:

The goal is to grow employment by five million jobs by 2020; to ensure that half of the working-age population in South Africa will be employed and that unemployment would be reduced from 25% to 15%. The NGP is also formulated to reduce inequality and eliminate rural poverty by identifying areas where long term structural and feasible changes can be made. Efforts will be prioritised in key sectors such as infrastructure, the mining value chain, green economy manufacturing, tourism, and certain high- level services. To achieve these objectives, the framework seeks to:

- Identify areas that have potential for large scale employment creation.
 - Develop a policy package to facilitate employment creation in the areas identified.
 - Create a consensus on the new local and global opportunities, and see how these opportunities can be seized in order to achieve socially desirable and sustainable outcomes.
 - Strengthen the domestic and regional markets.
 - Broaden the markets for South African goods and services through a stronger focus on exports.
-

Alignment to the Musina-Makhado SEZ development:

The Musina-Makhado SEZ has been prioritised to play an important role in the provision of job opportunities and improve the standard of living for communities around the complex. This is in line with the NGP objectives and can be concluded that the NGP supports the development of the Musina-Makhado energy and metallurgical complex.

THE NATIONAL DEVELOPMENT PLAN – 2030 (2010)

South Africa's first National Planning Commission was set by President Jacob Zuma and inaugurated in May 2010. The objective posed to the National Planning Commission was to take an independent view of South Africa, and from that, derive a vision and a plan that is focused on enabling a much better quality of life for all South Africans by 2030. The primary channels through which improvement in quality of life are likely to come about, are through eliminating poverty and reducing inequality (the two single biggest problems in South Africa).

Strategic Objective:

The three broad framework identified to ensure that the proposed vision set out by the NDP is achieved, are the

following:

- Raising employment through economic growth.
- Improving skills development, and innovation.
- Building the capability of the province to play a developmental and transformative role.

Alignment to the Musina-Makhado SEZ development:

The National Development Plan views mineral beneficiation and industrialization as critical to employment creation. The MMESZ will serve as an important mechanism to execute the NDP's objectives through creation of employment. The study that was conducted by Demacon (2019) estimated that the Musina-Makhado SEZ will create approximately 21 000 jobs in the first 5 years of its operation. This will increase to 51 000 jobs in the tenth year thereby giving rise to a large impact on the Vhembe District Municipality. This is directly in line with the NDP's objectives to stimulate industrial growth, accompanied by measures that ensure sustainable development on redistributed land and an improved institutional support system. In this regard, the NDP identifies certain sub-sectors within the industrialization that have the most potential for development, which are categorised into large labour-intensive industries, smaller labour-intensive industries, and large existing industries with significant value-chain linkages as having positive growth impacts on the rural economy.

LIMPOPO DEVELOPMENT PLAN (2015-2019)

This Limpopo Development Plan reflects the steps in an ongoing journey to eliminate poverty, reduce inequality, and improve the quality of life of the Limpopo citizens, as visualised in the National Development Plan (NDP). This document is the culmination of workshops at different levels of government and with private sector stakeholders throughout Limpopo. The Limpopo Development Plan (2015 – 2019) is based on lessons learnt from previous Limpopo Strategies and Plans, on the National Development Plan (NDP), the MTSF Outcomes (National and Provincial), the provincial Lekgotla of May 2014, and the LDP Summit of December 2014.

Strategic Objective:

The development objectives are classified into three broad development themes and fourteen priority outcomes, each with its own targets and indicators. The broad development themes are:

- Economic Transformation (including infrastructure and workplace conflict reduction);
- Social Transformation, including improved quality of life, social cohesion, active citizens; and
- Improving Service Delivery (access to and quality of services and local government capacity).

The 2030 vision focuses on rural areas which are spatially, socially and economically integrated and where residents have economic growth and jobs.

Alignment to the Musina-Makhado SEZ development:

Musina-Makhado SEZ will contribute significantly to reducing overall unemployment in the Limpopo province. Achieving this vision will require partnership from all relevant stakeholders, support from government, and the provision of physical infrastructure for successful development. It will also require capacity building, improved coordination and integration in the planning and implementation.

Trade and Co-operation agreements that have already been signed between Limpopo and its neighbours in pursuit of regional development and integration include:

- Memorandum of Understanding between Polokwane Local Municipality and the City of Bulawayo, 2012;
- Twinning Agreement between Limpopo and the Gaza Province of Mozambique, signed in 2006, with its work plan;
- Partnership and Co-operation Agreement between Thabazimbi Local Municipality and the City of Gaborone, 2006;
- Memorandum of Agreement between Musina Local Municipality and Beitbridge Rural District Council (October 2004);

The Musina-Makhado SEZ development will build further on these initiatives towards rural development in the

Limpopo Province as it will focus on logistics, imports, exports, and beneficiation. The location of Musina makes it the ideal hub to serve as the logistics port to other African countries. The Musina-Makhado SEZ will also be linked to some of infrastructure projects on Regional Integration for African Cooperation and Development.

SADC INDUSTRIALISATION

The SADC Industrialization Strategy was developed as an inclusive long-term modernization and economic transformation scheme that enables substantive and sustained raising of living standards, intensifying structural change and engendering a rapid catch up of the SADC countries with industrializing and developed countries. The Strategy sets out three potential growth paths: agro-processing; mineral beneficiation and downstream processing and industry and service-driven value chains. The paths are mutually supporting and inclusive, encompassing the combination of downstream value addition and backward integration of the upstream provision of inputs, intermediate items and capital goods.

Strategic Objective:

It is anchored on three interdependent and mutually supportive strategic pillars:

- Industrialization as champion of economic transformation;
- Enhancing competitiveness; and
- Deeper regional integration.

Alignment to the Musina-Makhado SEZ development:

In light of the above, the Action Plan proposes an approach that calls for very decisive actions by SADC Member States to promote investment, trade, and industrial regionalisation. South Africa is part of the SADC member, with the development of the Musina-Makhado SEZ fast approaching, this approach will be fully realised.

SADC FREE TRADE AREA (FTA)

Strategic Objective:

- To liberalise intra-regional trade in goods and services,
- Ensure efficient production and contribute towards the improvement of the climate for domestic, cross-border and foreign investment,
- Enhance economic development, diversification and industrialisation of the region.

Alignment to the Musina-Makhado SEZ development:

The establishment of the Musina-Makhado SEZ will deepen trade integration among SADC countries through the exports of steel, agro-processed products and contribute to the achievement of the objectives of the SADC Free Trade Area (FTA).

AFRICAN CONTINENTAL FREE TRADE AREA (CFTA)

African Continental Free Trade Area is seen as a stepping stone in the long-term objective of establishing an African Economic Community, through creation of a single continental market for goods and services, with free movement of business persons and investments, and thus pave the way for accelerating the establishment of the Continental Customs Union and the African customs union; expansion of intra-African trade through better harmonisation and coordination of trade liberalisation.

Strategic Objective:

- To deepen the African regional trade integration,
- Increase exports and accelerate the continent's economic development.

Alignment to the Musina-Makhado SEZ development:

The establishment of the Musina-Makhado SEZ will provide South Africa with an opportunity to increase its exports to ACFTA markets including Uganda and Kenya thereby accelerate intra-Africa trade. The ACFTA offers the country an opportunity to increase the supply of South African manufactured goods to the inter-continental market. The manufactured goods produced by the Musina-Makhado SEZ can be exported to the ACFTA region

OTHER APPLICABLE INTERNATIONAL BEST PRACTICE POLICY REVIEW

The most commonly used definition of SEZs across many countries in the world, centres on three key criteria. Similarly, UNCTAD's data is based on this criteria:

- A clearly demarcated geographical area (through physical barrier such as fencing),
- A fiscal and regulatory regime distinct from the rest of the economy (most often through customs, fiscal, foreign ownership, access to land or employment rules),
- Provision of infrastructure support by host governments and municipalities.

In consideration of all the factors above, Musina-Makhado SEZ site was found to be well suited and desirable for the establishment of energy and metallurgical complex.

3.3. Socio-Economic Impacts of the Musina-Makhado Energy and Metallurgical Complex on Vhembe District Municipality

A study that was done by Demacon (2019), a consulting company, estimated that the development of the R255 billion (at current R/\$ exchange) Musina-Makhado SEZ will have the following socio-economic impacts:

- Accelerating mineral beneficiation and industrialisation of Limpopo and South African economies
- Create 21 000 direct jobs in five years of operation and 53 000 jobs in the ten years
- Advance provincial and national GDP growth
- Attraction of FDI
- Skills development
- Technology transfer
- Investment in economic and social infrastructure
- Unlocking of the much needed water supply for industrial and domestic use
- Potential for a creation of a new smart city
- Promotion of regional economic integration

Table 4 below provides a summary of the jobs likely to be created by the Musina-Makhado SEZ

Table 5: Estimated Employment Impacts of Musina-Makhado SEZ

Project	Capacity (Mtpa)	Area (ha)	Labour (people)
Power Plant	3	300	3 429
Coke Plant	5	500	4 455
Ferrochromium Plant	3	500	13 000
Ferromanganese Plant	1	100	3 833
Pig Iron Plant	6	600	9 000
Carbon Steel Plant	2	200	1 733
Stainless Steel Plant	4	500	8 000
Lime Plant	8	500	2 400
Silico-Manganese Plant	0.5	100	1 000
Metal Silicon Plant	0.3	50	600
Calcium Carbide Plant	0.3	50	600
Infrastructure		2 600	3 000
Total		6 000	52 000

Table 6: Musina-Makhado SEZ Contribution to Gross Value Added

Manufacturing Sector GVA			
Economic Region	GVA (R/million)	Contribution (%)	Average Annual Growth Rate
Limpopo Province	R9 595	3.3 (contribution to Limpopo economy)	-0.003%
Vhembe District	R1 163	2.3% (contribution to Vhembe economy)	-0.3%
Musina Local Municipality	R116	2.2% (contribution to Musina economy)	31.9%
Makhado Local Municipality	R703	3.3% (contribution to Makhado economy)	0.5%

According to Demacon, the establishment of the Musina-Makhado SEZ will increase the gross value added (GVA) of Limpopo province, Vhembe District Municipality, Musina and Makhado Local Municipalities as indicated in Table 5 above. The development of the Musina-Makhado SEZ will increase the GVA of Limpopo province by approximately R9.5 billion. The GVA for Vhembe District will increase by R1.1 billion. This indicates that the manufacturing in Vhembe District add more value compared to other districts in the province. The GVA for Musina and Makhado Local Municipalities will increase by R116 million and R703 million respectively.

3.4. Risks to Locating the SEZ in the Musina-Makhado Area

3.4.1. Scarcity of Water

The Musina-Makhado SEZ is located in one of the driest and water scarce areas of Vhembe District, receiving an average of 495mm of rainfall per annum. Water is scarce within the district with many of its supply dams silting up or overexploited. The Vhembe District Municipality, as a water service authority and provider, purchase bulk raw from the Department of Water Affairs and Sanitation (DWAS) for treatment and distribution to households within its jurisdiction. There is a huge water and sanitation backlog within the district with the national target of achieving a basic level of water and sanitation service for all by 2015 having been missed already. Water infrastructure upgrading and refurbishment are the major problem. Many of the district's water infrastructure refurbishment projects are behind schedule or not adequately funded.

Water is supplied to Musina town from various boreholes which are submerged into the Limpopo River. The use of ground water as a stand-alone supply source or to supplement surface water is a common practice due to water scarcity experienced throughout in Limpopo Province. Groundwater is a sustainable, pollution free and the most economical source of water if managed well. While there is a water pipe linking Musina and Beit Bridge (Zimbabwe) that has a water surplus, there is no water being drawn from Zimbabwe to Musina currently. Furthermore, there are no water pipes linking Musina with the SEZ site. In addition there are no water-bone sanitation infrastructure and storm water drains at the proposed SEZ site (Mott MacDonald, 2015)

One critical risk factor for the success of the Musina-Makhado SEZ southern site is the long-term availability of water as the region is severely water strained. It may fail to secure enough water to sustain its manufacturing activities as well as for domestic consumption following the anticipated influx of people into the area. Preliminary engineering estimates indicate that approximately 10 million cubic metres of water will be required by the metallurgical complex for steel manufacturing activities per annum. The water needs of the metallurgical complex will go up once it reaches a steady state of production. The water requirements of the SEZ increase to approximately 100 million cubic metres when other water intensive business activities such as coal washing and cooling systems for the power generation plant, agro-processing and domestic consumption are added (Delta Built Environmental Consultants, 2019).

The Nzhelele Dam, another potential water supply source to the SEZ, is overexploited and silting up (Mott MacDonald, 2015). A decision has been taken by the SEZ project promoters to utilise ground water in the initial construction phase of the project while a pipeline, to draw water from the Limpopo River is being built. In the long term, the planned importation of water from Zimbabwe following the development of the new Runde-Tende and Zhove Dams will meet the water requirements needs of the SEZ, the surrounding coal mines and the province as a whole. The DWS water balance calculations for the province indicate that, by 2045, water shortages will worsen in line with the anticipated growth in water consumption from the mining, agriculture and household sectors. Mining related activities, particularly the coal mines accounted for the largest increase in water demand in the province.

The DWS forecasts that mining industry's water consumption in the province will increase from 98 million cubic metres per annum in 2018 to approximately 297 million cubic metres per annum in 2045. The DWS's Limpopo Province Water Master Plan states that the department is undertaking a feasibility study to draw and transfer water from Zimbabwe's Tokwe-Mukosi Dam to supply Limpopo province. Preliminary engineering estimates indicate that the Limpopo province's initiative to import water from Zimbabwe to cater for the anticipated growth in mining and agricultural activities is comparably cheaper than the Gauteng province's importation of water from Lesotho. This is because the Zimbabwean dams earmarked to supply the water to Limpopo province are within 100kms-220kms radius from the Beit Bridge border while the Lesotho dams that supply water to the Gauteng province are 400kms away.

3.4.2. Environmental Concerns

The establishment of the Musina-Makhado SEZ will result in the development of power plant and a metallurgical cluster for the production of high-grade steel. Other land uses envisaged to complement the energy and metallurgical complex will comprise bulk infrastructure, light industries, intermodal facilities, housing, retail centres, business uses, community facilities, and telecommunication services.

The Musina-Makhado SEZ SOC Ltd has commissioned a number of studies including the 'Environmental Scoping Assessment Report for the Proposed Musina-Makhado Special Economic Zone Development' done by the Delta Built Environmental Consultants in August 2019 and the 'Biodiversity Impact Assessment (Wetlands, Freshwater, Fauna and Flora) as part of the Scoping and Environmental Impact Reporting process for the Musina-Makhado Energy and Metallurgy Special Economic Zone Development' done by Digby Wells Environmental in July 2019 to understand the impacts of the development of the SEZ on the environment.

The preliminary environmental studies have identified several potential detrimental impacts of the development of the SEZ on the surrounding environment. These include the biodiversity assets (water, baobab trees, grass and bushes), potential resource (land, water) use conflicts, large scale land transformation, increase in pollution particularly from the power plant and metallurgical complex, high water requirements by the SEZ and the impacts of the anticipated high inflow of labour on the environment. However the impacts of the Musina-Makhado SEZ on surface water are expected to be minimal since the proposed SEZ site is located approximately 51kms and 25kms away from Limpopo River and Nzhelele Dam respectively. There are three streams that run through the proposed site but they are unlikely to be extensively polluted by the metallurgical complex if appropriate waste management infrastructure and facilities are developed. Furthermore, there is distances of between 20kms-45kms between existing game reserves (Musina Nature Reserve, Honnet Nature Reserve, Nwanedi Nature Reserve and Nzhelele Nature Reserve) and the proposed SEZ site. The noise coming out of the metallurgical complex is therefore unlikely to adversely impact on wild animals (Delta Built Environmental Consultants, 2019).

Delta Built Environmental Consultants recommended that in order to establish the SEZ with all its land uses on the site, applications for environmental authorisation and change of land use must be submitted to the relevant competent authorities. In addition, the SEZ should appoint a number of specialists including soil classification, biodiversity, noise impact, air quality, geotechnical, flood line, climate impact assessments and engineers be appointed to gather baseline information about the proposed SEZ site and provide relevant inputs to

Environmental Impact Assessment (EIA). Musina-Makhado SEZ SOC Ltd has appointed a service provider to undertake an EIA of the metallurgical complex and its complimentary businesses.

3.4.3. Electricity Supply Shortages

South Africa has been facing electricity supply challenges since 2008 due to frequent breakdowns of Eskom's power generation plants, ageing distribution infrastructure and increased electricity demand from both a growing economy, particularly between 2004 and 2008 and population growth. The mining industry, together with smelters (manganese, chrome, aluminium) and steel manufacturing operations have been classified as 'energy intensive' users by Eskom. Electricity consumption by the energy intensive users has been curtailed at 90% of normal consumption. Energy supply challenges have been identified as the single biggest constraint inhibiting the growth of the South African mining and manufacturing industries.

While the Musina-Makhado SEZ's power plant is poised to generate electricity for its own needs when operational, the availability of enough power for steel manufacturing activities, particularly in the initial phases of the project is not guaranteed. There is also need to develop bulk electricity infrastructure for the SEZ. In addition there is also still a backlog of electricity supply to residential areas and to the existing businesses in the Vhembe District Municipality. However, on the positive side, Eskom is likely to classify the metallurgical complex as an 'energy intensive' entailing that electricity supply interruptions to its operations are likely to be minimal to ensure continuity of production operations (Mott MacDonald, 2015).

4. CONSIDERATION OF ANTON VILLA FARM AS AN ALTERNATIVE SITE FOR THE ESTABLISHMENT OF THE SEZ IN MUSINA AREA

The Anton Villa farm was the first site to be identified for the establishment of the SEZ but it was considered unsuitable due to a number of reasons including the limited size of the land (3 500 hectares only) and its close proximity to Limpopo River which could pose environmental challenges to the SEZ. These factors are discussed in detail below.

4.1.1. Location

The Anton Villa farm is located approximately 7kms and 23kms from Musina town and Beit Bridge border post respectively. The R508 road which begins in Musina town and runs in the South East direction towards Tshipise, links the Anton Villa farm with the N1 national route. There is a 5kms service road between the R508 and the Anton Villa farm. The R508 also links the Anton Villa farm with Mozambique via the R525 (see figure below).

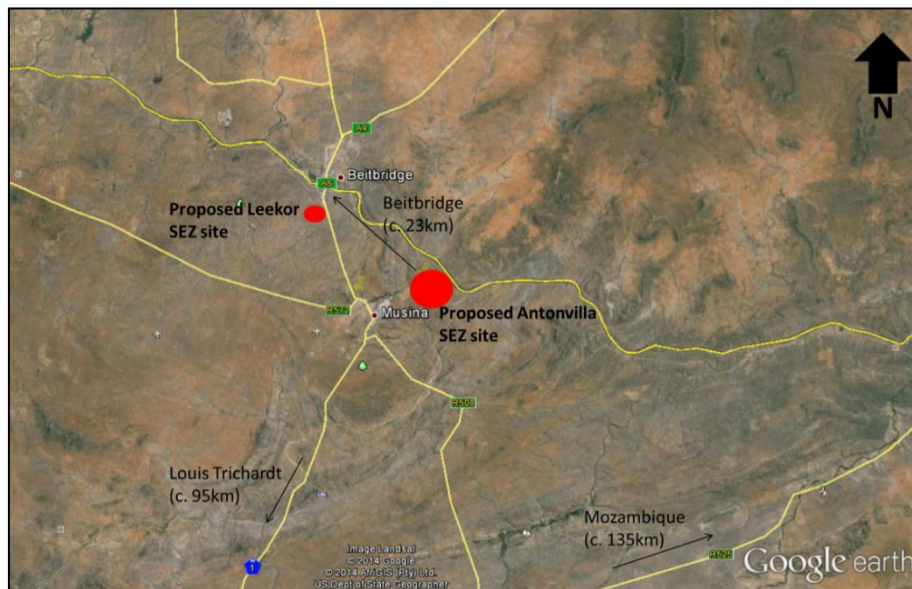


Figure 14: Location of the Anton Villa Farm

4.1.2. Land Availability

A total of 3 500 hectares of land is available for the development of the SEZ at Anton Villa farm. The land is currently owned by the national government via the Department of Public Works (DPW) and is zoned as agricultural under Spatial Development Framework of Musina Local Municipality. The limited size of the land at Anton Villa farm made it an unsuitable site for the development of the SEZ. The Musina-Makhado SEZ is anchored on investment pledges of over \$15 billion (approximately R225 billion) and approximately 6 000 hectares of land are required to cater its development and future expansion projects. There are deserted mine shafts and old mine buildings on the Anton Villa site that may restrict the optimal utilisation of the available land.

4.1.3. Water Supply Challenges

Currently, a number of boreholes that are submerged in the Limpopo River supply water to Musina town. The Anton Villa farm is served by one of the boreholes (M18-0636) that is located to the eastern side of the farm. There is existing water supply pipework linking the disused Anton Villa mine with Musina town. However, the pipework is in a poor state of repair and dilapidated. There are elevated storage tanks located within the area and these serve the existing offices, accommodation and recreation infrastructure on the Anton Villa mine. There are pump stations located within the Anton Villa farm that pump water from the M18-0636 borehole to the surrounding farms, residential areas and disused Anton Villa mine building facilities. There are no bulk water reservoirs in close proximity to the Anton Villa farm. Musina's new water treatment plant is located to the west of the proposed SEZ site. This currently supplies water to the residential area, truck-stop and petrol station at

the Beit Bridge border post. In addition, there are no storm water, waste water and sewage treatment facilities at the Anton Villa farm.

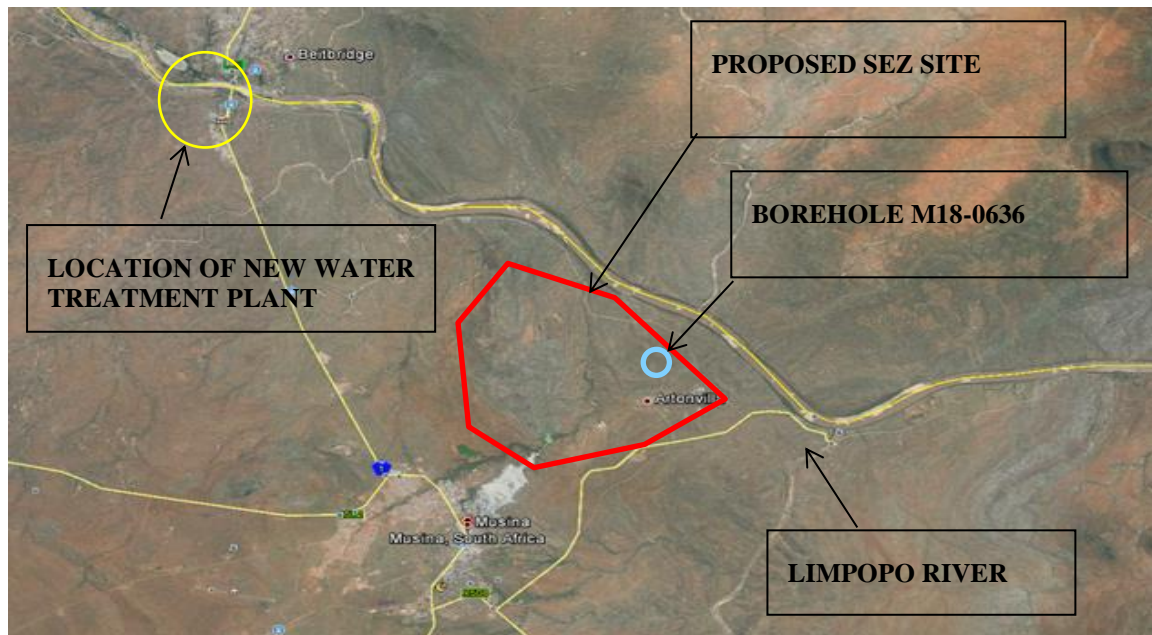


Figure 15: Water Supply Sources at Anton Villa Farm

4.1.4. Environmental Concerns and Land Use Restrictions

While the Musina Municipality is currently in the process of rezoning Anton Villa land from agricultural to industrial and residential area, the proximity of the farm to the Limpopo River and the border with Zimbabwe pose significant environmental and migrant labour challenges for the SEZ. The Limpopo River runs along the eastern boundary of the Anton Villa farm. The business activities of the metallurgical and energy complex, together with ancillary activities such as coal washing and the discharge of waste water may contaminate the Limpopo River located just outside the proposed SEZ site. The presence of a wetland and baobab trees on the Anton Villa farm exacerbates the environmental challenges that the development of the SEZ is likely to experience. In addition, the old mine shafts and mine buildings on Anton Villa farm could be classified as heritage sites by the government and thereby limiting optimal utilisation of the land and the future growth potential of the SEZ.



Figure 16: Limpopo River on the eastern side of the Anton Villa Farm

5. TUBATSE SPECIAL ECONOMIC ZONE

5.1. Overview of Tubatse Special Economic Zone Business Scope

The business scope of the Tubatse SEZ is focused on the beneficiation of PGMs to produce beneficiated products including catalytic converters and fuel cells. This will be complemented by the establishment of a mining inputs supply park which will supply mining consumables to the mines in the Eastern limb of the Bushveld Complex (BC).

5.2. Economic Rationale for Establishing an SEZ in the Tubatse Area

5.2.1. Location

The Tubatse identified site is located on Farm Spitskop 333KT in the Fetakgomo-Greater Tubatse Local Municipality which in turn belongs to the Sekhukhune District Municipality. The site is found in the Eastern limb of the BC that hosts the well-known Marensky reef in the Limpopo Province. The BC is home to three ferrochrome smelters, 38 operating mines which include PGM, chrome, iron ore and vanadium mines, granite and slate quarries owned by both local and international companies. The figure below illustrates the location of the proposed site for Tubatse SEZ.

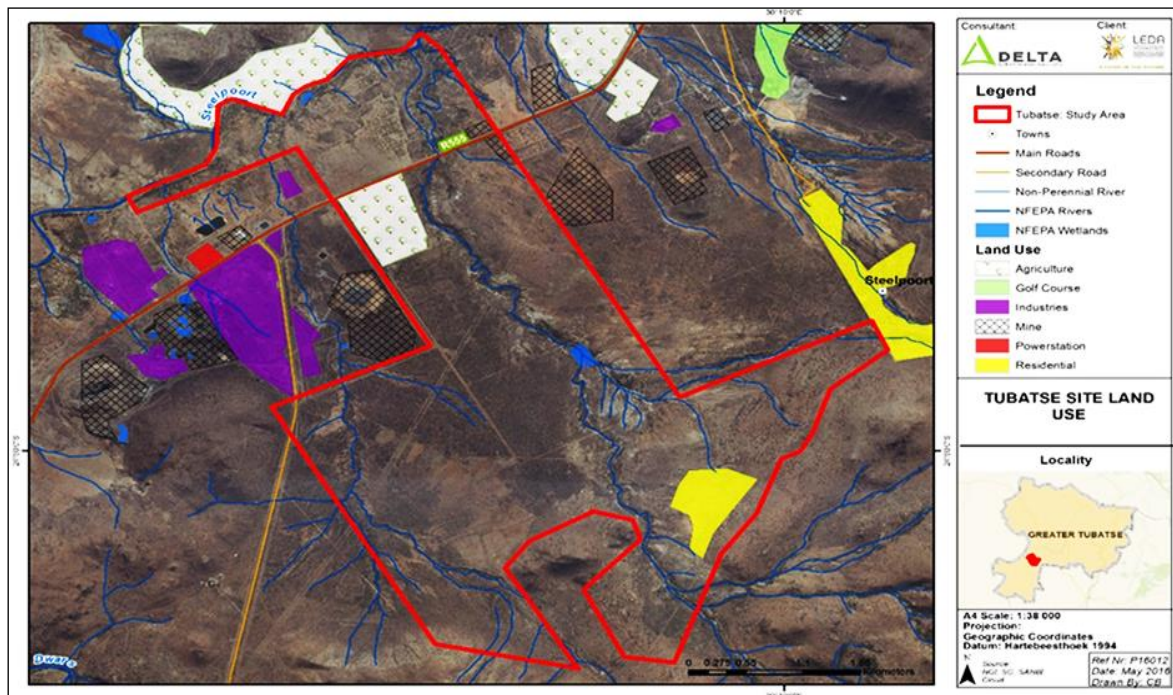


Figure 17: Location of Tubatse Site

5.2.2. Land Availability

A total of 1 700 hectares of land is available for the development of the Tubatse site. Of this, only 1 220 hectares of land is suitable for the construction of the SEZ due to environmental sensitivities of the area. The identified land is owned by the Dithamaga Community Trust. Identifying suitable land for the development of the SEZ was a challenge in Tubatse since government does not own enough land in the area. Buying privately owned land proved to be expensive because of the high prices of land. The 1 700 hectares of land available for the development of the SEZ in Tubatse is comparatively smaller than international SEZ size of 3 500 hectares.

In this regard, Tubatse was deemed an unfavourable site for the development of the proposed energy and metallurgical SEZ because of the small size of land. The limited size of the land available for the construction of

the SEZ in Tubatse also prohibits its future growth potential and the development of bulk infrastructure such as storm water drains and electricity sub stations.

International best practice for the location of SEZ require governments and private developers to consider the long term outlook for local and national economies, and changing regulations and global economic conditions. Preliminary studies indicate that there is no scope for future expansion of the Tubatse site as illustrated in the figure below.

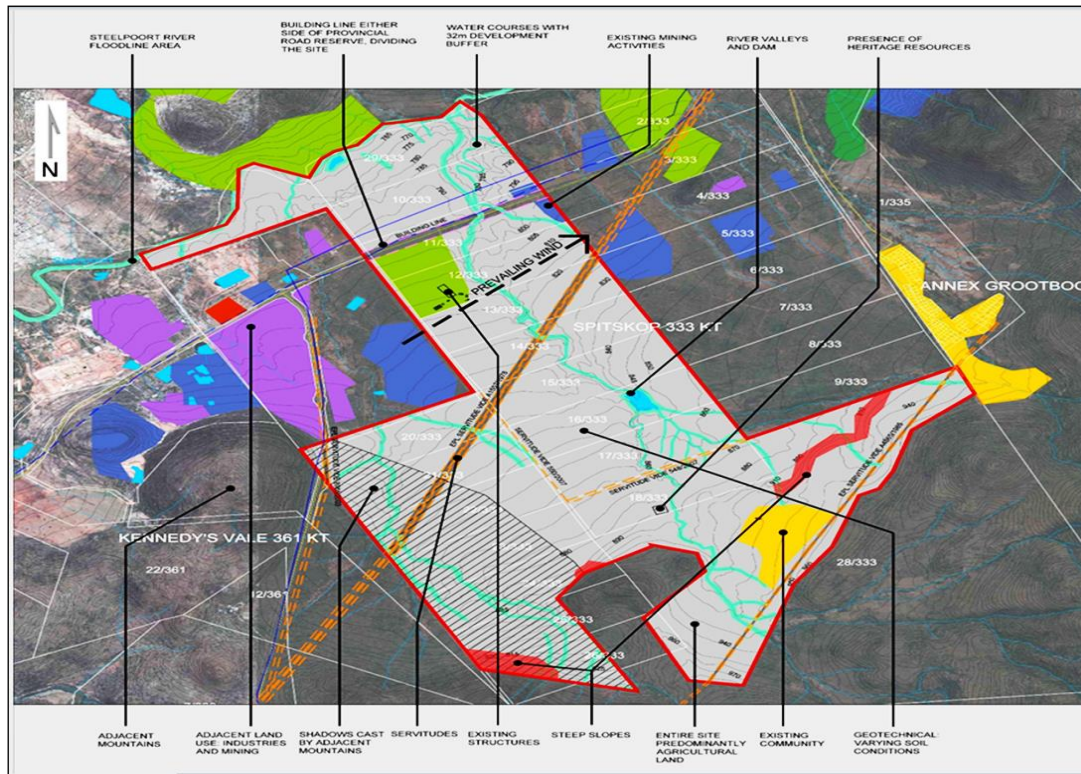


Figure 18: Tubatse SEZ Site Expansion Opportunities and Constraints

5.2.3. Infrastructure Availability

Infrastructure refers to the facilities which enable industry to work efficiently for example roads, railways, housing, schools, hospitals and water-supply. Poor or out-dated infrastructure may deter a firm or operation from locating in an area. Of course, the degree of dependency upon infrastructural facilities may vary from one industry to another but there is no denying of the fact that availability of infrastructural facilities plays a deciding role in the location selection of an industry.

Figure 19 below illustrates the infrastructure around the Tubatse area, which includes roads, railways and airports. However, important to note is the fact that even though this infrastructure is available, the standard, quality and distance approximation to the identified site makes it not suitable for the proposed energy and metallurgical SEZ. For example, the railway line closer to Tubatse site is 12kms away which impacts adversely on the transportation of manufactured goods. Interviews with some of the Tubatse stakeholders revealed that Transnet appears to be reluctant in funding the extension of the railway to Steelpoort in the east and Roosenekal in the west, based on its financial evaluation of the project.

Similarly, power situation was analysed with reference to its reliability, adequacy, rates (concessional, if any), own requirements, subsidy for standby arrangements etc. The findings revealed that the power supply available in the area was not adequate.

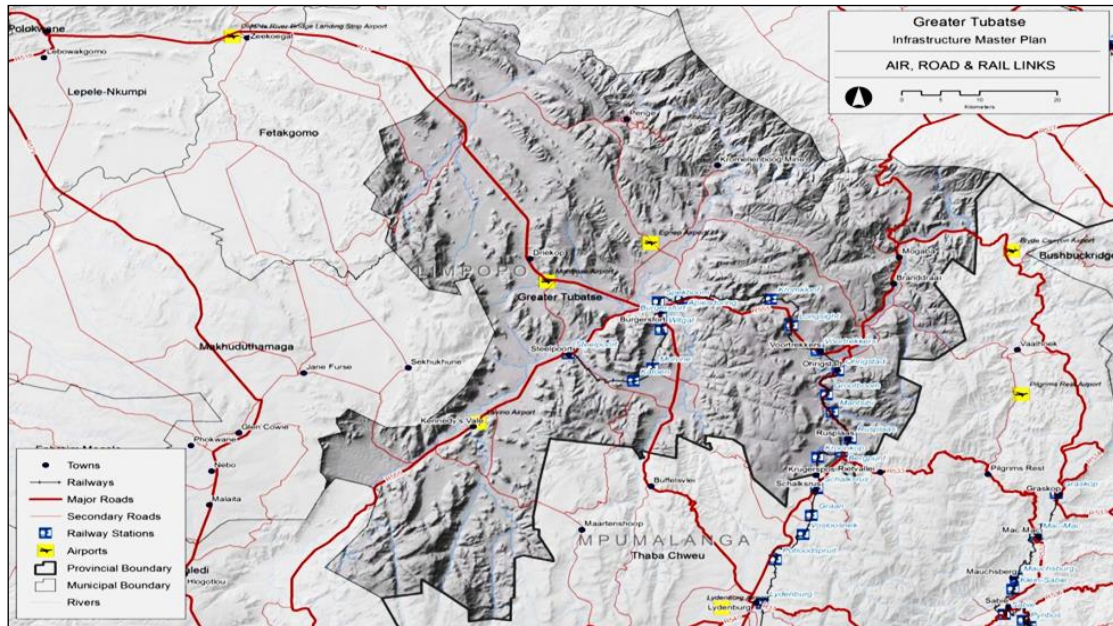


Figure 19: Tubatse Infrastructure

The two main roads connecting to Tubatse site, the R555 and R37 link the area from Middleburg and Polokwane, respectively, are in a very poor state to rely on for logistics purposes as shown in Figure 20 below.



Figure 20: State of Roads in Tubatse

However, there are existing plans in place for the upgrade of the infrastructure, most notably, the budget and request still needs approval by the government, with very slight chances of being approved. This makes Tubatse area unfavourable as it does not meet infrastructure requirements.

Similarly adequate water supply at low cost is a dominant decisional factor when selecting a site for industries like mining and energy that utilise large quantities of water. The required water capacity cannot be fulfilled by

the current water supply, though concerted efforts are being made for the collection of water from different sources (main pipeline running through Tubatse), the local infrastructure does not allow for efficient distribution.

Below is the current status of the water availability in Tubatse:

- The site currently has no bulk supply adequate for the SEZ.
- The SEZ will require 18ML/day at full capacity, inclusive of firewater, this is not adequate to meet the demand of the SEZ.
- There is no formal storm water drainage within the site.
- Natural drainage exists in the form of small streams and drains towards the Steelpoort River. This poses a risk to the water pollution by the SEZ.
- Storm water will be attenuated, and rainwater harvesting to be investigated
- No water treatment plan to be built on site and no existing sewer works
- Raw water needs to be treated before use and a 17 Ml waste water treatment plant required

Infrastructure developments plans in Tubatse include:

- Development of railway line to unlock the Vanadium bearing Titaniferous Magnetite ore in the area,
- Development of rail networks for movement of chrome from local mines to smelters,
- Development of R555 and R37 on behalf of SANRAL,
- Develop private coal fired power station and private hydro power station.

5.2.4. Proximity to Markets

As highlighted above, the SEZ will consist of firms and industries falling under the bulk-decreasing and bulk-gaining industries. For the bulk-gaining industries (e.g. cement processing plant that necessitate large volumes to be taken out to the market) to be profitable, close proximity to the markets is critical.

Consequently the main balancing factor will be the availability of transport from the source of raw material and or the SEZ to the market. In consideration of the above, it is evident that transportation challenges at the Tubatse site are deemed unfavourable at this stage.

5.2.5. Availability and Source of Raw Materials

Bulk-reducing industries are industries characterised by a production where import weighs more than the final product. As such, to reduce cost, bulk-reducing industries needs to locate near its source of inputs. For instance, it is easier and cheaper to transport finished steel products than iron ore because iron ore contains large quantities of waste.

The availability of raw materials required is one of the important considerations, the advantage to this lies on its availability at the location, and this translates to less cost in terms of transportation. Though the Tubatse area is surrounded by a number of mining operations, it lacks the appropriate and correct quality of the required raw material for the proposed SEZ. For instance, coal is available in abundance however, its quality is not of good standard.

5.2.6. Ecological and Environmental Factors

The ecological and environmental factors like water and air pollution pose negative impacts on the selection of Tubatse as an ideal location for the establishment of the energy and metallurgical SEZ. The processing and manufacturing plants not only produce solid waste but are likely to pollute water and air hence, stringent waste disposal laws, in cases of such industries, might add to the manufacturing cost to exorbitant limits.

5.2.7. Government Policies, Local Laws, Regulations and Taxes

In order to promote the balanced regional development, the Government also offers several incentives, concessions, tax holidays for number of years, cheaper power supply, factory shed. The Tubatse SEZ (through its main municipality) adopted these strategies to attract the investors to set up industries in this less developed area.

5.2.8. Availability of Manpower, Cost and Skills of the Labour Force

Labour is usually the firm's largest cost of production, and firms may move to where wages are lowest. The latter however, may be expensive areas in different ways.

The report conducted by Tubatse SEZ highlighted shortage of skilled labour as a major challenge in the area, with the lowest percentage number for the skills relevant and required for the SEZ. Thus adequate training would be required to equip the local population with the relevant skills. Another alternative would be to import the required skills, this poses a major challenge and might cause an increase to local unrest, for employment of local talent.

5.2.9. Political Conditions

Political stability is essential for industrial establishment and growth. The political stability fosters industrial activity and political upheaval derails industrial initiatives is duly confirmed by political situations across the countries and regions within the same country. The political stability builds among the prospective and present entrepreneurs to venture into industry which is filled with risks, in this case the Tubatse SEZ. Community attitudes also affect entrepreneurial spirits and may not be viable in every case.

From the interviews with Tubatse stakeholders, it was clear that the political climate for this area is unstable and may pose further challenges, with the community frequently engages in demonstration over the lack of service delivery and the lack of beneficiation from the local operating mines. This may sham a challenge in attracting new investors once the SEZ has been established.

5.2.10. Business Costs

The cost of running an operations fluctuates according to utility rates and infrastructural maintenance. Real estate costs such as property tax also enter into the equation.

In light of the above analysis, Tubatse was deemed not favourable for the establishment of the energy and metallurgical complex however, for mineral beneficiation of PGMs.

6. CONCLUSIONS AND RECOMMENDATIONS

The profitability and attractiveness of SEZs to investors is enhanced by their location, synergies with local economic activities, the availability of raw materials, large potential markets, the availability of appropriate factory space and infrastructure (road and rail) and the potential to run vertically integrated operations.

The purpose of this study was to assess and ascertain, at a high level, why the Musina-Makhado area offers the best location and the largest economic benefits for the establishment of the SEZ than other potential sites such as Tubatse and Lephalale in Limpopo province.

This research study concluded that:

- The Musina-Makhado site offers the best location and largest economic benefits for the establishment of the special economic zone (SEZ) than any other potential sites such as Tubatse and Lephalale in Limpopo province.
- The Musina-Makhado area's competitive advantage lies primarily on its geographic location on the NI north-south corridor and its close proximity (7.6kms from SEZ administration offices to Hunting Station) to the Johannesburg - Beit Bridge railway line. This provides excellent local, regional and international road and railway connectivity for transportation of both input materials and finished products to markets in the rest of South Africa and Southern African Development Community (SADC) countries.
- Comparatively, the Tubatse site lies off the country's major road and railway links which would make the transportation of bulk commodities to the markets expensive. The Lephalale site was not viewed favourably by both the LPG and the dti due to the construction of the Medupi power station which is poised to significantly contribute to the development of the area.
- The location of the Musina-Makhado SEZ is in line with national SEZ strategy which has witnessed a shift from the traditional approach of locating industrial zones in coastal cities and close to major airports (OR Tambo, Upington and Dube Trade Port) to other regions and potentially tackle the triple challenges of poverty, inequality and unemployment in those areas.
- The Musina-Makhado SEZ site's close proximity to minerals (coal, chrome) used in steel manufacturing together with its linkages with Limpopo province's existing road network (NI, NI I, R555, R521, R37) provide the metallurgical cluster of the SEZ with a cost competitive advantage for its products. This strengthens the investment case for the location of the SEZ in the Musina-Makhado area. The Tubatse site will be beneficial for mining input supplies and the beneficiation of platinum group metals (PGMs) mined in that area.
- A study that was done by Demacon (2019), a consulting company, estimated that the development of the R255 billion (at current R/\$ exchange) Musina-Makhado SEZ will generate approximately 21 000 jobs in the first 5 years of its operation. This will increase to 51 000 jobs in the tenth year of the SEZ's operation thereby giving rise to a larger impact on Vhembe District Municipality, Limpopo and South African economies.
- The development of the Musina-Makhado SEZ will accelerate mineral beneficiation and industrialisation of the provincial and national economies as well as leading to technology and skills transfer in the country. In addition, infrastructure upgrades, including road, rail and water, are likely to have positive spill over effects on local communities and thereby contributing to the creation of employment, eradication of poverty and inequality and poverty in the area.
- The Musina-Makhado SEZ's plans to develop a coal fired power plant are in line with the government's plans to create and enable power generating capacity outside the state owned power utility, Eskom, and ease the electricity shortages that South Africa has been experiencing since 2008. The electricity

generated by the Musina-Makhado SEZ will meet the power needs of its metallurgical complex while the remainder will be fed into the grid and be used by other electricity consumers in the country.

- The Musina-Makhado SEZ has a total of 8 000 hectares of land available for development of the SEZ. The Musina-Makhado site is an ideal location for the SEZ since it has enough land to cater for the construction of factory space, office and residential accommodation, development of bulk infrastructure (water, storm water and electricity) as well as catering for future expansion projects. In addition, the land available for development of the Musina Makhado SEZ compares favourably with China's average SEZ size of approximately 3 500 hectares.
- The establishment of an SEZ in the Musina-Makhado area provides an opportunity to enhance agro-processing activities in the Vhembe District Municipality and Limpopo province as a whole. Agricultural Business Chamber South Africa's statistics indicate that the Limpopo province accounts for a large portion (75% of mangoes, 65% of papayas, 60% of litchis, 60% of avocados and 60% of tomato) of South Africa's agricultural production. The bulk of the province's vegetables, fruits and nuts are produced in the Makhado and Thohoyandou areas which are within 50kms radius from the Musina-Makhado SEZ. This provides opportunity to food manufacturers to process fruits, nuts, vegetables produced in the district into fruit juices, canned fruits and vegetables in the Musina-Makhado SEZ and sell to both domestic and export markets.
- The Musina-Makhado SEZ site is approximately 51.6kms from Beit Bridge border post that is South Africa's primary gateway into the SADC region and the African Continental Free Trade Area (ACFTA) markets. South Africa is both a member of SADC and the African Union which are both multilateral institutions created to advance peace and security, economic cooperation, trade integration and development in Africa. The country can potentially harness the geographic proximity of the Musina-Makhado SEZ to the Beit Bridge border post together with its Dar es Salaam rail and road corridor linkages to substantially increase steel and agro-processed products exports to the SADC and ACFTA markets. A wide range of South African manufactured products including vehicles, processed food, chemicals and capital equipment are exported to the SADC and ACFTA markets via the Beit Bridge border post every day
- The proximity of the Musina-Makhado SEZ to the border post of Beit Bridge offers opportunities for a number of trade, logistic and border related services and facilities, such as bonded warehouse, vehicle distribution centres, holding depots, container yards and truck shops. In addition, the Musina-Makhado SEZ can be used as an inland intermodal terminal directly connected by both the NI north-south corridor and Johannesburg-Beit Bridge railway for the trans-shipment of sea cargo to inland destinations and manufactured goods to SADC markets. Vehicles manufactured in Durban and Port Elizabeth can be railed to the Musina-Makhado SEZ for storage before being transported to SADC and ACFTA markets.
- MESU recommends the Musina-Makhado SEZ SOC Ltd to undertake a detailed study on the availability, cost and quality of critical raw materials (coking coal, ferrochrome, manganese and iron ore) to the metallurgical complex and the implications this will have on the overall business case for Musina-Makhado SEZ.

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